APPENDIX B

ESSENTIAL FISH HABITAT ASSESSMENT

ESSENTIAL FISH HABITAT ASSESSMENT FOR THE CONNECTICUT RIVER HYDRILLA RESEARCH AND DEMONSTRATION PROJECT

MAY 2025

Prepared by

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New England District
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Concord, Massachusetts 01742-2751

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1. General Project Information

Date Prepared: May 15, 2025

Project/ Application Number: N/A

Project Name: Connecticut River Hydrilla Research and Demonstration Project

Project Applicant: U.S. Army Corps of Engineers, New England District

Federal Action Agency: U.S. Army Corps of Engineers, New England District

Fast-41: No

Action Agency Contact Name: Kelsie Dakessian

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Address: U.S. Army Corps of Engineers
New England District
696 Virginia Road
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2. Project Description

Location (WGS 84): 41.4092, -72.4352

Body of Water (HUC-12): Deep River-Connecticut River (010802050901)

Project Purpose:

The purpose of the proposed project is to provide a field-scale demonstration of technology developed under the APCRP, which is evaluating the effectiveness of aquatic herbicides to manage monoecious hydrilla in high water exchange environments, such as the tidal, riverine environment of the lower Connecticut River. The field demonstration will evaluate herbicide efficacy, optimal timing of treatment, non-target impacts, and herbicide concentration-exposure time requirements for effective control of hydrilla. The proposed project will also provide interim control of hydrilla at sites in the lower Connecticut River for the duration of the research and demonstration project to demonstrate and understand effective management practices.

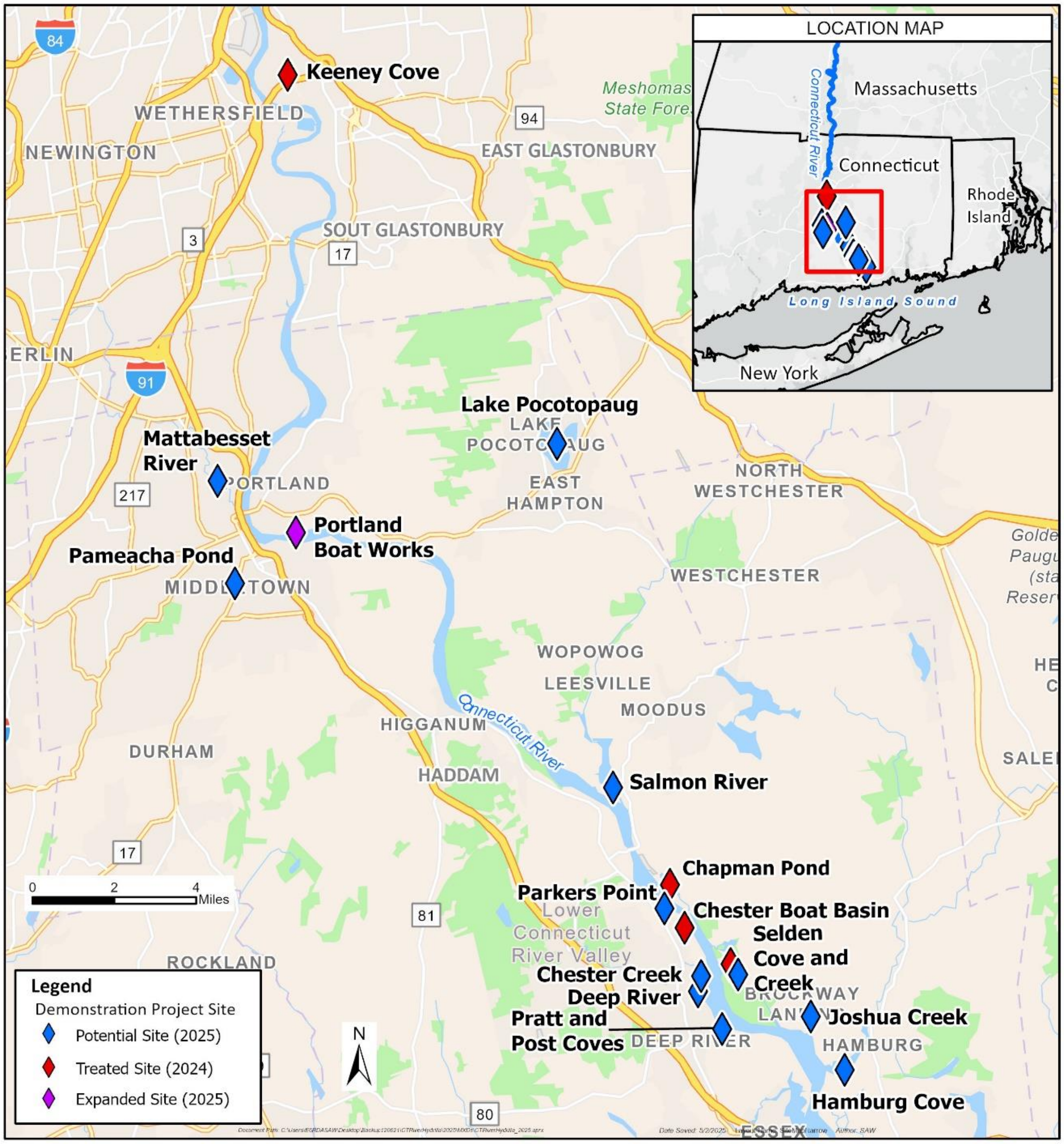

Figure 1. Proposed treatment sites

Project Description:

The Connecticut River Hydrilla Control Research and Demonstration Project currently includes five treatment sites, with a field-scale demonstration of chemical technology to evaluate the effectiveness of an aquatic herbicide to manage hydrilla, including sites in high water exchange environments (e.g., tidal, riverine environment). The proposed action is an expansion of the existing Connecticut River Hydrilla Control Research and Demonstration Project by adding 12 additional treatment sites within the Lower Connecticut watershed: (1) Chester Creek in Chester; (2) Deep River in Deep River; (3) Hamburg Cove in Lyme; (4) Joshua Creek in Lyme; (5) Mattabesset River in Middletown; (6) Parker's Point in Chester; (7) an expanded Portland Boat Works in Portland; (8) Post and Pratt Coves in Deep River; (9) Salmon River in East Haddam; (10) Selden Creek in Lyme; (11) Lake Pocotopaug in East Hampton; and (12) Pameacha Pond in Middletown.

The action proposes the use of diquat dibromide, dipotassium salt of endothall, and florpyrauxifen-benzyl or a combination of these chemicals to control hydrilla within Chester Creek. Herbicide will be evenly distributed across the entire treatment areas using the industry-standard boat-based subsurface injection application methods consisting of a calibrate pump and trailing hoses. Herbicide will be applied by licensed applicators and in accordance with product labels.

The proposed applications will occur in the summer after July 4th 2025, with any subsequent treatments occurring after July 4th of future years. This timing was selected to avoid impacts to diadromous fish and northern pike that may spawn in submerged aquatic vegetation at sites in or adjacent to the Connecticut River. Pre- and post-application monitoring will occur at the treatment sites to understand control efficacy for hydrilla and impacts to non-target species to inform the management of other hydrilla infestations. Post-application monitoring may occur for up to three years.

Table 1. Proposed herbicide use rates

Potential Herbicide	**Maximum Application Rate**
Diquat	370 ppb
Dipotassium salt of endothall	5 ppm
Florpyrauxifen-benzyl	48 ppb

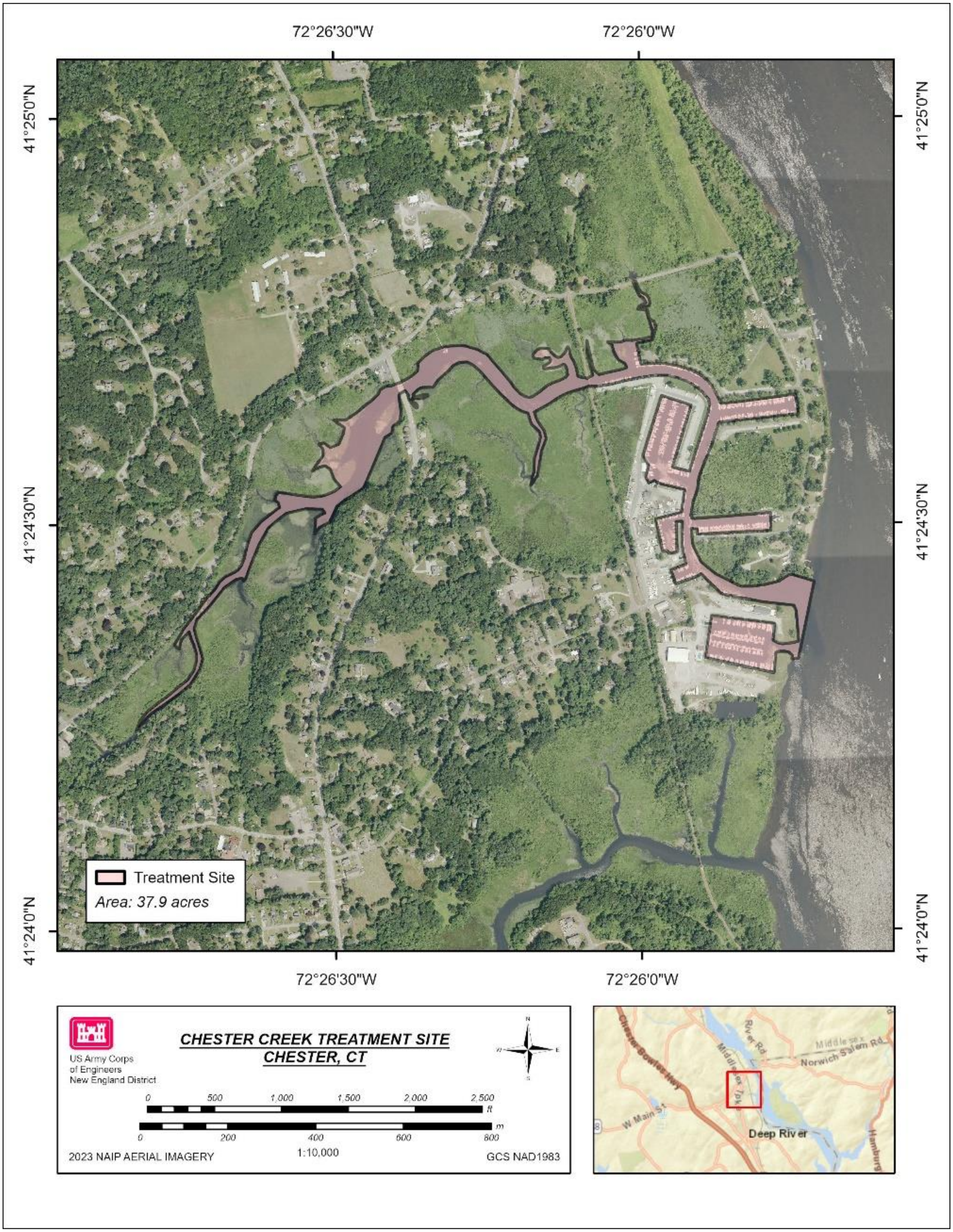

Figure 2. Proposed Treatment Site for Chester Creek in Chester, CT

Site Description

Is the project in designated EFH?	Yes
Is the project in designated HAPC?	Yes
Does the project contain any Special Aquatic Sites?	No
Is this coordination under FWCA only?	No

Total area of impact to EFH:

The total area of herbicide treatment is approximately 37.9 acres. Since it is not a closed system with tidal influence, herbicide may flow to areas outside the treatment polygon.

Total area of impact to HAPC:

The project area is approximately 37.9 acres, but impacts may extend outside of the treatment area based on site conditions at the time of treatment.

Current range of water depths:

According to the existing USACE bathymetric data, NOAA nautical charts, and local fishing maps the water depth is approximately 9 feet deep at MHHW. Bathymetric surveys will be conducted prior to herbicide treatment to inform herbicide treatment.

Salinity range:

Chester Creek is located upstream of the northern extent of the Connecticut River estuary's salt wedge; therefore, it is freshwater and has relatively low salinity.

Water temperature range:

Temperature data was sourced from the U.S. Geological Survey's Water Data portal (USGS, 2025).

Surface water temperature in the Connecticut River at Essex, CT, approximately 4 river miles downstream of Chester Creek, ranged from approximately 40°F in April 2024 to 72°F in September in 2024, and is likely a good estimate of the range of surface water temperatures within Chester Creek.

3. Habitat Types

Habitat Location	Habitat Type	Total Impacts	Temporary Impacts	Permanent Impacts	Restored to pre-existing conditions?
Freshwater	Submerged aquatic vegetation	37.9 acres	37.9 acres	37.9 acres	No

Submerged Aquatic Vegetation (SAV)

SAV Present? Yes

Details:

The proposed project will control hydrilla (*Hydrilla verticillata)* within Chester Creek. Vegetation surveys will be conducted prior to treatment to determine species within the treatment area. It is anticipated that SAV present will include species common to the Connecticut River, such as: waterweed (*Elodea canadensis*)*,* coontail (*Ceratophyllum demersum*), American eelgrass (*Vallisneria americana*), and pondweed (*Potamogeton spp.)*.

Sediment Characteristics

General Description of the Sediment Composition:

The sediment at Chester Creek is composed of silt.

Diadromous Fish (Migratory or Spawning Habitat)

Diadromous Fish Habitat?: Yes

4. EFH and HAPC Designations

The following table provides a summary of Essential Fish Habitat Designations in Chester Creek (denoted with an "X") (NMFS, 2025).

Species	Eggs	Larvae	Juveniles	Adults
Atlantic Butterfish (*Peprilus triacanthus*)	X	X		X
Atlantic Herring (*Clupea harengus*)			X	X
Atlantic mackerel (*Scomber scombrus*)	X	X	X	X
Atlantic salmon *(Salmo salar)*	X	X	X	X

Black Sea Bass (*Centropristis striata*)			X	
Bluefish (*Pomatomus saltatrix*)			X	X
Little Skate (*Leucoraja erinacea*)			X	X
Longfin inshore squid (*Doryteuthis pealeii*)	X		X	X
Pollock (*Pollachius virens*)			X	X
Red Hake (*Urophycis chuss*)	X	X	X	X
Scup (*Stenotomus chrysops*)	X	X	X	X
Summer Flounder (*Paralichthys dentatus*)			X	X
Windowpane Flounder (*Scophthalmus aquosus*)	X	X	X	X
Winter Flounder (*Psuedopleuronectes americanus*)	X	X	X	X
Winter Skate (*Leucoraja ocellata*)			X	X

5. Habitat Areas of Particular Concern (HAPCs)

Select all that apply	HAPC Designation	Select all that apply	HAPC Designation
X	Summer flounder: SAV		Alvin & Atlantis Canyons
	Sandbar shark		Baltimore Canyon
	Sand Tiger Shark (Delaware Bay)		Bear Seamount
	Sand Tiger Shark (Plymouth-Duxbury-Kingston Bay)		Heezen Canyon
	Inshore 20m Juvenile Cod		Hudson Canyon
	Great South Channel Juvenile Cod		Hydrographer Canyon
	Northern Edge Juvenile Cod		Jeffreys & Stellwagen
	Lydonia Canyon		Lydonia, Gilbert & Oceanographer Canyons
	Norfolk Canyon (Mid-Atlantic)		Norfolk Canyon (New England)
	Oceanographer Canyon		Retriever Seamount
	Veatch Canyon (Mid-Atlantic)		Toms, Middle Toms & Hendrickson Canyons
	Veatch Canyon (New England)		Washington Canyon
	Cashes Ledge		Wilmington Canyon
	Atlantic Salmon		

Chester Creek falls within the regional HAPC for summer flounder. The summer flounder HAPC consists of areas with SAV. The specific designation of summer flounder HAPC is:

> All native species of macroalgae, seagrasses, and freshwater and tidal macrophytes in any size bed, as well as loose aggregations, within adult and juvenile summer flounder EFH is HAPC. If native species of SAV are eliminated then exotic species should be protected because of functional value, however, all efforts should be made to restore native species (MAFMC, 1998).

Chester Creek primarily contains exotic freshwater and tidal macrophytes. This project will control the exotic macrophytes, with the goal of restoring native SAV benefiting native fish and wildlife, and the entire ecosystem. Consequently, this project is expected to have a beneficial impact to the HAPC for summer flounder.

6. Activity Details

Select all that apply	Project Type/Category
	Agriculture
	Aquaculture
	Bank/shoreline stabilization (e.g., living shoreline, groin, breakwater, bulkhead)
	Beach renourishment
	Dredging/excavation
	Energy development/use e.g., hydropower, oil and gas, pipeline, transmission line, tidal or wave power, wind
	Fill
	Forestry
	Infrastructure/transportation (e.g., culvert construction, bridge repair, highway, port, railroad)
	Intake/outfall
	Military (e.g., acoustic testing, training exercises)
	Mining (e.g., sand, gravel)
	Overboard dredged material placement
	Piers, ramps, floats, and other structures
	Restoration or fish/wildlife enhancement (e.g., fish passage, wetlands, mitigation bank/ILF creation)
	Survey (e.g., geotechnical, geophysical, habitat, fisheries)
	Water quality (e.g., storm water drainage, NPDES, TMDL, wastewater, sediment remediation)
X	Other: aquatic herbicide application

7. Effects Evaluation

Potential Stressors

Select all that apply	Potential Stressors Caused by the Activity
	Underwater noise
X	Water quality/turbidity/contaminant release
	Vessel traffic/barge grounding
	Impingement/entrainment
	Prevent fish passage/spawning
X	Benthic community disturbance
X	Impacts to prey species

Select all that apply		Potential Stressors Caused by the Activity
Temp	Perm	
		Water depth change
		Tidal flow change
		Fill
X		Habitat type conversion
		Other:

Project Impacts and Mitigation

Project Impacts to EFH by Species

EFH for **Atlantic butterfish** eggs, larvae, and adults is designated at the project area. In Long Island Sound, butterfish spawn from June to late August with a peak in late July. The principal spawning areas are in the eastern part of the sound. They have a seasonal inshore-offshore migration dependent on water temperature. In summer, they move north and inshore to feed on planktonic fish, squid, crustaceans, and jellyfish and then move south and offshore in the winter. Eggs and larvae may occur in salinities ranging from estuarine to full strength seawater. Adults are common to abundant in the high salinity and mixing zones of estuaries within the region (NMFS 1999a). Based on this species' diet, migration pattern, and habitat characteristics, the project will have no effect to Atlantic butterfish EFH.

EFH for **Atlantic herring** juvenile, and adults is designated at the project area. Juveniles are sometimes abundant in fall while adults are abundant in Long Island Sound during the spring. In the Connecticut River, juveniles have a rare abundance only in the mixing salinity zone .Juveniles and adults are pelagic, with adults only becoming demersal during spawning. Atlantic sea herring prey on pelagic zooplankton. Atlantic

herring larvae metamorphose into early-stage juveniles in the spring within intertidal and subtidal habitats out to 985 feet. Adults and juveniles may be found in the estuarine mixing salinity zones of the Connecticut River. The river does not support adults or juveniles in tidal freshwater habitat (NMFS, 199b). Given the salinity range of Chester Creek, no impacts are anticipated as there is not a suitable salinity for juveniles within Chester Creek.

Atlantic mackerel EFH for all life stages is designated in the project area. Atlantic mackerel spawn pelagic eggs from roughly mid-April to June. The pelagic eggs hatch into planktonic larvae 4-5 days post-fertilization. Atlantic mackerel gain the ability to swim and school after approximately 1-2 months. During the winter, Atlantic mackerel migrate to deep water offshore and eventually move back inshore in the spring. Mackerel feed on a variety of prey during their life cycles, including zooplankton, crustaceans, copepods, and small fish. They are never found in the Connecticut River, and their eggs have high mortality rates at low salinities (NMFS, 1999c). Based on the fact that Atlantic mackerel are unlikely to be found north of the Connecticut River estuary, the project will have no effect to this species' EFH.

Black sea bass EFH is designated at the project area for juveniles. In Southern New England, both juvenile and adult black sea bass migrate offshore to over-wintering areas at depths greater than 250 feet when waters begin to cool in the fall. Within estuaries, black sea bass juveniles use shallow shellfish, sponge, amphipod (e.g., *Ampelisca abdita*), seagrass, and cobble habitats as well as manmade structures such as wharves, pilings, and wrecks. Juveniles are generalist carnivores that feed on a variety of infaunal and epifaunal invertebrates, small fish, and squid (NMFS, 1999d). As black sea bass are unlikely to occur north of the Connecticut River estuary, no adverse effects to EFH is expected as a result of this project.

EFH for all life stages of **Atlantic salmon** is designated in the project area. All life stages of Atlantic salmon use freshwater habitats either exclusively or at some point during their life history. The streambed is important for eggs and larvae while the juveniles and adults use the river itself. Adults prefer riffle and run habitats in shallow, freshwater streams with gravel/rocky substrates with pools or vegetated riverine areas of low velocity. Spawning adults are generally found in late October through November. During this time, eggs are deposited and buried in the substrate and hatch after about 6 months in the spring. Larvae remain in the substrate for about six weeks before emerging as Juveniles in the spring (NEFMC, 2017). No impacts are anticipated to Atlantic salmon eggs, larvae, or spawning Adults as the proposed application will no occur during these months. These life stages are not likely to be present during the proposed application in the summer, after July 4.

Juveniles begin smolting in freshwater before migration downstream into brackish water and seawater. The timing of downstream migration depends on various factors, including temperature, salinity, and physiological adaptations. Spawning adults are generally found in late October through November. Juveniles may utilize the Connecticut River, in addition to riverine (e.g. Chester Creek), lacustrine, and estuarine habitats (NEFMC, 2017). The proposed project will result in temporary impacts to SAV and habitat conversion that may affect juvenile and adult life stages EFH habitat. Temporary habitat conversion may occur from the reduction of hydrilla and potential non-target impacts. Loss of SAV will be limited to the proposed treatment site. Although there may be impacts short term impacts to habitat availability to native fish following the hydrilla treatment, the goal is to reduce hydrilla presence, abundance and density to a level that allows native SAV to reestablish providing higher quality habitat. Therefore, the project is expected to have long-term beneficial impacts to EFH for Atlantic salmon.

Juvenile and adult EFH for **bluefish** is designated for the project area. Juveniles are abundant in the Connecticut River estuary. These life stages are generally restricted to estuarine and mixing salinity zones, and are not known to move into freshwater. Spawning occurs in the spring and summer when adults and juveniles are present inshore. Bluefish feed primarily on small prey fish but may forage for benthic prey on oyster bar and reef habitats when prey availability is limited (NMFS, 1999e). The project is located in areas that do not support bluefish and the action will not impact any prey species.

EFH for **little skate** and **winter skate** juveniles and adults is designated for the project area. Little skate and winter skate are sympatric species with similar habitat requirements. Their EFH occurs on sand, gravel, and mud substrates. Both species are benthic feeders, with crustaceans and polychaetes being important food sources. Both winter skate and little skate move inshore and offshore seasonally, moving into shallower inshore waters during spring and then into deeper waters in winter from roughly November to April (NMFS, 2003a; NMFS, 2003b). The project is located in areas that do not support little skate and winter skate; therefore, the action will not impact EFH.

Longfin inshore squid eggs, juvenile, and adult EFH is designated at the project area. Longfin inshore squid migrate offshore during late autumn and overwinter in deeper, warmer waters along the edge of the continental shelf. They return inshore during the spring and early summer to feed on planktonic organisms, crustaceans, and small fish. Most spawning occurs in May and hatching occurs in July. Egg masses are commonly found attached to rocks and small boulders on sandy/muddy bottom and on submerged aquatic vegetation (NMFS, 1999f). Longfin inshore squid are not known to use the Connecticut River for habitat so there will be no impact to longfin inshore squid EFH.

Pollock EFH for juveniles, and adults is designated at the project area. Larvae are pelagic, most are found at depths of 164 to 295 feet (50-90 m). EFH for juveniles includes rocky bottom habitats with attached macroalgae (NEFMC, 2017). The juveniles have been reported over a wide variety of substrates, including sand, mud, or rocky bottom, and vegetation. Most commonly juveniles are found at depths of 82 to 246 feet (25-75 m) although they can be found from the surface to 410 feet deep (125 m). Adults show little preference for bottom type, and they inhabit a wide range of depths from 115 to 1197 feet (35-365 m) (NMFS, 1999g). EFH for adults include the tops and edges of offshore banks and shores with mixed rocky substrate, often with attached macro algae.

The EFH designation for Long Island Sound includes the seawater salinity zone of Long Island Sound. Pollock are not known to travel up the Connecticut River; therefore, this project is not expected to have impacts on pollock EFH (NEFMC, 2017).

EFH for all life stages of **red hake** is designated in the project area. Spawning of pelagic eggs occurs in the summer along the continental shelf and is concentrated off southern New England. Red hake larvae have been collected on the middle to outer continental shelf of the Middle Atlantic Bight, but few larvae were collected in the Gulf of Maine. North of Cape Cod, where waters are cooler, juveniles can remain inshore throughout the summer. Both juveniles and adults have primarily been found over muddy substrate (NMFS, 1999h). Juvenile EFH includes intertidal and sub-tidal benthic habitats on mud and sand substrates. Adult EFH includes inshore estuarine and embayments, in depressions in softer sediments or in shell beds. In the Connecticut River, Red hake are present in mixing salinity zones (NEFMC, 2017). The proposed project will not occur within mixing salinity zones, where red hake may be present, therefore, no impacts are anticipated to red hake EFH.

Scup EFH for all life stages is designated at the project area. Scup eggs larvae are found from May through August in southern New England, with EFH habitat in the mixing and seawater salinity zones of estuaries. Larvae occupy a similar habitat and can be found from May through September. Juvenile and adult scup migrate from estuaries to the edge of the continental shelf as water temperatures decline in the winter and return from the edge of the continental shelf to inshore areas as water temperatures rise in the spring. Inshore, juvenile summer habitat includes intertidal and subtidal habitats, over sand, silty-sand, shell, mud, mussel beds and eelgrass (*Zostera marina*) as well as rocky ledges, wrecks, artificial reefs, and mussel beds (NMFS, 1999i). Adult EFH inshore habitat includes the mixing and seawater salinity zones of estuaries (MAFMC, 1998). Due to the project location north of the Connecticut River estuary, no adverse impacts to scup EFH are expected as a result of this project.

EFH for **summer flounder** juveniles and adults is designated at the project area. Summer flounder inhabit shallow coastal and estuarine waters between May and October, moving offshore to the outer continental shelf during winter months. It is believed that spawning occurs in offshore waters of southern New England, with peak offshore spawning occurring during October and November. Summer flounder juveniles and adults are benthic feeders, with polychaetes, crustaceans, and bivalves being important food sources (NMFS, 1999j). Inshore habitat for juveniles and adults is restricted to mixing and seawater salinity zones (MAFMC, 1998). Due to the location of the project being upstream of the Connecticut River estuary’s salt wedge, no adverse effects to adult summer flounder spawning EFH are expected.

EFH for all life stages of **windowpane flounder** is designated for the project area. Egg and larval EFH is described as pelagic habitats on the continental shelf from Georges Bank to Cape Hatteras and in mixed and high salinity zones of coastal bays and estuaries throughout the region. Juvenile and adult EFH occurs in intertidal and sub-tidal muddy or sandy benthic habitats in estuarine, coastal marine, and continental shelf waters from the Gulf of Maine south (NMFS, 1999k). All life stages are found in the mixing salinity zone of the Connecticut River (MAFMC, 1998). Windowpane flounder habitat is not expected north of the Connecticut River estuary. Therefore, no adverse impacts on all life stages of windowpane flounder EFH would be anticipated as a result of this project.

Winter flounder EFH for all life stages is designated at all project locations. Winter flounder are found in a variety of habitats from brackish riverine waters to saline coastal environments and have been documented from depths of less than 3 feet in coastal embayments, up to approximately 90 feet in Cape Cod Bay and Stellwagen Bank and up to 270 feet on George's Bank. Except for the Georges Bank population, adult winter flounder migrate inshore in the fall and early winter. Spawning occurs in late winter and early spring with peak spawning between February and March in Massachusetts Bay. The diet of juvenile and adult winter flounder consists of benthic fauna; mostly polychaetes and amphipods (NMFS, 1999l). Winter flounder are not expected to inhabit areas north of the Connecticut River estuary. Therefore, no impacts on all life stages of the winter flounder EFH would be anticipated as a result of this project.

Avoidance, Minimization, and Mitigation

Specific measures taken to avoid and minimize impacts to EFH:

The project area does not contain viable EFH for the identified species because it is a tidal freshwater creek and is located upstream of the Connecticut River estuary. Additionally, the proposed action will occur after July 4th to avoid potential impacts to diadromous fish.

Is compensatory mitigation proposed?

No compensatory mitigation is proposed as no significant adverse effects are anticipated to any species' EFH.

Compensatory mitigation details:

N/A

8. Effects of Climate Change

Could species or habitats be adversely affected by the proposed action due to projected changes in the climate?

No adverse effects to species or habitat are expected as a result of the project and projected climate change.

Is the expected lifespan of the action greater than 10 years?

No, however, use of aquatic herbicides for control of the invasive hydrilla are likely to continue in other parts of the Connecticut River. The project is expected to reduce hydrilla presence, abundance and density to allow for native SAV to replace it.

Is climate change currently affecting vulnerable species or habitats, and would the effects of a proposed action be amplified by climate change?

Vulnerable species and habitats are currently affected by climate change, but the effects of the proposed action are not likely to be amplified by climate change.

Do the results of the assessment indicate the effects of the action on habitats and species will be amplified by climate change?

No.

Can adaptive management strategies (AMS) be integrated into the action to avoid or minimize adverse effects of the proposed action as a result of climate?

Due to negligible impacts to species EFH, the effects of the proposed action are not likely to be amplified by climate change; thus, adaptive management strategies would not help avoid or minimize adverse impacts of the proposed action.

9. Federal Agency Determination

Federal Action Agency's EFH determination	
	There is no adverse effect on EFH or EFH is not designated at the project site. EFH Consultation is not required. This is a FWCA only request.
X	The adverse effect on EFH is not substantial. This means that the adverse effects are no more than minimal, temporary, or can be alleviated with minor project modifications or conservation recommendations. This is a request for an abbreviated EFH consultation.
	The adverse effect on EFH is substantial. This is a request for an expanded EFH consultation.

10. Fish and Wildlife Coordination Act

Fish and Wildlife Coordination Act Resources

Species known to occur at site	**Habitat impact type**
alewife	Temporary impacts to SAV.
American eel	Temporary impacts to SAV.
American shad	Temporary impacts to SAV.
Atlantic menhaden	N/A
blue crab	N/A
blue mussel	N/A
blueback herring	Temporary impacts to SAV.
Eastern oyster	N/A
horseshoe crab	N/A
quahog	N/A
soft-shell clams	N/A
striped bass	Temporary impacts to SAV.
other species:	

11. References

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National Marine Fisheries Service (NMFS). 1999f. Essential Fish Habitat Source Document: Longfin Inshore Squid, *Loligo pealeii*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

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National Marine Fisheries Service (NMFS). 1999j. Essential Fish Habitat Source Document: Summer Flounder, *Paralichthys dentatus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999k. Essential Fish Habitat Source Document: Windowpane Flounder, *Scophthalmus aquosus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999l. Essential Fish Habitat Source Document: Winter Flounder, *Psuedopleuronectes americanus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

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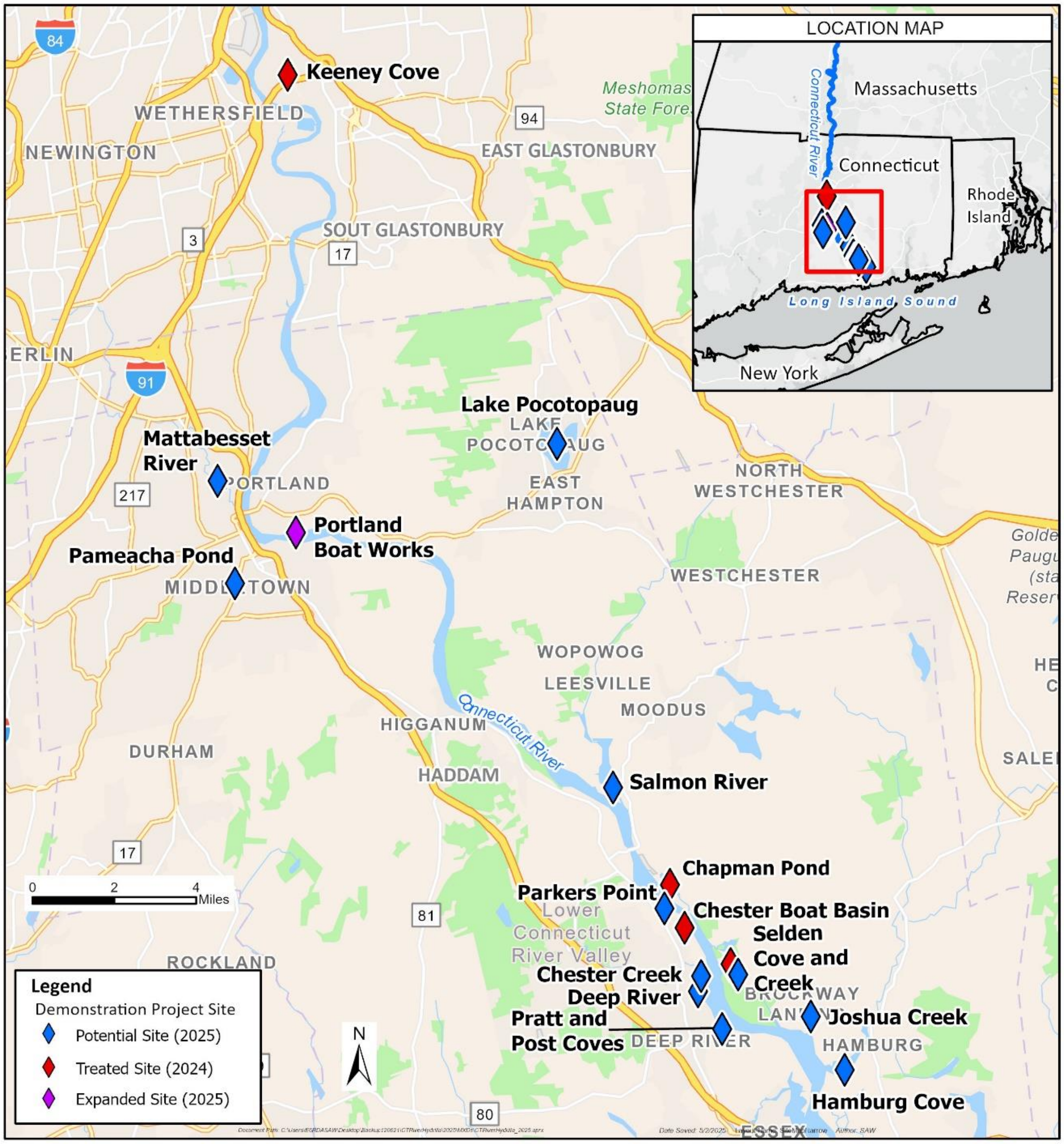

Figure 1. Proposed treatment sites

Project Description:

The Connecticut River Hydrilla Control Research and Demonstration Project currently includes five treatment sites, with a field-scale demonstration of chemical technology to evaluate the effectiveness of an aquatic herbicide to manage hydrilla, including sites in high water exchange environments (e.g., tidal, riverine environment). The proposed action is an expansion of the existing Connecticut River Hydrilla Control Research and Demonstration Project by adding 12 additional treatment sites within the Lower Connecticut watershed: (1) Chester Creek in Chester; (2) Deep River in Deep River; (3) Hamburg Cove in Lyme; (4) Joshua Creek in Lyme; (5) Mattabesset River in Middletown; (6) Parker's Point in Chester; (7) an expanded Portland Boat Works in Portland; (8) Post and Pratt Coves in Deep River; (9) Salmon River in East Haddam; (10) Selden Creek in Lyme; (11) Lake Pocotopaug in East Hampton; and (12) Pameacha Pond in Middletown.

The action proposes the use of diquat dibromide, dipotassium salt of endothall, and florpyrauxifen-benzyl or a combination of these chemicals to control hydrilla within Deep River. Herbicide will be evenly distributed across the entire treatment areas using the industry-standard boat-based subsurface injection application methods consisting of a calibrate pump and trailing hoses. Herbicide will be applied by licensed applicators and in accordance with product labels.

The proposed applications will occur in the summer after July 4th 2025, with any subsequent treatments occurring after July 4th of future years. This timing was selected to avoid impacts to diadromous fish and northern pike that may spawn in submerged aquatic vegetation at sites in or adjacent to the Connecticut River. Pre- and post-application monitoring will occur at the treatment sites to understand control efficacy for hydrilla and impacts to non-target species to inform the management of other hydrilla infestations. Post-application monitoring may occur for up to three years.

Table 1. Proposed herbicide use rates

Potential Herbicide	**Maximum Application Rate**
Diquat	370 ppb
Dipotassium salt of endothall	5 ppm
Florpyrauxifen-benzyl	48 ppb

Figure 2. Proposed Treatment Site for Deep River in Deep River, CT

Site Description

Is the project in designated EFH?	Yes
Is the project in designated HAPC?	Yes
Does the project contain any Special Aquatic Sites?	No
Is this coordination under FWCA only?	No

Total area of impact to EFH:

The total area of herbicide treatment is approximately 5.3 acres. Since it is not a closed system with tidal influence, herbicide may flow to areas outside the treatment polygon.

Total area of impact to HAPC:

The project area is approximately 5.3 acres, but impacts may extend outside of the treatment area based on site conditions at the time of treatment.

Current range of water depths:

According to the existing USACE bathymetric data, NOAA nautical charts, and local fishing maps the water depth is approximately 7 feet deep at MHHW. Bathymetric surveys will be conducted prior to herbicide treatment to inform herbicide treatment.

Salinity range:

Deep River is located upstream of the northern extent of the Connecticut River estuary's salt wedge; therefore, it is freshwater and has relatively low salinity.

Water temperature range:

Temperature data was sourced from the U.S. Geological Survey's Water Data portal (USGS, 2025).

Surface water temperature in the Connecticut River at Essex, CT, approximately 5 river miles downstream of Deep River, ranged from approximately 40°F in April 2024 to 72°F in September in 2024, and is likely a good estimate of the range of surface water temperatures within Deep River.

3. Habitat Types

Habitat Location	Habitat Type	Total Impacts	Temporary Impacts	Permanent Impacts	Restored to pre-existing conditions?
Freshwater	Submerged aquatic vegetation	5.3 acres	5.3 acres	5.3 acres	No

Submerged Aquatic Vegetation (SAV)

SAV Present? Yes

Details:

The proposed project will control hydrilla (*Hydrilla verticillata)* within Deep River. Vegetation surveys were conducted in 2023. Species of SAV at Deep River include: nuttall waterweed (*Elodea nuttalli*), coontail (*Ceratophyllum demersum*), American eelgrass (*Vallisneria americana*), and Eurasian water-milfoil (*Myriophyllum spicatum)*.

Sediment Characteristics

General Description of the Sediment Composition:

The sediment at Deep River is composed of silt.

Diadromous Fish (Migratory or Spawning Habitat)

Diadromous Fish Habitat?: Yes

4. EFH and HAPC Designations

The following table provides a summary of Essential Fish Habitat Designations in Deep River (denoted with an "X") (NMFS, 2025).

Species	Eggs	Larvae	Juveniles	Adults
Atlantic Butterfish (*Peprilus triacanthus*)	X	X		X
Atlantic Herring (*Clupea harengus*)			X	X
Atlantic mackerel (*Scomber scombrus*)	X	X	X	X
Atlantic salmon (*Salmo salar)*	X	X	X	X
Black Sea Bass (*Centropristis striata*)			X	

Bluefish (*Pomatomus saltatrix*)			X	X
Little Skate (*Leucoraja erinacea*)			X	X
Longfin inshore squid (*Doryteuthis pealeii*)	X		X	X
Pollock (*Pollachius virens*)			X	X
Red Hake (*Urophycis chuss*)	X	X	X	X
Scup (*Stenotomus chrysops*)	X	X	X	X
Summer Flounder (*Paralichthys dentatus*)			X	X
Windowpane Flounder (*Scophthalmus aquosus*)	X	X	X	X
Winter Flounder (*Psuedopleuronectes americanus*)	X	X	X	X
Winter Skate (*Leucoraja ocellata*)			X	X

5. Habitat Areas of Particular Concern (HAPCs)

Select all that apply	HAPC Designation	Select all that apply	HAPC Designation
X	Summer flounder: SAV		Alvin & Atlantis Canyons
	Sandbar shark		Baltimore Canyon
	Sand Tiger Shark (Delaware Bay)		Bear Seamount
	Sand Tiger Shark (Plymouth-Duxbury-Kingston Bay)		Heezen Canyon
	Inshore 20m Juvenile Cod		Hudson Canyon
	Great South Channel Juvenile Cod		Hydrographer Canyon
	Northern Edge Juvenile Cod		Jeffreys & Stellwagen
	Lydonia Canyon		Lydonia, Gilbert & Oceanographer Canyons
	Norfolk Canyon (Mid-Atlantic)		Norfolk Canyon (New England)
	Oceanographer Canyon		Retriever Seamount
	Veatch Canyon (Mid-Atlantic)		Toms, Middle Toms & Hendrickson Canyons
	Veatch Canyon (New England)		Washington Canyon
	Cashes Ledge		Wilmington Canyon
	Atlantic Salmon		

Deep River is located within the regional HAPC for summer flounder. The summer flounder HAPC consists of areas with SAV. The specific designation of summer flounder HAPC is:

> All native species of macroalgae, seagrasses, and freshwater and tidal macrophytes in any size bed, as well as loose aggregations, within adult and juvenile summer flounder EFH is HAPC. If native species of SAV are eliminated then exotic species should be protected because of functional value, however, all efforts should be made to restore native species (MAFMC, 1998).

Deep River primarily contains non-native (exotic) freshwater and tidal macrophytes. This project will control the exotic macrophytes, with the goal of restoring native SAV benefiting native fish and wildlife, and the entire ecosystem. Consequently, this project is expected to have a beneficial impact to the HAPC for summer flounder.

6. Activity Details

Select all that apply	Project Type/Category
	Agriculture
	Aquaculture
	Bank/shoreline stabilization (e.g., living shoreline, groin, breakwater, bulkhead)
	Beach renourishment
	Dredging/excavation
	Energy development/use e.g., hydropower, oil and gas, pipeline, transmission line, tidal or wave power, wind
	Fill
	Forestry
	Infrastructure/transportation (e.g., culvert construction, bridge repair, highway, port, railroad)
	Intake/outfall
	Military (e.g., acoustic testing, training exercises)
	Mining (e.g., sand, gravel)
	Overboard dredged material placement
	Piers, ramps, floats, and other structures
	Restoration or fish/wildlife enhancement (e.g., fish passage, wetlands, mitigation bank/ILF creation)
	Survey (e.g., geotechnical, geophysical, habitat, fisheries)
	Water quality (e.g., storm water drainage, NPDES, TMDL, wastewater, sediment remediation)
X	Other: aquatic herbicide application

7. Effects Evaluation

Potential Stressors

Select all that apply	Potential Stressors Caused by the Activity
	Underwater noise
X	Water quality/turbidity/contaminant release
	Vessel traffic/barge grounding
	Impingement/entrainment
	Prevent fish passage/spawning
X	Benthic community disturbance
X	Impacts to prey species

Select all that apply		Potential Stressors Caused by the Activity
Temp	Perm	
		Water depth change
		Tidal flow change
		Fill
X		Habitat type conversion
		Other:

Project Impacts and Mitigation

Project Impacts to EFH by Species

EFH for **Atlantic butterfish** eggs, larvae, and adults is designated at the project area. In Long Island Sound, butterfish spawn from June to late August with a peak in late July. The principal spawning areas are in the eastern part of the sound. They have a seasonal inshore-offshore migration dependent on water temperature. In summer, they move north and inshore to feed on planktonic fish, squid, crustaceans, and jellyfish and then move south and offshore in the winter. Eggs and larvae may occur in salinities ranging from estuarine to full strength seawater. Adults are common to abundant in the high salinity and mixing zones of estuaries within the region (NMFS 1999a). Based on this species' diet, migration pattern, and habitat characteristics, the project will have no effect to Atlantic butterfish EFH.

EFH for **Atlantic herring** juvenile, and adults is designated at the project area. Juveniles are sometimes abundant in fall while adults are abundant in Long Island Sound during the spring. In the Connecticut River, juveniles have a rare abundance only in the mixing salinity zone. Juveniles and adults are pelagic, with adults only becoming demersal during spawning. Atlantic sea herring prey on pelagic zooplankton. Atlantic herring larvae metamorphose into early-stage juveniles in the spring within intertidal and subtidal habitats out to 985 feet. Adults and juveniles may be found in the estuarine mixing salinity zones of the Connecticut River. The river does not support adults or juveniles in tidal freshwater habitat (NMFS, 199b). Given the salinity range of Deep River, no impacts are anticipated as there is not a suitable salinity for juveniles.

Atlantic mackerel EFH for all life stages is designated in the project area. Atlantic mackerel spawn pelagic eggs from roughly mid-April to June. The pelagic eggs hatch into planktonic larvae 4-5 days post-fertilization. Atlantic mackerel gain the ability to swim and school after approximately 1-2 months. During the winter, Atlantic mackerel migrate to deep water offshore and eventually move back inshore in the spring. Mackerel feed on a variety of prey during their life cycles, including zooplankton, crustaceans, copepods, and small fish. They are never found in the Connecticut River, and their eggs have high mortality rates at low salinities (NMFS, 1999c). Based on the fact that Atlantic mackerel are unlikely to be found north of the Connecticut River estuary, the project will have no effect to this species' EFH.

EFH for all life stages of **Atlantic salmon** is designated in the project area. All life stages of Atlantic salmon use freshwater habitats either exclusively or at some point during their life history. The streambed is important for eggs and larvae while the juveniles and adults use the river itself. Adults prefer riffle and run habitats in shallow, freshwater streams with gravel/rocky substrates with pools or vegetated riverine areas of low velocity. Spawning adults are generally found in late October through November. During this time, eggs are deposited and buried in the substrate and hatch after about 6 months in the spring. Larvae remain in the substrate for about six weeks before emerging as Juveniles in the spring (NEFMC, 2017). No impacts are anticipated to Atlantic salmon eggs, larvae, or spawning Adults as the proposed application will no occur during these months. These life stages are not likely to be present during the proposed application in the summer, after July 4.

Juveniles begin smolting in freshwater before migration downstream into brackish water and seawater. The timing of downstream migration depends on various factors, including temperature, salinity, and physiological adaptations. Spawning adults are generally found in late October through November. Juveniles may utilize the Connecticut River, in addition to riverine (e.g. Deep River), lacustrine, and estuarine habitats (NEFMC, 2017). The proposed project will result in temporary impacts to SAV and habitat conversion that may affect juvenile and adult life stages EFH habitat. Temporary habitat conversion may occur from the reduction of hydrilla and potential non-target impacts. Loss of SAV will be limited to the proposed treatment site. Although there may be impacts short term impacts to habitat availability to native fish following the hydrilla treatment, the goal is to reduce hydrilla presence, abundance and density to a level that allows native SAV to reestablish providing higher quality habitat. Therefore, the project is expected to have long-term beneficial impacts to EFH for Atlantic salmon.

Black sea bass EFH is designated at the project area for juveniles. In Southern New England, both juvenile and adult black sea bass migrate offshore to over-wintering areas at depths greater than 250 feet when waters begin to cool in the fall. Within estuaries, black sea bass juveniles use shallow shellfish, sponge, amphipod (e.g., *Ampelisca abdita*), seagrass, and cobble habitats as well as manmade structures such as wharves, pilings, and wrecks. Juveniles are generalist carnivores that feed on a variety of infaunal and epifaunal invertebrates, small fish, and squid (NMFS, 1999d). As black sea bass are unlikely to occur north of the Connecticut River estuary, no adverse effects to EFH is expected as a result of this project.

Juvenile and adult EFH for **bluefish** is designated for the project area. Juveniles are abundant in the Connecticut River estuary. These life stages are generally restricted to estuarine and mixing salinity zones and are not known to move into freshwater. Spawning occurs in the spring and summer when adults and juveniles are present inshore. Bluefish feed primarily on small prey fish but may forage for benthic prey on oyster bar and reef habitats when prey availability is limited (NMFS, 1999e). The project is located in areas that do not support bluefish and the action will not impact any prey species.

EFH for **little skate** and **winter skate** juveniles and adults are designated for the project area. Little skate and winter skate are sympatric species with similar habitat requirements. Their EFH occurs on sand, gravel, and mud substrates. Both species are benthic feeders, with crustaceans and polychaetes being important food sources. Both winter skate and little skate move inshore and offshore seasonally, moving into shallower inshore waters during spring and then into deeper waters in winter from roughly November to April (NMFS, 2003a; NMFS, 2003b). The project is located in areas that do not support little skate and winter skate; therefore, the action will not impact EFH.

Longfin inshore squid eggs, juvenile, and adult EFH is designated at the project area. Longfin inshore squid migrate offshore during late autumn and overwinter in deeper, warmer waters along the edge of the continental shelf. They return inshore during the spring and early summer to feed on planktonic organisms, crustaceans, and small fish. Most spawning occurs in May and hatching occurs in July. Egg masses are commonly found attached to rocks and small boulders on sandy/muddy bottom and on submerged aquatic vegetation (NMFS, 1999f). Longfin inshore squid are not known to use the Connecticut River for habitat so there will be no impact to longfin inshore squid EFH.

Pollock EFH for juveniles, and adults is designated at the project area. Larvae are pelagic, most are found at depths of 164 to 295 feet (50-90 m). EFH for juveniles includes rocky bottom habitats with attached macroalgae (NEFMC, 2017). The juveniles have been reported over a wide variety of substrates, including sand, mud, or rocky bottom, and vegetation. Most commonly juveniles are found at depths of 82 to 246 feet (25-75 m) although they can be found from the surface to 410 feet deep (125 m). Adults show little preference for bottom type, and they inhabit a wide range of depths from 115 to 1197 feet (35-365 m) (NMFS, 1999g). EFH for adults include the tops and edges of offshore banks and shores with mixed rocky substrate, often with attached macro algae. The EFH designation for Long Island Sound includes the seawater salinity zone of Long

Island Sound. Pollock are not known to travel up the Connecticut River; therefore, this project is not expected to have impacts on pollock EFH (NEFMC, 2017).

EFH for all life stages of **red hake** is designated in the project area. Spawning of pelagic eggs occurs in the summer along the continental shelf and is concentrated off southern New England. Red hake larvae have been collected on the middle to outer continental shelf of the Middle Atlantic Bight, but few larvae were collected in the Gulf of Maine. North of Cape Cod, where waters are cooler, juveniles can remain inshore throughout the summer. Both juveniles and adults have primarily been found over muddy substrate (NMFS, 1999h). Juvenile EFH includes intertidal and sub-tidal benthic habitats on mud and sand substrates. Adult EFH includes inshore estuarine and embayments, in depressions in softer sediments or in shell beds. In the Connecticut River, Red hake are present in mixing salinity zones (NEFMC, 2017). The proposed project will not occur within mixing salinity zones, where red hake may be present, therefore, no impacts are anticipated to red hake EFH.

Scup EFH for all life stages is designated at the project area. Scup eggs larvae are found from May through August in southern New England, with EFH habitat in the mixing and seawater salinity zones of estuaries. Larvae occupy a similar habitat and can be found from May through September. Juvenile and adult scup migrate from estuaries to the edge of the continental shelf as water temperatures decline in the winter and return from the edge of the continental shelf to inshore areas as water temperatures rise in the spring. Inshore, juvenile summer habitat includes intertidal and subtidal habitats, over sand, silty-sand, shell, mud, mussel beds and eelgrass (*Zostera marina*) as well as rocky ledges, wrecks, artificial reefs, and mussel beds (NMFS, 1999i). Adult EFH inshore habitat includes the mixing and seawater salinity zones of estuaries (MAFMC, 1998). Due to the project location north of the Connecticut River estuary, no adverse impacts to scup EFH are expected as a result of this project.

EFH for **summer flounder** juveniles and adults are designated at the project area. Summer flounder inhabit shallow coastal and estuarine waters between May and October, moving offshore to the outer continental shelf during winter months. It is believed that spawning occurs in offshore waters of southern New England, with peak offshore spawning occurring during October and November. Summer flounder juveniles and adults are benthic feeders, with polychaetes, crustaceans, and bivalves being important food sources (NMFS, 1999j). Inshore habitat for juveniles and adults is restricted to mixing and seawater salinity zones (MAFMC, 1998). Due to the location of the project being upstream of the Connecticut River estuary’s salt wedge, no adverse effects to adult summer flounder spawning EFH are expected.

EFH for all life stages of **windowpane flounder** is designated for the project area. Egg and larval EFH is described as pelagic habitats on the continental shelf from Georges Bank to Cape Hatteras and in mixed and high salinity zones of coastal bays and estuaries throughout the region. Juvenile and adult EFH occurs in intertidal and sub-tidal muddy or sandy benthic habitats in estuarine, coastal marine, and continental shelf waters from the Gulf of Maine south (NMFS, 1999k). All life stages are found in the mixing salinity zone of the Connecticut River (MAFMC, 1998). Windowpane flounder habitat is not expected north of the Connecticut River estuary. Therefore, no adverse impacts on all life stages of windowpane flounder EFH would be anticipated as a result of this project.

Winter flounder EFH for all life stages is designated at all project locations. Winter flounder are found in a variety of habitats from brackish riverine waters to saline coastal environments and have been documented from depths of less than 3 feet in coastal embayments, up to approximately 90 feet in Cape Cod Bay and Stellwagen Bank and up to 270 feet on George's Bank. Except for the Georges Bank population, adult winter flounder migrate inshore in the fall and early winter. Spawning occurs in late winter and early spring with peak spawning between February and March in Massachusetts Bay. The diet of juvenile and adult winter flounder consists of benthic fauna; mostly polychaetes and amphipods (NMFS, 1999l). Winter flounder are not expected to inhabit areas north of the Connecticut River estuary. Therefore, no impacts on all life stages of the winter flounder EFH would be anticipated as a result of this project.

Avoidance, Minimization, and Mitigation

Specific measures taken to avoid and minimize impacts to EFH:

The project area does not contain viable EFH for the identified species because it is a tidal freshwater river and is located upstream of the Connecticut River estuary. Additionally, the proposed action will occur after July 4th to avoid potential impacts to diadromous fish.

Is compensatory mitigation proposed?

No compensatory mitigation is proposed as no significant adverse effects are anticipated to any species' EFH.

Compensatory mitigation details:

N/A

8. Effects of Climate Change

Could species or habitats be adversely affected by the proposed action due to projected changes in the climate?

No adverse effects to species or habitat are expected as a result of the project and projected climate change.

Is the expected lifespan of the action greater than 10 years?

No, however, use of aquatic herbicides for control of the invasive hydrilla are likely to continue in other parts of the Connecticut River. The project is expected to reduce hydrilla presence, abundance, and density to allow for native SAV to replace it.

Is climate change currently affecting vulnerable species or habitats, and would the effects of a proposed action be amplified by climate change?

Vulnerable species and habitats are currently affected by climate change, but the effects of the proposed action are not likely to be amplified by climate change.

Do the results of the assessment indicate the effects of the action on habitats and species will be amplified by climate change?

No.

Can adaptive management strategies (AMS) be integrated into the action to avoid or minimize adverse effects of the proposed action as a result of climate?

Due to negligible impacts to species EFH, the effects of the proposed action are not likely to be amplified by climate change; thus, adaptive management strategies would not help avoid or minimize adverse impacts of the proposed action.

9. Federal Agency Determination

Federal Action Agency's EFH determination	
	There is no adverse effect on EFH or EFH is not designated at the project site. EFH Consultation is not required. This is a FWCA only request.
X	The adverse effect on EFH is not substantial. This means that the adverse effects are no more than minimal, temporary, or can be alleviated with minor project modifications or conservation recommendations. This is a request for an abbreviated EFH consultation.
	The adverse effect on EFH is substantial. This is a request for an expanded EFH consultation.

10. Fish and Wildlife Coordination Act

Fish and Wildlife Coordination Act Resources

Species known to occur at site	**Habitat impact type**
alewife	Temporary impacts to SAV.
American eel	Temporary impacts to SAV.
American shad	Temporary impacts to SAV.
Atlantic menhaden	N/A
blue crab	N/A
blue mussel	N/A
blueback herring	Temporary impacts to SAV.
Eastern oyster	N/A
horseshoe crab	N/A
quahog	N/A
soft-shell clams	N/A
striped bass	Temporary impacts to SAV.
other species:	

11. References

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National Marine Fisheries Service (NMFS). 1999a. Essential Fish Habitat Source Document: Atlantic Butterfish, *Peprilus triacanthus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999b. Essential Fish Habitat Source Document: Atlantic Herring, *Clupea harengus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999c. Essential Fish Habitat Source Document: Atlantic Mackerel, *Scomber scobrus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

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National Marine Fisheries Service (NMFS). 1999e. Essential Fish Habitat Source Document: Bluefish, *Pomatomus saltatrix*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999f. Essential Fish Habitat Source Document: Longfin Inshore Squid, *Loligo pealeii*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999g. Essential Fish Habitat Source Document: Pollock, *Pollachius virens*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999h. Essential Fish Habitat Source Document: Red Hake, *Urophycis chuss*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999i. Essential Fish Habitat Source Document: Scup, *Stenotomus chrysops*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999j. Essential Fish Habitat Source Document: Summer Flounder, *Paralichthys dentatus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999k. Essential Fish Habitat Source Document: Windowpane Flounder, *Scophthalmus aquosus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999l. Essential Fish Habitat Source Document: Winter Flounder, *Psuedopleuronectes americanus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

New England Fishery Management Council (NEFMC). 2017. Final Omnibus Essential Fish Habitat Amendment 2, Volume 2: EFH and HAPC Designation Alternatives and Environmental Impacts. Prepared by the NEFMC in cooperation with the National Marine Fisheries Service.

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Table of Contents

1. General Project Information

Date Prepared: May 15, 2025

Project/ Application Number: N/A

Project Name: Connecticut River Hydrilla Research and Demonstration Project

Project Applicant: U.S. Army Corps of Engineers, New England District

Federal Action Agency: U.S. Army Corps of Engineers, New England District

Fast-41: No

Action Agency Contact Name: Kelsie Dakessian

Contact Phone: 978-318-8685

Contact Email: Kelsie.Dakessian@usace.army.mil

Address: U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, Massachusetts 01742-2751

2. Project Description

Location (WGS 84): 41.3796, -72.3599

Body of Water (HUC-12): Eightmile River (010802050903)

Project Purpose:

The purpose of the proposed project is to provide a field-scale demonstration of technology developed under the APCRP, which is evaluating the effectiveness of aquatic herbicides to manage monoecious hydrilla in high water exchange environments, such as the tidal, riverine environment of the lower Connecticut River. The field demonstration will evaluate herbicide efficacy, optimal timing of treatment, non-target impacts, and herbicide concentration-exposure time requirements for effective control of hydrilla. The proposed project will also provide interim control of hydrilla at Hamburg Cove for the duration of the research and demonstration project to demonstrate and understand effective management practices.

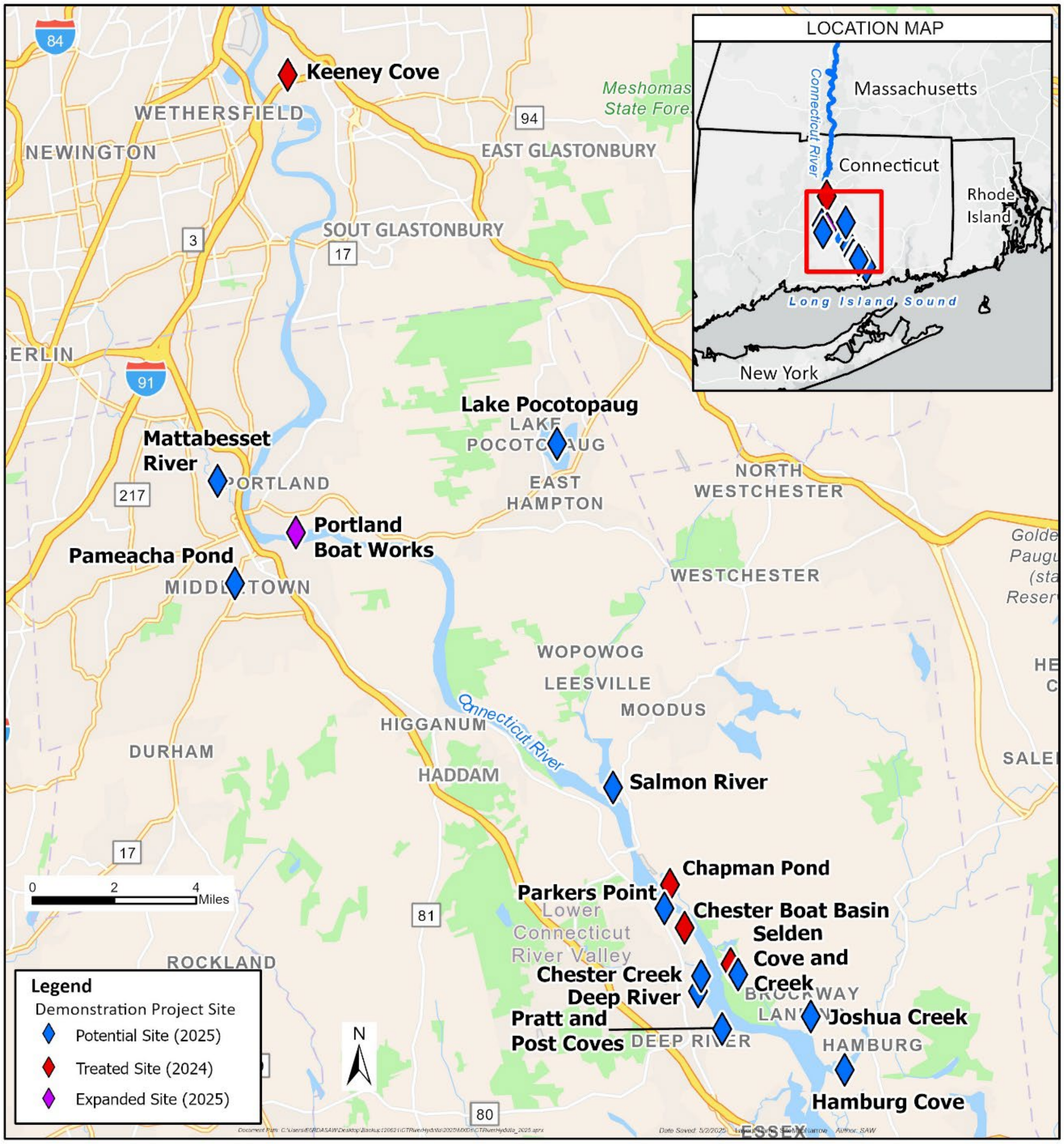

Figure 1. Proposed treatment sites

Project Description:

The Connecticut River Hydrilla Control Research and Demonstration Project currently includes five treatment sites, with a field-scale demonstration of chemical technology to evaluate the effectiveness of an aquatic herbicide to manage hydrilla, including sites in high water exchange environments (e.g., tidal, riverine environment). The proposed action is an expansion of the existing Connecticut River Hydrilla Control Research and Demonstration Project by adding 12 additional treatment sites within the Lower Connecticut watershed: (1) Chester Creek in Chester; (2) Deep River in Deep River; (3) Hamburg Cove in Lyme; (4) Joshua Creek in Lyme; (5) Mattabesset River in Middletown; (6) Parker's Point in Chester; (7) an expanded Portland Boat Works in Portland; (8) Post and Pratt Coves in Deep River; (9) Salmon River in East Haddam; (10) Selden Creek in Lyme; (11) Lake Pocotopaug in East Hampton; and (12) Pameacha Pond in Middletown.

The action proposes the use of diquat dibromide, dipotassium salt of endothall, and florpyrauxifen-benzyl or a combination of these chemicals to control hydrilla within Hamburg Cove. Herbicide will be evenly distributed across the entire treatment areas using the industry-standard boat-based subsurface injection application methods consisting of a calibrate pump and trailing hoses. Herbicide will be applied by licensed applicators and in accordance with product labels.

The proposed applications will occur in the summer after July 4th 2025, with any subsequent treatments occurring after July 4th of future years. This timing was selected to avoid impacts to diadromous fish and northern pike that may spawn in submerged aquatic vegetation at sites in or adjacent to the Connecticut River. Pre- and post-application monitoring will occur at the treatment sites to understand control efficacy for hydrilla and impacts to non-target species to inform the management of other hydrilla infestations. Post-application monitoring may occur for up to three years.

Table 1. Proposed Herbicide Use Rates

Potential Herbicide	**Maximum Application Rate**
Diquat	370 ppb
Dipotassium salt of endothall	5 ppm
Florpyrauxifen-benzyl	48 ppb

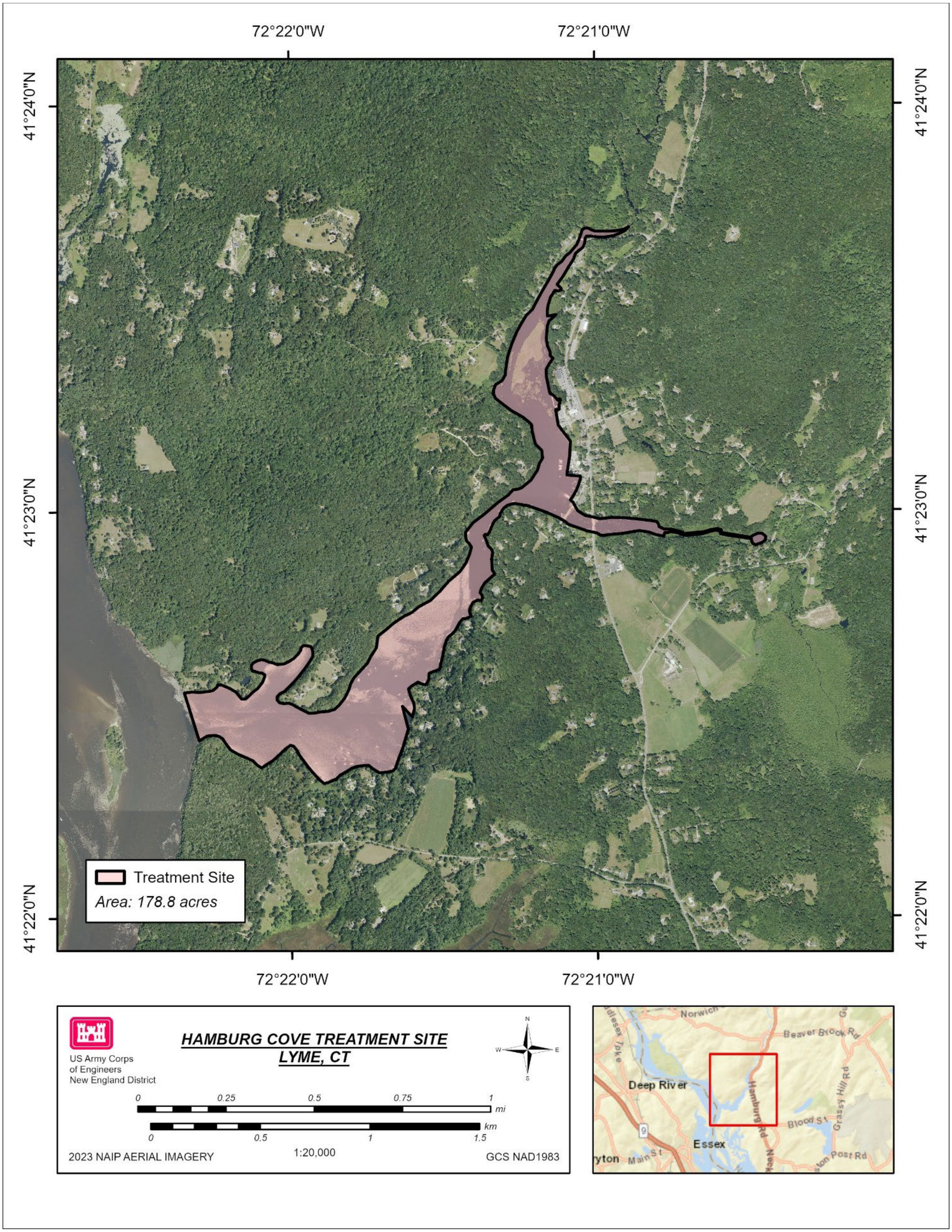

Figure 2. Proposed treatment site for Hamburg Cove in Lyme, CT

Site Description

Is the project in designated EFH?	Yes
Is the project in designated HAPC?	Yes
Does the project contain any Special Aquatic Sites?	No
Is this coordination under FWCA only?	No

Total area of impact to EFH:

The total area of herbicide treatment is approximately 178.8 acres. Since it is not a closed system with tidal influence, herbicide may flow to areas outside the treatment polygon.

Total area of impact to HAPC:

The project area is approximately 178.8 acres, but impacts may extend outside of the treatment area based on site conditions at the time of treatment.

Current range of water depths:

According to the existing USACE bathymetric data, NOAA nautical charts, and local fishing maps the water depth is approximately 11 feet deep at MHHW. Bathymetric surveys will be conducted prior to herbicide treatment to inform herbicide treatment.

Salinity range:

Hamburg Cove is located upstream of the northern extent of the Connecticut River estuary's salt wedge; therefore, it is freshwater and has relatively low salinity.

Water temperature range:

Temperature data was sourced from the U.S. Geological Survey's Water Data portal (USGS, 2025).

Surface water temperature in the Connecticut River at Essex, CT, approximately 2 river miles downstream of Hamburg Cove, ranged from approximately 40°F in April 2024 to 72°F in September in 2024, and is likely a good estimate of the range of surface water temperatures within Hamburg Cove.

3. Habitat Types

Habitat Location	Habitat Type	Total Impacts	Temporary Impacts	Permanent Impacts	Restored to pre-existing conditions?
Freshwater	Submerged aquatic vegetation	178.8 acres	178.8 acres	178.8 acres	No

Submerged Aquatic Vegetation (SAV)

SAV Present? Yes

Details:

The proposed project will control hydrilla (*Hydrilla verticillata)* within Hamburg Cove. In 2022, the Connecticut Agricultural Experiment Station (CAES) conducted an invasive aquatic vegetation survey for Hamburg Cove. Eight species of SAV were identified: Canadian waterweed (*Elodea canadensis)*, coontail (*Ceratophyllum demersum)*, eelgrass (*Vallisneria americana)*, eurasian watermilfoil (*Myriophyllum spicatum)*, horned pondweed (*Zannichellia palustris)*, hydrilla, variable-leaf watermilfoil (*Myriophyllum heterophyllum)*, and western waterweed (*Elodea nuttallii)*. Two transects were established in 2019 and resurveyed during 2022. In 2022, the species with the highest frequency of occurrence were hydrlla (80%) and coontail (75%) (Doherty et al., 2023).

Sediment Characteristics

General Description of the Sediment Composition:

The sediment at Hamburg Cove is composed of silt.

Diadromous Fish (Migratory or Spawning Habitat)

Diadromous Fish Habitat?: Yes

4. EFH and HAPC Designations

The following table provides a summary of Essential Fish Habitat Designations in Hamburg Cove (denoted with an "X") (NMFS, 2025).

Species	Eggs	Larvae	Juveniles	Adults
Atlantic Butterfish (*Peprilus triacanthus*)	X	X	X	X
Atlantic Herring (*Clupea harengus*)			X	X

Atlantic mackerel (*Scomber scombrus*)	X	X	X	X
Atlantic salmon *(Salmno salar)*	X	X	X	X
Black Sea Bass (*Centropristis striata*)			X	
Bluefish (*Pomatomus saltatrix*)			X	X
Little Skate (*Leucoraja erinacea*)			X	X
Longfin inshore squid (*Doryteuthis pealeii*)	X		X	X
Pollock (*Pollachius virens*)			X	X
Red Hake (*Urophycis chuss*)	X	X	X	X
Scup (*Stenotomus chrysops*)	X	X	X	X
Smoothhound Shark Complex: Smooth dogfish, Florida smoothhound, and Gulf smoothhound (*Mustelus spp.)*	X	X	X	X
Summer Flounder (*Paralichthys dentatus*)			X	X
Windowpane Flounder (*Scophthalmus aquosus*)	X	X	X	X
Winter Flounder (*Psuedopleuronectes americanus*)	X	X	X	X
Winter Skate (*Leucoraja ocellata*)			X	X

5. Habitat Areas of Particular Concern (HAPCs)

Select all that apply	HAPC Designation	Select all that apply	HAPC Designation
X	Summer flounder: SAV		Alvin & Atlantis Canyons
	Sandbar shark		Baltimore Canyon
	Sand Tiger Shark (Delaware Bay)		Bear Seamount
	Sand Tiger Shark (Plymouth-Duxbury-Kingston Bay)		Heezen Canyon
	Inshore 20m Juvenile Cod		Hudson Canyon
	Great South Channel Juvenile Cod		Hydrographer Canyon
	Northern Edge Juvenile Cod		Jeffreys & Stellwagen
	Lydonia Canyon		Lydonia, Gilbert & Oceanographer Canyons
	Norfolk Canyon (Mid-Atlantic)		Norfolk Canyon (New England)
	Oceanographer Canyon		Retriever Seamount
	Veatch Canyon (Mid-Atlantic)		Toms, Middle Toms & Hendrickson Canyons
	Veatch Canyon (New England)		Washington Canyon
	Cashes Ledge		Wilmington Canyon
	Atlantic Salmon		

Hamburg Cove falls within the regional HAPC for summer flounder. The summer flounder HAPC consists of areas with SAV. The specific designation of summer flounder HAPC is:

> All native species of macroalgae, seagrasses, and freshwater and tidal macrophytes in any size bed, as well as loose aggregations, within adult and juvenile summer flounder EFH is HAPC. If native species of SAV are eliminated then exotic species should be protected because of functional value, however, all efforts should be made to restore native species (MAFMC, 1998).

Hamburg Cove primarily contains exotic freshwater and tidal macrophytes. This project will control the exotic macrophytes, with the goal of restoring native SAV benefiting native fish and wildlife, and the entire ecosystem. Consequently, this project is expected to have a beneficial impact to the HAPC for summer flounder.

6. Activity Details

Select all that apply	Project Type/Category
	Agriculture
	Aquaculture
	Bank/shoreline stabilization (e.g., living shoreline, groin, breakwater, bulkhead)
	Beach renourishment
	Dredging/excavation
	Energy development/use e.g., hydropower, oil and gas, pipeline, transmission line, tidal or wave power, wind
	Fill
	Forestry
	Infrastructure/transportation (e.g., culvert construction, bridge repair, highway, port, railroad)
	Intake/outfall
	Military (e.g., acoustic testing, training exercises)
	Mining (e.g., sand, gravel)
	Overboard dredged material placement
	Piers, ramps, floats, and other structures
	Restoration or fish/wildlife enhancement (e.g., fish passage, wetlands, mitigation bank/ILF creation)
	Survey (e.g., geotechnical, geophysical, habitat, fisheries)
	Water quality (e.g., storm water drainage, NPDES, TMDL, wastewater, sediment remediation)
X	Other: aquatic herbicide application

7. Effects Evaluation

Potential Stressors

Select all that apply	Potential Stressors Caused by the Activity
	Underwater noise
X	Water quality/turbidity/contaminant release
	Vessel traffic/barge grounding
	Impingement/entrainment
	Prevent fish passage/spawning
X	Benthic community disturbance
X	Impacts to prey species

Select all that apply		Potential Stressors Caused by the Activity
Temp	Perm	
		Water depth change
		Tidal flow change
		Fill
X		Habitat type conversion
		Other:

Project Impacts and Mitigation

Project Impacts to EFH by Species

EFH for all life stages **Atlantic butterfish** is designated at the project area. In Long Island Sound, butterfish spawn from June to late August with a peak in late July. The principal spawning areas are in the eastern part of the sound. They have a seasonal inshore-offshore migration dependent on water temperature. In summer, they move north and inshore to feed on planktonic fish, squid, crustaceans, and jellyfish and then move south and offshore in the winter. Eggs and larvae may occur in salinities ranging from estuarine to full strength seawater. Juveniles EFH includes pelagic habitat in inshore estuaries and embayment's, and on the inner and outer continent shelf. Adults are common to abundant in the high salinity and mixing zones of estuaries within the region (NMFS 1999a). Based on this species' diet, migration pattern, and habitat characteristics, the project will have no effect to Atlantic butterfish EFH.

EFH for **Atlantic herring** juvenile, and adults is designated at the project area. Juveniles are sometimes abundant in fall while adults are abundant in Long Island Sound during the spring. In the Connecticut River, juveniles have a rare abundance only in the mixing salinity zone .Juveniles and adults are pelagic, with adults only becoming demersal during spawning. Atlantic sea herring prey on pelagic zooplankton. Atlantic herring larvae metamorphose into early-stage juveniles in the spring within intertidal and subtidal habitats out to 985 feet. Adults and juveniles may be found in the estuarine mixing salinity zones of the Connecticut River. The river does not support adults or juveniles in tidal freshwater habitat (NMFS, 199b). Given the salinity range of Hamburg Cove Creek, no impacts are anticipated as there is not a suitable salinity for juveniles.

Atlantic mackerel EFH for all life stages is designated in the project area. Atlantic mackerel spawn pelagic eggs from roughly mid-April to June. The pelagic eggs hatch into planktonic larvae 4-5 days post-fertilization. Atlantic mackerel gain the ability to swim and school after approximately 1-2 months. During the winter, Atlantic mackerel migrate to deep water offshore and eventually move back inshore in the spring. Mackerel feed on a variety of prey during their life cycles, including zooplankton, crustaceans, copepods, and small fish. They are never found in the Connecticut River, and their eggs have high mortality rates at low salinities (NMFS, 1999c). Based on the fact that Atlantic mackerel are unlikely to be found north of the Connecticut River estuary, the project will have no effect to this species' EFH.

EFH for all life stages of **Atlantic salmon** is designated in the project area. All life stages of Atlantic salmon use freshwater habitats either exclusively or at some point during their life history. The streambed is important for eggs and larvae while the juveniles and adults use the river itself. Adults prefer riffle and run habitats in shallow, freshwater streams with gravel/rocky substrates with pools or vegetated riverine areas of low velocity. Spawning adults are generally found in late October through November. During this time, eggs are deposited and buried in the substrate and hatch after about 6 months in the spring. Larvae remain in the substrate for about six weeks before emerging as Juveniles in the spring (NEFMC, 2017). No impacts are anticipated to Atlantic salmon eggs, larvae, or spawning Adults as the proposed application will no occur during these months. These lifestages are not likely to be present during the proposed application in the summer, after July 4.

Juveniles begin smolting in freshwater before migration downstream into brackish water and seawater. The timing of downstream migration depends on various factors, including temperature, salinity, and physiological adaptations. Spawning adults are generally found in late October through November. Juveniles may utilize the Connecticut River, in addition to riverine (e.g. Hamburg Cove), lacustrine, and estuarine habitats (NEFMC, 2017). The proposed project will result in temporary impacts to SAV and habitat conversion that may affect juvenile and adult life stages EFH habitat. Temporary habitat conversion may occur from the reduction of hydrilla and potential non-target impacts. Loss of SAV will be limited to the proposed treatment site. Although there may be short-term impacts to habitat avaliability to native fish following hydrilla treatment, the goal of the project is to reduce hydrilla presence, abundance and density to a level that allows for native SAV to establish providing higher quality habitat. Therefore, the project is expected to have long-term beneficial impacts to EFH for Atlantic salmon.

Black sea bass EFH is designated at the project area for juveniles. In Southern New England, both juvenile and adult black sea bass migrate offshore to over-wintering areas at depths greater than 250 feet when waters begin to cool in the fall. Within estuaries, black sea bass juveniles use shallow shellfish, sponge, amphipod (e.g., *Ampelisca abdita*), seagrass, and cobble habitats as well as manmade structures such as wharves, pilings, and wrecks. Juveniles are generalist carnivores that feed on a variety of infaunal and epifaunal invertebrates, small fish, and squid (NMFS, 1999d). As black sea bass are unlikely to occur north of the Connecticut River estuary, no adverse effects to EFH is expected as a result of this project.

Juvenile and adult EFH for **bluefish** is designated for the project area. Juveniles are abundant in the Connecticut River estuary. These life stages are generally restricted to estuarine and mixing salinity zones, and are not known to move into freshwater. Spawning occurs in the spring and summer when adults and juveniles are present inshore. Bluefish feed primarily on small prey fish but may forage for benthic prey on oyster bar and reef habitats when prey availability is limited (NMFS, 1999e). The project is located in areas that do not support bluefish and the action will not impact any prey species.

EFH for **little skate** and **winter skate** juveniles and adults is designated for the project area. Little skate and winter skate are sympatric species with similar habitat requirements. Their EFH occurs on sand, gravel, and mud substrates. Both species are benthic feeders, with crustaceans and polychaetes being important food sources. Both winter skate and little skate move inshore and offshore seasonally, moving into shallower inshore waters during spring and then into deeper waters in winter from roughly November to April (NMFS, 2003a; NMFS, 2003b). The project is located in areas that do not support little skate and winter skate; therefore, the action will not impact EFH.

Longfin inshore squid eggs, juvenile, and adult EFH is designated at the project area. Longfin inshore squid migrate offshore during late autumn and overwinter in deeper, warmer waters along the edge of the continental shelf. They return inshore during the spring and early summer to feed on planktonic organisms, crustaceans, and small fish. Most spawning occurs in May and hatching occurs in July. Egg masses are commonly found attached to rocks and small boulders on sandy/muddy bottom and on submerged aquatic vegetation (NMFS, 1999f). Longfin inshore squid are not known to use the Connecticut River for habitat so there will be no impact to longfin inshore squid EFH.

Pollock EFH for juveniles, and adults is designated at the project area. Larvae are pelagic, most are found at depths of 164 to 295 feet (50-90 m). EFH for juveniles includes rocky bottom habitats with attached macroalgae (NEFMC, 2017). The juveniles have been reported over a wide variety of substrates, including sand, mud, or rocky bottom, and vegetation. Most commonly juveniles are found at depths of 82 to 246 feet (25-75 m) although they can be found from the surface to 410 feet deep (125 m). Adults show little preference for bottom type, and they inhabit a wide range of depths from 115 to 1197 feet (35-365 m) (NMFS, 1999g). EFH for adults include the tops and edges of

offshore banks and shores with mixed rocky substrate, often with attached macro algae. The EFH designation for Long Island Sound includes the seawater salinity zone of Long Island Sound. Pollock are not known to travel up the Connecticut River; therefore, this project is not expected to have impacts on pollock EFH (NEFMC, 2017).

EFH for all life stages of **red hake** is designated in the project area. Spawning of pelagic eggs occurs in the summer along the continental shelf and is concentrated off southern New England. Red hake larvae have been collected on the middle to outer continental shelf of the Middle Atlantic Bight, but few larvae were collected in the Gulf of Maine. North of Cape Cod, where waters are cooler, juveniles can remain inshore throughout the summer. Both juveniles and adults have primarily been found over muddy substrate (NMFS, 1999h). Juvenile EFH includes intertidal and sub-tidal benthic habitats on mud and sand substrates. Adult EFH includes inshore estuarine and embayments, in depressions in softer sediments or in shell beds. In the Connecticut River, Red hake are present in mixing salinity zones (NEFMC, 2017). The proposed project will not occur within mixing salinity zones, where red hake may be present, therefore, no impacts are anticipated to red hake EFH.

Scup EFH for all life stages is designated at the project area. Scup eggs larvae are found from May through August in southern New England, with EFH habitat in the mixing and seawater salinity zones of estuaries. Larvae occupy a similar habitat and can be found from May through September. Juvenile and adult scup migrate from estuaries to the edge of the continental shelf as water temperatures decline in the winter and return from the edge of the continental shelf to inshore areas as water temperatures rise in the spring. Inshore, juvenile summer habitat includes intertidal and subtidal habitats, over sand, silty-sand, shell, mud, mussel beds and eelgrass (*Zostera marina*) as well as rocky ledges, wrecks, artificial reefs, and mussel beds (NMFS, 1999i). Adult EFH inshore habitat includes the mixing and seawater salinity zones of estuaries (MAFMC, 1998). Due to the project location north of the Connecticut River estuary, no adverse impacts to scup EFH are expected as a result of this project.

Smoothhound Shark Complex EFH for all life stages is designated at the project area. This complex include the Smooth dogfish (*Mustelus canis),* Florida smoothhound (*Mustelus norrisi)*, and the Gulf Smoothhound (*Mustelus sinusmexicanus)*. The smoothdogfish are primarily demersel sharks that inhabitat continental shelves. In the spring, smooth dogfish move along the coast, and move offshore during winter months for overwintering. Smooth dogfish feed on invertebrates, and primarily feed on large crustaceans (e.g. crabs, American lobsters). In New England, the species feeds on small bony fish (e.g. menhaden, sculpins, puffers) in the spring. Florida smoothhound and Gulf smoothhound are primarily distributed in the Gulf (NMFS, 2017). Due to the location of the project being upstream of the Connecticut River estuary, no adverse effects to Smoothhound Shark Complex EFH are expected.

EFH for **summer flounder** juveniles and adults is designated at the project area. Summer flounder inhabit shallow coastal and estuarine waters between May and October, moving offshore to the outer continental shelf during winter months. It is believed that spawning occurs in offshore waters of southern New England, with peak offshore spawning occurring during October and November. Summer flounder juveniles and adults are benthic feeders, with polychaetes, crustaceans, and bivalves being important food sources (NMFS, 1999j). Inshore habitat for juveniles and adults is restricted to mixing and seawater salinity zones (MAFMC, 1998). Due to the location of the project being upstream of the Connecticut River estuary's salt wedge, no adverse effects to adult summer flounder spawning EFH are expected.

EFH for all life stages of **windowpane flounder** is designated for the project area. Egg and larval EFH is described as pelagic habitats on the continental shelf from Georges Bank to Cape Hatteras and in mixed and high salinity zones of coastal bays and estuaries throughout the region. Juvenile and adult EFH occurs in intertidal and sub-tidal muddy or sandy benthic habitats in estuarine, coastal marine, and continental shelf waters from the Gulf of Maine south (NMFS, 1999k). All life stages are found in the mixing salinity zone of the Connecticut River (MAFMC, 1998). Windowpane flounder habitat is not expected north of the Connecticut River estuary. Therefore, no adverse impacts on all life stages of windowpane flounder EFH would be anticipated as a result of this project.

Winter flounder EFH for all life stages is designated at all project locations. Winter flounder are found in a variety of habitats from brackish riverine waters to saline coastal environments and have been documented from depths of less than 3 feet in coastal embayments, up to approximately 90 feet in Cape Cod Bay and Stellwagen Bank and up to 270 feet on George's Bank. Except for the Georges Bank population, adult winter flounder migrate inshore in the fall and early winter. Spawning occurs in late winter and early spring with peak spawning between February and March in Massachusetts Bay. The diet of juvenile and adult winter flounder consists of benthic fauna; mostly polychaetes and amphipods (NMFS, 1999l). Winter flounder are not expected to inhabit areas north of the Connecticut River estuary. Therefore, no impacts on all life stages of the winter flounder EFH would be anticipated as a result of this project.

Avoidance, Minimization, and Mitigation

Specific measures taken to avoid and minimize impacts to EFH:

The project area does not contain viable EFH for the identified species because it is a tidal freshwater cove and is located upstream of the Connecticut River estuary. Additionally, the proposed action will occur after July 4th to avoid potential impacts to diadromous fish.

Is compensatory mitigation proposed?

No compensatory mitigation is proposed as no significant adverse effects are anticipated to any species' EFH.

Compensatory mitigation details:

N/A

8. Effects of Climate Change

Could species or habitats be adversely affected by the proposed action due to projected changes in the climate?

No adverse effects to species or habitat are expected as a result of the project and projected climate change.

Is the expected lifespan of the action greater than 10 years?

No, however, use of aquatic herbicides for control of the invasive hydrilla are likely to continue in other parts of the Connecticut River. The project is expected to reduce hydrilla presence, abundance, and density to allow for native SAV to replace it.

Is climate change currently affecting vulnerable species or habitats, and would the effects of a proposed action be amplified by climate change?

Vulnerable species and habitats are currently affected by climate change, but the effects of the proposed action are not likely to be amplified by climate change.

Do the results of the assessment indicate the effects of the action on habitats and species will be amplified by climate change?

No.

Can adaptive management strategies (AMS) be integrated into the action to avoid or minimize adverse effects of the proposed action as a result of climate?

Due to negligible impacts to species EFH, the effects of the proposed action are not likely to be amplified by climate change; thus, adaptive management strategies would not help avoid or minimize adverse impacts of the proposed action.

9. Federal Agency Determination

Federal Action Agency's EFH determination	
	There is no adverse effect on EFH or EFH is not designated at the project site. EFH Consultation is not required. This is a FWCA only request.
X	The adverse effect on EFH is not substantial. This means that the adverse effects are no more than minimal, temporary, or can be alleviated with minor project modifications or conservation recommendations. This is a request for an abbreviated EFH consultation.
	The adverse effect on EFH is substantial. This is a request for an expanded EFH consultation.

10. Fish and Wildlife Coordination Act

Fish and Wildlife Coordination Act Resources

Species known to occur at site	**Habitat impact type**
alewife	Temporary impacts to SAV.
American eel	Temporary impacts to SAV.
Brown bullhead	N/A
blue crab	N/A
blue mussel	N/A
blueback herring	Temporary impacts to SAV.
Eastern oyster	N/A
horseshoe crab	N/A
quahog	N/A
soft-shell clams	N/A
striped bass	Temporary impacts to SAV.
other species:	

11. References

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National Marine Fisheries Service (NMFS). 1999d. Essential Fish Habitat Source Document: Black Sea Bass, *Centropristis striata*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999e. Essential Fish Habitat Source Document: Bluefish, *Pomatomus saltatrix*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999f. Essential Fish Habitat Source Document: Longfin Inshore Squid, *Loligo pealeii*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999g. Essential Fish Habitat Source Document: Pollock, *Pollachius virens*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999h. Essential Fish Habitat Source Document: Red Hake, *Urophycis chuss*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999i. Essential Fish Habitat Source Document: Scup, *Stenotomus chrysops*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999j. Essential Fish Habitat Source Document: Summer Flounder, *Paralichthys dentatus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999k. Essential Fish Habitat Source Document: Windowpane Flounder, *Scophthalmus aquosus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999l. Essential Fish Habitat Source Document: Winter Flounder, *Psuedopleuronectes americanus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

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Table of Contents

1. General Project Information

Date Prepared: May 15, 2025

Project/ Application Number: N/A

Project Name: Connecticut River Hydrilla Research and Demonstration Project

Project Applicant: U.S. Army Corps of Engineers, New England District

Federal Action Agency: U.S. Army Corps of Engineers, New England District

Fast-41: No

Action Agency Contact Name: Kelsie Dakessian

Contact Phone: 978-318-8685

Contact Email: Kelsie.Dakessian@usace.army.mil

Address: U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, Massachusetts 01742-2751

2. Project Description

Location (WGS 84): 41.3953, -72.3779

Body of Water (HUC-12): Joshua Creek-Connecticut River (010802050905)

Project Purpose:

The purpose of the proposed project is to provide a field-scale demonstration of technology developed under the APCRP, which is evaluating the effectiveness of aquatic herbicides to manage monoecious hydrilla in high water exchange environments, such as the tidal, riverine environment of the lower Connecticut River. The field demonstration will evaluate herbicide efficacy, optimal timing of treatment, non-target impacts, and herbicide concentration-exposure time requirements for effective control of hydrilla. The proposed project will also provide interim control of hydrilla at Joshua Creek for the duration of the research and demonstration project to demonstrate and understand effective management practices.

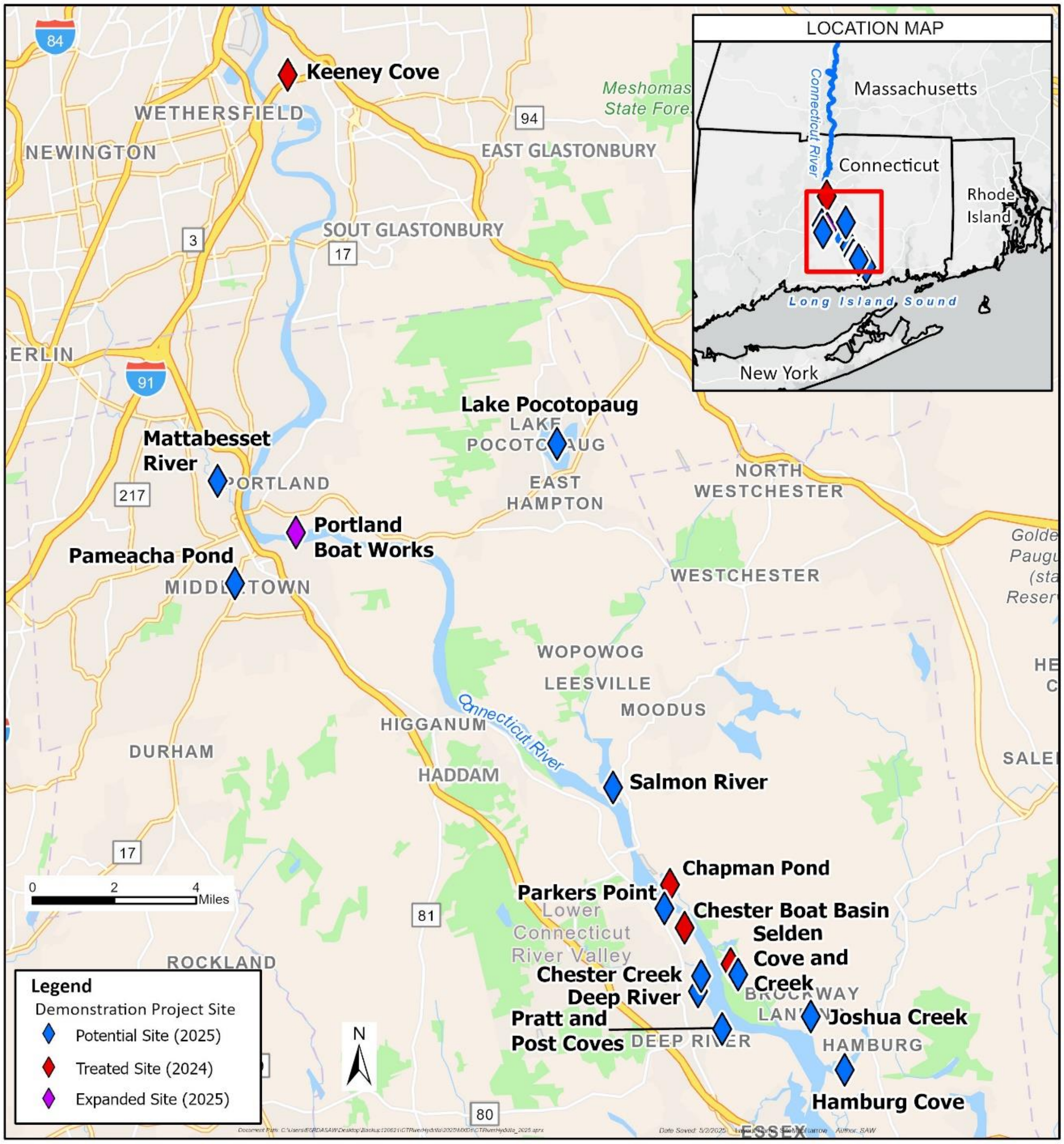

Figure 1. Proposed treatment sites

Project Description:

The Connecticut River Hydrilla Control Research and Demonstration Project currently includes five treatment sites, with a field-scale demonstration of chemical technology to evaluate the effectiveness of an aquatic herbicide to manage hydrilla, including sites in high water exchange environments (e.g., tidal, riverine environment). The proposed action is an expansion of the existing Connecticut River Hydrilla Control Research and Demonstration Project by adding 12 additional treatment sites within the Lower Connecticut watershed: (1) Chester Creek in Chester; (2) Deep River in Deep River; (3) Hamburg Cove in Lyme; (4) Joshua Creek in Lyme; (5) Mattabesset River in Middletown; (6) Parker’s Point in Chester; (7) an expanded Portland Boat Works in Portland; (8) Post and Pratt Coves in Deep River; (9) Salmon River in East Haddam; (10) Selden Creek in Lyme; (11) Lake Pocotopaug in East Hampton; and (12) Pameacha Pond in Middletown.

The action proposes the use of diquat dibromide, dipotassium salt of endothall, and florpyrauxifen-benzyl or a combination of these chemicals to control hydrilla within Joshua Creek. Herbicide will be evenly distributed across the entire treatment areas using the industry-standard boat-based subsurface injection application methods consisting of a calibrate pump and trailing hoses. Herbicide will be applied by licensed applicators and in accordance with product labels.

The proposed applications will occur in the summer after July 4th 2025, with any subsequent treatments occurring after July 4th of future years. This timing was selected to avoid impacts to diadromous fish and northern pike that may spawn in submerged aquatic vegetation at sites in or adjacent to the Connecticut River. Pre- and post-application monitoring will occur at the treatment sites to understand control efficacy for hydrilla and impacts to non-target species to inform the management of other hydrilla infestations. Post-application monitoring may occur for up to three years.

Table 1. Proposed herbicide use rates

Potential Herbicide	**Maximum Application Rate**
Diquat	370 ppb
Dipotassium salt of endothall	5 ppm
Florpyrauxifen-benzyl	48 ppb

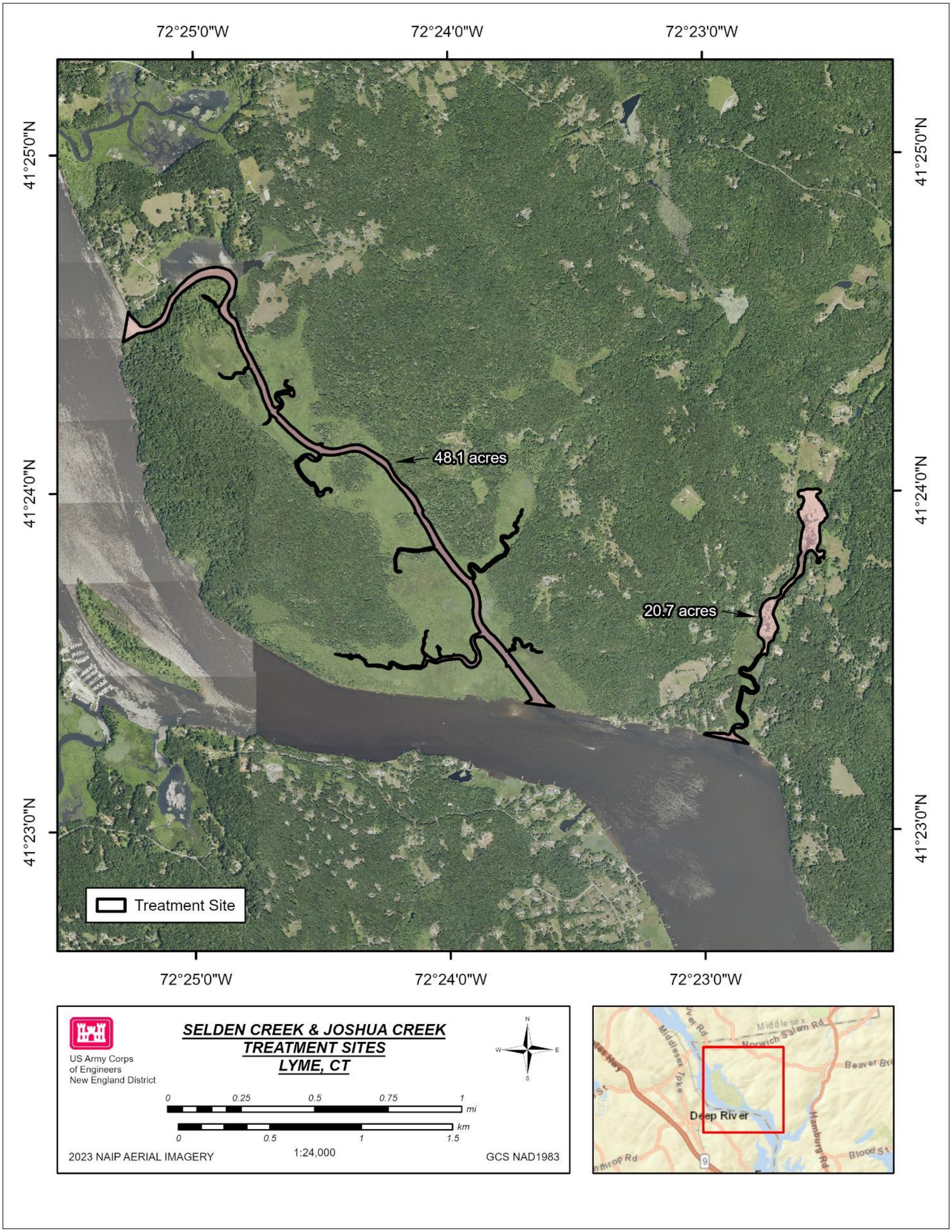

Figure 2. Proposed treatment site for Joshua Creek (right) in Lyme, CT

Site Description

Is the project in designated EFH?	Yes
Is the project in designated HAPC?	Yes
Does the project contain any Special Aquatic Sites?	No
Is this coordination under FWCA only?	No

Total area of impact to EFH:

The total area of herbicide treatment is approximately 20.7 acres. Since it is not a closed system with tidal influence, herbicide may flow to areas outside the treatment polygon.

Total area of impact to HAPC:

The project area is approximately 20.7 acres, but impacts may extend outside of the treatment area based on site conditions at the time of treatment.

Current range of water depths:

According to the existing USACE bathymetric data, NOAA nautical charts, and local fishing maps the water depth is approximately 6 feet deep at MHHW. Bathymetric surveys will be conducted prior to herbicide treatment to inform herbicide treatment.

Salinity range:

Joshua Creek is located upstream of the northern extent of the Connecticut River estuary's salt wedge; therefore, it is freshwater and has relatively low salinity.

Water temperature range:

Temperature data was sourced from the U.S. Geological Survey's Water Data portal (USGS, 2025).

Surface water temperature in the Connecticut River at Essex, CT, approximately 3 river miles downstream of Joshua Creek, ranged from approximately 40°F in April 2024 to 72°F in September in 2024, and is likely a good estimate of the range of surface water temperatures within Joshua Creek.

3. Habitat Types

Habitat Location	Habitat Type	Total Impacts	Temporary Impacts	Permanent Impacts	Restored to pre-existing conditions?
Freshwater	Submerged aquatic vegetation	20.7 acres	20.7 acres	20.7 acres	No

Submerged Aquatic Vegetation (SAV)

SAV Present? Yes

Details:

The proposed project will control hydrilla (*Hydrilla verticillata)* within Joshua Creek. Vegetation surveys will be conducted prior to treatment to determine species within the treatment area. It is anticipated that SAV present will include species common to the Connecticut River, such as: waterweed (*Elodea canadensis*)*,* coontail (*Ceratophyllum demersum*), American eelgrass (*Vallisneria americana*), and pondweed (*Potamogeton spp.)*.

Sediment Characteristics

General Description of the Sediment Composition:

The sediment at Joshua Creek is composed of silt.

Diadromous Fish (Migratory or Spawning Habitat)

Diadromous Fish Habitat?: Yes

4. EFH and HAPC Designations

The following table provides a summary of Essential Fish Habitat Designations in Joshua Creek (denoted with an "X") (NMFS, 2025).

Species	Eggs	Larvae	Juveniles	Adults
Atlantic Butterfish (*Peprilus triacanthus*)	X	X	X	X
Atlantic Herring (*Clupea harengus*)			X	X
Atlantic mackerel (*Scomber scombrus*)	X	X	X	X
Atlantic salmon *(Salmo salar)*	X	X	X	X

Black Sea Bass (*Centropristis striata*)			X	
Bluefish (*Pomatomus saltatrix*)			X	X
Little Skate (*Leucoraja erinacea*)			X	X
Longfin inshore squid (*Doryteuthis pealeii*)	X		X	X
Pollock (*Pollachius virens*)			X	X
Red Hake (*Urophycis chuss*)	X	X	X	X
Scup (*Stenotomus chrysops*)	X	X	X	X
Summer Flounder (*Paralichthys dentatus*)			X	X
Windowpane Flounder (*Scophthalmus aquosus*)	X	X	X	X
Winter Flounder (*Psuedopleuronectes americanus*)	X	X	X	X
Winter Skate (*Leucoraja ocellata*)			X	X

5. Habitat Areas of Particular Concern (HAPCs)

Select all that apply	HAPC Designation	Select all that apply	HAPC Designation
X	Summer flounder: SAV		Alvin & Atlantis Canyons
	Sandbar shark		Baltimore Canyon
	Sand Tiger Shark (Delaware Bay)		Bear Seamount
	Sand Tiger Shark (Plymouth-Duxbury-Kingston Bay)		Heezen Canyon
	Inshore 20m Juvenile Cod		Hudson Canyon
	Great South Channel Juvenile Cod		Hydrographer Canyon
	Northern Edge Juvenile Cod		Jeffreys & Stellwagen
	Lydonia Canyon		Lydonia, Gilbert & Oceanographer Canyons
	Norfolk Canyon (Mid-Atlantic)		Norfolk Canyon (New England)
	Oceanographer Canyon		Retriever Seamount
	Veatch Canyon (Mid-Atlantic)		Toms, Middle Toms & Hendrickson Canyons
	Veatch Canyon (New England)		Washington Canyon
	Cashes Ledge		Wilmington Canyon
	Atlantic Salmon		

Joshua Creek falls within the regional HAPC for summer flounder. The summer flounder HAPC consists of areas with SAV. The specific designation of summer flounder HAPC is:

> All native species of macroalgae, seagrasses, and freshwater and tidal macrophytes in any size bed, as well as loose aggregations, within adult and juvenile summer flounder EFH is HAPC. If native species of SAV are eliminated then exotic species should be protected because of functional value, however, all efforts should be made to restore native species (MAFMC, 1998).

Joshua Creek primarily contains exotic freshwater and tidal macrophytes. This project will control the exotic macrophytes, with the goal of restoring native SAV benefiting native fish and wildlife, and the entire ecosystem. Consequently, this project is expected to have a beneficial impact to the HAPC for summer flounder.

6. Activity Details

Select all that apply	Project Type/Category
	Agriculture
	Aquaculture
	Bank/shoreline stabilization (e.g., living shoreline, groin, breakwater, bulkhead)
	Beach renourishment
	Dredging/excavation
	Energy development/use e.g., hydropower, oil and gas, pipeline, transmission line, tidal or wave power, wind
	Fill
	Forestry
	Infrastructure/transportation (e.g., culvert construction, bridge repair, highway, port, railroad)
	Intake/outfall
	Military (e.g., acoustic testing, training exercises)
	Mining (e.g., sand, gravel)
	Overboard dredged material placement
	Piers, ramps, floats, and other structures
	Restoration or fish/wildlife enhancement (e.g., fish passage, wetlands, mitigation bank/ILF creation)
	Survey (e.g., geotechnical, geophysical, habitat, fisheries)
	Water quality (e.g., storm water drainage, NPDES, TMDL, wastewater, sediment remediation)
X	Other: aquatic herbicide application

7. Effects Evaluation

Potential Stressors

Select all that apply	Potential Stressors Caused by the Activity
	Underwater noise
X	Water quality/turbidity/contaminant release
	Vessel traffic/barge grounding
	Impingement/entrainment
	Prevent fish passage/spawning
X	Benthic community disturbance
X	Impacts to prey species

Select all that apply		Potential Stressors Caused by the Activity
Temp	Perm	
		Water depth change
		Tidal flow change
		Fill
X		Habitat type conversion
		Other:

Project Impacts and Mitigation

Project Impacts to EFH by Species

EFH for all life stages **Atlantic butterfish** is designated at the project area. In Long Island Sound, butterfish spawn from June to late August with a peak in late July. The principal spawning areas are in the eastern part of the sound. They have a seasonal inshore-offshore migration dependent on water temperature. In summer, they move north and inshore to feed on planktonic fish, squid, crustaceans, and jellyfish and then move south and offshore in the winter. Eggs and larvae may occur in salinities ranging from estuarine to full strength seawater. Juveniles EFH includes pelagic habitat in inshore estuaries and embayment's, and on the inner and outer continent shelf. Adults are common to abundant in the high salinity and mixing zones of estuaries within the region (NMFS 1999a). Based on this species' diet, migration pattern, and habitat characteristics, the project will have no effect to Atlantic butterfish EFH.

EFH for **Atlantic herring** juvenile, and adults is designated at the project area. Juveniles are sometimes abundant in fall while adults are abundant in Long Island Sound during the spring. In the Connecticut River, juveniles have a rare abundance only in the mixing salinity zone .Juveniles and adults are pelagic, with adults only becoming demersal during spawning. Atlantic sea herring prey on pelagic zooplankton. Atlantic herring larvae metamorphose into early-stage juveniles in the spring within intertidal and subtidal habitats out to 985 feet. Adults and juveniles may be found in the estuarine mixing salinity zones of the Connecticut River. The river does not support adults or juveniles in tidal freshwater habitat (NMFS, 199b). Given the salinity range of Joshua Creek, no impacts are anticipated as there is not a suitable salinity for juveniles within Joshua Creek.

Atlantic mackerel EFH for all life stages is designated in the project area. Atlantic mackerel spawn pelagic eggs from roughly mid-April to June. The pelagic eggs hatch into planktonic larvae 4-5 days post-fertilization. Atlantic mackerel gain the ability to swim and school after approximately 1-2 months. During the winter, Atlantic mackerel migrate to deep water offshore and eventually move back inshore in the spring. Mackerel feed on a variety of prey during their life cycles, including zooplankton, crustaceans, copepods, and small fish. They are never found in the Connecticut River, and their eggs have high mortality rates at low salinities (NMFS, 1999c). Based on the fact that Atlantic mackerel are unlikely to be found north of the Connecticut River estuary, the project will have no effect to this species' EFH.

Black sea bass EFH is designated at the project area for juveniles. In Southern New England, both juvenile and adult black sea bass migrate offshore to over-wintering areas at depths greater than 250 feet when waters begin to cool in the fall. Within estuaries, black sea bass juveniles use shallow shellfish, sponge, amphipod (e.g., *Ampelisca abdita*), seagrass, and cobble habitats as well as manmade structures such as wharves, pilings, and wrecks. Juveniles are generalist carnivores that feed on a variety of infaunal and epifaunal invertebrates, small fish, and squid (NMFS, 1999d). As black sea bass are unlikely to occur north of the Connecticut River estuary, no adverse effects to EFH is expected as a result of this project.

EFH for all life stages of **Atlantic salmon** is designated in the project area. All life stages of Atlantic salmon use freshwater habitats either exclusively or at some point during their life history. The streambed is important for eggs and larvae while the juveniles and adults use the river itself. Adults prefer riffle and run habitats in shallow, freshwater streams with gravel/rocky substrates with pools or vegetated riverine areas of low velocity. Spawning adults are generally found in late October through November. During this time, eggs are deposited and buried in the substrate and hatch after about 6 months in the spring. Larvae remain in the substrate for about six weeks before emerging as Juveniles in the spring (NEFMC, 2017). No impacts are anticipated to Atlantic salmon eggs, larvae, or spawning Adults as the proposed application will no occur during these months. These life stages are not likely to be present during the proposed application in the summer, after July 4.

Juveniles begin smolting in freshwater before migration downstream into brackish water and seawater. The timing of downstream migration depends on various factors, including temperature, salinity, and physiological adaptations. Spawning adults are generally found in late October through November. Juveniles may utilize the

Connecticut River, in addition to riverine (e.g. Joshua Creek), lacustrine, and estuarine habitats (NEFMC, 2017). The proposed project will result in temporary impacts to SAV and habitat conversion that may affect juvenile and adult life stages EFH habitat. Temporary habitat conversion may occur from the reduction of hydrilla and potential non-target impacts. Loss of SAV will be limited to the proposed treatment site. Although there may be impacts short term impacts to habitat availability to native fish following the hydrilla treatment, the goal is to reduce hydrilla presence, abundance and density to a level that allows native SAV to reestablish providing higher quality habitat. Therefore, the project is expected to have long-term beneficial impacts to EFH for Atlantic salmon.

Juveniles begin smolting in freshwater before migration downstream into brackish water and seawater. The timing of downstream migration depends on various factors, including temperature, salinity, and physiological adaptations. Spawning adults are generally found in late October through November. Juveniles may utilize the Connecticut River, in addition to riverine (e.g. Joshua Creek), lacustrine, and estuarine habitats (NEFMC, 2017). The proposed project will result in temporary impacts to SAV and habitat conversion that may affect juvenile and adult life stages EFH habitat. Temporary habitat conversion may occur from the reduction of hydrilla and potential non-target impacts. Loss of SAV will be limited to the proposed treatment site. Although the project will impact SAV in a low velocity riverine environment, the objective of the project is to decrease levels of exotic vegetation for native SAV to reestablish, providing more natural habitat for the adults. Therefore, the project is expected to have long-term beneficial impacts to EFH for Atlantic salmon.

Juvenile and adult EFH for **bluefish** is designated for the project area. Juveniles are abundant in the Connecticut River estuary. These life stages are generally restricted to estuarine and mixing salinity zones, and are not known to move into freshwater. Spawning occurs in the spring and summer when adults and juveniles are present inshore. Bluefish feed primarily on small prey fish but may forage for benthic prey on oyster bar and reef habitats when prey availability is limited (NMFS, 1999e). The project is located in areas that do not support bluefish and the action will not impact any prey species.

EFH for **little skate** and **winter skate** juveniles and adults is designated for the project area. Little skate and winter skate are sympatric species with similar habitat requirements. Their EFH occurs on sand, gravel, and mud substrates. Both species are benthic feeders, with crustaceans and polychaetes being important food sources. Both winter skate and little skate move inshore and offshore seasonally, moving into shallower inshore waters during spring and then into deeper waters in winter from roughly November to April (NMFS, 2003a; NMFS, 2003b). The project is located in areas that do not support little skate and winter skate; therefore, the action will not impact EFH.

Longfin inshore squid eggs, juvenile, and adult EFH is designated at the project area. Longfin inshore squid migrate offshore during late autumn and overwinter in deeper, warmer waters along the edge of the continental shelf. They return inshore during the spring and early summer to feed on planktonic organisms, crustaceans, and small fish. Most spawning occurs in May and hatching occurs in July. Egg masses are commonly found attached to rocks and small boulders on sandy/muddy bottom and on submerged aquatic vegetation (NMFS, 1999f). Longfin inshore squid are not known to use the Connecticut River for habitat so there will be no impact to longfin inshore squid EFH.

Pollock EFH for juveniles, and adults is designated at the project area. Larvae are pelagic, most are found at depths of 164 to 295 feet (50-90 m). EFH for juveniles includes rocky bottom habitats with attached macroalgae (NEFMC, 2017). The juveniles have been reported over a wide variety of substrates, including sand, mud, or rocky bottom, and vegetation. Most commonly juveniles are found at depths of 82 to 246 feet (25-75 m) although they can be found from the surface to 410 feet deep (125 m). Adults show little preference for bottom type, and they inhabit a wide range of depths from 115 to 1197 feet (35-365 m) (NMFS, 1999g). EFH for adults include the tops and edges of offshore banks and shores with mixed rocky substrate, often with attached macro algae. The EFH designation for Long Island Sound includes the seawater salinity zone of Long Island Sound. Pollock are not known to travel up the Connecticut River; therefore, this project is not expected to have impacts on pollock EFH (NEFMC, 2017).

EFH for all life stages of **red hake** is designated in the project area. Spawning of pelagic eggs occurs in the summer along the continental shelf and is concentrated off southern New England. Red hake larvae have been collected on the middle to outer continental shelf of the Middle Atlantic Bight, but few larvae were collected in the Gulf of Maine. North of Cape Cod, where waters are cooler, juveniles can remain inshore throughout the summer. Both juveniles and adults have primarily been found over muddy substrate (NMFS, 1999h). Juvenile EFH includes intertidal and sub-tidal benthic habitats on mud and sand substrates. Adult EFH includes inshore estuarine and embayments, in depressions in softer sediments or in shell beds. In the Connecticut River, Red hake are present in mixing salinity zones (NEFMC, 2017). The proposed project will not occur within mixing salinity zones, where red hake may be present, therefore, no impacts are anticipated to red hake EFH.

Scup EFH for all life stages is designated at the project area. Scup eggs larvae are found from May through August in southern New England, with EFH habitat in the mixing and seawater salinity zones of estuaries. Larvae occupy a similar habitat, and can be found from May through September. Juvenile and adult scup migrate from estuaries to the edge of the continental shelf as water temperatures decline in the winter and return from the edge of the continental shelf to inshore areas as water temperatures rise in the spring. Inshore, juvenile summer habitat includes intertidal and subtidal habitats, over sand, silty-sand, shell, mud, mussel beds and eelgrass (*Zostera marina*) as well as rocky ledges, wrecks, artificial reefs, and mussel beds (NMFS, 1999i). Adult EFH inshore habitat includes the mixing and seawater salinity zones of estuaries (MAFMC, 1998). Due to the project location north of the Connecticut River estuary, no adverse impacts to scup EFH are expected as a result of this project.

EFH for **summer flounder** juveniles and adults is designated at the project area. Summer flounder inhabit shallow coastal and estuarine waters between May and October, moving offshore to the outer continental shelf during winter months. It is believed that spawning occurs in offshore waters of southern New England, with peak offshore spawning occurring during October and November. Summer flounder juveniles and adults are benthic feeders, with polychaetes, crustaceans, and bivalves being important food sources (NMFS, 1999j). Inshore habitat for juveniles and adults is restricted to mixing and seawater salinity zones (MAFMC, 1998). Due to the location of the project being upstream of the Connecticut River estuary's salt wedge, no adverse effects to adult summer flounder spawning EFH are expected.

EFH for all life stages of **windowpane flounder** is designated for the project area. Egg and larval EFH is described as pelagic habitats on the continental shelf from Georges Bank to Cape Hatteras and in mixed and high salinity zones of coastal bays and estuaries throughout the region. Juvenile and adult EFH occurs in intertidal and sub-tidal muddy or sandy benthic habitats in estuarine, coastal marine, and continental shelf waters from the Gulf of Maine south (NMFS, 1999k). All life stages are found in the mixing salinity zone of the Connecticut River (MAFMC, 1998). Windowpane flounder habitat is not expected north of the Connecticut River estuary. Therefore, no adverse impacts on all life stages of windowpane flounder EFH would be anticipated as a result of this project.

Winter flounder EFH for all life stages is designated at all project locations. Winter flounder are found in a variety of habitats from brackish riverine waters to saline coastal environments and have been documented from depths of less than 3 feet in coastal embayments, up to approximately 90 feet in Cape Cod Bay and Stellwagen Bank and up to 270 feet on George's Bank. Except for the Georges Bank population, adult winter flounder migrate inshore in the fall and early winter. Spawning occurs in late winter and early spring with peak spawning between February and March in Massachusetts Bay. The diet of juvenile and adult winter flounder consists of benthic fauna; mostly polychaetes and amphipods (NMFS, 1999l). Winter flounder are not expected to inhabit areas north of the Connecticut River estuary. Therefore, no impacts on all life stages of the winter flounder EFH would be anticipated as a result of this project.

Avoidance, Minimization, and Mitigation

Specific measures taken to avoid and minimize impacts to EFH:

The project area does not contain viable EFH for the identified species because it is a tidal freshwater creek and is located upstream of the Connecticut River estuary. Additionally, the proposed action will occur after July 4th to avoid potential impacts to diadromous fish.

Is compensatory mitigation proposed?

No compensatory mitigation is proposed as no significant adverse effects are anticipated to any species' EFH.

Compensatory mitigation details:

N/A

8. Effects of Climate Change

Could species or habitats be adversely affected by the proposed action due to projected changes in the climate?

No adverse effects to species or habitat are expected as a result of the project and projected climate change.

Is the expected lifespan of the action greater than 10 years?

No, however, use of aquatic herbicides for control of the invasive hydrilla are likely to continue in other parts of the Connecticut River. The project is expected to reduce hydrilla presence, abundance and density to allow for native SAV to replace it.

Is climate change currently affecting vulnerable species or habitats, and would the effects of a proposed action be amplified by climate change?

Vulnerable species and habitats are currently affected by climate change, but the effects of the proposed action are not likely to be amplified by climate change.

Do the results of the assessment indicate the effects of the action on habitats and species will be amplified by climate change?

No.

Can adaptive management strategies (AMS) be integrated into the action to avoid or minimize adverse effects of the proposed action as a result of climate?

Due to negligible impacts to species EFH, the effects of the proposed action are not likely to be amplified by climate change; thus, adaptive management strategies would not help avoid or minimize adverse impacts of the proposed action.

9. Federal Agency Determination

Federal Action Agency's EFH determination	
	There is no adverse effect on EFH or EFH is not designated at the project site. EFH Consultation is not required. This is a FWCA only request.
X	The adverse effect on EFH is not substantial. This means that the adverse effects are no more than minimal, temporary, or can be alleviated with minor project modifications or conservation recommendations. This is a request for an abbreviated EFH consultation.
	The adverse effect on EFH is substantial. This is a request for an expanded EFH consultation.

10. Fish and Wildlife Coordination Act

Fish and Wildlife Coordination Act Resources

Species known to occur at site	**Habitat impact type**
alewife	Temporary impacts to SAV.
American eel	Temporary impacts to SAV.
American shad	Temporary impacts to SAV.
Atlantic menhaden	N/A
blue crab	N/A
blue mussel	N/A
blueback herring	Temporary impacts to SAV.
Eastern oyster	N/A
horseshoe crab	N/A
quahog	N/A
soft-shell clams	N/A
striped bass	Temporary impacts to SAV.
other species:	

11. References

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National Marine Fisheries Service (NMFS). 1999a. Essential Fish Habitat Source Document: Atlantic Butterfish, *Peprilus triacanthus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999b. Essential Fish Habitat Source Document: Atlantic Herring, *Clupea harengus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

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National Marine Fisheries Service (NMFS). 1999e. Essential Fish Habitat Source Document: Bluefish, *Pomatomus saltatrix*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999f. Essential Fish Habitat Source Document: Longfin Inshore Squid, *Loligo pealeii*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999g. Essential Fish Habitat Source Document: Pollock, *Pollachius virens*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999h. Essential Fish Habitat Source Document: Red Hake, *Urophycis chuss*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999i. Essential Fish Habitat Source Document: Scup, *Stenotomus chrysops*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999j. Essential Fish Habitat Source Document: Summer Flounder, *Paralichthys dentatus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999k. Essential Fish Habitat Source Document: Windowpane Flounder, *Scophthalmus aquosus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999l. Essential Fish Habitat Source Document: Winter Flounder, *Psuedopleuronectes americanus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

New England Fishery Management Council (NEFMC). 2017. Final Omnibus Essential Fish Habitat Amendment 2, Volume 2: EFH and HAPC Designation Alternatives and Environmental Impacts. Prepared by the NEFMC in cooperation with the National Marine Fisheries Service.

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Table of Contents

1. General Project Information

Date Prepared: May 15, 2025

Project/ Application Number: N/A

Project Name: Connecticut River Hydrilla Research and Demonstration Project

Project Applicant: U.S. Army Corps of Engineers, New England District

Federal Action Agency: U.S. Army Corps of Engineers, New England District

Fast-41: No

Action Agency Contact Name: Kelsie Dakessian

Contact Phone: 978-318-8685

Contact Email: Kelsie.Dakessian@usace.army.mil

Address: U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, Massachusetts 01742-2751

2. Project Description

Location (WGS 84): 41.5836, -72.6639

Body of Water (HUC-12): Lower Mattabesset River (010802050603)

Project Purpose:

The purpose of the proposed project is to provide a field-scale demonstration of technology developed under the APCRP, which is evaluating the effectiveness of aquatic herbicides to manage monoecious hydrilla in high water exchange environments, such as the tidal, riverine environment of the lower Connecticut River. The field demonstration will evaluate herbicide efficacy, optimal timing of treatment, non-target impacts, and herbicide concentration-exposure time requirements for effective control of hydrilla. The proposed project will also provide interim control of hydrilla at Mattabesset River for the duration of the research and demonstration project to demonstrate and understand effective management practices.

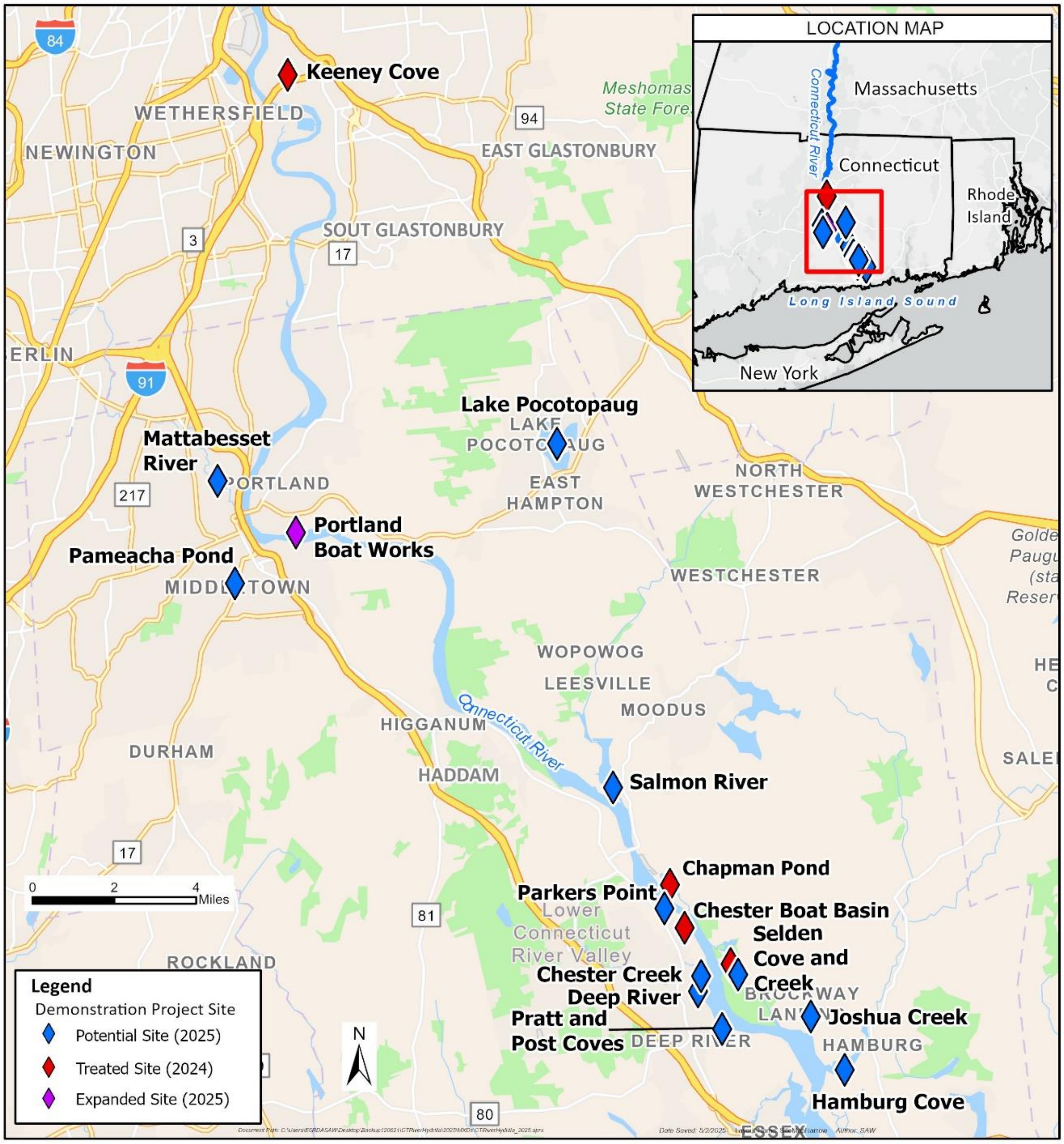

Figure 1. Proposed treatment sites

Project Description:

The Connecticut River Hydrilla Control Research and Demonstration Project currently includes five treatment sites, with a field-scale demonstration of chemical technology to evaluate the effectiveness of an aquatic herbicide to manage hydrilla, including sites in high water exchange environments (e.g., tidal, riverine environment). The proposed action is an expansion of the existing Connecticut River Hydrilla Control Research and Demonstration Project by adding 12 additional treatment sites within the Lower Connecticut watershed: (1) Chester Creek in Chester; (2) Deep River in Deep River; (3) Hamburg Cove in Lyme; (4) Joshua Creek in Lyme; (5) Mattabesset River in Middletown; (6) Parker's Point in Chester; (7) an expanded Portland Boat Works in Portland; (8) Post and Pratt Coves in Deep River; (9) Salmon River in East Haddam; (10) Selden Creek in Lyme; (11) Lake Pocotopaug in East Hampton; and (12) Pameacha Pond in Middletown.

The action proposes the use of diquat dibromide, dipotassium salt of endothall, florpyrauxifen-benzyl, fluridone or a combination of these chemicals to control hydrilla within Mattabesset River. Herbicide will be evenly distributed across the entire treatment areas using the industry-standard boat-based subsurface injection application methods consisting of a calibrate pump and trailing hoses. Herbicide will be applied by licensed applicators and in accordance with product labels.

The proposed applications will occur in the summer after July 4th 2025, with any subsequent treatments occurring after July 4th of future years. This timing was selected to avoid impacts to diadromous fish and northern pike that may spawn in submerged aquatic vegetation at sites in or adjacent to the Connecticut River. Pre- and post-application monitoring will occur at the treatment sites to understand control efficacy for hydrilla and impacts to non-target species to inform the management of other hydrilla infestations. Post-application monitoring may occur for up to three years.

Table 1. Proposed herbicide use rates

Potential Herbicide	**Maximum Application Rate**
Diquat	370 ppb
Dipotassium salt of endothall	5 ppm
Florpyrauxifen-benzyl	48 ppb
Fluridone	15 ppb

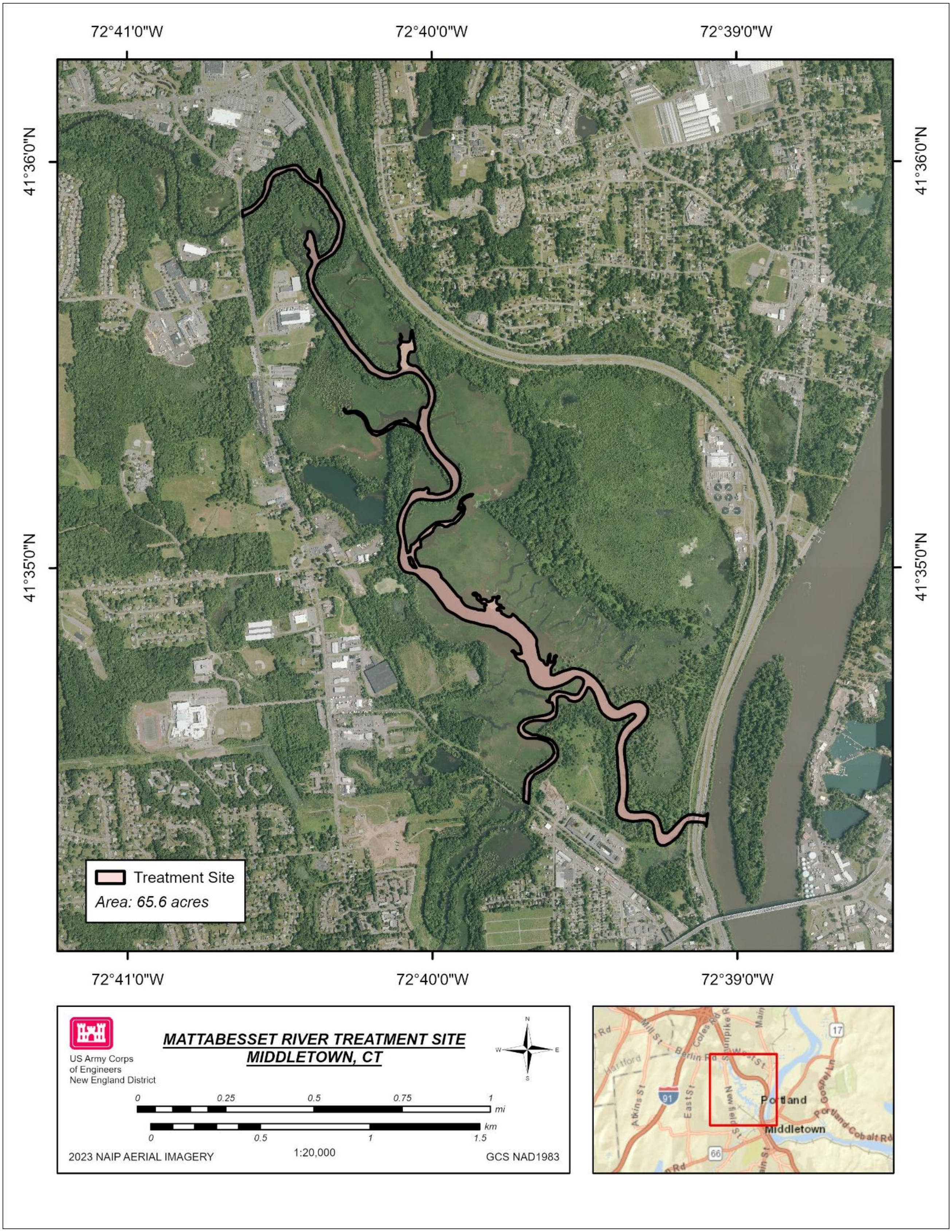

Figure 2. Proposed Treatment Site for Mattabesset River in Middletown, CT

Site Description

Is the project in designated EFH?	Yes
Is the project in designated HAPC?	Yes
Does the project contain any Special Aquatic Sites?	No
Is this coordination under FWCA only?	No

Total area of impact to EFH:

The total area of herbicide treatment is approximately 65.6 acres. Since it is not a closed system with tidal influence, herbicide may flow to areas outside the treatment polygon.

Total area of impact to HAPC:

The project area is approximately 65.6 acres, but impacts may extend outside of the treatment area based on site conditions at the time of treatment.

Current range of water depths:

According to the existing USACE bathymetric data, NOAA nautical charts, and local fishing maps the water depth is approximately 7 feet deep at MHHW. Bathymetric surveys will be conducted prior to herbicide treatment to inform herbicide treatment.

Salinity range:

Mattabesset River is located upstream of the northern extent of the Connecticut River estuary's salt wedge; therefore, it is freshwater and has relatively low salinity.

Water temperature range:

Temperature data was sourced from the U.S. Geological Survey's Water Data portal (USGS, 2025).

Surface water temperature in the Connecticut River at Middle Haddam, CT, approximately 7 river miles downstream of Mattabesset River, ranged from approximately 50°F in April 2024 to 72°F in September in 2024, and is likely a good estimate of the range of surface water temperatures within Mattabesset River.

3. Habitat Types

Habitat Location	Habitat Type	Total Impacts	Temporary Impacts	Permanent Impacts	Restored to pre-existing conditions?
Freshwater	Submerged aquatic vegetation	65.6 acres	65.6 acres	65.6 acres	No

Submerged Aquatic Vegetation (SAV)

SAV Present? Yes

Details:

The proposed project will control hydrilla (*Hydrilla verticillata)* within Mattabesset River. Vegetation surveys will be conducted prior to treatment to determine species within the treatment area. It is anticipated that SAV present will include species common to the Connecticut River, such as: waterweed (*Elodea canadensis*)*,* coontail (*Ceratophyllum demersum*), American eelgrass (*Vallisneria americana*), and pondweed (*Potamogeton spp.)*.

Sediment Characteristics

General Description of the Sediment Composition:

The sediment at Mattabesset River is composed of silt.

Diadromous Fish (Migratory or Spawning Habitat)

Diadromous Fish Habitat?: Yes

4. EFH and HAPC Designations

The following table provides a summary of Essential Fish Habitat Designations in Mattabesset River (denoted with an "X") (NMFS, 2025).

Species	Eggs	Larvae	Juveniles	Adults
Atlantic Butterfish (*Peprilus triacanthus*)	X	X		X
Atlantic Herring (*Clupea harengus*)			X	X
Atlantic mackerel (*Scomber scombrus*)	X	X	X	X
Atlantic salmon *(Salmo salar)*	X	X	X	X

Black Sea Bass (*Centropristis striata*)			X	
Bluefish (*Pomatomus saltatrix*)			X	X
Little Skate (*Leucoraja erinacea*)			X	X
Longfin inshore squid (*Doryteuthis pealeii*)	X		X	X
Pollock (*Pollachius virens*)			X	X
Red Hake (*Urophycis chuss*)	X	X	X	X
Scup (*Stenotomus chrysops*)	X	X	X	X
Summer Flounder (*Paralichthys dentatus*)			X	X
Windowpane Flounder (*Scophthalmus aquosus*)	X	X	X	X
Winter Flounder (*Psuedopleuronectes americanus*)	X	X	X	X
Winter Skate (*Leucoraja ocellata*)			X	X

5. Habitat Areas of Particular Concern (HAPCs)

Select all that apply	HAPC Designation	Select all that apply	HAPC Designation
X	Summer flounder: SAV		Alvin & Atlantis Canyons
	Sandbar shark		Baltimore Canyon
	Sand Tiger Shark (Delaware Bay)		Bear Seamount
	Sand Tiger Shark (Plymouth-Duxbury-Kingston Bay)		Heezen Canyon
	Inshore 20m Juvenile Cod		Hudson Canyon
	Great South Channel Juvenile Cod		Hydrographer Canyon
	Northern Edge Juvenile Cod		Jeffreys & Stellwagen
	Lydonia Canyon		Lydonia, Gilbert & Oceanographer Canyons
	Norfolk Canyon (Mid-Atlantic)		Norfolk Canyon (New England)
	Oceanographer Canyon		Retriever Seamount
	Veatch Canyon (Mid-Atlantic)		Toms, Middle Toms & Hendrickson Canyons
	Veatch Canyon (New England)		Washington Canyon
	Cashes Ledge		Wilmington Canyon
	Atlantic Salmon		

Mattabesset River falls within the regional HAPC for summer flounder. The summer flounder HAPC consists of areas with SAV. The specific designation of summer flounder HAPC is:

> All native species of macroalgae, seagrasses, and freshwater and tidal macrophytes in any size bed, as well as loose aggregations, within adult and juvenile summer flounder EFH is HAPC. If native species of SAV are eliminated then exotic species should be protected because of functional value, however, all efforts should be made to restore native species (MAFMC, 1998).

Mattabesset River primarily contains non-native (exotic) freshwater and tidal macrophytes. This project will control the exotic macrophytes, with the goal of restoring native SAV benefiting native fish and wildlife, and the entire ecosystem. Consequently, this project is expected to have a beneficial impact to the HAPC for summer flounder.

6. Activity Details

Select all that apply	Project Type/Category
	Agriculture
	Aquaculture
	Bank/shoreline stabilization (e.g., living shoreline, groin, breakwater, bulkhead)
	Beach renourishment
	Dredging/excavation
	Energy development/use e.g., hydropower, oil and gas, pipeline, transmission line, tidal or wave power, wind
	Fill
	Forestry
	Infrastructure/transportation (e.g., culvert construction, bridge repair, highway, port, railroad)
	Intake/outfall
	Military (e.g., acoustic testing, training exercises)
	Mining (e.g., sand, gravel)
	Overboard dredged material placement
	Piers, ramps, floats, and other structures
	Restoration or fish/wildlife enhancement (e.g., fish passage, wetlands, mitigation bank/ILF creation)
	Survey (e.g., geotechnical, geophysical, habitat, fisheries)
	Water quality (e.g., storm water drainage, NPDES, TMDL, wastewater, sediment remediation)
X	Other: aquatic herbicide application

7. Effects Evaluation

Potential Stressors

Select all that apply	Potential Stressors Caused by the Activity
	Underwater noise
X	Water quality/turbidity/contaminant release
	Vessel traffic/barge grounding
	Impingement/entrainment
	Prevent fish passage/spawning
X	Benthic community disturbance
X	Impacts to prey species

Select all that apply		Potential Stressors Caused by the Activity
Temp	Perm	
		Water depth change
		Tidal flow change
		Fill
X		Habitat type conversion
		Other:

Project Impacts and Mitigation

Project Impacts to EFH by Species

EFH for **Atlantic butterfish** eggs, larvae, and adults is designated at the project area. In Long Island Sound, butterfish spawn from June to late August with a peak in late July. The principal spawning areas are in the eastern part of the sound. They have a seasonal inshore-offshore migration dependent on water temperature. In summer, they move north and inshore to feed on planktonic fish, squid, crustaceans, and jellyfish and then move south and offshore in the winter. Eggs and larvae may occur in salinities ranging from estuarine to full strength seawater. Adults are common to abundant in the high salinity and mixing zones of estuaries within the region (NMFS 1999a). Based on this species' diet, migration pattern, and habitat characteristics, the project will have no effect to Atlantic butterfish EFH.

EFH for **Atlantic herring** juvenile, and adults is designated at the project area. Juveniles are sometimes abundant in fall while adults are abundant in Long Island Sound during the spring. In the Connecticut River, juveniles have a rare abundance only in the mixing salinity zone .Juveniles and adults are pelagic, with adults only becoming demersal during spawning. Atlantic sea herring prey on pelagic zooplankton. Atlantic

herring larvae metamorphose into early-stage juveniles in the spring within intertidal and subtidal habitats out to 985 feet. Adults and juveniles may be found in the estuarine mixing salinity zones of the Connecticut River. The river does not support adults or juveniles in tidal freshwater habitat (NMFS, 199b). Given the salinity range of Mattabesset River, no impacts are anticipated as there is not a suitable salinity for juveniles within Mattabesset River.

Atlantic mackerel EFH for all life stages is designated in the project area. Atlantic mackerel spawn pelagic eggs from roughly mid-April to June. The pelagic eggs hatch into planktonic larvae 4-5 days post-fertilization. Atlantic mackerel gain the ability to swim and school after approximately 1-2 months. During the winter, Atlantic mackerel migrate to deep water offshore and eventually move back inshore in the spring. Mackerel feed on a variety of prey during their life cycles, including zooplankton, crustaceans, copepods, and small fish. They are never found in the Connecticut River, and their eggs have high mortality rates at low salinities (NMFS, 1999c). Based on the fact that Atlantic mackerel are unlikely to be found north of the Connecticut River estuary, the project will have no effect to this species' EFH.

EFH for all life stages of **Atlantic salmon** is designated in the project area. All life stages of Atlantic salmon use freshwater habitats either exclusively or at some point during their life history. The streambed is important for eggs and larvae while the juveniles and adults use the river itself. Adults prefer riffle and run habitats in shallow, freshwater streams with gravel/rocky substrates with pools or vegetated riverine areas of low velocity. Spawning adults are generally found in late October through November. During this time, eggs are deposited and buried in the substrate and hatch after about 6 months in the spring. Larvae remain in the substrate for about six weeks before emerging as Juveniles in the spring (NEFMC, 2017). No impacts are anticipated to Atlantic salmon eggs, larvae, or spawning Adults as the proposed application will not occur during these months. These life stages are not likely to be present during the proposed application in the summer, after July 4.

Juveniles begin smolting in freshwater before migration downstream into brackish water and seawater. The timing of downstream migration depends on various factors, including temperature, salinity, and physiological adaptations. Spawning adults are generally found in late October through November. Juveniles may utilize the Connecticut River, in addition to riverine (e.g. Mattabesset River), lacustrine, and estuarine habitats (NEFMC, 2017). The proposed project will result in temporary impacts to SAV and habitat conversion that may affect juvenile and adult life stages EFH habitat. Temporary habitat conversion may occur from the reduction of hydrilla and potential non-target impacts. Loss of SAV will be limited to the proposed treatment site. Although there may be impacts short term impacts to habitat availability to native fish following the hydrilla treatment, the goal is to reduce hydrilla presence, abundance and density to a level that allows native SAV to reestablish providing higher quality habitat. Therefore, the project is expected to have long-term beneficial impacts to EFH for Atlantic salmon.

Black sea bass EFH is designated at the project area for juveniles. In Southern New England, both juvenile and adult black sea bass migrate offshore to over-wintering areas at depths greater than 250 feet when waters begin to cool in the fall. Within estuaries, black sea bass juveniles use shallow shellfish, sponge, amphipod (e.g., *Ampelisca abdita*), seagrass, and cobble habitats as well as manmade structures such as wharves, pilings, and wrecks. Juveniles are generalist carnivores that feed on a variety of infaunal and epifaunal invertebrates, small fish, and squid (NMFS, 1999d). As black sea bass are unlikely to occur north of the Connecticut River estuary, no adverse effects to EFH is expected as a result of this project.

Juvenile and adult EFH for **bluefish** is designated for the project area. Juveniles are abundant in the Connecticut River estuary. These life stages are generally restricted to estuarine and mixing salinity zones, and are not known to move into freshwater. Spawning occurs in the spring and summer when adults and juveniles are present inshore. Bluefish feed primarily on small prey fish but may forage for benthic prey on oyster bar and reef habitats when prey availability is limited (NMFS, 1999e). The project is located in areas that do not support bluefish and the action will not impact any prey species.

EFH for **little skate** and **winter skate** juveniles and adults is designated for the project area. Little skate and winter skate are sympatric species with similar habitat requirements. Their EFH occurs on sand, gravel, and mud substrates. Both species are benthic feeders, with crustaceans and polychaetes being important food sources. Both winter skate and little skate move inshore and offshore seasonally, moving into shallower inshore waters during spring and then into deeper waters in winter from roughly November to April (NMFS, 2003a; NMFS, 2003b). The project is located in areas that do not support little skate and winter skate; therefore, the action will not impact EFH.

Longfin inshore squid eggs, juvenile, and adult EFH is designated at the project area. Longfin inshore squid migrate offshore during late autumn and overwinter in deeper, warmer waters along the edge of the continental shelf. They return inshore during the spring and early summer to feed on planktonic organisms, crustaceans, and small fish. Most spawning occurs in May and hatching occurs in July. Egg masses are commonly found attached to rocks and small boulders on sandy/muddy bottom and on submerged aquatic vegetation (NMFS, 1999f). Longfin inshore squid are not known to use the Connecticut River for habitat so there will be no impact to longfin inshore squid EFH.

Pollock EFH for juveniles, and adults is designated at the project area. Larvae are pelagic, most are found at depths of 164 to 295 feet (50-90 m). EFH for juveniles includes rocky bottom habitats with attached macroalgae (NEFMC, 2017). The juveniles have been reported over a wide variety of substrates, including sand, mud, or rocky bottom, and vegetation. Most commonly juveniles are found at depths of 82 to 246 feet (25-75 m) although they can be found from the surface to 410 feet deep (125 m). Adults show little preference for bottom type, and they inhabit a wide range of depths from 115 to 1197 feet (35-365 m) (NMFS, 1999g). EFH for adults include the tops and edges of

offshore banks and shores with mixed rocky substrate, often with attached macro algae. The EFH designation for Long Island Sound includes the seawater salinity zone of Long Island Sound. Pollock are not known to travel up the Connecticut River; therefore, this project is not expected to have impacts on pollock EFH (NEFMC, 2017).

EFH for all life stages of **red hake** is designated in the project area. Spawning of pelagic eggs occurs in the summer along the continental shelf and is concentrated off southern New England. Red hake larvae have been collected on the middle to outer continental shelf of the Middle Atlantic Bight, but few larvae were collected in the Gulf of Maine. North of Cape Cod, where waters are cooler, juveniles can remain inshore throughout the summer. Both juveniles and adults have primarily been found over muddy substrate (NMFS, 1999h). Juvenile EFH includes intertidal and sub-tidal benthic habitats on mud and sand substrates. Adult EFH includes inshore estuarine and embayments, in depressions in softer sediments or in shell beds. In the Connecticut River, Red hake are present in mixing salinity zones (NEFMC, 2017). The proposed project will not occur within mixing salinity zones, where red hake may be present, therefore, no impacts are anticipated to red hake EFH.

Scup EFH for all life stages is designated at the project area. Scup eggs larvae are found from May through August in southern New England, with EFH habitat in the mixing and seawater salinity zones of estuaries. Larvae occupy a similar habitat, and can be found from May through September. Juvenile and adult scup migrate from estuaries to the edge of the continental shelf as water temperatures decline in the winter and return from the edge of the continental shelf to inshore areas as water temperatures rise in the spring. Inshore, juvenile summer habitat includes intertidal and subtidal habitats, over sand, silty-sand, shell, mud, mussel beds and eelgrass (*Zostera marina*) as well as rocky ledges, wrecks, artificial reefs, and mussel beds (NMFS, 1999i). Adult EFH inshore habitat includes the mixing and seawater salinity zones of estuaries (MAFMC, 1998). Due to the project location north of the Connecticut River estuary, no adverse impacts to scup EFH are expected as a result of this project.

EFH for **summer flounder** juveniles and adults is designated at the project area. Summer flounder inhabit shallow coastal and estuarine waters between May and October, moving offshore to the outer continental shelf during winter months. It is believed that spawning occurs in offshore waters of southern New England, with peak offshore spawning occurring during October and November. Summer flounder juveniles and adults are benthic feeders, with polychaetes, crustaceans, and bivalves being important food sources (NMFS, 1999j). Inshore habitat for juveniles and adults is restricted to mixing and seawater salinity zones (MAFMC, 1998). Due to the location of the project being upstream of the Connecticut River estuary's salt wedge, no adverse effects to adult summer flounder spawning EFH are expected.

EFH for all life stages of **windowpane flounder** is designated for the project area. Egg and larval EFH is described as pelagic habitats on the continental shelf from Georges Bank to Cape Hatteras and in mixed and high salinity zones of coastal bays and estuaries throughout the region. Juvenile and adult EFH occurs in intertidal and sub-

tidal muddy or sandy benthic habitats in estuarine, coastal marine, and continental shelf waters from the Gulf of Maine south (NMFS, 1999k). All life stages are found in the mixing salinity zone of the Connecticut River (MAFMC, 1998). Windowpane flounder habitat is not expected north of the Connecticut River estuary. Therefore, no adverse impacts on all life stages of windowpane flounder EFH would be anticipated as a result of this project.

Winter flounder EFH for all life stages is designated at all project locations. Winter flounder are found in a variety of habitats from brackish riverine waters to saline coastal environments and have been documented from depths of less than 3 feet in coastal embayments, up to approximately 90 feet in Cape Cod Bay and Stellwagen Bank and up to 270 feet on George's Bank. Except for the Georges Bank population, adult winter flounder migrate inshore in the fall and early winter. Spawning occurs in late winter and early spring with peak spawning between February and March in Massachusetts Bay. The diet of juvenile and adult winter flounder consists of benthic fauna; mostly polychaetes and amphipods (NMFS, 1999l). Winter flounder are not expected to inhabit areas north of the Connecticut River estuary. Therefore, no impacts on all life stages of the winter flounder EFH would be anticipated as a result of this project.

Avoidance, Minimization, and Mitigation

Specific measures taken to avoid and minimize impacts to EFH:

The project area does not contain viable EFH for the identified species because it is a tidal freshwater river and is located upstream of the Connecticut River estuary. Additionally, the proposed action will occur after July 4th to avoid potential impacts to diadromous fish.

Is compensatory mitigation proposed?

No compensatory mitigation is proposed as no significant adverse effects are anticipated to any species' EFH.

Compensatory mitigation details:

N/A

8. Effects of Climate Change

Could species or habitats be adversely affected by the proposed action due to projected changes in the climate?

No adverse effects to species or habitat are expected as a result of the project and projected climate change.

Is the expected lifespan of the action greater than 10 years?

No, however, use of aquatic herbicides for control of the invasive hydrilla are likely to continue in other parts of the Connecticut River. The project is expected to reduce hydrilla presence, abundance and density to allow for native SAV to replace it.

Is climate change currently affecting vulnerable species or habitats, and would the effects of a proposed action be amplified by climate change?

Vulnerable species and habitats are currently affected by climate change, but the effects of the proposed action are not likely to be amplified by climate change.

Do the results of the assessment indicate the effects of the action on habitats and species will be amplified by climate change?

No.

Can adaptive management strategies (AMS) be integrated into the action to avoid or minimize adverse effects of the proposed action as a result of climate?

Due to negligible impacts to species EFH, the effects of the proposed action are not likely to be amplified by climate change; thus, adaptive management strategies would not help avoid or minimize adverse impacts of the proposed action.

9. Federal Agency Determination

Federal Action Agency's EFH determination	
	There is no adverse effect on EFH or EFH is not designated at the project site. EFH Consultation is not required. This is a FWCA only request.
X	The adverse effect on EFH is not substantial. This means that the adverse effects are no more than minimal, temporary, or can be alleviated with minor project modifications or conservation recommendations. This is a request for an abbreviated EFH consultation.
	The adverse effect on EFH is substantial. This is a request for an expanded EFH consultation.

10. Fish and Wildlife Coordination Act

Fish and Wildlife Coordination Act Resources

Species known to occur at site	**Habitat impact type**
alewife	Temporary impacts to SAV.
American eel	Temporary impacts to SAV.
American shad	Temporary impacts to SAV.
Atlantic menhaden	N/A
blue crab	N/A
blue mussel	N/A
blueback herring	Temporary impacts to SAV.
Eastern oyster	N/A
horseshoe crab	N/A
quahog	N/A
soft-shell clams	N/A
striped bass	Temporary impacts to SAV.
other species:	

11. References

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National Marine Fisheries Service (NMFS). 2003b. Essential Fish Habitat Source Document: Winter Skate, Leucoraja ocellata, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999a. Essential Fish Habitat Source Document: Atlantic Butterfish, *Peprilus triacanthus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999b. Essential Fish Habitat Source Document: Atlantic Herring, *Clupea harengus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999c. Essential Fish Habitat Source Document: Atlantic Mackerel, *Scomber scobrus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

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National Marine Fisheries Service (NMFS). 1999f. Essential Fish Habitat Source Document: Longfin Inshore Squid, *Loligo pealeii*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999g. Essential Fish Habitat Source Document: Pollock, *Pollachius virens*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999h. Essential Fish Habitat Source Document: Red Hake, *Urophycis chuss*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999i. Essential Fish Habitat Source Document: Scup, *Stenotomus chrysops*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999j. Essential Fish Habitat Source Document: Summer Flounder, *Paralichthys dentatus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999k. Essential Fish Habitat Source Document: Windowpane Flounder, *Scophthalmus aquosus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

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Table of Contents

1. General Project Information

Date Prepared: May 15, 2025

Project/ Application Number: N/A

Project Name: Connecticut River Hydrilla Research and Demonstration Project

Project Applicant: U.S. Army Corps of Engineers, New England District

Federal Action Agency: U.S. Army Corps of Engineers, New England District

Fast-41: No

Action Agency Contact Name: Kelsie Dakessian

Contact Phone: 978-318-8685

Contact Email: Kelsie.Dakessian@usace.army.mil

Address: U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, Massachusetts 01742-2751

2. Project Description

Location (WGS 84): 41.4309, -72.4486

Body of Water (HUC-12): Deep River-Connecticut River (010802050901)

Project Purpose:

The purpose of the proposed project is to provide a field-scale demonstration of technology developed under the APCRP, which is evaluating the effectiveness of aquatic herbicides to manage monoecious hydrilla in high water exchange environments, such as the tidal, riverine environment of the lower Connecticut River. The field demonstration will evaluate herbicide efficacy, optimal timing of treatment, non-target impacts, and herbicide concentration-exposure time requirements for effective control of hydrilla. The proposed project will also provide interim control of hydrilla at Parkers Point for the duration of the research and demonstration project to demonstrate and understand effective management practices.

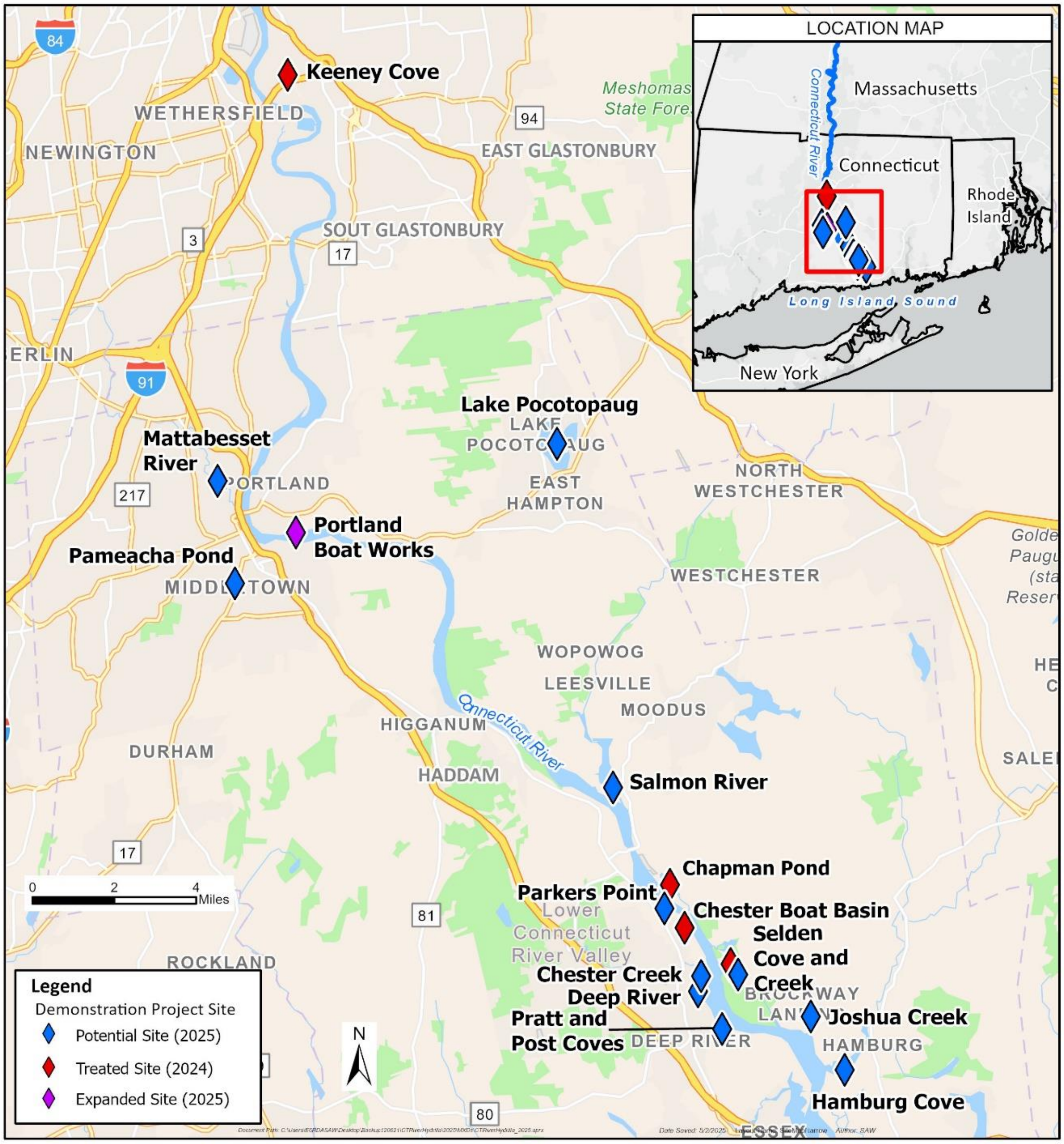

Figure 1. Proposed treatment sites

Project Description:

The Connecticut River Hydrilla Control Research and Demonstration Project currently includes five treatment sites, with a field-scale demonstration of chemical technology to evaluate the effectiveness of an aquatic herbicide to manage hydrilla, including sites in high water exchange environments (e.g., tidal, riverine environment). The proposed action is an expansion of the existing Connecticut River Hydrilla Control Research and Demonstration Project by adding 12 additional treatment sites within the Lower Connecticut watershed: (1) Chester Creek in Chester; (2) Deep River in Deep River; (3) Hamburg Cove in Lyme; (4) Joshua Creek in Lyme; (5) Mattabesset River in Middletown; (6) Parker's Point in Chester; (7) an expanded Portland Boat Works in Portland; (8) Post and Pratt Coves in Deep River; (9) Salmon River in East Haddam; (10) Selden Creek in Lyme; (11) Lake Pocotopaug in East Hampton; and (12) Pameacha Pond in Middletown.

The action proposes the use of diquat dibromide, dipotassium salt of endothall, and florpyrauxifen-benzyl or a combination of these chemicals to control hydrilla within Parkers Point. Herbicide will be evenly distributed across the entire treatment areas using the industry-standard boat-based subsurface injection application methods consisting of a calibrate pump and trailing hoses. Herbicide will be applied by licensed applicators and in accordance with product labels.

The proposed applications will occur in the summer after July 4th 2025, with any subsequent treatments occurring after July 4th of future years. This timing was selected to avoid impacts to diadromous fish and northern pike that may spawn in submerged aquatic vegetation at sites in or adjacent to the Connecticut River. Pre- and post-application monitoring will occur at the treatment sites to understand control efficacy for hydrilla and impacts to non-target species to inform the management of other hydrilla infestations. Post-application monitoring may occur for up to three years.

Table 1. Proposed herbicide use rates

Potential Herbicide	**Maximum Application Rate**
Diquat	370 ppb
Dipotassium salt of endothall	5 ppm
Florpyrauxifen-benzyl	48 ppb

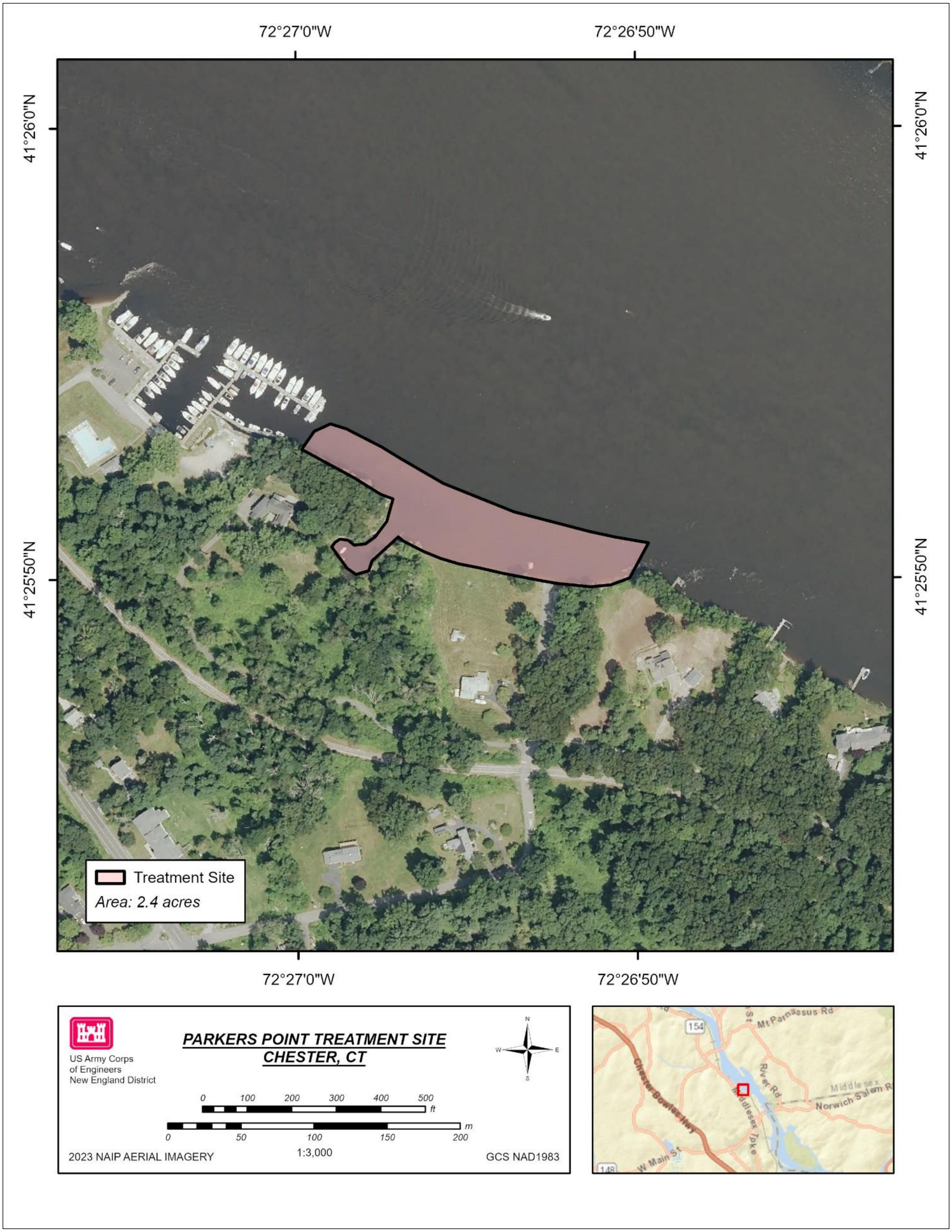

Figure 2. Proposed Treatment Site for Parkers Point in Chester, CT

Site Description

Is the project in designated EFH?	Yes
Is the project in designated HAPC?	Yes
Does the project contain any Special Aquatic Sites?	No
Is this coordination under FWCA only?	No

Total area of impact to EFH:

The total area of herbicide treatment is approximately 2.4 acres. Since it is not a closed system with tidal influence, herbicide may flow to areas outside the treatment polygon.

Total area of impact to HAPC:

The project area is approximately 2.4 acres, but impacts may extend outside of the treatment area based on site conditions at the time of treatment.

Current range of water depths:

According to the existing USACE bathymetric data, NOAA nautical charts, and local fishing maps the water depth is approximately 6 feet deep at MHHW. Bathymetric surveys will be conducted prior to herbicide treatment to inform herbicide treatment.

Salinity range:

Parkers Point is located upstream of the northern extent of the Connecticut River estuary's salt wedge; therefore, it is freshwater and has relatively low salinity.

Water temperature range:

Temperature data was sourced from the U.S. Geological Survey's Water Data portal (USGS, 2025).

Surface water temperature in the Connecticut River, at Middle Haddam, CT, approximately 11 river miles upstream of Parkers Point ranged from approximately 50°F in April 2024 to 72°F in September in 2024, and is likely a good estimate of the range of surface water temperatures within Parkers Point.

3. Habitat Types

Habitat Location	Habitat Type	Total Impacts	Temporary Impacts	Permanent Impacts	Restored to pre-existing conditions?
Freshwater	Submerged aquatic vegetation	2.4 acres	2.4 acres	2.4 acres	No

Submerged Aquatic Vegetation (SAV)

SAV Present? Yes

Details:

The proposed project will control hydrilla (*Hydrilla verticillata)* within Parkers Point, along the mainstem of the Connecticut River. Vegetation surveys will be conducted prior to treatment to determine species within the treatment area. It is anticipated that SAV present will include species common to the Connecticut River, such as: waterweed (*Elodea canadensis*)*,* coontail (*Ceratophyllum demersum*), American eelgrass (*Vallisneria americana*), and pondweed (*Potamogeton spp.)*.

Sediment Characteristics

General Description of the Sediment Composition:

The sediment at Parkers Point is composed of silt.

Diadromous Fish (Migratory or Spawning Habitat)

Diadromous Fish Habitat?: Yes

4. EFH and HAPC Designations

The following table provides a summary of Essential Fish Habitat Designations in Parkers Point (denoted with an "X") (NMFS, 2025).

Species	Eggs	Larvae	Juveniles	Adults
Atlantic Butterfish (*Peprilus triacanthus*)	X	X		X
Atlantic Herring (*Clupea harengus*)			X	X
Atlantic mackerel (*Scomber scombrus*)	X	X	X	X
Atlantic salmon (*Salmno salar)*	X	X	X	X

Black Sea Bass (*Centropristis striata*)			X	
Bluefish (*Pomatomus saltatrix*)			X	X
Little Skate (*Leucoraja erinacea*)			X	X
Longfin inshore squid (*Doryteuthis pealeii*)	X		X	X
Pollock (*Pollachius virens*)			X	X
Red Hake (*Urophycis chuss*)	X	X	X	X
Scup (*Stenotomus chrysops*)	X	X	X	X
Summer Flounder (*Paralichthys dentatus*)			X	X
Windowpane Flounder (*Scophthalmus aquosus*)	X	X	X	X
Winter Flounder (*Psuedopleuronectes americanus*)	X	X	X	X
Winter Skate (*Leucoraja ocellata*)			X	X

5. Habitat Areas of Particular Concern (HAPCs)

Select all that apply	HAPC Designation	Select all that apply	HAPC Designation
X	Summer flounder: SAV		Alvin & Atlantis Canyons
	Sandbar shark		Baltimore Canyon
	Sand Tiger Shark (Delaware Bay)		Bear Seamount
	Sand Tiger Shark (Plymouth-Duxbury-Kingston Bay)		Heezen Canyon
	Inshore 20m Juvenile Cod		Hudson Canyon
	Great South Channel Juvenile Cod		Hydrographer Canyon
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	Norfolk Canyon (Mid-Atlantic)		Norfolk Canyon (New England)
	Oceanographer Canyon		Retriever Seamount
	Veatch Canyon (Mid-Atlantic)		Toms, Middle Toms & Hendrickson Canyons
	Veatch Canyon (New England)		Washington Canyon
	Cashes Ledge		Wilmington Canyon
	Atlantic Salmon		

Parkers Point falls within the regional HAPC for summer flounder. The summer flounder HAPC consists of areas with SAV. The specific designation of summer flounder HAPC is:

> All native species of macroalgae, seagrasses, and freshwater and tidal macrophytes in any size bed, as well as loose aggregations, within adult and juvenile summer flounder EFH is HAPC. If native species of SAV are eliminated then exotic species should be protected because of functional value, however, all efforts should be made to restore native species (MAFMC, 1998).

Parkers Point primarily contains non-native (exotic) freshwater and tidal macrophytes. This project will control the exotic macrophytes, with the goal of restoring native SAV benefiting native fish and wildlife, and the entire ecosystem. Consequently, this project is expected to have a beneficial impact to the HAPC for summer flounder.

6. Activity Details

Select all that apply	Project Type/Category
	Agriculture
	Aquaculture
	Bank/shoreline stabilization (e.g., living shoreline, groin, breakwater, bulkhead)
	Beach renourishment
	Dredging/excavation
	Energy development/use e.g., hydropower, oil and gas, pipeline, transmission line, tidal or wave power, wind
	Fill
	Forestry
	Infrastructure/transportation (e.g., culvert construction, bridge repair, highway, port, railroad)
	Intake/outfall
	Military (e.g., acoustic testing, training exercises)
	Mining (e.g., sand, gravel)
	Overboard dredged material placement
	Piers, ramps, floats, and other structures
	Restoration or fish/wildlife enhancement (e.g., fish passage, wetlands, mitigation bank/ILF creation)
	Survey (e.g., geotechnical, geophysical, habitat, fisheries)
	Water quality (e.g., storm water drainage, NPDES, TMDL, wastewater, sediment remediation)
X	Other: aquatic herbicide application

7. Effects Evaluation

Potential Stressors

Select all that apply	Potential Stressors Caused by the Activity
	Underwater noise
X	Water quality/turbidity/contaminant release
	Vessel traffic/barge grounding
	Impingement/entrainment
	Prevent fish passage/spawning
X	Benthic community disturbance
X	Impacts to prey species

Select all that apply		Potential Stressors Caused by the Activity
Temp	Perm	
		Water depth change
		Tidal flow change
		Fill
X		Habitat type conversion
		Other:

Project Impacts and Mitigation

Project Impacts to EFH by Species

EFH for **Atlantic butterfish** eggs, larvae, and adults is designated at the project area. In Long Island Sound, butterfish spawn from June to late August with a peak in late July. The principal spawning areas are in the eastern part of the sound. They have a seasonal inshore-offshore migration dependent on water temperature. In summer, they move north and inshore to feed on planktonic fish, squid, crustaceans, and jellyfish and then move south and offshore in the winter. Eggs and larvae may occur in salinities ranging from estuarine to full strength seawater. Adults are common to abundant in the high salinity and mixing zones of estuaries within the region (NMFS 1999a). Based on this species' diet, migration pattern, and habitat characteristics, the project will have no effect to Atlantic butterfish EFH.

EFH for **Atlantic herring** juvenile, and adults is designated at the project area. Juveniles are sometimes abundant in fall while adults are abundant in Long Island Sound during the spring. In the Connecticut River, juveniles have a rare abundance only in the mixing salinity zone .Juveniles and adults are pelagic, with adults only becoming demersal during spawning. Atlantic sea herring prey on pelagic zooplankton. Atlantic

herring larvae metamorphose into early-stage juveniles in the spring within intertidal and subtidal habitats out to 985 feet. Adults and juveniles may be found in the estuarine mixing salinity zones of the Connecticut River. The river does not support adults or juveniles in tidal freshwater habitat (NMFS, 199b). Given the salinity range of Parkers Point, no impacts are anticipated as there is not a suitable salinity for juveniles.

Atlantic mackerel EFH for all life stages is designated in the project area. Atlantic mackerel spawn pelagic eggs from roughly mid-April to June. The pelagic eggs hatch into planktonic larvae 4-5 days post-fertilization. Atlantic mackerel gain the ability to swim and school after approximately 1-2 months. During the winter, Atlantic mackerel migrate to deep water offshore and eventually move back inshore in the spring. Mackerel feed on a variety of prey during their life cycles, including zooplankton, crustaceans, copepods, and small fish. They are never found in the Connecticut River, and their eggs have high mortality rates at low salinities (NMFS, 1999c). Based on the fact that Atlantic mackerel are unlikely to be found north of the Connecticut River estuary, the project will have no effect to this species' EFH.

EFH for all life stages of **Atlantic salmon** is designated in the project area. All life stages of Atlantic salmon use freshwater habitats either exclusively or at some point during their life history. The streambed is important for eggs and larvae while the juveniles and adults use the river itself. Adults prefer riffle and run habitats in shallow, freshwater streams with gravel/rocky substrates with pools or vegetated riverine areas of low velocity. Spawning adults are generally found in late October through November. During this time, eggs are deposited and buried in the substrate and hatch after about 6 months in the spring. Larvae remain in the substrate for about six weeks before emerging as Juveniles in the spring (NEFMC, 2017). No impacts are anticipated to Atlantic salmon eggs, larvae, or spawning Adults as the proposed application will no occur during these months. These life stages are not likely to be present during the proposed application in the summer, after July 4.

Juveniles begin smolting in freshwater before migration downstream into brackish water and seawater. The timing of downstream migration depends on various factors, including temperature, salinity, and physiological adaptations. Spawning adults are generally found in late October through November. Juveniles may utilize the Connecticut River, in addition to riverine (e.g. the Connecticut River), lacustrine, and estuarine habitats (NEFMC, 2017). The proposed project will result in temporary impacts to SAV and habitat conversion that may affect juvenile and adult life stages EFH habitat. Temporary habitat conversion may occur from the reduction of hydrilla and potential non-target impacts. Loss of SAV will be limited to the proposed treatment site. Although there may be impacts short term impacts to habitat availability to native fish following the hydrilla treatment, the goal is to reduce hydrilla presence, abundance and density to a level that allows native SAV to reestablish providing higher quality habitat. Therefore, the project is expected to have long-term beneficial impacts to EFH for Atlantic salmon.

Black sea bass EFH is designated at the project area for juveniles. In Southern New England, both juvenile and adult black sea bass migrate offshore to over-wintering areas at depths greater than 250 feet when waters begin to cool in the fall. Within estuaries, black sea bass juveniles use shallow shellfish, sponge, amphipod (e.g., *Ampelisca abdita*), seagrass, and cobble habitats as well as manmade structures such as wharves, pilings, and wrecks. Juveniles are generalist carnivores that feed on a variety of infaunal and epifaunal invertebrates, small fish, and squid (NMFS, 1999d). As black sea bass are unlikely to occur north of the Connecticut River estuary, no adverse effects to EFH is expected as a result of this project.

Juvenile and adult EFH for **bluefish** is designated for the project area. Juveniles are abundant in the Connecticut River estuary. These life stages are generally restricted to estuarine and mixing salinity zones, and are not known to move into freshwater. Spawning occurs in the spring and summer when adults and juveniles are present inshore. Bluefish feed primarily on small prey fish but may forage for benthic prey on oyster bar and reef habitats when prey availability is limited (NMFS, 1999e). The project is located in areas that do not support bluefish and the action will not impact any prey species.

EFH for **little skate** and **winter skate** juveniles and adults is designated for the project area. Little skate and winter skate are sympatric species with similar habitat requirements. Their EFH occurs on sand, gravel, and mud substrates. Both species are benthic feeders, with crustaceans and polychaetes being important food sources. Both winter skate and little skate move inshore and offshore seasonally, moving into shallower inshore waters during spring and then into deeper waters in winter from roughly November to April (NMFS, 2003a; NMFS, 2003b). The project is located in areas that do not support little skate and winter skate; therefore, the action will not impact EFH.

Longfin inshore squid eggs, juvenile, and adult EFH is designated at the project area. Longfin inshore squid migrate offshore during late autumn and overwinter in deeper, warmer waters along the edge of the continental shelf. They return inshore during the spring and early summer to feed on planktonic organisms, crustaceans, and small fish. Most spawning occurs in May and hatching occurs in July. Egg masses are commonly found attached to rocks and small boulders on sandy/muddy bottom and on submerged aquatic vegetation (NMFS, 1999f). Longfin inshore squid are not known to use the Connecticut River for habitat so there will be no impact to longfin inshore squid EFH.

Pollock EFH for juveniles, and adults is designated at the project area. Larvae are pelagic, most are found at depths of 164 to 295 feet (50-90 m). EFH for juveniles includes rocky bottom habitats with attached macroalgae (NEFMC, 2017). The juveniles have been reported over a wide variety of substrates, including sand, mud, or rocky bottom, and vegetation. Most commonly juveniles are found at depths of 82 to 246 feet (25-75 m) although they can be found from the surface to 410 feet deep (125 m). Adults show little preference for bottom type, and they inhabit a wide range of depths from 115 to 1197 feet (35-365 m) (NMFS, 1999g). EFH for adults include the tops and edges of

offshore banks and shores with mixed rocky substrate, often with attached macro algae. The EFH designation for Long Island Sound includes the seawater salinity zone of Long Island Sound. Pollock are not known to travel up the Connecticut River; therefore, this project is not expected to have impacts on pollock EFH (NEFMC, 2017).

EFH for all life stages of **red hake** is designated in the project area. Spawning of pelagic eggs occurs in the summer along the continental shelf and is concentrated off southern New England. Red hake larvae have been collected on the middle to outer continental shelf of the Middle Atlantic Bight, but few larvae were collected in the Gulf of Maine. North of Cape Cod, where waters are cooler, juveniles can remain inshore throughout the summer. Both juveniles and adults have primarily been found over muddy substrate (NMFS, 1999h). Juvenile EFH includes intertidal and sub-tidal benthic habitats on mud and sand substrates. Adult EFH includes inshore estuarine and embayments, in depressions in softer sediments or in shell beds. In the Connecticut River, Red hake are present in mixing salinity zones (NEFMC, 2017). The proposed project will not occur within mixing salinity zones, where red hake may be present, therefore, no impacts are anticipated to red hake EFH.

Scup EFH for all life stages is designated at the project area. Scup eggs larvae are found from May through August in southern New England, with EFH habitat in the mixing and seawater salinity zones of estuaries. Larvae occupy a similar habitat and can be found from May through September. Juvenile and adult scup migrate from estuaries to the edge of the continental shelf as water temperatures decline in the winter and return from the edge of the continental shelf to inshore areas as water temperatures rise in the spring. Inshore, juvenile summer habitat includes intertidal and subtidal habitats, over sand, silty-sand, shell, mud, mussel beds and eelgrass (*Zostera marina*) as well as rocky ledges, wrecks, artificial reefs, and mussel beds (NMFS, 1999i). Adult EFH inshore habitat includes the mixing and seawater salinity zones of estuaries (MAFMC, 1998). Due to the project location north of the Connecticut River estuary, no adverse impacts to scup EFH are expected as a result of this project.

EFH for **summer flounder** juveniles and adults is designated at the project area. Summer flounder inhabit shallow coastal and estuarine waters between May and October, moving offshore to the outer continental shelf during winter months. It is believed that spawning occurs in offshore waters of southern New England, with peak offshore spawning occurring during October and November. Summer flounder juveniles and adults are benthic feeders, with polychaetes, crustaceans, and bivalves being important food sources (NMFS, 1999j). Inshore habitat for juveniles and adults is restricted to mixing and seawater salinity zones (MAFMC, 1998). Due to the location of the project being upstream of the Connecticut River estuary’s salt wedge, no adverse effects to adult summer flounder spawning EFH are expected.

EFH for all life stages of **windowpane flounder** is designated for the project area. Egg and larval EFH is described as pelagic habitats on the continental shelf from Georges Bank to Cape Hatteras and in mixed and high salinity zones of coastal bays and estuaries throughout the region. Juvenile and adult EFH occurs in intertidal and sub-

tidal muddy or sandy benthic habitats in estuarine, coastal marine, and continental shelf waters from the Gulf of Maine south (NMFS, 1999k). All life stages are found in the mixing salinity zone of the Connecticut River (MAFMC, 1998). Windowpane flounder habitat is not expected north of the Connecticut River estuary. Therefore, no adverse impacts on all life stages of windowpane flounder EFH would be anticipated as a result of this project.

Winter flounder EFH for all life stages is designated at all project locations. Winter flounder are found in a variety of habitats from brackish riverine waters to saline coastal environments and have been documented from depths of less than 3 feet in coastal embayments, up to approximately 90 feet in Cape Cod Bay and Stellwagen Bank and up to 270 feet on George's Bank. Except for the Georges Bank population, adult winter flounder migrate inshore in the fall and early winter. Spawning occurs in late winter and early spring with peak spawning between February and March in Massachusetts Bay. The diet of juvenile and adult winter flounder consists of benthic fauna; mostly polychaetes and amphipods (NMFS, 1999l). Winter flounder are not expected to inhabit areas north of the Connecticut River estuary. Therefore, no impacts on all life stages of the winter flounder EFH would be anticipated as a result of this project.

Avoidance, Minimization, and Mitigation

Specific measures taken to avoid and minimize impacts to EFH:

The project area does not contain viable EFH for the identified species because it is located upstream of the Connecticut River estuary. Additionally, the proposed action will occur after July 4th to avoid potential impacts to diadromous fish.

Is compensatory mitigation proposed?

No compensatory mitigation is proposed as no significant adverse effects are anticipated to any species' EFH.

Compensatory mitigation details:

N/A

8. Effects of Climate Change

Could species or habitats be adversely affected by the proposed action due to projected changes in the climate?

No adverse effects to species or habitat are expected as a result of the project and projected climate change.

Is the expected lifespan of the action greater than 10 years?

No, however, use of aquatic herbicides for control of the invasive hydrilla are likely to continue in other parts of the Connecticut River. The project is expected to reduce hydrilla presence, abundance and density to allow for native SAV to replace it.

Is climate change currently affecting vulnerable species or habitats, and would the effects of a proposed action be amplified by climate change?

Vulnerable species and habitats are currently affected by climate change, but the effects of the proposed action are not likely to be amplified by climate change.

Do the results of the assessment indicate the effects of the action on habitats and species will be amplified by climate change?

No.

Can adaptive management strategies (AMS) be integrated into the action to avoid or minimize adverse effects of the proposed action as a result of climate?

Due to negligible impacts to species EFH, the effects of the proposed action are not likely to be amplified by climate change; thus, adaptive management strategies would not help avoid or minimize adverse impacts of the proposed action.

9. Federal Agency Determination

Federal Action Agency's EFH determination	
	There is no adverse effect on EFH or EFH is not designated at the project site. EFH Consultation is not required. This is a FWCA only request.
X	The adverse effect on EFH is not substantial. This means that the adverse effects are no more than minimal, temporary, or can be alleviated with minor project modifications or conservation recommendations. This is a request for an abbreviated EFH consultation.
	The adverse effect on EFH is substantial. This is a request for an expanded EFH consultation.

10. Fish and Wildlife Coordination Act

Fish and Wildlife Coordination Act Resources

Species known to occur at site	**Habitat impact type**
alewife	Temporary impacts to SAV.
American eel	Temporary impacts to SAV.
American shad	Temporary impacts to SAV.
Atlantic menhaden	N/A
blue crab	N/A
blue mussel	N/A
blueback herring	Temporary impacts to SAV.
Eastern oyster	N/A
horseshoe crab	N/A
quahog	N/A
soft-shell clams	N/A
striped bass	Temporary impacts to SAV.
other species:	

11. References

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National Marine Fisheries Service (NMFS). 2003a. Essential Fish Habitat Source Document: Little Skate, Leucoraja erinacea, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 2003b. Essential Fish Habitat Source Document: Winter Skate, Leucoraja ocellata, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999a. Essential Fish Habitat Source Document: Atlantic Butterfish, *Peprilus triacanthus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999b. Essential Fish Habitat Source Document: Atlantic Herring, *Clupea harengus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999c. Essential Fish Habitat Source Document: Atlantic Mackerel, *Scomber scobrus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999d. Essential Fish Habitat Source Document: Black Sea Bass, *Centropristis striata*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999e. Essential Fish Habitat Source Document: Bluefish, *Pomatomus saltatrix*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999f. Essential Fish Habitat Source Document: Longfin Inshore Squid, *Loligo pealeii*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999g. Essential Fish Habitat Source Document: Pollock, *Pollachius virens*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999h. Essential Fish Habitat Source Document: Red Hake, *Urophycis chuss*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999i. Essential Fish Habitat Source Document: Scup, *Stenotomus chrysops*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999j. Essential Fish Habitat Source Document: Summer Flounder, *Paralichthys dentatus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999k. Essential Fish Habitat Source Document: Windowpane Flounder, *Scophthalmus aquosus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999l. Essential Fish Habitat Source Document: Winter Flounder, *Psuedopleuronectes americanus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

New England Fishery Management Council (NEFMC). 2017. Final Omnibus Essential Fish Habitat Amendment 2, Volume 2: EFH and HAPC Designation Alternatives and Environmental Impacts. Prepared by the NEFMC in cooperation with the National Marine Fisheries Service.

U.S. Geological Survey (USGS) (2025). National Water Dashboard. Retrieved April 7, 2025 from https://dashboard.waterdata.usgs.gov/app/nwd/en/.

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Table of Contents

1. General Project Information

Date Prepared: May 15, 2025

Project/ Application Number: N/A

Project Name: Connecticut River Hydrilla Research and Demonstration Project

Project Applicant: U.S. Army Corps of Engineers, New England District

Federal Action Agency: U.S. Army Corps of Engineers, New England District

Fast-41: No

Action Agency Contact Name: Kelsie Dakessian

Contact Phone: 978-318-8685

Contact Email: Kelsie.Dakessian@usace.army.mil

Address: U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, Massachusetts 01742-2751

2. Project Description

Location (WGS 84): 41.5624, -72.6244

Body of Water (HUC-12): Mill Creek-Connecticut River (010802050702)

Project Purpose:

The purpose of the proposed project is to provide a field-scale demonstration of technology developed under the APCRP, which is evaluating the effectiveness of aquatic herbicides to manage monoecious hydrilla in high water exchange environments, such as the tidal, riverine environment of the lower Connecticut River. The field demonstration will evaluate herbicide efficacy, optimal timing of treatment, non-target impacts, and herbicide concentration-exposure time requirements for effective control of hydrilla. The proposed project will also provide interim control of hydrilla at Portland Boat Works for the duration of the research and demonstration project to demonstrate and understand effective management practices.

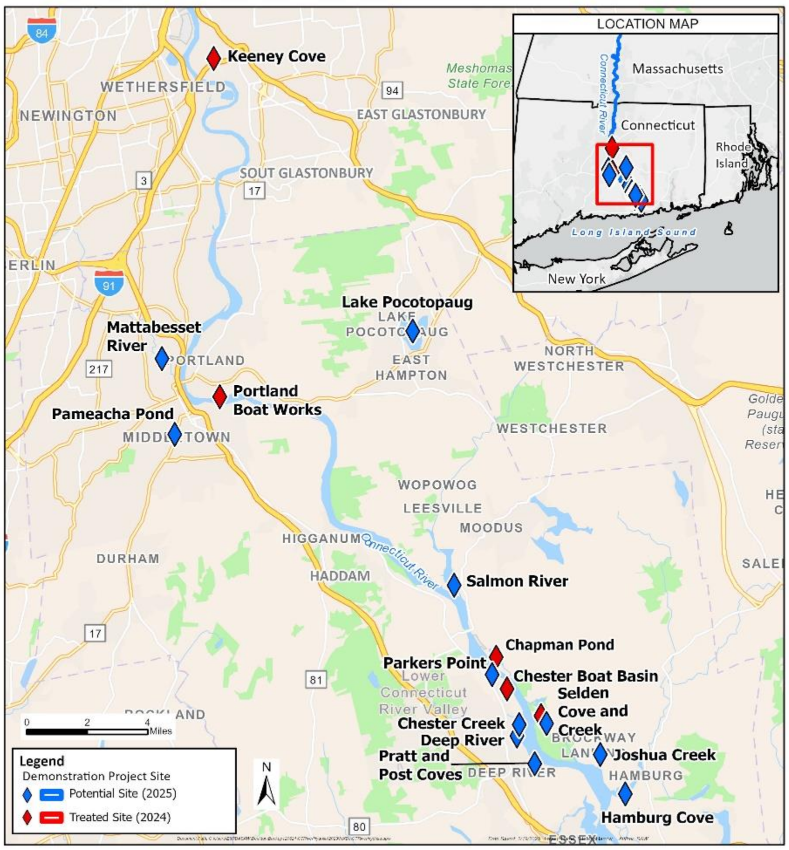


Figure 1. Proposed Treatment Sites

Project Description:

The Connecticut River Hydrilla Control Research and Demonstration Project currently includes five treatment sites, with a field-scale demonstration of chemical technology to evaluate the effectiveness of an aquatic herbicide to manage hydrilla, including sites in high water exchange environments (e.g., tidal, riverine environment). The proposed action is an expansion of the existing Connecticut River Hydrilla Control Research and Demonstration Project by adding 12 additional treatment sites within the Lower Connecticut watershed: (1) Chester Creek in Chester; (2) Deep River in Deep River; (3) Hamburg Cove in Lyme; (4) Joshua Creek in Lyme; (5) Mattabesset River in Middletown; (6) Parker's Point in Chester; (7) an expanded Portland Boat Works in Portland; (8) Post and Pratt Coves in Deep River; (9) Salmon River in East Haddam; (10) Selden Creek in Lyme; (11) Lake Pocotopaug in East Hampton; and (12) Pameacha Pond in Middletown.

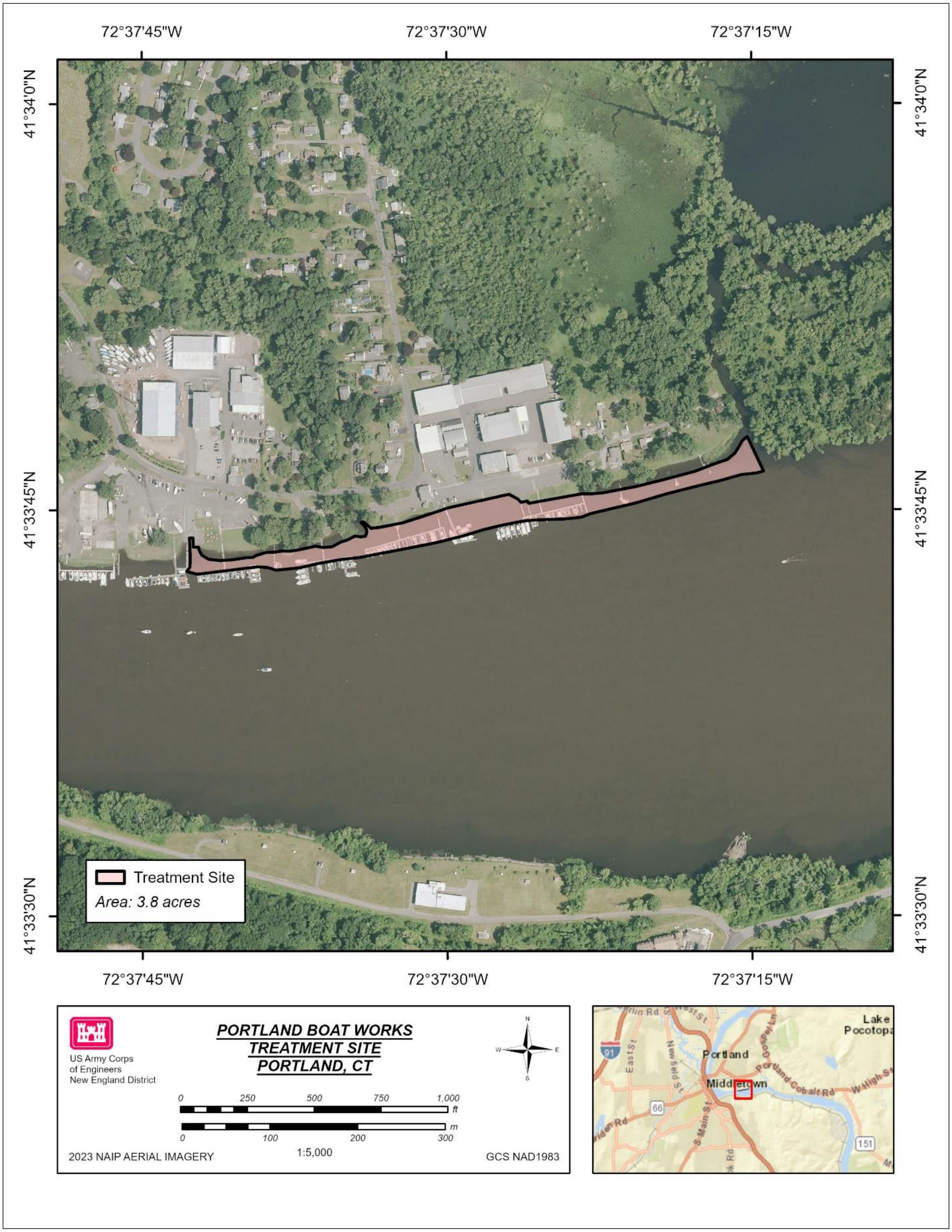
The action proposes the use of diquat dibromide, dipotassium salt of endothall, and florpyrauxifen-benzyl or a combination of these chemicals to control hydrilla within Portland Boat Works. Herbicide will be evenly distributed across the entire treatment areas using the industry-standard boat-based subsurface injection application methods consisting of a calibrate pump and trailing hoses. Herbicide will be applied by licensed applicators and in accordance with product labels.

The proposed applications will occur in the summer after July 4th 2025, with any subsequent treatments occurring after July 4th of future years. This timing was selected to avoid impacts to diadromous fish and northern pike that may spawn in submerged aquatic vegetation at sites in or adjacent to the Connecticut River. Pre- and post-application monitoring will occur at the treatment sites to understand control efficacy for hydrilla and impacts to non-target species to inform the management of other hydrilla infestations. Post-application monitoring may occur for up to three years.

Table 1. Proposed Herbicide Use Rates

Potential Herbicide	**Maximum Application Rate**
Diquat	370 ppb
Dipotassium salt of endothall	5 ppm
Florpyrauxifen-benzyl	48 ppb

Portland Boat Works was treated as part of the 2024 field demonstration. Coordination occurred with NMFS, and the treatment was conducted in accordance with EFH Conservation Recommendations were received on March 3, 2024. The proposed action for 2025 and potential future treatments includes an expanded treatment site. The original treatment site had a treatment area of 0.6 acres with a mean depth of 0.9 to 3.2 feet MLLW. The proposed treatment site has an area of 2.8 acres with an estimated mean depth of 5 feet MHHW.


72°37'45"W
72°37'30"W
72°37'15"W
41°34'0"N
41°33'45"N
41°33'30"N
Treatment Site
Area: 3.8 acres
US Army Corps
of Engineers
New England District
PORTLAND BOAT WORKS
TREATMENT SITE
PORTLAND, CT
0 250 500 750 1,000 ft
0 100 200 300 m
2023 NAIP AERIAL IMAGERY
1:5,000
GCS NAD1983
Portland
Middletown

Site Description

Is the project in designated EFH?	Yes
Is the project in designated HAPC?	Yes
Does the project contain any Special Aquatic Sites?	No
Is this coordination under FWCA only?	No

Total area of impact to EFH:

The total area of herbicide treatment is approximately 3.8 acres. Since it is not a closed system with tidal influence, herbicide is expected to flow to areas outside the treatment polygon.

Total area of impact to HAPC:

The project area is approximately 3.8 acres but impacts may extend outside of the treatment area based on site conditions at the time of treatment.

Current range of water depths:

According to the existing USACE bathymetric data, NOAA nautical charts, and local fishing maps the water depth is approximately 5 feet deep at MHHW.

Salinity range:

Portland Boat Works is located upstream of the northern extent of the Connecticut River estuary's salt wedge; therefore, it is freshwater and has relatively low salinity.

Water temperature range:

Temperature data was sourced from the U.S. Geological Survey's Water Data portal (USGS, 2025).

Surface water temperature in the Connecticut River at Middle Haddam, CT, approximately 5 river miles downstream of Portland Boat Works, ranged from approximately 50°F in April 2024 to 72°F in September in 2024, and is likely a good estimate of the range of surface water temperatures at Portland Boat Works .

3. Habitat Types

Habitat Location	Habitat Type	Total Impacts	Temporary Impacts	Permanent Impacts	Restored to pre-existing conditions?
Freshwater	Submerged aquatic vegetation	3.8 acres	3.8 acres	3.8 acres	No

Submerged Aquatic Vegetation (SAV)

SAV Present? Yes

Details:

Vegetation surveys were conducted for the previous treatment area. SAV that is present includes hydrilla (*Hydrilla verticillata*), water chestnut (*Trapa natans*), and intermittent native SAV (Figure 3). A vegetation survey will be conducted prior to treatment of the expanded area included in the proposed action.

Sediment Characteristics

General Description of the Sediment Composition:

Based on site observations, sediment is composed of silt.

Diadromous Fish (Migratory or Spawning Habitat)

Diadromous Fish Habitat?: Yes

4. EFH and HAPC Designations

The following table provides a summary of Essential Fish Habitat Designations in Portland Boat Works (denoted with an "X") (NMFS, 2025).

Species	Eggs	Larvae	Juveniles	Adults
Atlantic Butterfish (*Peprilus triacanthus*)	X	X	X	X
Atlantic Herring (*Clupea harengus*)			X	X
Atlantic mackerel (*Scomber scombrus*)	X	X	X	X
Atlantic salmon (*Salmo salar*)	X	X	X	X

Black Sea Bass (*Centropristis striata*)			X	
Bluefish (*Pomatomus saltatrix*)			X	X
Little Skate (*Leucoraja erinacea*)			X	X
Longfin inshore squid (*Doryteuthis pealeii*)	X		X	X
Pollock (*Pollachius virens*)			X	X
Red Hake (*Urophycis chuss*)	X	X	X	X
Scup (*Stenotomus chrysops*)	X	X	X	X
Summer Flounder (*Paralichthys dentatus*)			X	X
Windowpane Flounder (*Scophthalmus aquosus*)	X	X	X	X
Winter Flounder (*Psuedopleuronectes americanus*)	X	X	X	X
Winter Skate (*Leucoraja ocellata*)			X	X

5. Habitat Areas of Particular Concern (HAPCs)

Select all that apply	HAPC Designation	Select all that apply	HAPC Designation
X	Summer flounder: SAV		Alvin & Atlantis Canyons
	Sandbar shark		Baltimore Canyon
	Sand Tiger Shark (Delaware Bay)		Bear Seamount
	Sand Tiger Shark (Plymouth-Duxbury-Kingston Bay)		Heezen Canyon
	Inshore 20m Juvenile Cod		Hudson Canyon
	Great South Channel Juvenile Cod		Hydrographer Canyon
	Northern Edge Juvenile Cod		Jeffreys & Stellwagen
	Lydonia Canyon		Lydonia, Gilbert & Oceanographer Canyons
	Norfolk Canyon (Mid-Atlantic)		Norfolk Canyon (New England)
	Oceanographer Canyon		Retriever Seamount
	Veatch Canyon (Mid-Atlantic)		Toms, Middle Toms & Hendrickson Canyons
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Portland Boat Works falls within the regional HAPC for summer flounder. The summer flounder HAPC consists of areas with SAV. The specific designation of summer flounder HAPC is:

> All native species of macroalgae, seagrasses, and freshwater and tidal macrophytes in any size bed, as well as loose aggregations, within adult and juvenile summer flounder EFH is HAPC. If native species of SAV are eliminated then exotic species should be protected because of functional value, however, all efforts should be made to restore native species (MAFMC, 1998).

Portland Boat Works primarily contains exotic freshwater and tidal macrophytes. This project will control the exotic macrophytes, with the goal of restoring native SAV benefitting native fish and wildlife, and the entire ecosystem. Consequently, this project is expected to have a positive impact to the HAPC for summer flounder.

6. Activity Details

Select all that apply	Project Type/Category
	Agriculture
	Aquaculture
	Bank/shoreline stabilization (e.g., living shoreline, groin, breakwater, bulkhead)
	Beach renourishment
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	Fill
	Forestry
	Infrastructure/transportation (e.g., culvert construction, bridge repair, highway, port, railroad)
	Intake/outfall
	Military (e.g., acoustic testing, training exercises)
	Mining (e.g., sand, gravel)
	Overboard dredged material placement
	Piers, ramps, floats, and other structures
	Restoration or fish/wildlife enhancement (e.g., fish passage, wetlands, mitigation bank/ILF creation)
	Survey (e.g., geotechnical, geophysical, habitat, fisheries)
	Water quality (e.g., storm water drainage, NPDES, TMDL, wastewater, sediment remediation)
X	Other: aquatic herbicide application

7. Effects Evaluation

Potential Stressors

Select all that apply	Potential Stressors Caused by the Activity
	Underwater noise
X	Water quality/turbidity/ contaminant release
	Vessel traffic/barge grounding
	Impingement/entrainment
	Prevent fish passage/spawning
X	Benthic community disturbance
X	Impacts to prey species

Select all that apply		Potential Stressors Caused by the Activity
Temp	Perm	
		Water depth change
		Tidal flow change
		Fill
X		Habitat type conversion
		Other:

Project Impacts and Mitigation

Project Impacts to EFH by Species

EFH for **Atlantic butterfish** eggs, larvae, and adults is designated at the project area. In Long Island Sound, butterfish spawn from June to late August with a peak in late July. The principal spawning areas are in the eastern part of the sound. They have a seasonal inshore-offshore migration dependent on water temperature. In summer, they move north and inshore to feed on planktonic fish, squid, crustaceans, and jellyfish and then move south and offshore in the winter. Eggs and larvae may occur in salinities ranging from estuarine to full strength seawater. Adults are common to abundant in the high salinity and mixing zones of estuaries within the region (NMFS 1999a). Based on this species' diet, migration pattern, and habitat characteristics, the project will have no effect to Atlantic butterfish EFH.

EFH for **Atlantic herring** juvenile, and adults is designated at the project area. Juveniles are sometimes abundant in fall while adults are abundant in Long Island Sound during the spring. In the Connecticut River, juveniles have a rare abundance only in the mixing salinity zone .Juveniles and adults are pelagic, with adults only becoming demersal during spawning. Atlantic sea herring prey on pelagic zooplankton. Atlantic

herring larvae metamorphose into early-stage juveniles in the spring within intertidal and subtidal habitats out to 985 feet. Adults and juveniles may be found in the estuarine mixing salinity zones of the Connecticut River. The river does not support adults or juveniles in tidal freshwater habitat (NMFS, 199b). Given the salinity range of Portland Boat Works, no impacts are anticipated as there is not a suitable salinity for juveniles.

Atlantic mackerel EFH for all life stages is designated in the project area. Atlantic mackerel spawn pelagic eggs from roughly mid-April to June. The pelagic eggs hatch into planktonic larvae 4-5 days post-fertilization. Atlantic mackerel gain the ability to swim and school after approximately 1-2 months. During the winter, Atlantic mackerel migrate to deep water offshore and eventually move back inshore in the spring. Mackerel feed on a variety of prey during their life cycles, including zooplankton, crustaceans, copepods, and small fish. They are never found in the Connecticut River, and their eggs have high mortality rates at low salinities (NMFS, 1999c). Based on the fact that Atlantic mackerel are unlikely to be found north of the Connecticut River estuary, the project will have no effect to this species' EFH.

EFH for all life stages of **Atlantic salmon** is designated in the project area. All life stages of Atlantic salmon use freshwater habitats either exclusively or at some point during their life history. The streambed is important for eggs and larvae while the juveniles and adults use the river itself. Adults prefer riffle and run habitats in shallow, freshwater streams with gravel/rocky substrates with pools or vegetated riverine areas of low velocity. Spawning adults are generally found in late October through November. During this time, eggs are deposited and buried in the substrate and hatch after about 6 months in the spring. Larvae remain in the substrate for about six weeks before emerging as Juveniles in the spring (NEFMC, 2017). No impacts are anticipated to Atlantic salmon eggs, larvae, or spawning Adults as the proposed application will no occur during these months. These life stages are not likely to be present during the proposed application in the summer, after July 4.

Juveniles begin smolting in freshwater before migration downstream into brackish water and seawater. The timing of downstream migration depends on various factors, including temperature, salinity, and physiological adaptations. Spawning adults are generally found in late October through November. Juveniles may utilize the Connecticut River, in addition to riverine (e.g. the Connecticut River), lacustrine, and estuarine habitats (NEFMC, 2017). The proposed project will result in temporary impacts to SAV and habitat conversion that may affect juvenile and adult life stages EFH habitat. Temporary habitat conversion may occur from the reduction of hydrilla and potential non-target impacts. Loss of SAV will be limited to the proposed treatment site. Although there may be impacts short term impacts to habitat availability to native fish following the hydrilla treatment, the goal is to reduce hydrilla presence, abundance and density to a level that allows native SAV to reestablish providing higher quality habitat. Therefore, the project is expected to have long-term beneficial impacts to EFH for Atlantic salmon.

Black sea bass EFH is designated at the project area for juveniles. In Southern New England, both juvenile and adult black sea bass migrate offshore to over-wintering areas at depths greater than 250 feet when waters begin to cool in the fall. Within estuaries, black sea bass juveniles use shallow shellfish, sponge, amphipod (e.g., *Ampelisca abdita*), seagrass, and cobble habitats as well as manmade structures such as wharves, pilings, and wrecks. Juveniles are generalist carnivores that feed on a variety of infaunal and epifaunal invertebrates, small fish, and squid (NMFS, 1999d). Because black sea bass are unlikely to occur north of the Connecticut River estuary, no adverse effects to EFH is expected as a result of this project.

Juvenile and adult EFH for **bluefish** is designated for the project area. Juveniles are abundant in the Connecticut River estuary. These life stages are generally restricted to estuarine and mixing salinity zones, and are not known to move into freshwater. Spawning occurs in the spring and summer when adults and juveniles are present inshore. Bluefish feed primarily on small prey fish but may forage for benthic prey on oyster bar and reef habitats when prey availability is limited (NMFS, 1999e). The project is located in areas that do not support bluefish and the action will not impact any prey species.

EFH for **little skate** and **winter skate** juveniles and adults is designated for the project area. Little skate and winter skate are sympatric species with similar habitat requirements. Their EFH occurs on sand, gravel, and mud substrates. Both species are benthic feeders, with crustaceans and polychaetes being important food sources. Both winter skate and little skate move inshore and offshore seasonally, moving into shallower inshore waters during spring and then into deeper waters in winter from roughly November to April (NMFS, 2003a; NMFS, 2003b). The project is located in areas that do not support little skate and winter skate; therefore, the action will not impact EFH.

Longfin inshore squid eggs, juvenile, and adult EFH is designated at the project area. Longfin inshore squid migrate offshore during late autumn and overwinter in deeper, warmer waters along the edge of the continental shelf. They return inshore during the spring and early summer to feed on planktonic organisms, crustaceans, and small fish. Most spawning occurs in May and hatching occurs in July. Egg masses are commonly found attached to rocks and small boulders on sandy/muddy bottom and on submerged aquatic vegetation (NMFS, 1999f). Longfin inshore squid are not known to use the Connecticut River for habitat so there will be no impact to longfin inshore squid EFH.

Pollock EFH for juveniles, and adults is designated at the project area. Larvae are pelagic, most are found at depths of 164 to 295 feet (50-90 m). EFH for juveniles includes rocky bottom habitats with attached macroalgae (NEFMC, 2017). The juveniles have been reported over a wide variety of substrates, including sand, mud, or rocky bottom, and vegetation. Most commonly juveniles are found at depths of 82 to 246 feet (25-75 m) although they can be found from the surface to 410 feet deep (125 m). Adults show little preference for bottom type, and they inhabit a wide range of depths from 115 to 1197 feet (35-365 m) (NMFS, 1999g). EFH for adults include the tops and edges of

offshore banks and shores with mixed rocky substrate, often with attached macro algae. The EFH designation for Long Island Sound includes the seawater salinity zone of Long Island Sound. Pollock are not known to travel up the Connecticut River; therefore, this project is not expected to have impacts on pollock EFH (NEFMC, 2017).

EFH for all life stages of **red hake** is designated in the project area. Spawning of pelagic eggs occurs in the summer along the continental shelf and is concentrated off southern New England. Red hake larvae have been collected on the middle to outer continental shelf of the Middle Atlantic Bight, but few larvae were collected in the Gulf of Maine. North of Cape Cod, where waters are cooler, juveniles can remain inshore throughout the summer. Both juveniles and adults have primarily been found over muddy substrate (NMFS, 1999h). Juvenile EFH includes intertidal and sub-tidal benthic habitats on mud and sand substrates. Adult EFH includes inshore estuarine and embayments, in depressions in softer sediments or in shell beds. In the Connecticut River, Red hake are present in mixing salinity zones (NEFMC, 2017). The proposed project will not occur within mixing salinity zones, where red hake may be present, therefore, no impacts are anticipated to red hake EFH.

Scup EFH for all life stages is designated at the project area. Scup eggs larvae are found from May through August in southern New England, with EFH habitat in the mixing and seawater salinity zones of estuaries. Larvae occupy a similar habitat and can be found from May through September. Juvenile and adult scup migrate from estuaries to the edge of the continental shelf as water temperatures decline in the winter and return from the edge of the continental shelf to inshore areas as water temperatures rise in the spring. Inshore, juvenile summer habitat includes intertidal and subtidal habitats, over sand, silty-sand, shell, mud, mussel beds and eelgrass (*Zostera marina*) as well as rocky ledges, wrecks, artificial reefs, and mussel beds (NMFS, 1999i). Adult EFH inshore habitat includes the mixing and seawater salinity zones of estuaries (MAFMC, 1998). Due to the project location north of the Connecticut River estuary, no adverse impacts to scup EFH are expected as a result of this project.

EFH for **summer flounder** juveniles and adults are designated at the project area. Summer flounder inhabit shallow coastal and estuarine waters between May and October, moving offshore to the outer continental shelf during winter months. It is believed that spawning occurs in offshore waters of southern New England, with peak offshore spawning occurring during October and November. Summer flounder juveniles and adults are benthic feeders, with polychaetes, crustaceans, and bivalves being important food sources (NMFS, 1999j). Inshore habitat for juveniles and adults is restricted to mixing and seawater salinity zones (MAFMC, 1998). Due to the location of the project being upstream of the Connecticut River estuary's salt wedge, no adverse effects to adult summer flounder spawning EFH are expected.

EFH for all life stages of **windowpane flounder** is designated for the project area. Egg and larval EFH is described as pelagic habitats on the continental shelf from Georges Bank to Cape Hatteras and in mixed and high salinity zones of coastal bays and estuaries throughout the region. Juvenile and adult EFH occurs in intertidal and sub-

tidal muddy or sandy benthic habitats in estuarine, coastal marine, and continental shelf waters from the Gulf of Maine south (NMFS, 1999k). All life stages are found in the mixing salinity zone of the Connecticut River (MAFMC, 1998). Windowpane flounder habitat is not expected north of the Connecticut River estuary. Therefore, no adverse impacts on all life stages of windowpane flounder EFH would be anticipated as a result of this project.

Winter flounder EFH for all life stages is designated at all project locations. Winter flounder are found in a variety of habitats from brackish riverine waters to saline coastal environments and have been documented from depths of less than 3 feet in coastal embayments, up to approximately 90 feet in Cape Cod Bay and Stellwagen Bank and up to 270 feet on George's Bank. Except for the Georges Bank population, adult winter flounder migrate inshore in the fall and early winter. Spawning occurs in late winter and early spring with peak spawning between February and March in Massachusetts Bay. The diet of juvenile and adult winter flounder consists of benthic fauna; mostly polychaetes and amphipods (NMFS, 1999l). Winter flounder are not expected to inhabit areas north of the Connecticut River estuary. Therefore, no impacts on all life stages of the winter flounder EFH would be anticipated as a result of this project.

Avoidance, Minimization, and Mitigation

Specific measures taken to avoid and minimize impacts to EFH:

The project area does not contain viable EFH for the identified species because it is located upstream of the Connecticut River estuary. Additionally, the proposed action will occur after July 4th to avoid potential impacts to diadromous fish.

Is compensatory mitigation proposed?

No compensatory mitigation is proposed as no significant adverse effects are anticipated to any species' EFH.

Compensatory mitigation details:

N/A

8. Effects of Climate Change

Could species or habitats be adversely affected by the proposed action due to projected changes in the climate?

No adverse effects to species or habitat are expected as a result of the project and projected climate change.

Is the expected lifespan of the action greater than 10 years?

No, however, use of aquatic herbicides for control of the invasive hydrilla are likely to continue in other parts of the Connecticut River. The project is expected to reduce hydrilla presence, abundance and density to allow for native SAV to replace it.

Is climate change currently affecting vulnerable species or habitats, and would the effects of a proposed action be amplified by climate change?

Vulnerable species and habitats are currently affected by climate change but the effects of the proposed action are not likely to be amplified by climate change.

Do the results of the assessment indicate the effects of the action on habitats and species will be amplified by climate change?

No.

Can adaptive management strategies (AMS) be integrated into the action to avoid or minimize adverse effects of the proposed action as a result of climate?

Due to negligible impacts to species EFH, the effects of the proposed action are not likely to be amplified by climate change; thus, adaptive management strategies would not help avoid or minimize adverse impacts of the proposed action.

9. Federal Agency Determination

Federal Action Agency's EFH determination	
	There is no adverse effect on EFH or EFH is not designated at the project site. EFH Consultation is not required. This is a FWCA only request.
X	The adverse effect on EFH is not substantial. This means that the adverse effects are no more than minimal, temporary, or can be alleviated with minor project modifications or conservation recommendations. This is a request for an abbreviated EFH consultation.
	The adverse effect on EFH is substantial. This is a request for an expanded EFH consultation.

10. Fish and Wildlife Coordination Act

Fish and Wildlife Coordination Act Resources

Species known to occur at site	**Habitat impact type**
alewife	Temporary impacts to SAV.
American eel	Temporary impacts to SAV.
American shad	Temporary impacts to SAV.
Atlantic menhaden	N/A
blue crab	N/A
blue mussel	N/A
blueback herring	Temporary impacts to SAV.
Eastern oyster	N/A
horseshoe crab	N/A
quahog	N/A
soft-shell clams	N/A
striped bass	Temporary impacts to SAV.
other species:	

11. References

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National Marine Fisheries Service (NMFS). 1999a. Essential Fish Habitat Source Document: Atlantic Butterfish, *Peprilus triacanthus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999b. Essential Fish Habitat Source Document: Atlantic Herring, *Clupea harengus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999c. Essential Fish Habitat Source Document: Atlantic Mackerel, *Scomber scobrus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

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National Marine Fisheries Service (NMFS). 1999e. Essential Fish Habitat Source Document: Bluefish, *Pomatomus saltatrix*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999f. Essential Fish Habitat Source Document: Longfin Inshore Squid, *Loligo pealeii*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999g. Essential Fish Habitat Source Document: Pollock, *Pollachius virens*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999h. Essential Fish Habitat Source Document: Red Hake, *Urophycis chuss*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999i. Essential Fish Habitat Source Document: Scup, *Stenotomus chrysops*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999j. Essential Fish Habitat Source Document: Summer Flounder, *Paralichthys dentatus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999k. Essential Fish Habitat Source Document: Windowpane Flounder, *Scophthalmus aquosus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999l. Essential Fish Habitat Source Document: Winter Flounder, *Psuedopleuronectes americanus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

New England Fishery Management Council (NEFMC). 2017. Final Omnibus Essential Fish Habitat Amendment 2, Volume 2: EFH and HAPC Designation Alternatives and Environmental Impacts. Prepared by the NEFMC in cooperation with the National Marine Fisheries Service.

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1. General Project Information

Date Prepared: May 15, 2025

Project/ Application Number: N/A

Project Name: Connecticut River Hydrilla Research and Demonstration Project

Project Applicant: U.S. Army Corps of Engineers, New England District

Federal Action Agency: U.S. Army Corps of Engineers, New England District

Fast-41: No

Action Agency Contact Name: Kelsie Dakessian

Contact Phone: 978-318-8685

Contact Email: Kelsie.Dakessian@usace.army.mil

Address: U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, Massachusetts 01742-2751

2. Project Description

Location (WGS 84): 41.3860, -72.7217

Body of Water (HUC-12): Deep River-Connecticut River (010802050901)

Project Purpose:

The purpose of the proposed project is to provide a field-scale demonstration of technology developed under the APCRP, which is evaluating the effectiveness of aquatic herbicides to manage monoecious hydrilla in high water exchange environments, such as the tidal, riverine environment of the lower Connecticut River. The field demonstration will evaluate herbicide efficacy, optimal timing of treatment, non-target impacts, and herbicide concentration-exposure time requirements for effective control of hydrilla. The proposed project will also provide interim control of hydrilla at Post and Pratt Coves for the duration of the research and demonstration project to demonstrate and understand effective management practices.

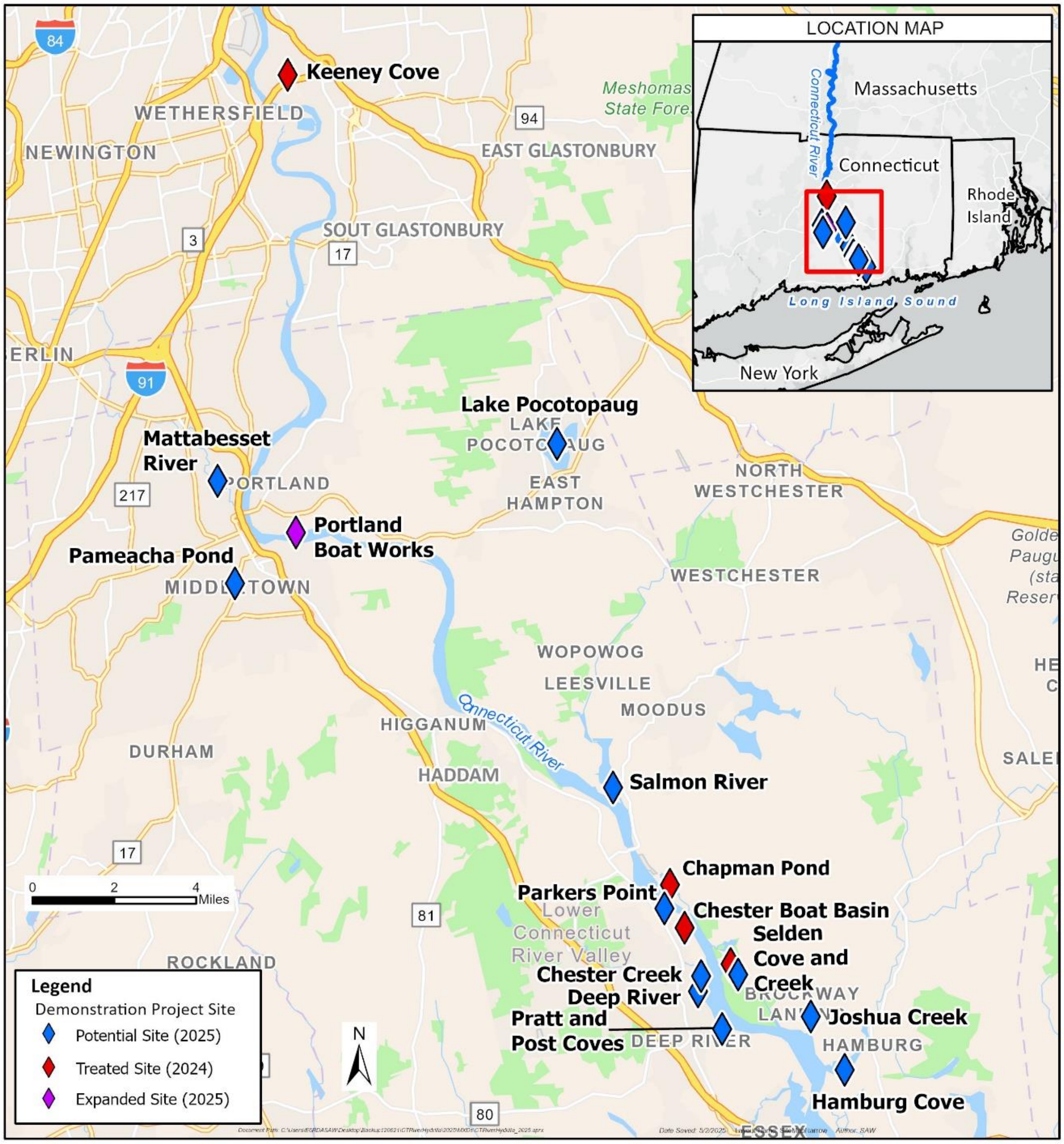

Figure 1. Proposed treatment sites

Project Description:

The Connecticut River Hydrilla Control Research and Demonstration Project currently includes five treatment sites, with a field-scale demonstration of chemical technology to evaluate the effectiveness of an aquatic herbicide to manage hydrilla, including sites in high water exchange environments (e.g., tidal, riverine environment). The proposed action is an expansion of the existing Connecticut River Hydrilla Control Research and Demonstration Project by adding 12 additional treatment sites within the Lower Connecticut watershed: (1) Chester Creek in Chester; (2) Deep River in Deep River; (3) Hamburg Cove in Lyme; (4) Joshua Creek in Lyme; (5) Mattabesset River in Middletown; (6) Parker's Point in Chester; (7) an expanded Portland Boat Works in Portland; (8) Post and Pratt Coves in Deep River; (9) Salmon River in East Haddam; (10) Selden Creek in Lyme; (11) Lake Pocotopaug in East Hampton; and (12) Pameacha Pond in Middletown.

The action proposes the use of diquat dibromide, dipotassium salt of endothall, and florpyrauxifen-benzyl or a combination of these chemicals to control hydrilla within Post and Pratt Coves. Herbicide will be evenly distributed across the entire treatment areas using the industry-standard boat-based subsurface injection application methods consisting of a calibrate pump and trailing hoses. Herbicide will be applied by licensed applicators and in accordance with product labels.

The proposed applications will occur in the summer after July 4th 2025, with any subsequent treatments occurring after July 4th of future years. This timing was selected to avoid impacts to diadromous fish and northern pike that may spawn in submerged aquatic vegetation at sites in or adjacent to the Connecticut River. Pre- and post-application monitoring will occur at the treatment sites to understand control efficacy for hydrilla and impacts to non-target species to inform the management of other hydrilla infestations. Post-application monitoring may occur for up to three years.

Table 1. Proposed herbicide use rates

Potential Herbicide	**Maximum Application Rate**
Diquat	370 ppb
Dipotassium salt of endothall	5 ppm
Florpyrauxifen-benzyl	48 ppb

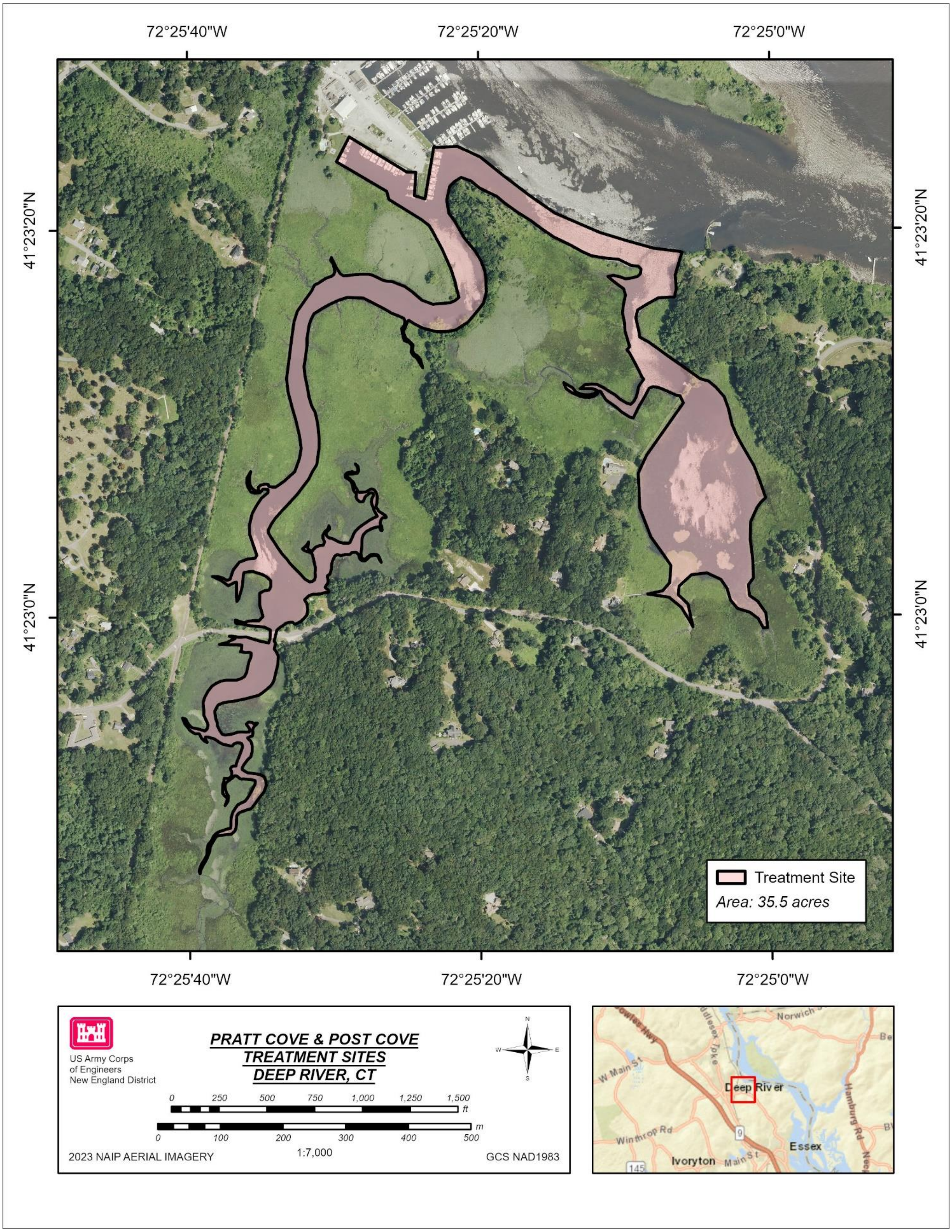

Figure 2. Proposed Treatment Site for Post and Pratt Coves in Deep River, CT

Site Description

Is the project in designated EFH?	Yes
Is the project in designated HAPC?	Yes
Does the project contain any Special Aquatic Sites?	No
Is this coordination under FWCA only?	No

Total area of impact to EFH:

The total area of herbicide treatment is approximately 35.5 acres. Since it is not a closed system with tidal influence, herbicide may flow to areas outside the treatment polygon.

Total area of impact to HAPC:

The project area is approximately 35.5 acres, but impacts may extend outside of the treatment area based on site conditions at the time of treatment.

Current range of water depths:

According to the existing USACE bathymetric data, NOAA nautical charts, and local fishing maps the water depth is approximately 6 feet deep at MHHW. Bathymetric surveys will be conducted prior to herbicide treatment to inform herbicide treatment.

Salinity range:

Post and Pratt Coves are located upstream of the northern extent of the Connecticut River estuary’s salt wedge; therefore, it is freshwater and has relatively low salinity.

Water temperature range:

Temperature data was sourced from the U.S. Geological Survey’s Water Data portal (USGS, 2025).

Surface water temperature in the Connecticut River at Essex, CT, approximately 4 river miles downstream of Post and Pratt Coves, ranged from approximately 40°F in April 2024 to 72°F in September in 2024, and is likely a good estimate of the range of surface water temperatures within Post and Pratt coves.

3. Habitat Types

Habitat Location	**Habitat Type**	**Total Impacts**	**Temporary Impacts**	**Permanent Impacts**	**Restored to pre-existing conditions?**
Freshwater	Submerged aquatic vegetation	35.5 acres	35.5 acres	35.5 acres	No

Submerged Aquatic Vegetation (SAV)

SAV Present? Yes

Details:

The proposed project will control hydrilla (*Hydrilla verticillata)* within Post and Pratt Coves. Vegetation surveys will be conducted prior to treatment to determine species within the treatment area. It is anticipated that SAV present will include species common to the Connecticut River, such as: waterweed (*Elodea canadensis*), coontail (*Ceratophyllum demersum*), American eelgrass (*Vallisneria americana*), and pondweed (*Potamogeton spp.)*.

Sediment Characteristics

General Description of the Sediment Composition:

The sediments at Post and Pratt Coves are composed of silt.

Diadromous Fish (Migratory or Spawning Habitat)

Diadromous Fish Habitat?: Yes

4. EFH and HAPC Designations

The following table provides a summary of Essential Fish Habitat Designations in Post and Pratt Coves (denoted with an "X") (NMFS, 2025).

Species	**Eggs**	**Larvae**	**Juveniles**	**Adults**
Atlantic Butterfish (*Peprilus triacanthus*)	X	X		X
Atlantic Herring (*Clupea harengus*)			X	X
Atlantic mackerel (*Scomber scombrus*)	X	X	X	X
Black Sea Bass (*Centropristis striata*)			X	

Bluefish (*Pomatomus saltatrix*)			X	X
Little Skate (*Leucoraja erinacea*)			X	X
Longfin inshore squid (*Doryteuthis pealeii*)	X		X	X
Pollock (*Pollachius virens*)			X	X
Red Hake (*Urophycis chuss*)	X	X	X	X
Scup (*Stenotomus chrysops*)	X	X	X	X
Summer Flounder (*Paralichthys dentatus*)			X	X
Windowpane Flounder (*Scophthalmus aquosus*)	X	X	X	X
Winter Flounder (*Psuedopleuronectes americanus*)	X	X	X	X
Winter Skate (*Leucoraja ocellata*)			X	X

5. Habitat Areas of Particular Concern (HAPCs)

Select all that apply	HAPC Designation	Select all that apply	HAPC Designation
X	Summer flounder: SAV		Alvin & Atlantis Canyons
	Sandbar shark		Baltimore Canyon
	Sand Tiger Shark (Delaware Bay)		Bear Seamount
	Sand Tiger Shark (Plymouth-Duxbury-Kingston Bay)		Heezen Canyon
	Inshore 20m Juvenile Cod		Hudson Canyon
	Great South Channel Juvenile Cod		Hydrographer Canyon
	Northern Edge Juvenile Cod		Jeffreys & Stellwagen
	Lydonia Canyon		Lydonia, Gilbert & Oceanographer Canyons
	Norfolk Canyon (Mid-Atlantic)		Norfolk Canyon (New England)
	Oceanographer Canyon		Retriever Seamount
	Veatch Canyon (Mid-Atlantic)		Toms, Middle Toms & Hendrickson Canyons
	Veatch Canyon (New England)		Washington Canyon
	Cashes Ledge		Wilmington Canyon
	Atlantic Salmon		

Post and Pratt Coves fall within the regional HAPC for summer flounder. The summer flounder HAPC consists of areas with SAV. The specific designation of summer flounder HAPC is:

> All native species of macroalgae, seagrasses, and freshwater and tidal macrophytes in any size bed, as well as loose aggregations, within adult and juvenile summer flounder EFH is HAPC. If native species of SAV are eliminated then exotic species should be protected because of functional value, however, all efforts should be made to restore native species (MAFMC, 1998).

Post and Pratt Coves primarily contain exotic freshwater and tidal macrophytes. This project will control the exotic macrophytes, with the goal of restoring native SAV benefiting native fish and wildlife, and the entire ecosystem. Consequently, this project is expected to have a beneficial impact to the HAPC for summer flounder.

6. Activity Details

Select all that apply	Project Type/Category
	Agriculture
	Aquaculture
	Bank/shoreline stabilization (e.g., living shoreline, groin, breakwater, bulkhead)
	Beach renourishment
	Dredging/excavation
	Energy development/use e.g., hydropower, oil and gas, pipeline, transmission line, tidal or wave power, wind
	Fill
	Forestry
	Infrastructure/transportation (e.g., culvert construction, bridge repair, highway, port, railroad)
	Intake/outfall
	Military (e.g., acoustic testing, training exercises)
	Mining (e.g., sand, gravel)
	Overboard dredged material placement
	Piers, ramps, floats, and other structures
	Restoration or fish/wildlife enhancement (e.g., fish passage, wetlands, mitigation bank/ILF creation)
	Survey (e.g., geotechnical, geophysical, habitat, fisheries)
	Water quality (e.g., storm water drainage, NPDES, TMDL, wastewater, sediment remediation)
X	Other: aquatic herbicide application

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Date Prepared: May 15, 2025

Project/ Application Number: N/A

Project Name: Connecticut River Hydrilla Research and Demonstration Project

Project Applicant: U.S. Army Corps of Engineers, New England District

Federal Action Agency: U.S. Army Corps of Engineers, New England District

Fast-41: No

Action Agency Contact Name: Kelsie Dakessian

Contact Phone: 978-318-8685

Contact Email: Kelsie.Dakessian@usace.army.mil

Address: U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, Massachusetts 01742-2751

2. Project Description

Location (WGS 84): 41.4843, -72.4784

Body of Water (HUC-12): Dickinson Creek-Salmon River (010802050805)

Project Purpose:

The purpose of the proposed project is to provide a field-scale demonstration of technology developed under the APCRP, which is evaluating the effectiveness of aquatic herbicides to manage monoecious hydrilla in high water exchange environments, such as the tidal, riverine environment of the lower Connecticut River. The field demonstration will evaluate herbicide efficacy, optimal timing of treatment, non-target impacts, and herbicide concentration-exposure time requirements for effective control of hydrilla. The proposed project will also provide interim control of hydrilla at Salmon River for the duration of the research and demonstration project to demonstrate and understand effective management practices.

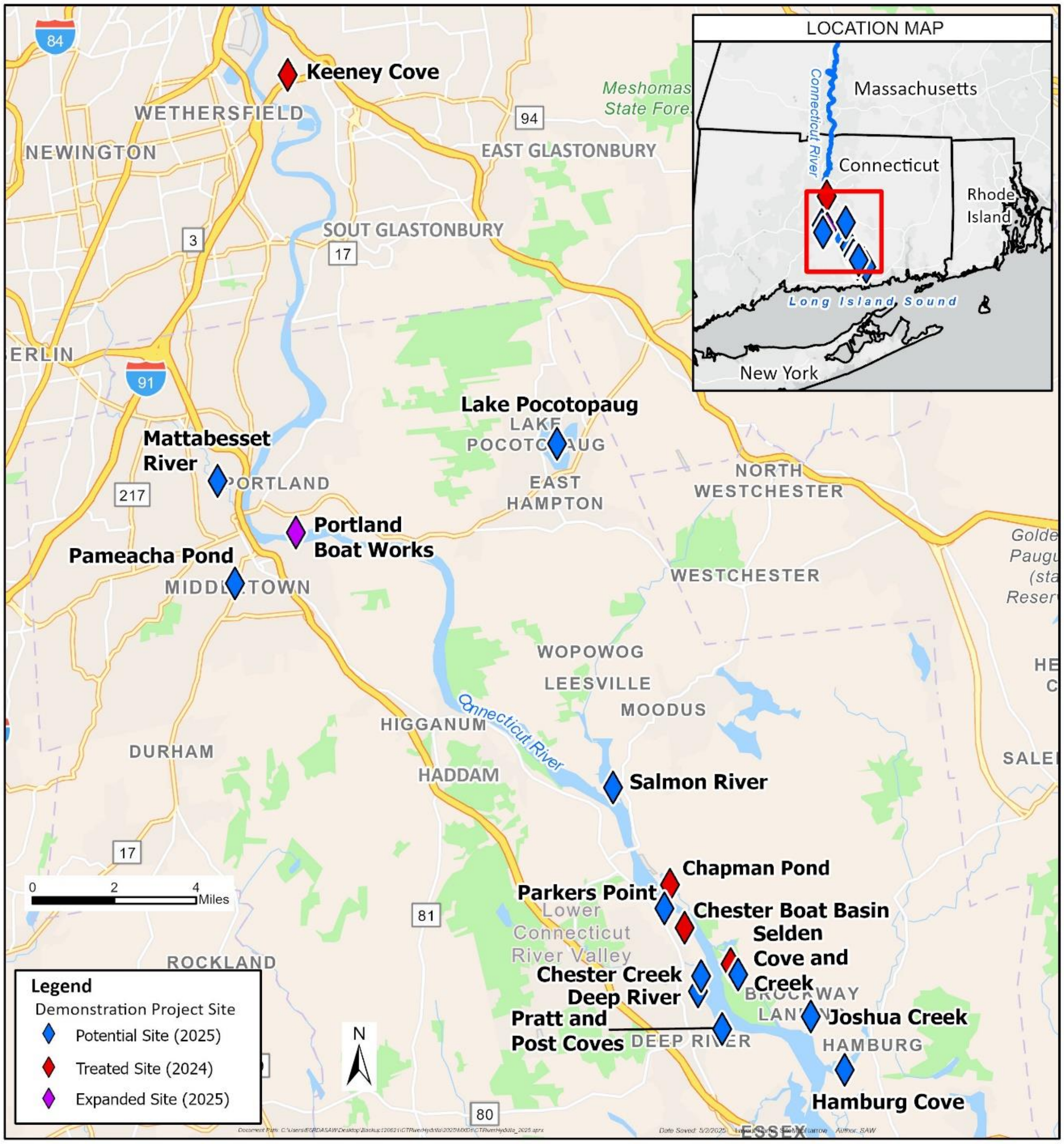

Figure 1. Proposed Treatment Sites

Project Description:

The Connecticut River Hydrilla Control Research and Demonstration Project currently includes five treatment sites, with a field-scale demonstration of chemical technology to evaluate the effectiveness of an aquatic herbicide to manage hydrilla, including sites in high water exchange environments (e.g., tidal, riverine environment). The proposed action is an expansion of the existing Connecticut River Hydrilla Control Research and Demonstration Project by adding 12 additional treatment sites within the Lower Connecticut watershed: (1) Chester Creek in Chester; (2) Deep River in Deep River; (3) Hamburg Cove in Lyme; (4) Joshua Creek in Lyme; (5) Mattabesset River in Middletown; (6) Parker's Point in Chester; (7) an expanded Portland Boat Works in Portland; (8) Post and Pratt Coves in Deep River; (9) Salmon River in East Haddam; (10) Selden Creek in Lyme; (11) Lake Pocotopaug in East Hampton; and (12) Pameacha Pond in Middletown.

The action proposes the use of diquat dibromide, dipotassium salt of endothall, and florpyrauxifen-benzyl or a combination of these chemicals to control hydrilla within Salmon River. Herbicide will be evenly distributed across the entire treatment areas using the industry-standard boat-based subsurface injection application methods consisting of a calibrate pump and trailing hoses. Herbicide will be applied by licensed applicators and in accordance with product labels.

The proposed applications will occur in the summer after July 4th 2025, with any subsequent treatments occurring after July 4th of future years. This timing was selected to avoid impacts to diadromous fish and northern pike that may spawn in submerged aquatic vegetation at sites in or adjacent to the Connecticut River. Pre- and post-application monitoring will occur at the treatment sites to understand control efficacy for hydrilla and impacts to non-target species to inform the management of other hydrilla infestations. Post-application monitoring may occur for up to three years.

Table 1. Proposed herbicide use rates

Potential Herbicide	**Maximum Application Rate**
Diquat	370 ppb
Dipotassium salt of endothall	5 ppm
Florpyrauxifen-benzyl	48 ppb

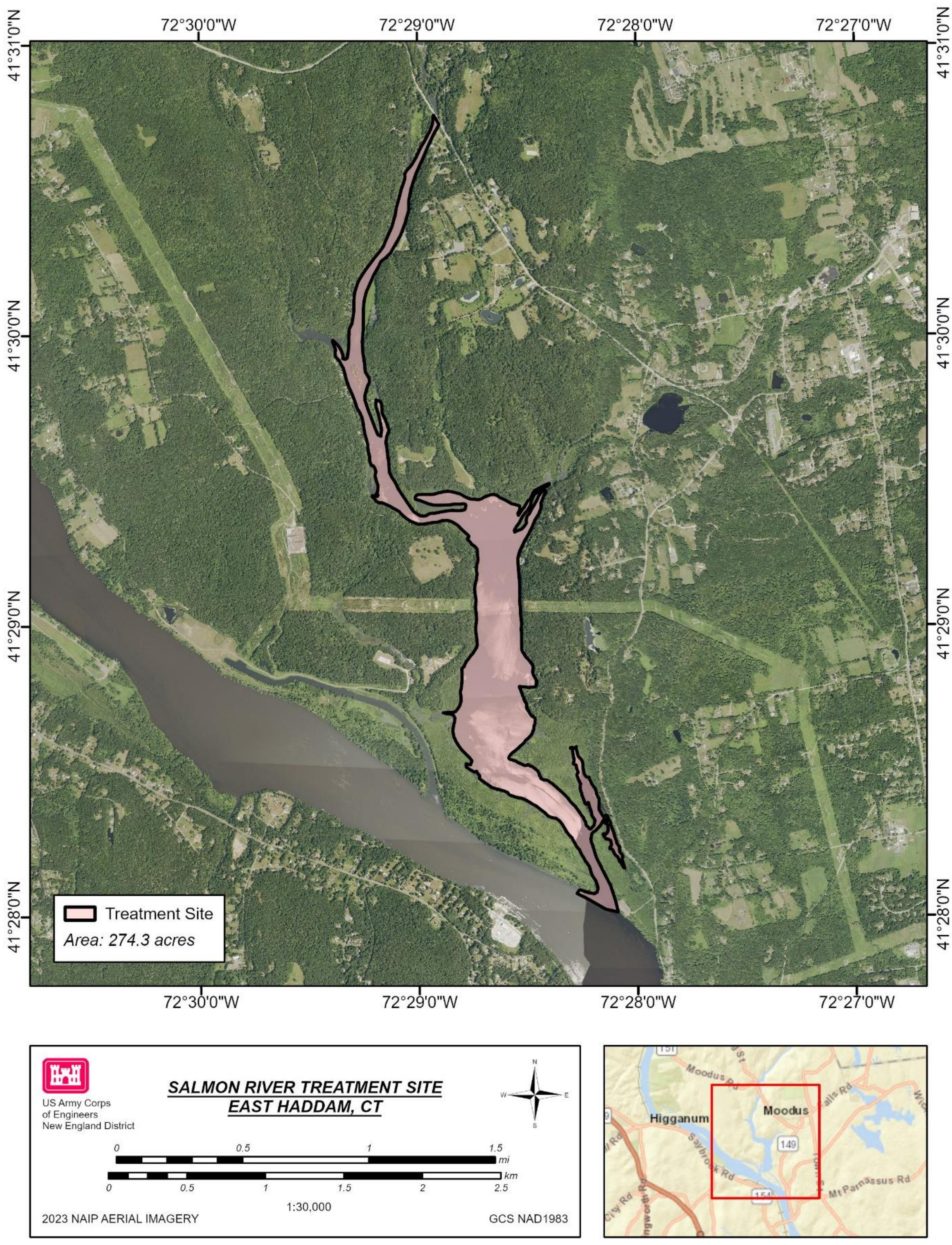

Figure 2. Proposed Treatment Site for Salmon River in East Haddam, CT

Site Description

Is the project in designated EFH?	Yes
Is the project in designated HAPC?	Yes
Does the project contain any Special Aquatic Sites?	No
Is this coordination under FWCA only?	No

Total area of impact to EFH:

The total area of herbicide treatment is approximately 274.3 acres. Since it is not a closed system with tidal influence, herbicide may flow to areas outside the treatment polygon.

Total area of impact to HAPC:

The project area is approximately 274.3 acres, but impacts may extend outside of the treatment area based on site conditions at the time of treatment.

Current range of water depths:

According to the existing USACE bathymetric data, NOAA nautical charts, and local fishing maps the water depth is approximately 9 feet deep at MHHW. Bathymetric surveys will be conducted prior to herbicide treatment to inform herbicide treatment.

Salinity range:

Salmon River is located upstream of the northern extent of the Connecticut River estuary's salt wedge; therefore, it is freshwater and has relatively low salinity.

Water temperature range:

Temperature data was sourced from the U.S. Geological Survey's Water Data portal (USGS, 2025).

Surface water temperature in the Connecticut River at Essex, CT, approximately 8 river miles upstream of Salmon River, ranged from approximately 50°F in April 2024 to 72°F in September in 2024, and is likely a good estimate of the range of surface water temperatures within Salmon River.

3. Habitat Types

Habitat Location	Habitat Type	Total Impacts	Temporary Impacts	Permanent Impacts	Restored to pre-existing conditions?
Freshwater	Submerged aquatic vegetation	274.3 acres	274.3 acres	274.3 acres	No

Submerged Aquatic Vegetation (SAV)

SAV Present? Yes

Details:

The proposed project will control hydrilla (*Hydrilla verticillata)* within Salmon River. Vegetation surveys will be conducted prior to treatment to determine species within the treatment area. It is anticipated that SAV present will include species common to the Connecticut River, such as: waterweed (*Elodea canadensis*), coontail (*Ceratophyllum demersum*), American eelgrass (*Vallisneria americana*), and pondweed (*Potamogeton spp.)*.

Sediment Characteristics

General Description of the Sediment Composition:

The sediment at Salmon River is composed of silt.

Diadromous Fish (Migratory or Spawning Habitat)

Diadromous Fish Habitat?: Yes

4. EFH and HAPC Designations

The following table provides a summary of Essential Fish Habitat Designations in Salmon River (denoted with an "X") (NMFS, 2025).

Species	Eggs	Larvae	Juveniles	Adults
Atlantic Butterfish (*Peprilus triacanthus*)	X	X	X	X
Atlantic Herring (*Clupea harengus*)			X	X
Atlantic mackerel (*Scomber scombrus*)	X	X	X	X
Atlantic salmon *(Salmo salar)*	X	X	X	X

Black Sea Bass (*Centropristis striata*)			X	
Bluefish (*Pomatomus saltatrix*)			X	X
Little Skate (*Leucoraja erinacea*)			X	X
Longfin inshore squid (*Doryteuthis pealeii*)	X		X	X
Pollock (*Pollachius virens*)			X	X
Red Hake (*Urophycis chuss*)	X	X	X	X
Scup (*Stenotomus chrysops*)	X	X	X	X
Summer Flounder (*Paralichthys dentatus*)			X	X
Windowpane Flounder (*Scophthalmus aquosus*)	X	X	X	X
Winter Flounder (*Psuedopleuronectes americanus*)	X	X	X	X
Winter Skate (*Leucoraja ocellata*)			X	X

5. Habitat Areas of Particular Concern (HAPCs)

Select all that apply	HAPC Designation	Select all that apply	HAPC Designation
X	Summer flounder: SAV		Alvin & Atlantis Canyons
	Sandbar shark		Baltimore Canyon
	Sand Tiger Shark (Delaware Bay)		Bear Seamount
	Sand Tiger Shark (Plymouth-Duxbury-Kingston Bay)		Heezen Canyon
	Inshore 20m Juvenile Cod		Hudson Canyon
	Great South Channel Juvenile Cod		Hydrographer Canyon
	Northern Edge Juvenile Cod		Jeffreys & Stellwagen
	Lydonia Canyon		Lydonia, Gilbert & Oceanographer Canyons
	Norfolk Canyon (Mid-Atlantic)		Norfolk Canyon (New England)
	Oceanographer Canyon		Retriever Seamount
	Veatch Canyon (Mid-Atlantic)		Toms, Middle Toms & Hendrickson Canyons
	Veatch Canyon (New England)		Washington Canyon
	Cashes Ledge		Wilmington Canyon
	Atlantic Salmon		

Salmon River falls within the regional HAPC for summer flounder. The summer flounder HAPC consists of areas with SAV. The specific designation of summer flounder HAPC is:

> All native species of macroalgae, seagrasses, and freshwater and tidal macrophytes in any size bed, as well as loose aggregations, within adult and juvenile summer flounder EFH is HAPC. If native species of SAV are eliminated then exotic species should be protected because of functional value, however, all efforts should be made to restore native species (MAFMC, 1998).

Salmon River primarily contains exotic freshwater and tidal macrophytes. This project will control the exotic macrophytes, with the goal of restoring native SAV benefiting native fish and wildlife, and the entire ecosystem. Consequently, this project is expected to have a beneficial impact to the HAPC for summer flounder.

6. Activity Details

Select all that apply	Project Type/Category
	Agriculture
	Aquaculture
	Bank/shoreline stabilization (e.g., living shoreline, groin, breakwater, bulkhead)
	Beach renourishment
	Dredging/excavation
	Energy development/use e.g., hydropower, oil and gas, pipeline, transmission line, tidal or wave power, wind
	Fill
	Forestry
	Infrastructure/transportation (e.g., culvert construction, bridge repair, highway, port, railroad)
	Intake/outfall
	Military (e.g., acoustic testing, training exercises)
	Mining (e.g., sand, gravel)
	Overboard dredged material placement
	Piers, ramps, floats, and other structures
	Restoration or fish/wildlife enhancement (e.g., fish passage, wetlands, mitigation bank/ILF creation)
	Survey (e.g., geotechnical, geophysical, habitat, fisheries)
	Water quality (e.g., storm water drainage, NPDES, TMDL, wastewater, sediment remediation)
X	Other: aquatic herbicide application

7. Effects Evaluation

Potential Stressors

Select all that apply	Potential Stressors Caused by the Activity
	Underwater noise
X	Water quality/turbidity/contaminant release
	Vessel traffic/barge grounding
	Impingement/entrainment
	Prevent fish passage/spawning
X	Benthic community disturbance
X	Impacts to prey species

Select all that apply		Potential Stressors Caused by the Activity
Temp	Perm	
		Water depth change
		Tidal flow change
		Fill
X		Habitat type conversion
		Other:

Project Impacts and Mitigation

Project Impacts to EFH by Species

EFH for all life stages **Atlantic butterfish** is designated at the project area. In Long Island Sound, butterfish spawn from June to late August with a peak in late July. The principal spawning areas are in the eastern part of the sound. They have a seasonal inshore-offshore migration dependent on water temperature. In summer, they move north and inshore to feed on planktonic fish, squid, crustaceans, and jellyfish and then move south and offshore in the winter. Eggs and larvae may occur in salinities ranging from estuarine to full strength seawater. Juveniles EFH includes pelagic habitat in inshore estuaries and embayment's, and on the inner and outer continent shelf. Adults are common to abundant in the high salinity and mixing zones of estuaries within the region (NMFS 1999a). Based on this species' diet, migration pattern, and habitat characteristics, the project will have no effect to Atlantic butterfish EFH.

EFH for **Atlantic herring** juvenile, and adults is designated at the project area. Juveniles are sometimes abundant in fall while adults are abundant in Long Island Sound during the spring. In the Connecticut River, juveniles have a rare abundance only in the mixing salinity zone. Juveniles and adults are pelagic, with adults only becoming demersal during spawning. Atlantic sea herring prey on pelagic zooplankton. Atlantic herring larvae metamorphose into early-stage juveniles in the spring within intertidal and subtidal habitats out to 985 feet. Adults and juveniles may be found in the estuarine mixing salinity zones of the Connecticut River. The river does not support adults or juveniles in tidal freshwater habitat (NMFS, 199b). Given the salinity range of Salmon River, no impacts are anticipated as there is not a suitable salinity for juveniles.

Atlantic mackerel EFH for all life stages is designated in the project area. Atlantic mackerel spawn pelagic eggs from roughly mid-April to June. The pelagic eggs hatch into planktonic larvae 4-5 days post-fertilization. Atlantic mackerel gain the ability to swim and school after approximately 1-2 months. During the winter, Atlantic mackerel migrate to deep water offshore and eventually move back inshore in the spring. Mackerel feed on a variety of prey during their life cycles, including zooplankton, crustaceans, copepods, and small fish. They are never found in the Connecticut River, and their eggs have high mortality rates at low salinities (NMFS, 1999c). Based on the fact that Atlantic mackerel are unlikely to be found north of the Connecticut River estuary, the project will have no effect to this species' EFH.

Black sea bass EFH is designated at the project area for juveniles. In Southern New England, both juvenile and adult black sea bass migrate offshore to over-wintering areas at depths greater than 250 feet when waters begin to cool in the fall. Within estuaries, black sea bass juveniles use shallow shellfish, sponge, amphipod (e.g., *Ampelisca abdita*), seagrass, and cobble habitats as well as manmade structures such as wharves, pilings, and wrecks. Juveniles are generalist carnivores that feed on a variety of infaunal and epifaunal invertebrates, small fish, and squid (NMFS, 1999d). As black sea bass are unlikely to occur north of the Connecticut River estuary, no adverse effects to EFH is expected as a result of this project.

EFH for all life stages of **Atlantic salmon** is designated in the project area. Salmon River, alongside other main tributaries of the Connecticut River, has been historically documented for adult Atlantic Salmon presence (NEFMC, 2017). All life stages of Atlantic salmon use freshwater habitats either exclusively or at some point during their life history. The streambed is important for eggs and larvae while the juveniles and adults use the river itself. Adults prefer riffle and run habitats in shallow, freshwater streams with gravel/rocky substrates with pools or vegetated riverine areas of low velocity. Spawning adults are generally found in late October through November. During this time, eggs are deposited and buried in the substrate and hatch after about 6 months in the spring. Larvae remain in the substrate for about six weeks before emerging as Juveniles in the spring (NEFMC, 2017). No impacts are anticipated to Atlantic salmon eggs, larvae, or spawning Adults as the proposed application will no occur during these months. These life stages are not likely to be present during the proposed application in the summer, after July 4.

Juveniles begin smolting in freshwater before migration downstream into brackish water and seawater. The timing of downstream migration depends on various factors, including temperature, salinity, and physiological adaptations. Spawning adults are generally found in late October through November. Juveniles may utilize the Connecticut River, in addition to riverine (e.g. Salmon River), lacustrine, and estuarine habitats (NEFMC, 2017). The proposed project will result in temporary impacts to SAV and habitat conversion that may affect juvenile and adult life stages EFH habitat. Temporary habitat conversion may occur from the reduction of hydrilla and potential non-target impacts. Loss of SAV will be limited to the proposed treatment site. Although there may be impacts short term impacts to habitat availability to native fish following the hydrilla treatment, the goal is to reduce hydrilla presence, abundance and density to a level that allows native SAV to reestablish providing higher quality habitat. Therefore, the project is expected to have long-term beneficial impacts to EFH for Atlantic salmon.

EFH for **little skate** and **winter skate** juveniles and adults is designated for the project area. Little skate and winter skate are sympatric species with similar habitat requirements. Their EFH occurs on sand, gravel, and mud substrates. Both species are benthic feeders, with crustaceans and polychaetes being important food sources. Both winter skate and little skate move inshore and offshore seasonally, moving into shallower inshore waters during spring and then into deeper waters in winter from roughly November to April (NMFS, 2003a; NMFS, 2003b). The project is located in areas that do not support little skate and winter skate; therefore, the action will not impact EFH.

Longfin inshore squid eggs, juvenile, and adult EFH is designated at the project area. Longfin inshore squid migrate offshore during late autumn and overwinter in deeper, warmer waters along the edge of the continental shelf. They return inshore during the spring and early summer to feed on planktonic organisms, crustaceans, and small fish. Most spawning occurs in May and hatching occurs in July. Egg masses are commonly found attached to rocks and small boulders on sandy/muddy bottom and on submerged aquatic vegetation (NMFS, 1999f). Longfin inshore squid are not known to use the Connecticut River for habitat so there will be no impact to longfin inshore squid EFH.

Pollock EFH for juveniles, and adults is designated at the project area. Larvae are pelagic, most are found at depths of 164 to 295 feet (50-90 m). EFH for juveniles includes rocky bottom habitats with attached macroalgae (NEFMC, 2017). The juveniles have been reported over a wide variety of substrates, including sand, mud, or rocky bottom, and vegetation. Most commonly juveniles are found at depths of 82 to 246 feet (25-75 m) although they can be found from the surface to 410 feet deep (125 m). Adults show little preference for bottom type, and they inhabit a wide range of depths from 115 to 1197 feet (35-365 m) (NMFS, 1999g). EFH for adults include the tops and edges of offshore banks and shores with mixed rocky substrate, often with attached macro algae. The EFH designation for Long Island Sound includes the seawater salinity zone of Long Island Sound. Pollock are not known to travel up the Connecticut River (NEFMC, 2017); therefore, this project is not expected to have impacts on pollock EFH.

EFH for all life stages of **red hake** is designated in the project area. Spawning of pelagic eggs occurs in the summer along the continental shelf and is concentrated off southern New England. Red hake larvae have been collected on the middle to outer continental shelf of the Middle Atlantic Bight, but few larvae were collected in the Gulf of Maine. North of Cape Cod, where waters are cooler, juveniles can remain inshore throughout the summer. Both juveniles and adults have primarily been found over muddy substrate (NMFS, 1999h). Juvenile EFH includes intertidal and sub-tidal benthic habitats on mud and sand substrates. Adult EFH includes inshore estuarine and embayment habitat, in depressions in softer sediments or in shell beds. In the Connecticut River, Red hake are present in mixing salinity zones (NEFMC, 2017). The proposed project will not occur within mixing salinity zones, where red hake may be present, therefore, no impacts are anticipated to red hake EFH.

Scup EFH for all life stages is designated at the project area. Scup eggs larvae are found from May through August in southern New England, with EFH habitat in the mixing and seawater salinity zones of estuaries. Larvae occupy a similar habitat and can be found from May through September. Juvenile and adult scup migrate from estuaries to the edge of the continental shelf as water temperatures decline in the winter and return from the edge of the continental shelf to inshore areas as water temperatures rise in the spring. Inshore, juvenile summer habitat includes intertidal and subtidal habitats, over sand, silty-sand, shell, mud, mussel beds and eelgrass (*Zostera marina*) as well as rocky ledges, wrecks, artificial reefs, and mussel beds (NMFS, 1999i). Adult EFH inshore habitat includes the mixing and seawater salinity zones of estuaries (MAFMC, 1998). Due to the project location north of the Connecticut River estuary, no adverse impacts to scup EFH are expected as a result of this project.

EFH for **summer flounder** juveniles and adults is designated at the project area. Summer flounder inhabit shallow coastal and estuarine waters between May and October, moving offshore to the outer continental shelf during winter months. It is believed that spawning occurs in offshore waters of southern New England, with peak offshore spawning occurring during October and November. Summer flounder juveniles and adults are benthic feeders, with polychaetes, crustaceans, and bivalves being important food sources (NMFS, 1999j). Inshore habitat for juveniles and adults is restricted to mixing and seawater salinity zones (MAFMC, 1998). Due to the location of the project being upstream of the Connecticut River estuary’s salt wedge, no adverse effects to adult summer flounder spawning EFH are expected.

EFH for all life stages of **windowpane flounder** is designated for the project area. Egg and larval EFH is described as pelagic habitats on the continental shelf from Georges Bank to Cape Hatteras and in mixed and high salinity zones of coastal bays and estuaries throughout the region. Juvenile and adult EFH occurs in intertidal and sub-tidal muddy or sandy benthic habitats in estuarine, coastal marine, and continental shelf waters from the Gulf of Maine south (NMFS, 1999k). All life stages are found in the mixing salinity zone of the Connecticut River (MAFMC, 1998). Windowpane flounder habitat is not expected north of the Connecticut River estuary. Therefore, no adverse impacts on all life stages of windowpane flounder EFH would be anticipated as a result of this project.

Winter flounder EFH for all life stages is designated at all project locations. Winter flounder are found in a variety of habitats from brackish riverine waters to saline coastal environments and have been documented from depths of less than 3 feet in coastal embayments, up to approximately 90 feet in Cape Cod Bay and Stellwagen Bank and up to 270 feet on George's Bank. Except for the Georges Bank population, adult winter flounder migrate inshore in the fall and early winter. Spawning occurs in late winter and early spring with peak spawning between February and March in Massachusetts Bay. The diet of juvenile and adult winter flounder consists of benthic fauna; mostly polychaetes and amphipods (NMFS, 1999l). Winter flounder are not expected to inhabit areas north of the Connecticut River estuary. Therefore, no impacts on all life stages of the winter flounder EFH would be anticipated as a result of this project.

Avoidance, Minimization, and Mitigation

Specific measures taken to avoid and minimize impacts to EFH:

The project area does not contain viable EFH for the identified species because it is a tidal freshwater river and is located upstream of the Connecticut River estuary. Additionally, the proposed action will occur after July 4th to avoid potential impacts to diadromous fish.

Is compensatory mitigation proposed?

No compensatory mitigation is proposed as no significant adverse effects are anticipated to any species' EFH.

Compensatory mitigation details:

N/A

8. Effects of Climate Change

Could species or habitats be adversely affected by the proposed action due to projected changes in the climate?

No adverse effects to species or habitat are expected as a result of the project and projected climate change.

Is the expected lifespan of the action greater than 10 years?

No, however, use of aquatic herbicides for control of the invasive hydrilla are likely to continue in other parts of the Connecticut River. The project is expected to reduce hydrilla presence, abundance and density to allow for native SAV to replace it.

Is climate change currently affecting vulnerable species or habitats, and would the effects of a proposed action be amplified by climate change?

Vulnerable species and habitats are currently affected by climate change, but the effects of the proposed action are not likely to be amplified by climate change.

Do the results of the assessment indicate the effects of the action on habitats and species will be amplified by climate change?

No.

Can adaptive management strategies (AMS) be integrated into the action to avoid or minimize adverse effects of the proposed action as a result of climate?

Due to negligible impacts to species EFH, the effects of the proposed action are not likely to be amplified by climate change; thus, adaptive management strategies would not help avoid or minimize adverse impacts of the proposed action.

9. Federal Agency Determination

Federal Action Agency's EFH determination	
	There is no adverse effect on EFH or EFH is not designated at the project site. EFH Consultation is not required. This is a FWCA only request.
X	The adverse effect on EFH is not substantial. This means that the adverse effects are no more than minimal, temporary, or can be alleviated with minor project modifications or conservation recommendations. This is a request for an abbreviated EFH consultation.
	The adverse effect on EFH is substantial. This is a request for an expanded EFH consultation.

10. Fish and Wildlife Coordination Act

Fish and Wildlife Coordination Act Resources

Species known to occur at site	**Habitat impact type**
alewife	Temporary impacts to SAV.
American eel	Temporary impacts to SAV.
American shad	Temporary impacts to SAV.
Atlantic menhaden	N/A
blue crab	N/A
blue mussel	N/A
blueback herring	Temporary impacts to SAV.
Eastern oyster	N/A
horseshoe crab	N/A
quahog	N/A
soft-shell clams	N/A
striped bass	Temporary impacts to SAV.
other species:	

11. References

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National Marine Fisheries Service (NMFS). 1999b. Essential Fish Habitat Source Document: Atlantic Herring, *Clupea harengus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

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National Marine Fisheries Service (NMFS). 1999f. Essential Fish Habitat Source Document: Longfin Inshore Squid, *Loligo pealeii*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999g. Essential Fish Habitat Source Document: Pollock, *Pollachius virens*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

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National Marine Fisheries Service (NMFS). 1999i. Essential Fish Habitat Source Document: Scup, *Stenotomus chrysops*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999j. Essential Fish Habitat Source Document: Summer Flounder, *Paralichthys dentatus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

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New England Fishery Management Council (NEFMC). 2017. Final Omnibus Essential Fish Habitat Amendment 2, Volume 2: EFH and HAPC Designation Alternatives and Environmental Impacts. Prepared by the NEFMC in cooperation with the National Marine Fisheries Service.

U.S. Geological Survey (USGS) (2025). National Water Dashboard. Retrieved April 7, 2025 from https://dashboard.waterdata.usgs.gov/app/nwd/en/.

7. Effects Evaluation

Potential Stressors

Select all that apply	Potential Stressors Caused by the Activity
	Underwater noise
X	Water quality/turbidity/contaminant release
	Vessel traffic/barge grounding
	Impingement/entrainment
	Prevent fish passage/spawning
X	Benthic community disturbance
X	Impacts to prey species

Select all that apply		Potential Stressors Caused by the Activity
Temp	Perm	
		Water depth change
		Tidal flow change
		Fill
X		Habitat type conversion
		Other:

Project Impacts and Mitigation

Project Impacts to EFH by Species

EFH for **Atlantic butterfish** eggs, larvae, and adults is designated at the project area. In Long Island Sound, butterfish spawn from June to late August with a peak in late July. The principal spawning areas are in the eastern part of the sound. They have a seasonal inshore-offshore migration dependent on water temperature. In summer, they move north and inshore to feed on planktonic fish, squid, crustaceans, and jellyfish and then move south and offshore in the winter. Eggs and larvae may occur in salinities ranging from estuarine to full strength seawater. Adults are common to abundant in the high salinity and mixing zones of estuaries within the region (NMFS 1999a). Based on this species' diet, migration pattern, and habitat characteristics, the project will have no effect to Atlantic butterfish EFH.

EFH for **Atlantic herring** juvenile, and adults is designated at the project area. Juveniles are sometimes abundant in fall while adults are abundant in Long Island Sound during the spring. In the Connecticut River, juveniles have a rare abundance only in the mixing salinity zone .Juveniles and adults are pelagic, with adults only becoming demersal during spawning. Atlantic sea herring prey on pelagic zooplankton. Atlantic

herring larvae metamorphose into early-stage juveniles in the spring within intertidal and subtidal habitats out to 985 feet. Adults and juveniles may be found in the estuarine mixing salinity zones of the Connecticut River. The river does not support adults or juveniles in tidal freshwater habitat (NMFS, 199b). Given the salinity range of Post and Pratt Coves, no impacts are anticipated as there is not a suitable salinity for juveniles.

Atlantic mackerel EFH for all life stages is designated in the project area. Atlantic mackerel spawn pelagic eggs from roughly mid-April to June. The pelagic eggs hatch into planktonic larvae 4-5 days post-fertilization. Atlantic mackerel gain the ability to swim and school after approximately 1-2 months. During the winter, Atlantic mackerel migrate to deep water offshore and eventually move back inshore in the spring. Mackerel feed on a variety of prey during their life cycles, including zooplankton, crustaceans, copepods, and small fish. They are never found in the Connecticut River, and their eggs have high mortality rates at low salinities (NMFS, 1999c). Based on the fact that Atlantic mackerel are unlikely to be found north of the Connecticut River estuary, the project will have no effect to this species' EFH.

Black sea bass EFH is designated at the project area for juveniles. In Southern New England, both juvenile and adult black sea bass migrate offshore to over-wintering areas at depths greater than 250 feet when waters begin to cool in the fall. Within estuaries, black sea bass juveniles use shallow shellfish, sponge, amphipod (e.g., *Ampelisca abdita*), seagrass, and cobble habitats as well as manmade structures such as wharves, pilings, and wrecks. Juveniles are generalist carnivores that feed on a variety of infaunal and epifaunal invertebrates, small fish, and squid (NMFS, 1999d). As black sea bass are unlikely to occur north of the Connecticut River estuary, no adverse effects to EFH is expected as a result of this project.

Juvenile and adult EFH for **bluefish** is designated for the project area. Juveniles are abundant in the Connecticut River estuary. These life stages are generally restricted to estuarine and mixing salinity zones, and are not known to move into freshwater. Spawning occurs in the spring and summer when adults and juveniles are present inshore. Bluefish feed primarily on small prey fish but may forage for benthic prey on oyster bar and reef habitats when prey availability is limited (NMFS, 1999e). The project is located in areas that do not support bluefish and the action will not impact any prey species.

EFH for **little skate** and **winter skate** juveniles and adults is designated for the project area. Little skate and winter skate are sympatric species with similar habitat requirements. Their EFH occurs on sand, gravel, and mud substrates. Both species are benthic feeders, with crustaceans and polychaetes being important food sources. Both winter skate and little skate move inshore and offshore seasonally, moving into shallower inshore waters during spring and then into deeper waters in winter from roughly November to April (NMFS, 2003a; NMFS, 2003b). The project is located in areas that do not support little skate and winter skate; therefore, the action will not impact EFH.

Longfin inshore squid eggs, juvenile, and adult EFH is designated at the project area. Longfin inshore squid migrate offshore during late autumn and overwinter in deeper, warmer waters along the edge of the continental shelf. They return inshore during the spring and early summer to feed on planktonic organisms, crustaceans, and small fish. Most spawning occurs in May and hatching occurs in July. Egg masses are commonly found attached to rocks and small boulders on sandy/muddy bottom and on submerged aquatic vegetation (NMFS, 1999f). Longfin inshore squid are not known to use the Connecticut River for habitat so there will be no impact to longfin inshore squid EFH.

Pollock EFH for juveniles, and adults is designated at the project area. Larvae are pelagic, most are found at depths of 164 to 295 feet (50-90 m). EFH for juveniles includes rocky bottom habitats with attached macroalgae (NEFMC, 2017). The juveniles have been reported over a wide variety of substrates, including sand, mud, or rocky bottom, and vegetation. Most commonly juveniles are found at depths of 82 to 246 feet (25-75 m) although they can be found from the surface to 410 feet deep (125 m). Adults show little preference for bottom type, and they inhabit a wide range of depths from 115 to 1197 feet (35-365 m) (NMFS, 1999g). EFH for adults include the tops and edges of offshore banks and shores with mixed rocky substrate, often with attached macro algae. The EFH designation for Long Island Sound includes the seawater salinity zone of Long Island Sound. Pollock are not known to travel up the Connecticut River; therefore, this project is not expected to have impacts on pollock EFH (NEFMC, 2017).

EFH for all life stages of **red hake** is designated in the project area. Spawning of pelagic eggs occurs in the summer along the continental shelf and is concentrated off southern New England. Red hake larvae have been collected on the middle to outer continental shelf of the Middle Atlantic Bight, but few larvae were collected in the Gulf of Maine. North of Cape Cod, where waters are cooler, juveniles can remain inshore throughout the summer. Both juveniles and adults have primarily been found over muddy substrate (NMFS, 1999h). Juvenile EFH includes intertidal and sub-tidal benthic habitats on mud and sand substrates. Adult EFH includes inshore estuarine and embayments, in depressions in softer sediments or in shell beds. In the Connecticut River, Red hake are present in mixing salinity zones (NEFMC, 2017). The proposed project will not occur within mixing salinity zones, where red hake may be present, therefore, no impacts are anticipated to red hake EFH.

Scup EFH for all life stages is designated at the project area. Scup eggs larvae are found from May through August in southern New England, with EFH habitat in the mixing and seawater salinity zones of estuaries. Larvae occupy a similar habitat and can be found from May through September. Juvenile and adult scup migrate from estuaries to the edge of the continental shelf as water temperatures decline in the winter and return from the edge of the continental shelf to inshore areas as water temperatures rise in the spring. Inshore, juvenile summer habitat includes intertidal and subtidal habitats, over sand, silty-sand, shell, mud, mussel beds and eelgrass (*Zostera marina*) as well as rocky ledges, wrecks, artificial reefs, and mussel beds (NMFS, 1999i). Adult EFH inshore habitat includes the mixing and seawater salinity zones of estuaries

(MAFMC, 1998). Due to the project location north of the Connecticut River estuary, no adverse impacts to scup EFH are expected as a result of this project.

EFH for **summer flounder** juveniles and adults is designated at the project area. Summer flounder inhabit shallow coastal and estuarine waters between May and October, moving offshore to the outer continental shelf during winter months. It is believed that spawning occurs in offshore waters of southern New England, with peak offshore spawning occurring during October and November. Summer flounder juveniles and adults are benthic feeders, with polychaetes, crustaceans, and bivalves being important food sources (NMFS, 1999j). Inshore habitat for juveniles and adults is restricted to mixing and seawater salinity zones (MAFMC, 1998). Due to the location of the project being upstream of the Connecticut River estuary's salt wedge, no adverse effects to adult summer flounder spawning EFH are expected.

EFH for all life stages of **windowpane flounder** is designated for the project area. Egg and larval EFH is described as pelagic habitats on the continental shelf from Georges Bank to Cape Hatteras and in mixed and high salinity zones of coastal bays and estuaries throughout the region. Juvenile and adult EFH occurs in intertidal and sub-tidal muddy or sandy benthic habitats in estuarine, coastal marine, and continental shelf waters from the Gulf of Maine south (NMFS, 1999k). All life stages are found in the mixing salinity zone of the Connecticut River (MAFMC, 1998). Windowpane flounder habitat is not expected north of the Connecticut River estuary. Therefore, no adverse impacts on all life stages of windowpane flounder EFH would be anticipated as a result of this project.

Winter flounder EFH for all life stages is designated at all project locations. Winter flounder are found in a variety of habitats from brackish riverine waters to saline coastal environments and have been documented from depths of less than 3 feet in coastal embayments, up to approximately 90 feet in Cape Cod Bay and Stellwagen Bank and up to 270 feet on George's Bank. Except for the Georges Bank population, adult winter flounder migrate inshore in the fall and early winter. Spawning occurs in late winter and early spring with peak spawning between February and March in Massachusetts Bay. The diet of juvenile and adult winter flounder consists of benthic fauna; mostly polychaetes and amphipods (NMFS, 1999l). Winter flounder are not expected to inhabit areas north of the Connecticut River estuary. Therefore, no impacts on all life stages of the winter flounder EFH would be anticipated as a result of this project.

Avoidance, Minimization, and Mitigation

Specific measures taken to avoid and minimize impacts to EFH:

The project area does not contain viable EFH for the identified species because it is tidal freshwater coves and is located upstream of the Connecticut River estuary. Additionally, the proposed action will occur after July 4th to avoid potential impacts to diadromous fish.

Is compensatory mitigation proposed?

No compensatory mitigation is proposed as no significant adverse effects are anticipated to any species' EFH.

Compensatory mitigation details:

N/A

8. Effects of Climate Change

Could species or habitats be adversely affected by the proposed action due to projected changes in the climate?

No adverse effects to species or habitat are expected as a result of the project and projected climate change.

Is the expected lifespan of the action greater than 10 years?

No, however, use of aquatic herbicides for control of the invasive hydrilla are likely to continue in other parts of the Connecticut River. The project is expected to reduce hydrilla presence, abundance and density to allow for native SAV to replace it.

Is climate change currently affecting vulnerable species or habitats, and would the effects of a proposed action be amplified by climate change?

Vulnerable species and habitats are currently affected by climate change, but the effects of the proposed action are not likely to be amplified by climate change.

Do the results of the assessment indicate the effects of the action on habitats and species will be amplified by climate change?

No.

Can adaptive management strategies (AMS) be integrated into the action to avoid or minimize adverse effects of the proposed action as a result of climate?

Due to negligible impacts to species EFH, the effects of the proposed action are not likely to be amplified by climate change; thus, adaptive management strategies would not help avoid or minimize adverse impacts of the proposed action.

9. Federal Agency Determination

Federal Action Agency's EFH determination	
	There is no adverse effect on EFH or EFH is not designated at the project site. EFH Consultation is not required. This is a FWCA only request.
X	The adverse effect on EFH is not substantial. This means that the adverse effects are no more than minimal, temporary, or can be alleviated with minor project modifications or conservation recommendations. This is a request for an abbreviated EFH consultation.
	The adverse effect on EFH is substantial. This is a request for an expanded EFH consultation.

10. Fish and Wildlife Coordination Act

Fish and Wildlife Coordination Act Resources

Species known to occur at site	**Habitat impact type**
alewife	Temporary impacts to SAV.
American eel	Temporary impacts to SAV.
American shad	Temporary impacts to SAV.
Atlantic menhaden	N/A
blue crab	N/A
blue mussel	N/A
blueback herring	Temporary impacts to SAV.
Eastern oyster	N/A
horseshoe crab	N/A
quahog	N/A
soft-shell clams	N/A
striped bass	Temporary impacts to SAV.
other species:	

11. References

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National Marine Fisheries Service (NMFS). 1999a. Essential Fish Habitat Source Document: Atlantic Butterfish, *Peprilus triacanthus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999b. Essential Fish Habitat Source Document: Atlantic Herring, *Clupea harengus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999c. Essential Fish Habitat Source Document: Atlantic Mackerel, *Scomber scobrus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999d. Essential Fish Habitat Source Document: Black Sea Bass, *Centropristis striata*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999e. Essential Fish Habitat Source Document: Bluefish, *Pomatomus saltatrix*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999f. Essential Fish Habitat Source Document: Longfin Inshore Squid, *Loligo pealeii*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999g. Essential Fish Habitat Source Document: Pollock, *Pollachius virens*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999h. Essential Fish Habitat Source Document: Red Hake, *Urophycis chuss*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999i. Essential Fish Habitat Source Document: Scup, *Stenotomus chrysops*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999j. Essential Fish Habitat Source Document: Summer Flounder, *Paralichthys dentatus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999k. Essential Fish Habitat Source Document: Windowpane Flounder, *Scophthalmus aquosus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999l. Essential Fish Habitat Source Document: Winter Flounder, *Psuedopleuronectes americanus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

New England Fishery Management Council (NEFMC). 2017. Final Omnibus Essential Fish Habitat Amendment 2, Volume 2: EFH and HAPC Designation Alternatives and Environmental Impacts. Prepared by the NEFMC in cooperation with the National Marine Fisheries Service.

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Table of Contents

1. General Project Information

Date Prepared: May 15, 2025

Project/ Application Number: N/A

Project Name: Connecticut River Hydrilla Research and Demonstration Project

Project Applicant: U.S. Army Corps of Engineers, New England District

Federal Action Agency: U.S. Army Corps of Engineers, New England District

Fast-41: No

Action Agency Contact Name: Kelsie Dakessian

Contact Phone: 978-318-8685

Contact Email: Kelsie.Dakessian@usace.army.mil

Address: U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, Massachusetts 01742-2751

2. Project Description

Location (WGS 84): 41.4007, -72.4064

Body of Water (HUC-12): Deep River-Connecticut River (010802050901)

Project Purpose:

The purpose of the proposed project is to provide a field-scale demonstration of technology developed under the APCRP, which is evaluating the effectiveness of aquatic herbicides to manage monoecious hydrilla in high water exchange environments, such as the tidal, riverine environment of the lower Connecticut River. The field demonstration will evaluate herbicide efficacy, optimal timing of treatment, non-target impacts, and herbicide concentration-exposure time requirements for effective control of hydrilla. The proposed project will also provide interim control of hydrilla at Selden Creek for the duration of the research and demonstration project to demonstrate and understand effective management practices.

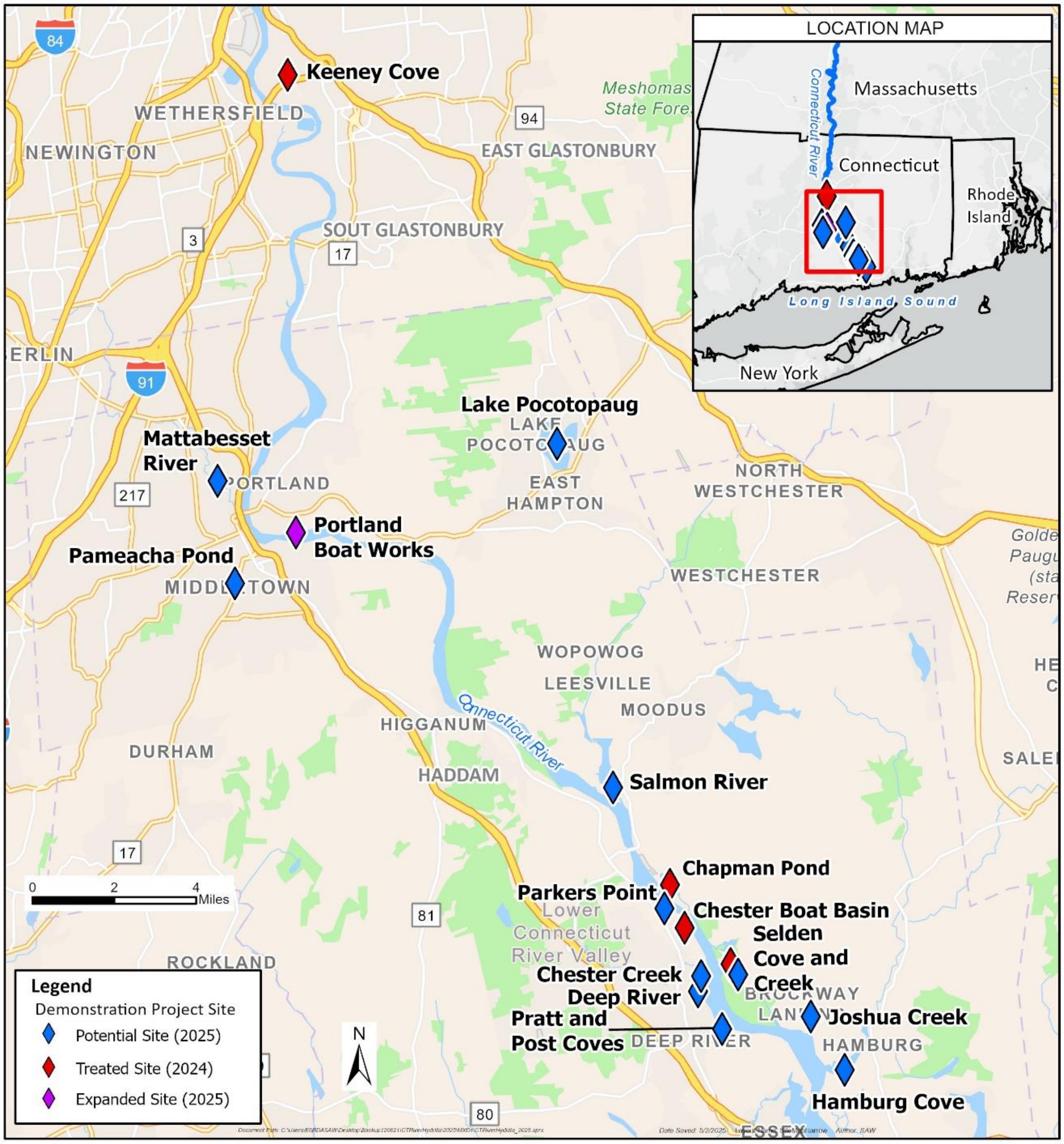

Figure 1. Proposed treatment sites

Project Description:

The Connecticut River Hydrilla Control Research and Demonstration Project currently includes five treatment sites, with a field-scale demonstration of chemical technology to evaluate the effectiveness of an aquatic herbicide to manage hydrilla, including sites in high water exchange environments (e.g., tidal, riverine environment). The proposed action is an expansion of the existing Connecticut River Hydrilla Control Research and Demonstration Project by adding 12 additional treatment sites within the Lower Connecticut watershed: (1) Chester Creek in Chester; (2) Deep River in Deep River; (3) Hamburg Cove in Lyme; (4) Joshua Creek in Lyme; (5) Mattabesset River in Middletown; (6) Parker's Point in Chester; (7) an expanded Portland Boat Works in Portland; (8) Post and Pratt Coves in Deep River; (9) Salmon River in East Haddam; (10) Selden Creek in Lyme; (11) Lake Pocotopaug in East Hampton; and (12) Pameacha Pond in Middletown.

The action proposes the use of diquat dibromide, dipotassium salt of endothall, and florpyrauxifen-benzyl or a combination of these chemicals to control hydrilla within Selden Creek Herbicide will be evenly distributed across the entire treatment areas using the industry-standard boat-based subsurface injection application methods consisting of a calibrate pump and trailing hoses. Herbicide will be applied by licensed applicators and in accordance with product labels.

The proposed applications will occur in the summer after July 4th 2025, with any subsequent treatments occurring after July 4th of future years. This timing was selected to avoid impacts to diadromous fish and northern pike that may spawn in submerged aquatic vegetation at sites in or adjacent to the Connecticut River. Pre- and post-application monitoring will occur at the treatment sites to understand control efficacy for hydrilla and impacts to non-target species to inform the management of other hydrilla infestations. Post-application monitoring may occur for up to three years.

Table 1. Proposed herbicide use rates

Potential Herbicide	**Maximum Application Rate**
Diquat	370 ppb
Dipotassium salt of endothall	5 ppm
Florpyrauxifen-benzyl	48 ppb

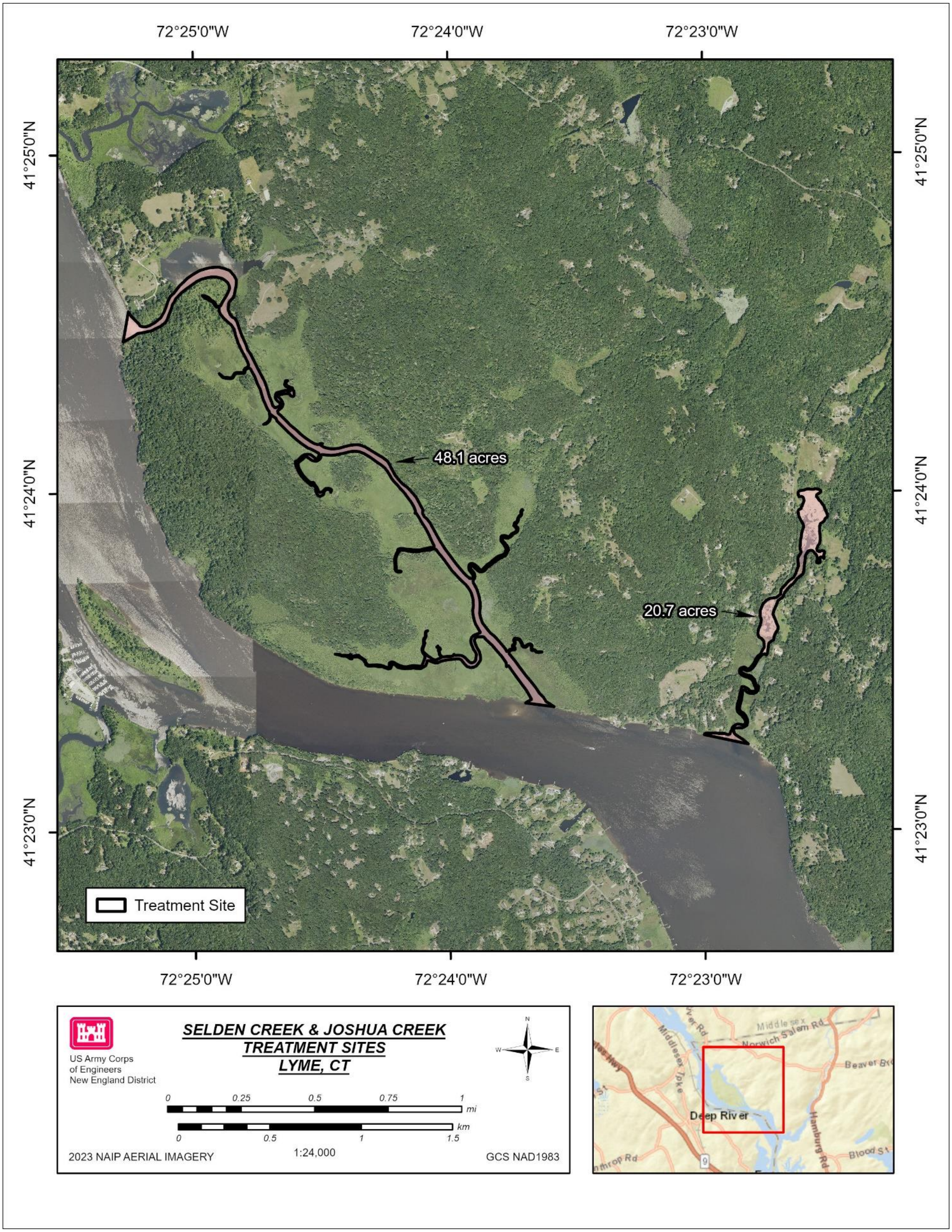

Figure 2. Proposed treatment site for Selden Creek (left) in Lyme, CT

Site Description

Is the project in designated EFH?	Yes
Is the project in designated HAPC?	Yes
Does the project contain any Special Aquatic Sites?	No
Is this coordination under FWCA only?	No

Total area of impact to EFH:

The total area of herbicide treatment is approximately 48.1 acres. Since it is not a closed system with tidal influence, herbicide may flow to areas outside the treatment polygon.

Total area of impact to HAPC:

The project area is approximately 48.1 acres, but impacts may extend outside of the treatment area based on site conditions at the time of treatment.

Current range of water depths:

According to the existing USACE bathymetric data, NOAA nautical charts, and local fishing maps the water depth is approximately 12 feet deep at MHHW. Bathymetric surveys will be conducted prior to herbicide treatment to inform herbicide treatment.

Salinity range:

Selden Creek is located upstream of the northern extent of the Connecticut River estuary's salt wedge; therefore, it is freshwater and has relatively low salinity.

Water temperature range:

Temperature data was sourced from the U.S. Geological Survey's Water Data portal (USGS, 2025).

Surface water temperature in the Connecticut River at Essex, CT, approximately 3 river miles downstream of Selden Creek, ranged from approximately 40°F in April 2024 to 72°F in September in 2024, and is likely a good estimate of the range of surface water temperatures within Selden Creek.

3. Habitat Types

Habitat Location	Habitat Type	Total Impacts	Temporary Impacts	Permanent Impacts	Restored to pre-existing conditions?
Freshwater	Submerged aquatic vegetation	37.9 acres	37.9 acres	37.9 acres	No

Submerged Aquatic Vegetation (SAV)

SAV Present? Yes

Details:

The proposed project will control hydrilla (*Hydrilla verticillata)* within Selden Creek. Vegetation surveys will be conducted prior to treatment to determine species within the treatment area. It is anticipated that SAV present will include species common to the Connecticut River, such as: waterweed (*Elodea canadensis*), coontail (*Ceratophyllum demersum*), American eelgrass (*Vallisneria americana*), and pondweed (*Potamogeton spp.)*.

Sediment Characteristics

General Description of the Sediment Composition:

The sediment at Selden Creek is composed of silt.

Diadromous Fish (Migratory or Spawning Habitat)

Diadromous Fish Habitat?: Yes

4. EFH and HAPC Designations

The following table provides a summary of Essential Fish Habitat Designations in Selden Creek (denoted with an "X") (NMFS, 2025).

Species	Eggs	Larvae	Juveniles	Adults
Atlantic Butterfish (*Peprilus triacanthus*)	X	X		X
Atlantic Herring (*Clupea harengus*)			X	X
Atlantic mackerel (*Scomber scombrus*)	X	X	X	X
Atlantic salmon *(Salmo salar)*	X	X	X	X

Black Sea Bass (*Centropristis striata*)			X	
Bluefish (*Pomatomus saltatrix*)			X	X
Little Skate (*Leucoraja erinacea*)			X	X
Longfin inshore squid (*Doryteuthis pealeii*)	X		X	X
Pollock (*Pollachius virens*)			X	X
Red Hake (*Urophycis chuss*)	X	X	X	X
Scup (*Stenotomus chrysops*)	X	X	X	X
Summer Flounder (*Paralichthys dentatus*)			X	X
Windowpane Flounder (*Scophthalmus aquosus*)	X	X	X	X
Winter Flounder (*Psuedopleuronectes americanus*)	X	X	X	X
Winter Skate (*Leucoraja ocellata*)			X	X

5. Habitat Areas of Particular Concern (HAPCs)

Select all that apply	HAPC Designation	Select all that apply	HAPC Designation
X	Summer flounder: SAV		Alvin & Atlantis Canyons
	Sandbar shark		Baltimore Canyon
	Sand Tiger Shark (Delaware Bay)		Bear Seamount
	Sand Tiger Shark (Plymouth-Duxbury-Kingston Bay)		Heezen Canyon
	Inshore 20m Juvenile Cod		Hudson Canyon
	Great South Channel Juvenile Cod		Hydrographer Canyon
	Northern Edge Juvenile Cod		Jeffreys & Stellwagen
	Lydonia Canyon		Lydonia, Gilbert & Oceanographer Canyons
	Norfolk Canyon (Mid-Atlantic)		Norfolk Canyon (New England)
	Oceanographer Canyon		Retriever Seamount
	Veatch Canyon (Mid-Atlantic)		Toms, Middle Toms & Hendrickson Canyons
	Veatch Canyon (New England)		Washington Canyon
	Cashes Ledge		Wilmington Canyon
	Atlantic Salmon		

Selden Creek falls within the regional HAPC for summer flounder. The summer flounder HAPC consists of areas with SAV. The specific designation of summer flounder HAPC is:

> All native species of macroalgae, seagrasses, and freshwater and tidal macrophytes in any size bed, as well as loose aggregations, within adult and juvenile summer flounder EFH is HAPC. If native species of SAV are eliminated then exotic species should be protected because of functional value, however, all efforts should be made to restore native species (MAFMC, 1998).

Selden Creek primarily contains exotic freshwater and tidal macrophytes. This project will control the exotic macrophytes, with the goal of restoring native SAV benefiting native fish and wildlife, and the entire ecosystem. Consequently, this project is expected to have a beneficial impact to the HAPC for summer flounder.

6. Activity Details

Select all that apply	Project Type/Category
	Agriculture
	Aquaculture
	Bank/shoreline stabilization (e.g., living shoreline, groin, breakwater, bulkhead)
	Beach renourishment
	Dredging/excavation
	Energy development/use e.g., hydropower, oil and gas, pipeline, transmission line, tidal or wave power, wind
	Fill
	Forestry
	Infrastructure/transportation (e.g., culvert construction, bridge repair, highway, port, railroad)
	Intake/outfall
	Military (e.g., acoustic testing, training exercises)
	Mining (e.g., sand, gravel)
	Overboard dredged material placement
	Piers, ramps, floats, and other structures
	Restoration or fish/wildlife enhancement (e.g., fish passage, wetlands, mitigation bank/ILF creation)
	Survey (e.g., geotechnical, geophysical, habitat, fisheries)
	Water quality (e.g., storm water drainage, NPDES, TMDL, wastewater, sediment remediation)
X	Other: aquatic herbicide application

7. Effects Evaluation

Potential Stressors

Select all that apply	Potential Stressors Caused by the Activity
	Underwater noise
X	Water quality/turbidity/contaminant release
	Vessel traffic/barge grounding
	Impingement/entrainment
	Prevent fish passage/spawning
X	Benthic community disturbance
X	Impacts to prey species

Select all that apply		Potential Stressors Caused by the Activity
Temp	Perm	
		Water depth change
		Tidal flow change
		Fill
X		Habitat type conversion
		Other:

Project Impacts and Mitigation

Project Impacts to EFH by Species

EFH for **Atlantic butterfish** eggs, larvae, and adults is designated at the project area. In Long Island Sound, butterfish spawn from June to late August with a peak in late July. The principal spawning areas are in the eastern part of the sound. They have a seasonal inshore-offshore migration dependent on water temperature. In summer, they move north and inshore to feed on planktonic fish, squid, crustaceans, and jellyfish and then move south and offshore in the winter. Eggs and larvae may occur in salinities ranging from estuarine to full strength seawater. Adults are common to abundant in the high salinity and mixing zones of estuaries within the region (NMFS 1999a). Based on this species' diet, migration pattern, and habitat characteristics, the project will have no effect to Atlantic butterfish EFH.

EFH for **Atlantic herring** juvenile, and adults is designated at the project area. Juveniles are sometimes abundant in fall while adults are abundant in Long Island Sound during the spring. In the Connecticut River, juveniles have a rare abundance only in the mixing salinity zone. Juveniles and adults are pelagic, with adults only becoming demersal during spawning. Atlantic sea herring prey on pelagic zooplankton. Atlantic herring larvae metamorphose into early-stage juveniles in the spring within intertidal and subtidal habitats out to 985 feet. Adults and juveniles may be found in the estuarine mixing salinity zones of the Connecticut River. The river does not support adults or juveniles in tidal freshwater habitat (NMFS, 199b). Given the salinity range of Selden Creek, no impacts are anticipated as there is not a suitable salinity for adults and juveniles within Selden Creek.

Atlantic mackerel EFH for all life stages is designated in the project area. Atlantic mackerel spawn pelagic eggs from roughly mid-April to June. The pelagic eggs hatch into planktonic larvae 4-5 days post-fertilization. Atlantic mackerel gain the ability to swim and school after approximately 1-2 months. During the winter, Atlantic mackerel migrate to deep water offshore and eventually move back inshore in the spring. Mackerel feed on a variety of prey during their life cycles, including zooplankton, crustaceans, copepods, and small fish. They are never found in the Connecticut River, and their eggs have high mortality rates at low salinities (NMFS, 1999c). Based on the fact that Atlantic mackerel are unlikely to be found north of the Connecticut River estuary, the project will have no effect to this species' EFH.

EFH for all life stages of **Atlantic salmon** is designated in the project area. All life stages of Atlantic salmon use freshwater habitats either exclusively or at some point during their life history. The streambed is important for eggs and larvae while the juveniles and adults use the river itself. Adults prefer riffle and run habitats in shallow, freshwater streams with gravel/rocky substrates with pools or vegetated riverine areas of low velocity. Spawning adults are generally found in late October through November. During this time, eggs are deposited and buried in the substrate and hatch after about 6 months in the spring. Larvae remain in the substrate for about six weeks before emerging as Juveniles in the spring (NEFMC, 2017). No impacts are anticipated to Atlantic salmon eggs, larvae, or spawning Adults as the proposed application will no occur during these months. These life stages are not likely to be present during the proposed application in the summer, after July 4.

Juveniles begin smolting in freshwater before migration downstream into brackish water and seawater. The timing of downstream migration depends on various factors, including temperature, salinity, and physiological adaptations. Spawning adults are generally found in late October through November. Juveniles may utilize the Connecticut River, in addition to riverine (e.g. Selden Creek), lacustrine, and estuarine habitats (NEFMC, 2017). The proposed project will result in temporary impacts to SAV and habitat conversion that may affect juvenile and adult life stages EFH habitat. Temporary habitat conversion may occur from the reduction of hydrilla and potential non-target impacts. Loss of SAV will be limited to the proposed treatment site. Although there may be impacts short term impacts to habitat availability to native fish following the hydrilla treatment, the goal is to reduce hydrilla presence, abundance and density to a level that allows native SAV to reestablish~~,~~ providing higher quality habitat. Therefore, the project is expected to have long-term beneficial impacts to EFH for Atlantic salmon.

Black sea bass EFH is designated at the project area for juveniles. In Southern New England, both juvenile and adult black sea bass migrate offshore to over-wintering areas at depths greater than 250 feet when waters begin to cool in the fall. Within estuaries, black sea bass juveniles use shallow shellfish, sponge, amphipod (e.g., *Ampelisca abdita*), seagrass, and cobble habitats as well as manmade structures such as wharves, pilings, and wrecks. Juveniles are generalist carnivores that feed on a variety of infaunal and epifaunal invertebrates, small fish, and squid (NMFS, 1999d). As black sea bass are unlikely to occur north of the Connecticut River estuary, no adverse effects to EFH is expected as a result of this project.

Juvenile and adult EFH for **bluefish** is designated for the project area. Juveniles are abundant in the Connecticut River estuary but are not known to move into freshwater. Spawning occurs in the spring and summer when adults and juveniles are present inshore. Bluefish feed primarily on small prey fish but may forage for benthic prey on oyster bar and reef habitats when prey availability is limited (NMFS, 1999e). The project is located in areas that do not support bluefish and the action will not impact any prey species.

EFH for **little skate** and **winter skate** juveniles and adults is designated for the project area. Little skate and winter skate are sympatric species with similar habitat requirements. Their EFH occurs on sand, gravel, and mud substrates. Both species are benthic feeders, with crustaceans and polychaetes being important food sources. Both winter skate and little skate move inshore and offshore seasonally, moving into shallower inshore waters during spring and then into deeper waters in winter from roughly November to April (NMFS, 2003a; NMFS, 2003b). The project is located in areas that do not support little skate and winter skate; therefore, the action will not impact EFH.

Longfin inshore squid eggs, juvenile, and adult EFH is designated at the project area. Longfin inshore squid migrate offshore during late autumn and overwinter in deeper, warmer waters along the edge of the continental shelf. They return inshore during the spring and early summer to feed on planktonic organisms, crustaceans, and small fish. Most spawning occurs in May and hatching occurs in July. Egg masses are commonly found attached to rocks and small boulders on sandy/muddy bottom and on submerged aquatic vegetation (NMFS, 1999f). Longfin inshore squid are not known to use the Connecticut River for habitat so there will be no impact to longfin inshore squid EFH.

Pollock EFH for juveniles, and adults is designated at the project area. Larvae are pelagic, most are found at depths of 164 to 295 feet (50-90 m). EFH for juveniles includes rocky bottom habitats with attached macroalgae (NEFMC, 2017). The juveniles have been reported over a wide variety of substrates, including sand, mud, or rocky bottom, and vegetation. Most commonly juveniles are found at depths of 82 to 246 feet (25-75 m) although they can be found from the surface to 410 feet deep (125 m). Adults show little preference for bottom type, and they inhabit a wide range of depths from 115 to 1197 feet (35-365 m) (NMFS, 1999g). EFH for adults include the tops and edges of offshore banks and shores with mixed rocky substrate, often with attached macro algae.

The EFH designation for Long Island Sound includes the seawater salinity zone of Long Island Sound. Pollock are not known to travel up the Connecticut River (NEFMC, 2017); therefore, this project is not expected to have impacts on pollock EFH.

EFH for all life stages of **red hake** is designated in the project area. Spawning of pelagic eggs occurs in the summer along the continental shelf and is concentrated off southern New England. Red hake larvae have been collected on the middle to outer continental shelf of the Middle Atlantic Bight, but few larvae were collected in the Gulf of Maine. North of Cape Cod, where waters are cooler, juveniles can remain inshore throughout the summer. Both juveniles and adults have primarily been found over muddy substrate (NMFS, 1999h). Juvenile EFH includes intertidal and sub-tidal benthic habitats on mud and sand substrates. Adult EFH includes inshore estuarine and embayment habitat, in depressions in softer sediments or in shell beds. In the Connecticut River, Red hake are present in mixing salinity zones (NEFMC, 2017). The proposed project will not occur within mixing salinity zones, where red hake may be present, therefore, no impacts are anticipated to red hake EFH.

Scup EFH for all life stages is designated at the project area. Scup eggs larvae are found from May through August in southern New England, with EFH habitat in the mixing and seawater salinity zones of estuaries. Larvae occupy a similar habitat and can be found from May through September. Juvenile and adult scup migrate from estuaries to the edge of the continental shelf as water temperatures decline in the winter and return from the edge of the continental shelf to inshore areas as water temperatures rise in the spring. Inshore, juvenile summer habitat includes intertidal and subtidal habitats, over sand, silty-sand, shell, mud, mussel beds and eelgrass (*Zostera marina*) as well as rocky ledges, wrecks, artificial reefs, and mussel beds (NMFS, 1999i). Adult EFH inshore habitat includes the mixing and seawater salinity zones of estuaries (MAFMC, 1998). Due to the project location north of the Connecticut River estuary, no adverse impacts to scup EFH are expected as a result of this project.

EFH for **summer flounder** juveniles and adults is designated at the project area. Summer flounder inhabit shallow coastal and estuarine waters between May and October, moving offshore to the outer continental shelf during winter months. It is believed that spawning occurs in offshore waters of southern New England, with peak offshore spawning occurring during October and November. Summer flounder juveniles and adults are benthic feeders, with polychaetes, crustaceans, and bivalves being important food sources (NMFS, 1999j). Inshore habitat for juveniles and adults is restricted to mixing and seawater salinity zones (MAFMC, 1998). Due to the location of the project being upstream of the Connecticut River estuary’s salt wedge, no adverse effects to adult summer flounder spawning EFH are expected.

EFH for all life stages of **windowpane flounder** is designated for the project area. Egg and larval EFH is described as pelagic habitats on the continental shelf from Georges Bank to Cape Hatteras and in mixed and high salinity zones of coastal bays and estuaries throughout the region. Juvenile and adult EFH occurs in intertidal and sub-tidal muddy or sandy benthic habitats in estuarine, coastal marine, and continental shelf waters from the Gulf of Maine south (NMFS, 1999k). All life stages are found in the mixing salinity zone of the Connecticut River (MAFMC, 1998). Windowpane flounder habitat is not expected north of the Connecticut River estuary. Therefore, no adverse impacts on all life stages of windowpane flounder EFH would be anticipated as a result of this project.

Winter flounder EFH for all life stages is designated at all project locations. Winter flounder are found in a variety of habitats from brackish riverine waters to saline coastal environments and have been documented from depths of less than 3 feet in coastal embayments, up to approximately 90 feet in Cape Cod Bay and Stellwagen Bank and up to 270 feet on George's Bank. Except for the Georges Bank population, adult winter flounder migrate inshore in the fall and early winter. Spawning occurs in late winter and early spring with peak spawning between February and March in Massachusetts Bay. The diet of juvenile and adult winter flounder consists of benthic fauna; mostly polychaetes and amphipods (NMFS, 1999l). Winter flounder are not expected to inhabit areas north of the Connecticut River estuary. Therefore, no impacts on all life stages of the winter flounder EFH would be anticipated as a result of this project.

Avoidance, Minimization, and Mitigation

Specific measures taken to avoid and minimize impacts to EFH:

The project area does not contain viable EFH for the identified species because it is a tidal freshwater creek and is located upstream of the Connecticut River estuary. Additionally, the proposed action will occur after July 4th to avoid potential impacts to diadromous fish.

Is compensatory mitigation proposed?

No compensatory mitigation is proposed as no significant adverse effects are anticipated to any species' EFH.

Compensatory mitigation details:

N/A

8. Effects of Climate Change

Could species or habitats be adversely affected by the proposed action due to projected changes in the climate?

No adverse effects to species or habitat are expected as a result of the project and projected climate change.

Is the expected lifespan of the action greater than 10 years?

No, however, use of aquatic herbicides for control of the invasive hydrilla are likely to continue in other parts of the Connecticut River. The project is expected to reduce hydrilla presence, abundance and density to allow for native SAV to replace it.

Is climate change currently affecting vulnerable species or habitats, and would the effects of a proposed action be amplified by climate change?

Vulnerable species and habitats are currently affected by climate change, but the effects of the proposed action are not likely to be amplified by climate change.

Do the results of the assessment indicate the effects of the action on habitats and species will be amplified by climate change?

No.

Can adaptive management strategies (AMS) be integrated into the action to avoid or minimize adverse effects of the proposed action as a result of climate?

Due to negligible impacts to species EFH, the effects of the proposed action are not likely to be amplified by climate change; thus, adaptive management strategies would not help avoid or minimize adverse impacts of the proposed action.

9. Federal Agency Determination

Federal Action Agency's EFH determination	
	There is no adverse effect on EFH or EFH is not designated at the project site. EFH Consultation is not required. This is a FWCA only request.
X	The adverse effect on EFH is not substantial. This means that the adverse effects are no more than minimal, temporary, or can be alleviated with minor project modifications or conservation recommendations. This is a request for an abbreviated EFH consultation.
	The adverse effect on EFH is substantial. This is a request for an expanded EFH consultation.

10. Fish and Wildlife Coordination Act

Fish and Wildlife Coordination Act Resources

Species known to occur at site	**Habitat impact type**
alewife	Temporary impacts to SAV.
American eel	Temporary impacts to SAV.
American shad	Temporary impacts to SAV.
Atlantic menhaden	N/A
blue crab	N/A
blue mussel	N/A
blueback herring	Temporary impacts to SAV.
Eastern oyster	N/A
horseshoe crab	N/A
quahog	N/A
soft-shell clams	N/A
striped bass	Temporary impacts to SAV.
other species:	

11. References

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National Marine Fisheries Service (NMFS). 1999j. Essential Fish Habitat Source Document: Summer Flounder, *Paralichthys dentatus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

National Marine Fisheries Service (NMFS). 1999k. Essential Fish Habitat Source Document: Windowpane Flounder, *Scophthalmus aquosus*, Life History and Habitat Characteristics. Northeast Region, Northeast Fisheries Science Center.

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