**Commonwealth of Massachusetts**
**Executive Office of Environmental Affairs ■ MEPA Office**

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| EOEA No.: 12872 |
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| Phone: 617-626-1029 |

# ENF Environmental Notification Form

The information requested on this form must be completed to begin MEPA Review in accordance with the provisions of the Massachusetts Environmental Policy Act, 301 CMR 11.00.

| | | |
|---|---|---|
| Project Name: Advanced Wastewater Treatment Facility | | |
| Street: **29 Charles Street** | | |
| Municipality: **Douglas** | Watershed: **Mumford River** | |
| Universal Tranverse Mercator Coordinates: | Latitude: **42.08**<br>Longitude: **71.71** | |
| Estimated commencement date:<br>**March 2003 (WWTF)** | Estimated completion date:<br>**November 2004 (WWTF)** | |
| Approximate cost: **WWTF = $5.6M**<br>**Sewers = $6.2M** | Status of project design: **75 (WWTF)** %complete | |
| Proponent: **Town of Douglas Sewer Commission** | | |
| Street: **29 Charles Street** | | |
| Municipality: **Douglas** | State: **MA** | Zip Code: **01516** |
| Name of Contact Person From Whom Copies of this ENF May Be Obtained:<br>**Joseph D'Alesio, P.E.** | | |
| Firm/Agency: **BETA Group, Inc.** | Street: **6 Blackstone Valley Place** | |
| Municipality: **Lincoln** | State: **RI** | Zip Code: **02865** |
| Phone: **(401) 333-2382** | Fax: **(401) 333-9225** | E-mail:**jdalesio@beta-inc.com** |

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

Has this project been filed with MEPA before?
☐Yes (EOEA No.__________) ☒No

Has any project on this site been filed with MEPA before?
☐Yes (EOEA No.__________) ☒No

Is this an Expanded ENF (see 301 CMR 11.05(7)) 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

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): **SRF is funding the WWTF project in the amount of $5.6M**

Are you requesting coordinated review with any other federal, state, regional, or local agency?
☐Yes(Specify______________________) ☒No

List Local or Federal Permits and Approvals: **U.S. EPA: NPDES Permit**

Which ENF or EIR review threshold(s) does the project meet or exceed (see 301 CMR 11.03):

- ☐ Land
- ☐ Water
- ☐ Energy
- ☐ ACEC
- ☐ Rare Species
- ☒ Wastewater
- ☐ Air
- ☐ Regulations
- ☐ Wetlands, Waterways, & Tidelands
- ☐ Transportation
- ☐ Solid & Hazardous Waste
- ☐ Historical & Archaeological Resources

| Summary of Project Size & Environmental Impacts | Existing | Change | Total |
|---|---|---|---|
| **LAND** | | | |
| Total site acreage | 7.10 | | |
| New acres of land altered | | 0.00 | |
| Acres of impervious area | .51 | .42 | .93 |
| Square feet of new bordering vegetated wetlands alteration | | 0 | |
| Square feet of new other wetland alteration | | 0 | |
| Acres of new non-water dependent use of tidelands or waterways | | 0 | |
| **STRUCTURES** | | | |
| Gross square footage | 2700 | 4535 | 7235 |
| Number of housing units | 0 | 0 | 0 |
| Maximum height (in feet) | | | |
| **TRANSPORTATION** | | | |
| Vehicle trips per day | 0 | 0 | 0 |
| Parking spaces | 3 | 7 | 10 |
| **WATER/WASTEWATER** | | | |
| Gallons/day (GPD) of water use | 777 (2001 average) | N/A[1] | N/A[1] |
| GPD water withdrawal | 0 | 0 | 0 |
| GPD wastewater generation/ treatment | 180,000 gpd of treatment | 440,000 gpd of treatment | 620,000 gpd of treatment |
| Length of water/sewer mains (in miles) | 10.9 Sewer | 5.8 Sewer | 16.7 Sewer |

**State Permits & Approvals**

- ☒ Order of Conditions
- ☐ Superseding Order of Conditions
- ☐ Chapter 91 License
- ☐ 401 Water Quality Certification
- ☐ MHD or MDC Access Permit
- ☐ Water Management Act Permit
- ☐ New Source Approval
- ☐ DEP or MWRA Sewer Connection/ Extension Permit
- ☐ Other Permits (*including Legislative Approvals*) – Specify:

1. The Plant's municipal water use is expected to decrease after project completion. A portion of the project includes constructing a plant water system which will utilize treated effluent for plant operations and maintenance.

**CONSERVATION LAND**: Will the project involve the conversion of public parkland or other Article 97 public natural resources to any purpose not in accordance with Article 97?

☐Yes (Specify____________________________________) ☒No

Will it involve the release of any conservation restriction, preservation restriction, agricultural preservation restriction, or watershed preservation restriction?

☐Yes (Specify____________________________________) ☒No

**RARE SPECIES**: Does the project site include Estimated Habitat of Rare Species, Vernal Pools, Priority Sites of Rare Species, or Exemplary Natural Communities?

☐Yes (Specify________________________________ ) ☒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________________________________ ) ☒No

If yes, does the project involve any demolition or destruction of any listed or inventoried historic or archaeological resources?

☐Yes (Specify________________________________ ) ☒No

**AREAS OF CRITICAL ENVIRONMENTAL CONCERN:** Is the project in or adjacent to an Area of Critical Environmental Concern?

☐Yes (Specify________________________________ ) ☒No

**PROJECT DESCRIPTION**: The project description should include **(a)** a description of the project site, **(b)** a description of both on-site and off-site alternatives and the impacts associated with each alternative, and **(c)** potential on-site and off-site mitigation measures for each alternative (*You may attach one additional page, if necessary.*)

The Douglas Wastewater Treatment Facility is located in the East Douglas section of town, along the banks of the Mumford River. The facility has been in operation since 1974. Treated effluent from the plant is discharged directly to the river. The existing facility consists of the following: grit settling channels, comminutor, bypass channel with bar rack, extended aeration tanks with mechanical aeration and diffused air, chemical feed facilities for phosphorus removal, final clarifiers, Parshall flume, chlorine contact tank with sodium hypochlorite and sodium bisulfite addition, aerobic sludge digester, a small laboratory and an administration building connected to a garage facility.

Several problems and conditions exist at the facility. These include the following:

- Grit is manually removed from the grit channels by an operator using a long-handled shovel. This task is maintenance intensive and difficult to perform.
- The comminutor is not easily accessible for maintenance and service, especially for replacement of cutter blades.
- Flow splitting to the two aeration tanks and to the two clarifiers is not effective as designed. In an attempt to correct the problem, facility personnel have placed rocks and baffles in the channels.
- The locations of the aeration tank influent gates, effluent weirs and interconnecting gate do not allow for sufficient flexibility in routing flows through the aeration tanks. This flexibility is desirable because it can provide a means for addressing problems such as excess foaming.
- The existing secondary clarifiers are inadequately sized to handle existing flows and therefore cannot be expected to handle the projected increase in flows and loadings. Scum removal is also inadequate.
- Currently, RAS pumping is not flow paced and there is no flow metering or recording devices for WAS pumping.
- Digested sludge pumps and the septage pumps, which are not currently used, are located in areas that are classified as confined spaces. This location requires that extensive procedures be followed for operation and maintenance of the equipment.
- Laboratory facilities are small and inadequate.

Additionally, the population within the currently sewered area is expected to increase during the design period of twenty years. Accordingly, the permitted flow through the plant is anticipated to increase from 0.18 MGD to 0.60 MGD.

Increased flows to the plant carry with them increased loadings to the plant, and impact the plant's ability to meet effluent requirements. Following a limited modeling of the Mumford River, USEPA indicated that an increase in the plant design capacity will result in a slight dissolved oxygen sag, which USEPA feels cannot be considered insignificant. As such, anti-degradation provisions of the Clean Water Act must be considered. In May 2001, MADEP issued a letter outlining preliminary NPDES effluent limits for the proposed treatment plant improvements. The letter indicated that an increase in plant capacity, and therefore a new permit, would mean tighter limits on BOD, TSS, ammonia, phosphorus, and residual chlorine.

Two alternatives were considered for preliminary treatment: A mechanical fine screen followed by a vortex grit removal unit, and a packaged influent screen and grit chamber. In either case, a manually cleaned coarse bar rack will be installed as a bypass to the influent screen. The recommended alternative for screenings and grit disposal is transportation to and disposal at an off-site facility.

There were two alternatives discussed for secondary treatment; upgrade of the existing secondary treatment and sequencing batch reactors (SBRs). An upgrade to the existing secondary treatment process would include improvements to the existing tanks, new aeration tanks, and aeration equipment. This alternative would modify the existing aeration tanks, add new tankage to treat projected flows, improve oxygen transfer by providing full floor coverage with fine bubble diffused air, improve influent flow splitting, and add a foam control system. New tankage would also be required to accommodate increased future flow and loads. This alternative consists of two additional aeration tanks, flow splitting, new positive displacement blowers, foam control, and full floor coverage of diffused air. For this option, additional clarifier volume must be provided to accommodate the future design flows and loadings. This alternative would include construction of two new clarifiers, a flow splitting structure to the clarifiers, and an effluent junction manhole to combine the flow from the clarifiers. New sludge pumps, scum pumps, foam spray pumps, and the required piping appurtenances would be installed in the basement. The first floor of this structure would house the new blowers required for the aeration system, an emergency generator, and an electrical room.

An SBR treats wastewater by the same mechanism as the existing conventional secondary treatment system with the exception that all treatment occurs in a single tank. The SBR operates in a batch mode where an electrically actuated influent valve allows flow into the vessel during the fill cycle. The treatment process includes cycling the aeration and mixing in various combinations to achieve treatment. Aerobic stages will oxidize ammonia and BOD, anoxic stages will convert nitrate to nitrogen gas and control filamentous bacteria, and anaerobic steps will facilitate fermentation for biological phosphorus removal during aerobic steps. Once treatment is complete, the clarification process begins, where the aeration and mixing is stopped and the mixed liquor is allowed to settle. The waste sludge is then removed and the process repeats. To treat present and future flows, the SBR system would include three SBR tanks (piped in parallel so while one is treating, the other is filling, and one is on standby) each will be approximately 42-feet x 42-feet x 16-feet side water depth at average day flow.

The only alternative that was considered feasible to achieve the future requirement for seasonal phosphorus removal consists of adding a metal salt to the aeration tank or SBR, followed by effluent filtration. Chemical addition will provide secondary phosphorus removal and effluent polishing since the SBRs will remove the majority of the phosphorus biologically. Alum solution (aluminum sulfate) should be strongly considered because it is available locally, less corrosive and easier to handle than ferric chloride, and will not foul UV disinfection lamps as iron compounds have been shown to do.

Two alternatives were evaluated to disinfect the plant effluent and comply with the total residual chlorine limits in the permit. The first alternative applies the existing method of adding sodium hypochlorite for disinfection and sodium bisulfite for dechlorination. This alternative requires construction of a new chlorine contact tank with a dechlorination chamber and installing a sodium bisulfite mixer. Other improvements that are needed include two metering pumps for sodium hypochlorite addition, two metering pumps for sodium bisulfite addition, a new sodium hypochlorite storage tank, a sodium bisulfite diffuser, and piping improvements. The second alternative considered was ultraviolet (UV) irradiation, which would require the addition of in-line UV disinfection units with a control system that monitors the intensity of the lamps.

The first alternative considered for sludge thickening was to mechanically thicken waste activated sludge with either a rotary screen thickener or a gravity belt thickener. To implement this alternative, an unthickened sludge storage tank, mechanical thickener, sludge feed pumps, polymer feed system, and a thickened sludge storage tank would be required. The existing aerobic digester would be used as the unthickened sludge storage tank. The existing pumping pit would be modified to accommodate new sludge feed pumps that will transfer the sludge from the unthickened sludge storage tank to the mechanical thickener. An odor control system consisting of a drum scrubber would also be provided. The second alternative was to optimize clarification in the SBRs. Since these SBRs will be deeper and larger that the existing clarifiers, the solids concentration of the sludge wasted will be higher. The seasonal addition of phosphorus removal chemicals will also enhance solid settling in the SBRs, resulting in a higher solids concentration in the raw waste activated sludge. The existing aeration tanks will be used as a waste activated sludge storage tank. This alternative does not have any associated construction costs. However, higher disposal costs will result due to the larger volume of thin sludge that will be produced as compared to that produced by the rotary screen thickener.