Commonwealth of Massachusetts

Executive Office of Energy and Environmental Affairs
Massachusetts Environmental Policy Act (MEPA) Office

Environmental Notification Form

For Office Use Only
EEA#: 15771
MEPA Analyst: Purvi Patel

The information requested on this form must be completed in order to submit a document electronically for review under the Massachusetts Environmental Policy Act, 301 CMR 11.00.

Project Name: Field Pond Dam & Dike Rehabilitation		
Street Address: Harold Parker Road		
Municipality: Andover	Watershed: Ipswich	
Universal Transverse Mercator Coordinates: X: 327291 Y: 4719444	Latitude: 42 36' 29" Longitude: -71 6' 20"	
Estimated commencement date: Spring 2018	Estimated completion date: Spring 2019	
Project Type: Dam Rehabilitation	Status of project design: 50 %complete	
Proponent: MADCR c/o Dan Mortell		
Street Address: 180 Beaman Street		
Municipality: West Boylston	State: MA	Zip Code: 01583
Name of Contact Person: Allen R. Orsi, P.E.		
Firm/Agency: Pare Corporation	Street Address:10 Lincoln Road, Suite 210	
Municipality: Foxboro	State: MA	Zip Code: 02035
Phone: (508) 543-1755	Fax: (508) 543-1881	E-mail: AOrsi@parecorp.com

Does this project meet or exceed a mandatory EIR threshold (see 301 CMR 11.03)?
☐Yes ☒No

If this is an Expanded Environmental Notification Form (ENF) (see 301 CMR 11.05(7)) or a Notice of Project Change (NPC), are you requesting:

a Single EIR? (see 301 CMR 11.06(8))	☐Yes ☒No
a Special Review Procedure? (see 301CMR 11.09)	☐Yes ☒No
a Waiver of mandatory EIR? (see 301 CMR 11.11)	☐Yes ☒No
a Phase I Waiver? (see 301 CMR 11.11)	☐Yes ☒No

(Note: Greenhouse Gas Emissions analysis must be included in the Expanded ENF.)

Which MEPA review threshold(s) does the project meet or exceed (see 301 CMR 11.03)?
11.03(3)(b)(1)b: Alteration of 500 or more linear feet of bank along a fish run or inland bank
11.03(3)(b)(1)f: Alteration of half or more acre of any other wetlands (LUW, Riverfront Area)
11.03(3)(b)(1)d: Alteration of 5000 or more square feet of BVW (temporary impacts)
Which State Agency Permits will the project require? **Order of Conditions, Water Quality Certification for dredging and filling, ACOE General Permit Category II, MADCR Ch. 253 Permit**

Identify any financial assistance or land transfer from an Agency of the Commonwealth, including the Agency name and the amount of funding or land area in acres: **N/A**

Summary of Project Size & Environmental Impacts	Existing	Change	Total
LAND			
Total site acreage	6.18± acres*		
New acres of land altered		4.75± acres**	
Acres of impervious area	0	0	
Square feet of new bordering vegetated wetlands alteration		650 permanent; 14,580 temporary (vegetation removal)	
Square feet of new other wetland alteration		24,405 S.F. LUW*** 8,835 S.F. BLSF**** 58,260 S.F. RA*** 790 L.F. BANK***	
Acres of new non-water dependent use of tidelands or waterways		0	
STRUCTURES			
Gross square footage	0	0	0
Number of housing units	0	0	0
Maximum height (feet)	0	0	0
TRANSPORTATION			
Vehicle trips per day	0	0	0
Parking spaces	0	0	0
WASTEWATER			
Water Use (Gallons per day)	0	0	0
Water withdrawal (GPD)	0	0	0
Wastewater generation/treatment (GPD)	0	0	0
Length of water mains (miles)	0	0	0
Length of sewer mains (miles)	0	0	0

Has this project been filed with MEPA before?
☐ Yes (EEA #_____) ☒No

Has any project on this site been filed with MEPA before?
☐ Yes (EEA #_____) ☒No (none known)

*Includes entire area within LOD, including temporary access and staging.
**Includes entire area within LOD excluding areas within LOD that will not be disturbed.
***Includes permanent alterations and temporary construction impacts within LOD from staging, clearing, access, dewatering, and erosion controls. See "wetlands, waterways and tidelands section" for temporary vs permanent impacts.

GENERAL PROJECT INFORMATION – all proponents must fill out this section

Describe the existing conditions and land uses on the project site: Field Pond Dam and Dike are located within the Harold Parker State Forest in Essex County in the Town of Andover, Massachusetts. The dam and dike impound water along an unnamed tributary to the Skug Brook. The structures and impoundment are shown on the Reading, Massachusetts USGS quadrangle map with the dam near coordinates 42.60737°N / 71.10564°W and the dike near coordinates 42.60592°N / 71.10621°W.

The dam is located on the south side of Harold Parker Road and is accessible from Interstate 93 as follows: Take Exit 41: State Route 125 towards Andover/North Andover. Follow Route 125 for approximately 2.6 miles and take a right onto Gould Road after the State Police Barracks. Travel a short distance (less than 100 feet) and stay straight onto Harold Parker Road. Travel approximately 0.5 miles and Harold Parker Road will travel along the northern portion of Field Pond. A gravel access road/foot path leading to the dam will be on the right after Field Pond. Follow the gravel access road to the dam. The dam is located in the rear of the private residence at 10 Penobscot Way; however, authorization to access the dam from this location is unknown.

To reach the dike from the dam, continue along wooded footpaths that extend from the right abutment of the dam to the left abutment of the dike. Alternatively, the dike can be accessed from its right abutment via the following: Instead of staying straight onto Harold Parker Road, take a right to stay on Gould Road then in 0.5 miles turn left onto Farrwood Drive. In 0.25 miles, the right abutment of the dike is located in the back of 14 Farrwood Drive. Access through the private residence requires coordination with the owner of the residence.

Field Pond Dam (MA01134) is an Intermediate sized Significant hazard structure that consists of an approximately 14-foot high, 630-foot long earthen embankment dam with a concrete core wall. The embankment has a curved shape, with upstream slopes ranging from about 6:1 to about 4:1 and downstream slopes ranging from about 6:1 to about 4:1. A foot path runs along the top of the embankment, and another footpath runs along the downstream toe. The dam has a concrete core wall, the top of which is visible in some sections.

The primary spillway is a broad-crested concrete weir with vertical concrete training walls. The primary spillway has metal stoplog/flashboard supports, and discharges to a stone-lined channel with vertical concrete training walls. The training walls have some rebar protruding from the walls, which appears to be rebar intended for a spillway apron/slab that was never constructed. The spillway channel also has a stone masonry pier in the middle of the channel that appears to have been a bridge support.

The low-level outlet is located to the right of the spillway and consists of a slide gate mounted on the upstream face of the core wall with a 28-inch CMP pipe that passes through the embankment. The pipe transitions to a 30" high x 32" wide concrete box culvert approximately 55 feet downstream of the upstream gate and 25 feet upstream of the downstream end of the outlet. The intake area consists of vertical training walls that project into the Pond from the core wall. The intake channel has slots for stop logs, and is covered with steel gratings for maintenance access. Adjacent to the low-level outlet intake, the upstream side of the concrete core forms the upstream face of the dam. The downstream end of the box culvert empties into a rectangular discharge area confined by short concrete walls.

Field Pond Dike (MA03217) is an Intermediate sized Significant hazard structure that consists of an approximately 10-foot high, 145-foot long earthen embankment with a concrete core wall. The dike is located within a small cove on the south shore of Field Pond. The dike has an approximately 5:1 upstream slope and an approximately 3:1 downstream slope. A footpath runs along the top of the embankment, just upstream of the core wall. The top of the core wall is visible along the majority of the embankment. Field Pond Dike does not have a spillway or other outlet structures. A spillway and low-level outlet are located at Field Pond Dam about 700 feet northeast of the dike.

Wetland resource areas present in the vicinity of the dam include the Banks and Land Under Water associated with Field Pond and Skug River; 200-foot Riverfront Area associated with Skug River; Banks associated with an unnamed intermittent stream discharging from the low level outlet; Bordering Vegetated Wetlands (BVW) located within the Dam and Dike project areas; and Bordering Land Subject to Flooding located on the downstream side of the dam surrounding Skug River.

Describe the proposed project and its programmatic and physical elements: MADCR is proposing repairs at Field Pond Dam and Dike in order to provide a long-term solution to the noted deficiencies, which are described in the attached Conceptual Design Report (Appendix D). Several alternatives were considered for the proposed project, and the selected approach represents that which minimizes resource area alterations to the extent practicable. The proposed repair program includes the following elements:

1) **Clearing and Grubbing:** Clear trees, brush, and other unwanted woody vegetation from the dam and dike embankments. Grub remaining stumps and root systems within the footprint of the dam and dike. Fill resulting voids with approved material compacted in lifts to subgrade for the specific surface treatment (i.e. loam and seed, riprap, etc.). The proposed limits of clearing is shown on Sheet 3.0: Dam Site Plan and Sheet 6.0 Dike Site Plan.

2) **Seepage Mitigation:** To address the observed and modeled conditions of significant seepage along the toe of the dam and dike, a seepage mitigation system is required. The following two alternatives for repair have been developed:

   i. **Sheet Pile and Toe Drain (Recommended):** A driven sheet pile cutoff wall installed along the crest of the dam and dike immediately downstream of the existing concrete cutoff walls. The cutoff wall is anticipated to extend from 1.5 feet below the crest elevation (El. 94.5) to a minimum of 3 to 4 feet within the foundation material (the glacial deposits layer at the dam and the sand and gravel layer at the dike) or to bedrock. Based on the subsurface investigations, it appears that a combination of 15-foot, 20-foot, and 25-foot long sheet piles can be utilized. In addition to the cutoff wall, a toe drain system will be installed along the downstream slope.

   ii. **Sheet Pile Only:** Although the model results seem to indicate that with the sheet pile cutoff wall, a toe drain system is not needed, it is recommended to include the toe drain system to ensure free draining conditions downstream of the cutoff wall and to account for uncertainties regarding seepage through the sheet pile joints and potential discontinuities within the

bedrock foundation.

3) **Spillway Repairs:** To address the noted concrete deficiencies and apparent unfinished areas of the existing spillway control section and training walls, repairs are required. The following two alternatives for repair have been developed. Both alternatives require control of water work inclusive of installation of an upstream cofferdam and dewatering controls to allow the work to be completed in the dry as well as a flow diversion system to bypass flows. Although it appears that a sandbag or portadam cofferdam is geometrically feasible, due to the loose sandy nature of the embankment material along with the potential for deeper overexcavations that may be required, a sheet pile cofferdam is anticipated. A drawdown of the impoundment is also required to limit the dewatering efforts within excavations as well as the potential for slope failures of the existing loose embankment material.

   i. **Replacement (Recommended):** Removal of the existing spillway components inclusive of the concrete control weir, concrete training walls, the portion of the concrete cutoff wall within the limits of work, the stone bridge pier, the existing channel riprap, and all other associated components. Provide foundation preparation for the proposed spillway components anticipated to either include overexcavation and replacement of unsuitable foundation material or a semi-deep foundation system comprised of driven H piles. Install the new spillway components inclusive of a concrete weir wall and footing, two piers to create three stop log bays, concrete training walls and footings, and riprap channel protection.

   ii. **Repair:** A repair alternative was considered including completing concrete repairs to the existing concrete components and finishing the apparent concrete slab within the downstream channel. However, given the need of the sheet pile cutoff wall to extend through and beneath these existing components, this alternative was no longer considered. In addition, above grade concrete structures at this dam as well as the other dams built by the CCC in the early 1930's displays indications of advanced degradation of the concrete structures, potentially resulting from improper material or construction methods. As such, a repair program would likely result in an end product with limited service lift.

4) **Low Level Outlet (LLO) Repairs:** To address the noted deficiencies at the low level outlet including deteriorated sections of the CMP pipe with observed leakage and the inoperability of the LLO slide gate, repairs to the LLO system are required. The following two alternatives for repair have been developed.

   Both alternatives require control of water work inclusive of a the installation of an upstream cofferdam and dewatering controls to allow the work to be completed in the dry as well as a flow diversion system to bypass flows. Although it appears that a sandbag or portadam cofferdam is geometrically feasible, due to the loose sandy nature of the embankment material along with the potential for deeper overexcavations that may be required, a sheet pile cofferdam is anticipated. A drawdown of the impoundment is also required to limit the dewatering efforts within excavations as well as the potential for slope failures of the existing loose embankment material.

   i. **Remove and Replace the LLO in the Same Location (Recommended):** Remove the existing LLO system inclusive of the concrete walls and stop logs of the intake structure, the portion of the concrete core wall required to complete the replacement work, the slide gate, the CMP pipe and concrete culvert, accumulated material upstream of the intake structure, and other associated components. Install a new LLO system inclusive of a concrete intake structure with a trash rack and removable stop logs, a slide gate, a 24-inch ductile iron pipe with concrete cradle, and other associated components. Regrade the upstream slope in the area of the intake structure. As the existing outlet discharges at the lowest point of the downstream toe, the location of the existing LLO appears to be the most appropriate to maximize drawdown capacity.

   ii. **Install a LLO closer to the Spillway and Abandon Existing LLO:** Once punctured through the installation of the sheet pile cutoff wall, abandon the existing outlet conduit through tremie grouting. Install a new LLO system incorporated within the spillway replacement alternative. Given the concerns as to how effective the abandonment procedures will be and the potential for limited sheet pile cutoff wall depth in the area due to potential bedrock, this option is not preferred. A sub-alternative that could be considered is to remove the low level outlet through excavation and replacement with engineered fill.

   iii. **Repair:** Repair options for the LLO include implementing a sliplining approach to provide a continuous water tight conduit through the embankment. Upon installation of the carrier pipe, the annulus and voids around the existing CMP could be filled utilizing a pressurized grouting approach. However, conflicts between the proposed cutoff wall and the existing conduit would require an open cut excavation at the location of the pipe/sheet pile intersection; Required excavation to accommodate this interaction would likely offset the cost savings associated with in-situ pipe repair methods. As such, complete replacement appears to be a preferable approach.

5) **Embankment Regrading:** Fill areas of the crest that are lower than the design top of dam/dike elevation (El. 96.0). Regrade the crest to a uniform level width. Regrade the downstream slope and upstream slope as required as a result of crest regrading. Match existing mild slopes.

6) **Upstream Slope Scarping Protection:** To address the noted scarping along the upstream slope at the dam and potential for scarping at the dike, scarping/slope protection is required.

   i. **Riprap (Recommended):** Remove existing surficial material and install riprap slope protection inclusive of geotextile fabric,

bedding stone, and armor stone. The extent of the riprap should extend from near the crest of the dam to below an anticipated winter drawdown elevation.

ii. **Other:** Install a row of 2-foot to 3-foot diameter boulders along the anticipated limits of normal pool wave action. Chink the joints between the boulders with smaller stone (bedding/armor). Provide vegetative stabilization upstream and downstream of the stone protection. The vegetation type used upstream should be a type that can grow below water. Although this alternative would address the scarping potential from wave action at normal pool, it would not address it at the winter drawdown pool or elevated pools as a result of storm events. As such, the riprap alternative is recommended.

7) **Pedestrian Access Improvements:** Provide pedestrian access improvements. Relocate the existing walking path from along the downstream slope/toe to the crest of the dam. Provide a prefabricated bridge to span the spillway as well as provide access for debris maintenance and removal.

8) **Miscellaneous Work Items Necessary For Construction:** The following is a list of other miscellaneous work items that are required to facilitate the completion of the repair components identified above:

a. **Access and Staging at Dam:** Establish access and staging areas at the dam site:
   i. **Access:** Access to the dam site is from the existing fire road that extends through the wooded area of the Harold Parker State Forest from Harold Parker Road to the left abutment of the dam. Improvements to this existing road include widening the road from its current width of 12 to 15 feet to 25 feet, tree removal associated with widening, and surface stabilization, anticipated to include dense grade material underlain by geotextile fabric, where required. It is anticipated that any access improvements will be permanent; however, if restoration of the existing fire road is desired, this could be incorporated into the final design.
   ii. **Staging:** Several potential staging areas have been identified as shown within Sheet 2.2: Site Access and Staging Plan. Tree removal will be required in these areas. As part of the identification of potential staging areas, potential beneficial use for the staging area has been considered such as use for wetland impact mitigation anticipated to be required for unavoidable impacts associated with the dam work.

b. **Access and Staging at Dike:** Establish access and staging areas at the dike site: It is anticipated that access to the dike site will be through the residential property of 14 Farnwood Drive; however, the abutter at 14 Farnwood Drive has also indicated a willingness to provide access through their property. Means of providing the necessary permission/easement for this access is still to be determined. One staging area has been identified at the right abutment of the dike. Tree removal will be required in this area. Alternatively to identifying this staging area on the plans, it could be removed with language incorporated within the contract documents for the Contractor to coordinate access and staging through private property.

c. **Erosion and Sediment Control:** Perimeter erosion and sediment controls, inclusive of silt fence, straw bales, and turbidity barrier will be provided along the limits of work where required.

d. **Control of Water:** To safely complete the work, Pare recommends incorporating both a deep drawdown of the impoundment as well as erection of a temporary cofferdam. While a temporary cofferdam can often be considered as the sole means by which to control work during dam embankment construction, existing conditions at the dam and dike, the nature of the work to be completed, and other factors require the combined approach.
   i. **Drawdown:** A 7-foot deep drawdown (El. 86.0±) is recommended to enable safe completion of the work. Replacement of the spillway and low level outlet will require deep excavations within the earthen embankment and into the underlaying foundation material. The embankment consists of a poorly graded loose sand; excavation support, dewatering, and excavation safety could be compromised if the work is attempted at normal pool operation levels. This depth of drawdown will allow for a remnant pool to remain with depths averaging near 4 feet, which will support refuge for wildlife during the construction period. The drawdown will also relieve hydrostatic forces from the embankment to levels that can safely be controlled during completion of the work while providing storage capacity within the impoundment should a storm event in excess of the required diversion occur during the construction period. It is anticipated that the drawdown will be implemented through use of the existing low level outlet.
   ii. **Cofferdam:** An upstream cofferdam will be required for the spillway and low level outlet repair work. Given the sandy and loose nature of the embankment materials, concerns may arise if a port-a-dam type cofferdam or bulk sand bag cofferdam is implemented. As such, it is presumed that the cofferdam will consist of a driven sheet pile system.
   iii. **Diversion and Dewatering:** A water diversion system, inclusive of siphons through/around the work area, is anticipated to bypass storm flows and to maintain the drawdown. Excavation dewatering, inclusive of multiple sump locations leading to dewatering basins, is anticipated for the excavations that extend below the drawdown elevation. Sedimentation basins will be required to pretreat any pumped dewatering flow prior to discharge to the downstream channel or impoundment area.

Due to the location and nature of this dam repair project, impacts to wetland resource areas are unavoidable. The proposed work will result in the following impacts, which are described in greater detail in the "Wetlands, Waterways, and Tidelands" section:

Resource Area	Permanent Impact			Temporary Impact			Total Impact
	Dam	Dike	Total	Dam	Dike	Total	
Bank	590	115	705	60	25	85	790

LUW	13,100*	800*	13,900*	8,660	1,845	10,505	24,405*
RFA	52,360	0	52,360	5,900	0	5,900	58,260
BVW	300	350	650	12,920	1,660	14,580	15,230
BLSF	840**	0	840**	7,995	0	7,995	8,835**

*No net loss of LUW proposed.
**No net loss of flood storage proposed.

Describe the on-site project alternatives (and alternative off-site locations, if applicable), considered by the proponent, including at least one feasible alternative that is allowed under current zoning, and the reasons(s) that they were not selected as the preferred alternative: Throughout the evaluation and design phases of this project, a variety of alternatives have been considered to address the identified deficiencies. Some of the alternatives are discussed above. The following section presents the other design alternatives considered.

Alternative 1 - Breach the Dam: The alternative of breaching the dam and restoring the impoundment to a stream channel was rejected by the MADCR who desired to maintain the valuable water resource.

Alternative 2 – Dam and dike improvements (selected approach): It was determined by the MADCR that Field Pond Dam offered a valuable resource area for the community and that the dam should be restored. The restoration of the dam will allow the impoundment to meet current dam safety regulations and preserve the ecological, aesthetic, and recreational resources provided by Field Pond. A number of alternatives for several of the various repair components were considered, as discussed above. The selected approach shown presents that which represents an option meeting dam safety requirements while minimizing overall impacts associated with the project.

Alternative 3 – Dam and dike reconstruction: Alternatively to the sheet pile cutoff wall and toe drain system described above, remove and reconstruct the dam and dike embankments entirely. While technically feasible, this option was not considered practical due to anticipated level of permitting, design, and costs of construction. As such, it was not considered further as part of this evaluation.

Summarize the mitigation measures proposed to offset the impacts of the preferred alternative: Dewatering is proposed in two phases in order to maintain flow downstream throughout the construction. Erosion and sedimentation controls are provided at the limits of work to prevent migration of sediment into resource areas. All areas of temporary disturbance within wetlands will be restored to their pre-construction condition and seeded as appropriate. A replacement wetland will be provided to offset the proposed unavoidable alterations to Bordering Vegetated Wetland. Pare is in the process of evaluating potential wetland replication areas on the subject property that will provide greater than 1:1 mitigation that will meet the requirements of the various regulatory agencies while resulting in minimal alteration to the surrounding state forest. A Wetland Replication Plan will be provided with upcoming wetlands permit application submissions.

If the project is proposed to be constructed in phases, please describe each phase: No phasing of the project is required.

AREAS OF CRITICAL ENVIRONMENTAL CONCERN:

Is the project within or adjacent to an Area of Critical Environmental Concern?
☐Yes
☒No
if yes, does the ACEC have an approved Resource Management Plan?__Yes ___ No;
If yes, describe how the project complies with this plan.

Will there be stormwater runoff or discharge to the designated ACEC? ___ Yes ___ No;
If yes, describe and assess the potential impacts of such stormwater runoff/discharge to the designated ACEC.

RARE SPECIES:

Does the project site include Estimated and/or Priority Habitat of State-Listed Rare Species? (see http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/priority_habitat/priority_habitat_home.htm)
☐Yes ☒No

HISTORICAL /ARCHAEOLOGICAL RESOURCES:

Does the project site include any structure, site or district listed in the State Register of Historic Place or the inventory of Historic and Archaeological Assets of the Commonwealth?
☒Yes (Specify **Field Pond and Dam, Inv No. ANV.930; Harold Parker State Forest- West Ponds CCC Camp, Inv No. ANV.X**) ☐No

If yes, does the project involve any demolition or destruction of any listed or inventoried historic or archaeological resources? ☒Yes (Specify **the project involves select demolition of the spillway structure and low level outlet at Field Pond Dam, and repairs to both structures**) ☐No

WATER RESOURCES:

Is there an Outstanding Resource Water (ORW) on or within a half-mile radius of the project site? __ Yes _X_No;
if yes, identify the ORW and its location.

(NOTE: Outstanding Resource Waters include Class A public water supplies, their tributaries, and bordering