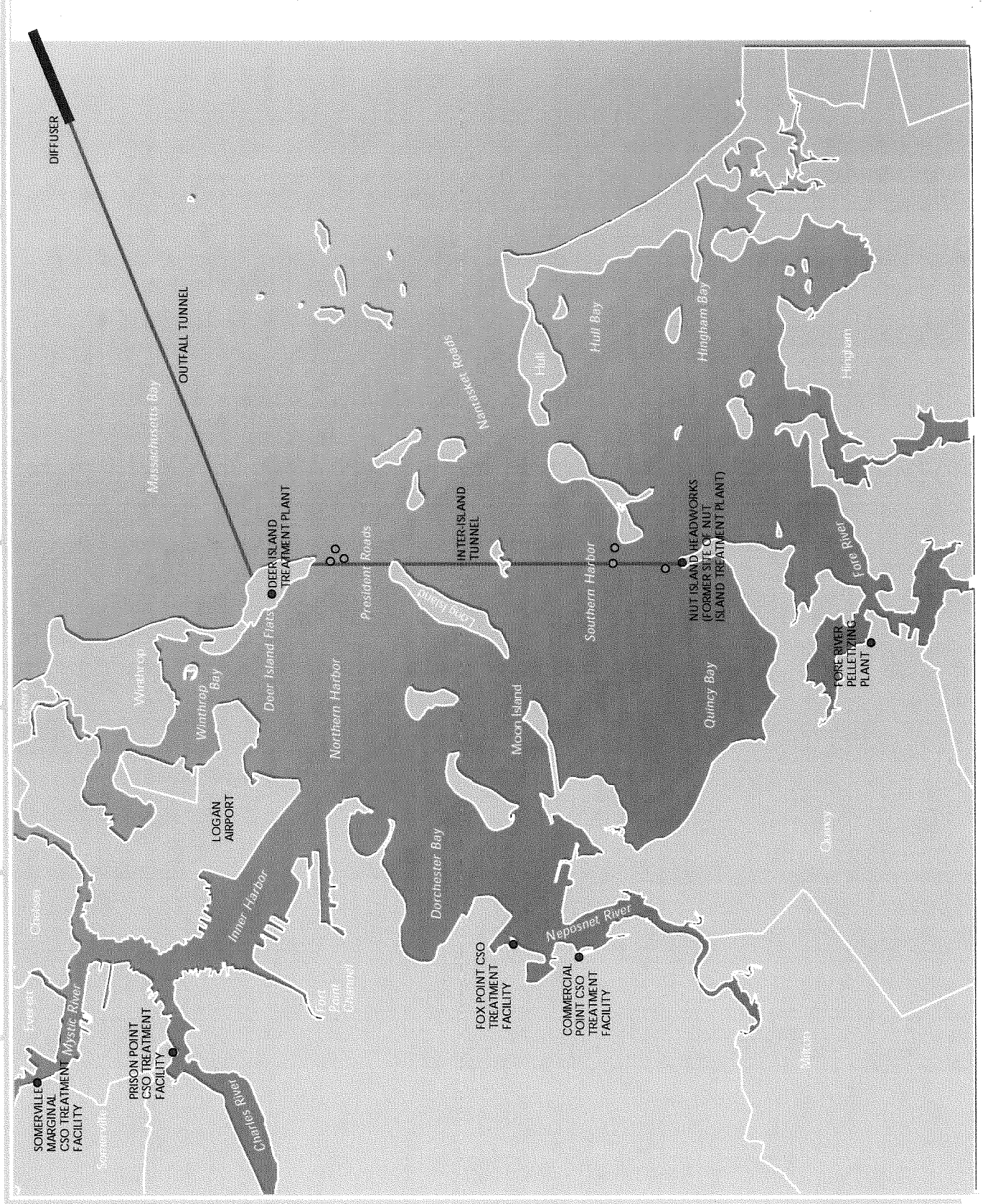


ATTACHMENT A
DEER ISLAND HYDRO PROJECT
PROJECT LOCATION



ATTACHMENT B

DEER ISLAND HYDRO PROJECT
FERC ORDER GRANTING EXEMPTION

65 FERC 162,121
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Massachusetts Water Resource
Authority

Project No. 11412-000
Massachusetts

ORDER GRANTING EXEMPTION FROM LICENSING
(CONDUIT)
Issued November 9, 1993

On May 3, 1993, Massachusetts Water Resource Authority Inc. (MWRA), filed an application to exempt the Deer Island Hydro Project from the licensing requirements set forth in Part I of the Federal Power Act. The small conduit hydropower project is described in the attached public notice. The comments of interested agencies and individuals, have been fully considered in determining whether to issue this exemption from licensing.

Article 2 of this exemption requires compliance with the terms and conditions prepared by federal or state fish and wildlife agencies to protect fish and wildlife resources. Fish and wildlife agencies commented but did not file terms and conditions for this project.

Cultural Resources

The proposed project site is located in the vicinity of the Deer Island Pumping Station and the Superintendent's House, which are eligible for listing in the National Register of Historic Places (National Register), and two potentially eligible historic period burial grounds located at the New Resthaven cemetery and Piggery Point. However, the proposed project would consist of a hydroelectric facility constructed within the channel leading to the effluent outfall shaft, and thus it would not be expected to affect any of those properties. The Massachusetts State Historic Preservation Officer (SHPO) concurs that the project would have no effect on the significant architectural and historical characteristics of the National Register-eligible properties (letter to Marianne Connolly from Judith B. McDonough, State Historic Preservation Officer, Massachusetts Historical Commission, Boston Massachusetts, September 22, 1993).

However, the SHPO recommends that the Piggery Point burial ground be depicted on the project design plans to ensure the site would be protected from damage by construction activities. Therefore, article 401 requires the MWRA to file project design plans depicting the location of the Piggery Point burial grounds for Commission approval before beginning any project-related construction activities.

Preparation of an environmental assessment or an environmental impact statement is not required for this project

pursuant to 1380.4(a)(14) of the regulations. Nonetheless, we have considered the agency comments, the environmental information in the exemption application, and other public comments, and find that issuance of this order is not a major federal action significantly affecting the quality of the human environment.

The Director orders:

(A) The Deer Island Hydro Project is exempted from the licensing requirements of Part 1 of the Federal Power Act, subject to the attached articles. See 18 CFR section 4.94.

(B) Article 6 of this exemption is amended as follows:

Before transferring any property interests in the exempt project, the exemption holder must inform the transferee of the terms and conditions of the exemption. Within 30 days of transferring the property interests, the exemption holder must inform the Commission and the Regional Director of the identity and address of the transferee.

(C) The exemption is also subject to the following article:

Article 401. At least 90 days before commencing any project-related construction activities, the Exemptee shall file with the Commission, for approval, revised project design drawings and specifications depicting the location of the historic Piggery Point burial grounds, and describing measures that the Exemptee would implement to avoid any project-related construction activities at the historic burial grounds.

The Exemptee shall prepare the project drawings and specifications after consultation with the Massachusetts State Historic Preservation Officer (SHPO). The Exemptee shall include with the filing, copies of comments and recommendations from the SHPO and descriptions of how the SHPO's comments are accommodated by the project design drawings and specifications.

The Commission may require changes to the drawings and specifications to ensure that no project-related activities would take place at the historic Piggery Point burial grounds. No project-related construction activities shall begin until the Exemptee is notified that the requirements of this article have been fulfilled.

(D) The Exemptee shall serve copies of any Commission filing required by this order on any entity specified in this order to be consulted on matters related to that filing. Proof

of service on these entities must accompany the filing with the Commission.

(E) This order is issued under authority delegated to the Director and constitutes final agency action. Requests for rehearing by the Commission may be filed within 30 days of the date of issuance of this order, pursuant to 18 CFR section 385.713.

Dean L. Shumway
Director, Division of
Project Review

Public Notice of Application Accepted for Filing
(Issued August 13, 1993)

- a. Type of Application: Conduit Exemption
- b. Project No.: 11412-000
- c. Date Filed: May 3, 1993
- d. Applicant: Massachusetts Water Resource Authority
- e. Name of Project: Deer Island Hydro Project
- f. Location: On Deer Island in the Boston Harbor, Suffolk,
near Boston, Massachusetts
- g. Filed Pursuant to: Federal Power Act, 16 U.S.C. 791(a)-
825(r)
- h. Applicant Contact: Mr. Walter Armstrong
Massachusetts Water Resource Authority
Program Management Division
Charleston Navy Yard
100 First Avenue
Boston, MA 02129
(617) 242-6000
- i. FERC Contact: Ed Lee (202) 219-2809
- j. Comment Date: October 18, 1993

19931117-0300(821365)[1].txt

- k. Status of Environmental Analysis: This application is accepted for filing and is categorically excluded from the preparation of an environmental assessment.
- l. Description of Project: The proposed project consists of the following: (1) an electrical building; (2) a substation; (3) a powerhouse containing two 1,000-kw generators for a total installed capacity of 2,000 kw; (4) an intake conduit which conveys the wastewater from the disinfection facilities to the hydropower chute; and (5) appurtenant facilities. The applicant estimates that the total average annual generation would be 12,400 megawatthours.
- m. Purpose of Project: Project power would be utilized by the applicant in its water treatment facilities.
- n. This notice also consists of the following standard paragraphs: A2, A9, and B1.
- o. Available Location of Application: A copy of the application, as amended and supplemented, is available for inspection and reproduction at the Commission's Public

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Reference and Files Maintenance Branch, located at 941 North Capitol Street, N.E., Room 3104, Washington, D.C., 20426, or by calling (202) 208-1371. A copy is also available for inspection and reproduction at Massachusetts Water Resource Authority, Charleston Navy Yard, 100 First Avenue, Boston, MA 02129 or by calling (617) 242-6000.

- a. Type of Application: Conduit Exemption
- b. Project No.: 11412-000
- c. Date Filed: May 3, 1993
- d. Applicant: Massachusetts Water Resource Authority
- e. Name of Project: Deer Island Hydro Project
- f. Location: On Deer Island in the Boston Harbor, Suffolk,
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- g. Filed Pursuant to: Federal Power Act, 16 U.S.C. 791(a)-
825(r)
- h. Applicant Contact: Mr. Walter Armstrong
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100 First Avenue
Boston, MA 02129
(617) 242-6000
- i. FERC Contact: Ed Lee (202) 219-2809
- j. Comment Date: October 18, 1993
- k. Status of Environmental Analysis: This application is
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preparation of an environmental assessment.
- l. Description of Project: The proposed project consists
of the following: (1) an electrical building; (2) a
substation; (3) a powerhouse containing two 1,000-kw
generators for a total installed capacity of 2,000 kw; (4)
an intake conduit which conveys the wastewater from the
disinfection facilities to the hydropower chute; and (5)
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total average annual generation would be 12,400
megawatt-hours.
- m. Purpose of Project: Project power would be utilized
by the applicant in its water treatment facilities.
- n. This notice also consists of the following standard
paragraphs: A2, A9, and B1.
- o. Available Location of Application: A copy of the
application, as amended and supplemented, is available for
inspection and reproduction at the Commission's Public
Reference and Files Maintenance Branch, located at 941 North

19930819-0261(820669)[1].txt

-2-

capitol Street, N.E., Room 3104, Washington, D.C., 20426, or by calling (202) 208-1371. A copy is also available for inspection and reproduction at Massachusetts Water Resource Authority, Charleston Navy Yard, 100 First Avenue, Boston, MA 02129 or by calling (617) 242-6000.

UNITED STATES OF AMERICA 67 ferc 62,094
FEDERAL ENERGY REGULATORY COMMISSION

Massachusetts Water Resource
Authority

Project No. 11412-001
Massachusetts

ORDER APPROVING REVISED PROJECT DESIGN DRAWING

(Issued May 3, 1994)

On February 17, 1994, the Massachusetts Water Resource Authority, exemptee for the Deer Island Hydro Project, filed a revised project design drawing and specifications showing the location of the historic Piggery Point burial ground (burial ground). This filing was required by article 401 of the exemption issued November 9, 1993.¹

Article 401 requires that the exemptee file with the Commission, for approval, revised drawings showing the historic burial ground and describing measures that the exemptee would implement to avoid any project-related construction activities at the historic burial ground. It further requires that the exemptee prepare the drawings and specifications after consultation with the Massachusetts State Historic Preservation Officer (SHPO).

Consultation

The exemptee consulted with SHPO. In a letter dated January 24, 1994, SHPO states that the burial site is located in an area of the island proposed to be used as open space in the future. SHPO further states that by placing its location on the site plans, the site can be protected from damage by construction-related activities associated with the new wastewater treatment facilities.

Discussion and Conclusion

The proposed project is located in the vicinity of the Deer Island Pumping Station and the Superintendent's House, which are eligible for listing on the National Register of Historic Places (Register). The proposed project would consist of a hydroelectric facility constructed within the channel leading to the effluent outfall shaft. Construction will take place over 500 feet away from the burial ground and is not expected to affect any of the properties eligible for listing in the Register.

The exemptee has located the historic site on the design drawing. By noting the location, all construction-related

1. 65 FERC ¶ 62,121.

activities can be planned to ensure that the site is protected from damage. This filing meets the requirements of article 401 and should be approved.

The Director orders:

(A) The revised project drawing depicting the location of Piggery Point burial ground, filed on February 17, 1994 is approved and made part of the exemption.

(B) This order constitutes final agency action. Requests for rehearing by the Commission may be filed within 30 days of the date of issuance of this order, pursuant to 18 C.F.R. § 385.713.

J. Mark Robinson
Director, Division of Project
Compliance and Administration

ATTACHMENT C

DEER ISLAND HYDRO PROJECT

PROJECT DESCRIPTION

AND SUPPORTING FIGURES

Deer Island Hydropower Facility Description

MWRA generates hydropower at its Deer Island Wastewater Treatment Facility. Once wastewater has undergone secondary treatment, it is disinfected and discharged into a hydropower facility that takes advantage of the flow and fall of treated wastewater. After passing through hydroelectric turbines, the effluent is conveyed to a 400 foot deep vertical shaft and then into a 9.5 mile long deep rock outfall tunnel for discharge into Massachusetts Bay. The hydroelectric facility is described further below.

Once treated wastewater is disinfected, it is discharged into Effluent Channel 1. Flow is then split through two horizontal intake openings at base of Effluent Channel 1 and transmitted through separate rectangular concrete conduits below the disinfection basin to two corresponding hydro turbines. The two intake openings in Effluent Channel 1 are each approximately 20 feet by 18 feet. The intakes decrease to 11 feet by 11 feet at motorized roller intake gates located immediately upstream of the turbines. The average head available is approximately 29 feet. The hydropower facilities include two nominal 1,000 kw Kaplan units, each with flow capacity of approximately 500 cfs (320 mgd). The maximum flow (640 mgd) is approximately equivalent to the maximum flow through secondary treatment at DITP. Turbine runner blades and wicket gates are adjusted to meet changing power demands and changes in flow and head. After the turbines, the turbine effluent conduit joins the outfall chute which discharges into the outfall shaft which drops the effluent into the 9.5 mile outfall tunnel to Massachusetts Bay.

The hydropower facilities' instrumentation and control system is designed to interface with the DI wastewater treatment facilities control system. The system allows fully automatic unattended operation. The treatment plant must operate continuously to prevent backups of the sewage collection system. Wastewater flow in excess of the hydro facility bypasses Effluent Channel 1 and is discharged through Effluent Channel 2 directly to the outfall tunnel.

The building that houses the turbines, generators and all associated electrical switchgear equipment is situated directly over Effluent Conduit 1. An aerial view of the Deer Island Treatment plant is shown in the attached Figures: the structure housing the hydropower installation is indicated in the lower right hand corner of the figure and is within the configuration of the treatment plant. The building is bordered to the north by the outfall tunnel shaft, on the east by a seawall and MA Bay, on the south by disinfection basins, and on the west by secondary clarifiers. A schematic of the Deer Island Wastewater Collection and Treatment system follows the aerial view: the hydroelectric plant, while not shown the schematic, lies between the "Chlorination/Dechlorination" and "Discharge to Mass Bay" sections. A profile and cross-sectional view of the hydropower facility are also included.

The facility is a conduit facility and received a conduit exemption from FERC. The hydroelectric facility was also part of a thorough environmental review by state and federal agencies as part of the Deer Island Water Treatment Plant.

The Deer Island Treatment Plant is the centerpiece of MWRA's \$3.8 billion dollar program to protect Boston Harbor against pollution from Metropolitan Boston's sewer system. The Plant removes pollutants from wastewater originating in 43 communities in the Boston Metropolitan area. It operates in compliance with all federal and state environmental standards and a precedent setting National Pollution Discharge Elimination System permit.

Two 190-foot
Wind Turbines

South System Pump
Station Electrical
Upgrade

North Main Pump
Station Electrical
Upgrade

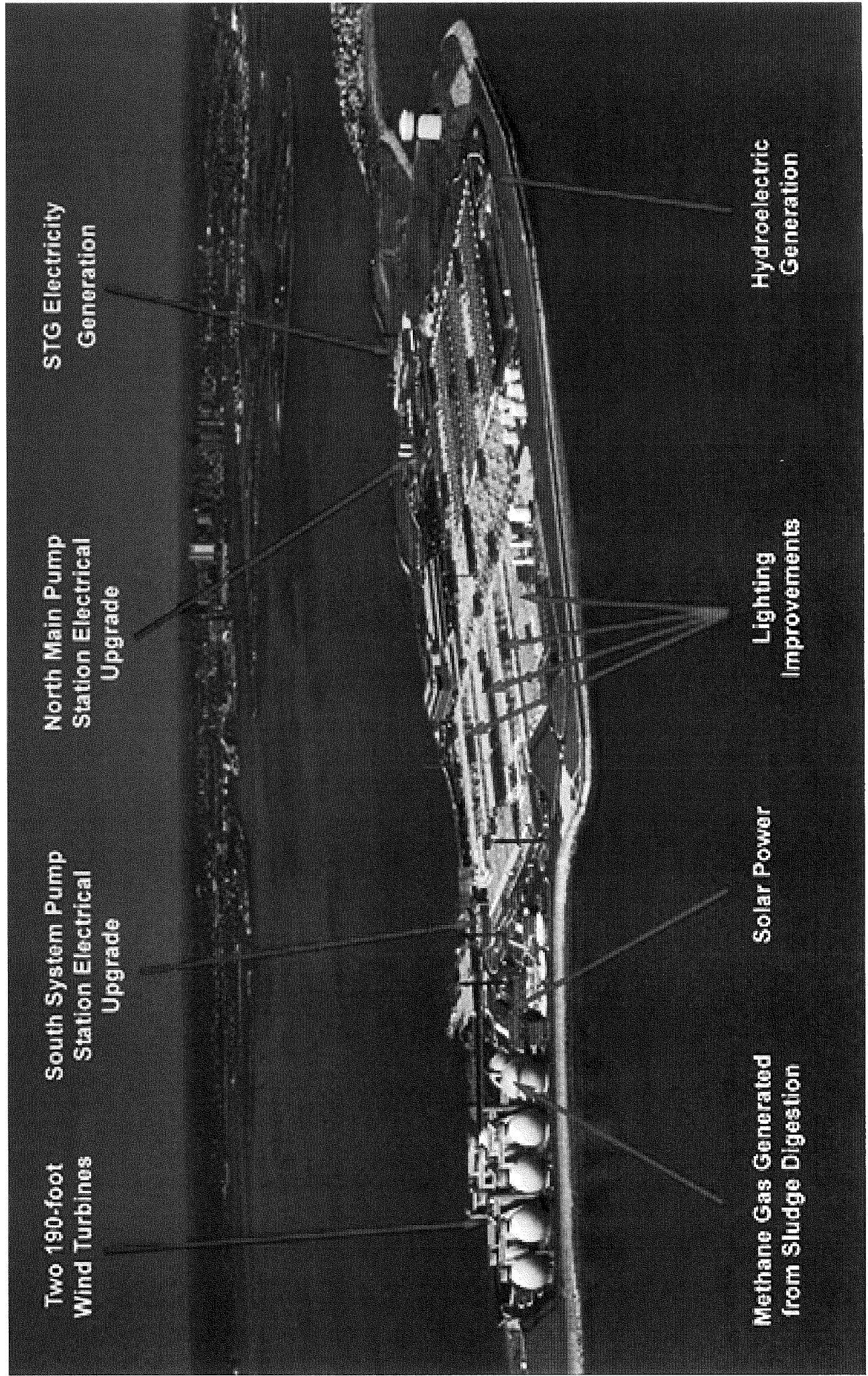
STG Electricity
Generation

Methane Gas Generated
from Sludge Digestion

Solar Power

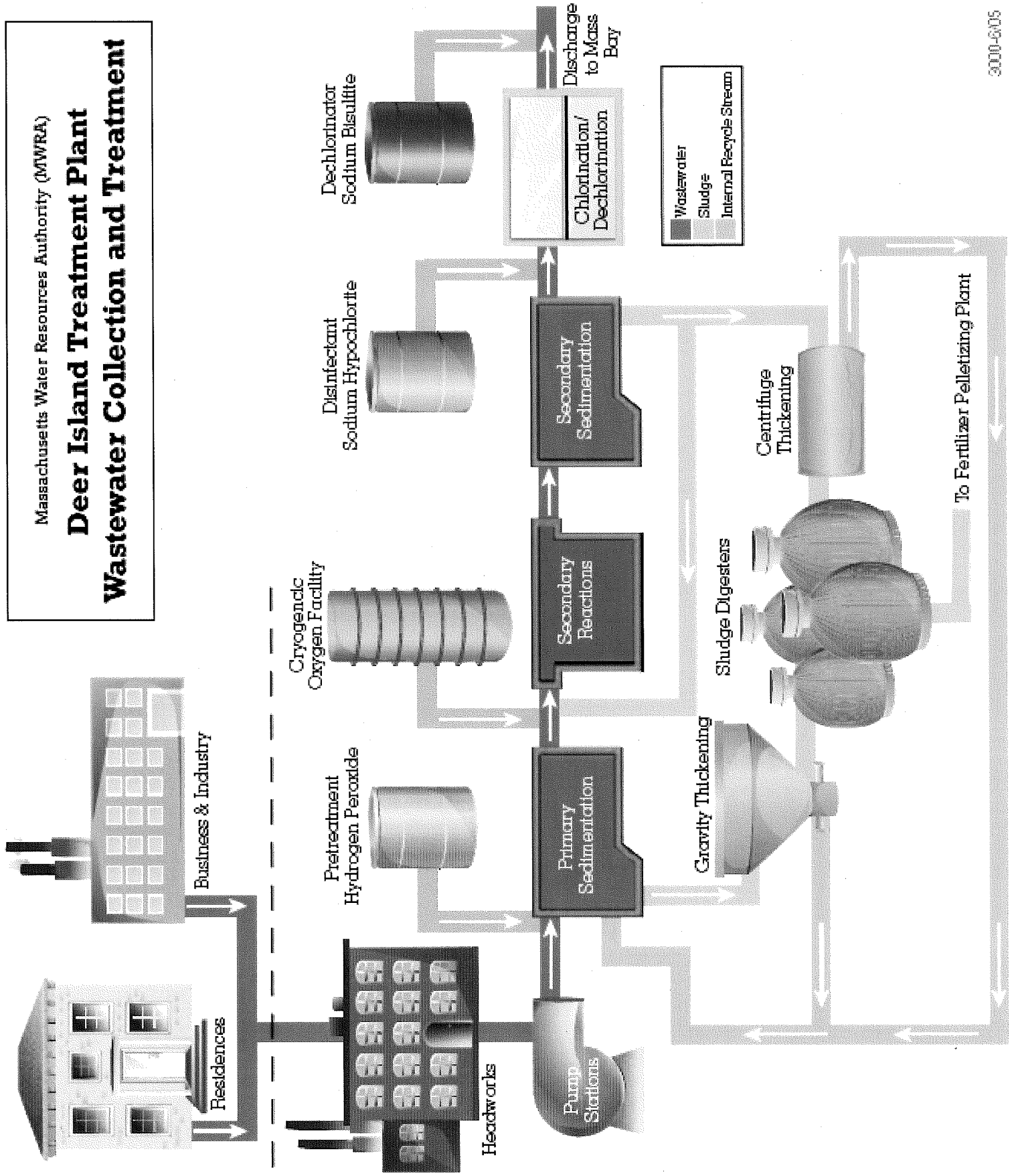
Lighting
Improvements

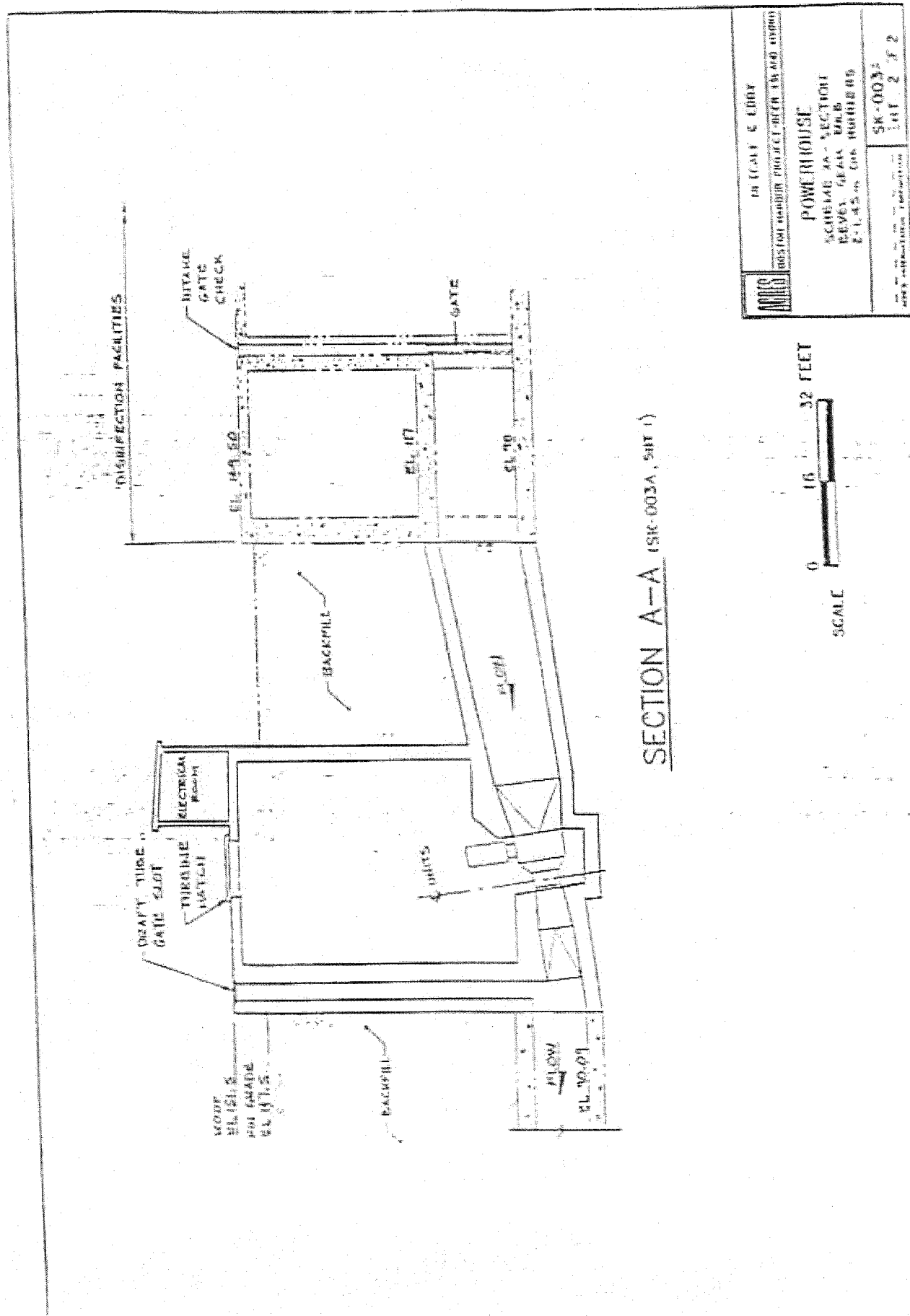
Hydroelectric
Generation



Massachusetts Water Resources Authority (MWRA)

Deer Island Treatment Plant Wastewater Collection and Treatment







160' - 0"

96' - 4 1/2"

DISTRIBUTION FACILITY

OUTFALL CHUTE

EFFLUENT OUTFALL
TUNNEL SHAFT

FLOW

EL 90.03

SLUICES

DRAFT TUBE
GATE SLOTS

FLOW

EL 90.10

EL 90.10

EL 90.10

EL 90.10

PLAN



ADDITIONAL

OUTFALL C CHUTE

POWERHOUSE

1000 KW - 1000 HP
EL 90.10 - 90.10
7.1 15.0 15.0 15.0

1000 KW - 1000 HP
EL 90.10 - 90.10
7.1 15.0 15.0 15.0