

WASTE SUMMARY  
FOR  
ENVIRONMENTAL PROTECTION AGENCY

PROPOSED TREATMENT AND  
IMPLEMENTATION SCHEDULE  
FOR JULY 1, 1977  
NPDES PERMIT NO. PA 0009920

METROPOLITAN EDISON COMPANY  
THREE MILE ISLAND  
UNITS 1 AND 2

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ATTACHMENT - Drawing D-300-148, Revision 1

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1.0

INTRODUCTION

This document is written to describe briefly existing and proposed treatments for non-radioactive waste streams which are presently produced by Unit 1 and will be produced by Unit 2 at the Three Mile Island Nuclear Generating Station.

The nuclear station is located on Three Mile Island in the Susquehanna River, two miles south of Middletown, Pennsylvania, in Dauphin County. The station consists of two electric generating units. Unit 1 has been commercial since September of 1974 and has a nominal generating capacity of 792 MWe. Unit 2 is presently under construction and is designed for a nominal generating capacity of 880 MWe.

The proposed treatments listed herein for each discharge category are designed to meet the July 1, 1977 EPA Standards as designated in NPDES permit No. PA 0009920 presently held by the Metropolitan Edison Company, operator of the generating facility. For clarity, this summary should be studied in conjunction with GAI Drawing Number D-300-148 Revision 1 which illustrates the various waste flow paths and associated treatments.

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2.0 DISCHARGE CATEGORY 001 - COMBINED MECHANICAL DRAFT COOLING TOWER  
BLOWDOWN

2.1 PRESENT TREATMENT

Data collected over an approximate 10 month period in 1975 show that all limitations imposed by the permit are consistently being met.<sup>(1)</sup> It is anticipated that the additional flow from Unit 2 will cause no significant changes in the station's ability to continue to meet these limitations.

The thermal limitations for Unit 1 are met by combining warmer natural draft cooling tower blowdown with cooler once through plant service cooling water. The water, once mixed, is passed through a mechanical draft cooling tower prior to discharge. This method of treatment will also be utilized for Unit 2.

Temperature and flow are continuously monitored. Chlorine and pH are determined by grab samples.

Based on the above facts, it is felt that treatment will not be required now or in the future. However the stated parameters as listed in the permit will be monitored.

(1) It should be noted that temperature noncompliances were experienced during times when ambient river temperatures were equal to or greater than 87°F. This situation was a result of having conflicting Nuclear Regulatory Commission (NRC) and EPA regulations, and not due to inadequate temperature control capabilities.

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### 3.0 DISCHARGE CATEGORY 101 - TREATED SEWAGE EFFLUENT

#### 3.1 PROPOSED TREATMENT

The proposed form of treatment will be extended aeration and activated sludge for all sanitary wastes generated at the site. This process will consist of comminuting the solids in the stream, pumping the sewage to an aeration tank to breakdown the organic solids, then passing the liquor to a primary clarifier to settle solids (sludge) and remove surface scum. Lime will be added to the overflow from the primary clarifier to remove phosphorous in a secondary clarifier. The effluent from the secondary clarifier will be treated with acid to reduce the pH to acceptable limits. Further treatment with hypochlorite for sterilization purposes will be conducted in a contact chamber prior to discharge. All sludges produced will be concentrated in a digester and transported off the site.

The system is designed to serve approximately 400 people and meet discharge limitations in the permit. All grab and composite sampling will be conducted on the effluent from the facility prior to its combination with other streams.

#### 3.2 IMPLEMENTATION SCHEDULE

The implementation schedule for the sewage treatment plant is:

Completion of Construction - December 1975

Commence Operation - February 1976

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4.0

DISCHARGE CATEGORY 103 - PRE-OPERATIONAL CLEANING AND FLUSHING  
SETTLING BASIN

4.1

PRESENT TREATMENT

The past method of treatment, which was used to treat the pre-operational cleaning and flushing wastes produced by Unit 1, will again be employed when Unit 2 is chemically cleaned. The treatment consists of long term settling of the pre-operational cleaning and flushing wastes to drop out the suspended solids in two lined basins each having a one million gallon capacity. The supernatant from the basins is adjusted with acid as needed to meet the pH limitation prior to discharge. Grab sampling is performed during discharge. Past monitoring data indicate that this method of treatment is adequate to ensure the limitations for this discharge can be met.

It should be noted that the pre-operational and flushing operation is only performed one time for each unit. The wastes from the pre-operational cleaning of Unit 1 have already been treated and discharged as described above. The generation and discharge of these wastes will again occur prior to start up of Unit 2.

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5.0

DISCHARGE CATEGORY 104A - INDUSTRIAL WASTE FILTER EFFLUENT

5.1

## PROPOSED TREATMENT

Past laboratory data indicate that the waste sources which are presently combined to makeup this point source contain only suspended solids in excess of that allowable by the permit.

The proposed method of treatment will be removing solids by pressure filtration using a diatomaceous earth body feed. The effluent from the suspended solids removal facility will be flow monitored and composite sampled. The dewatered sludges will be transported off the premises.

5.2

## IMPLEMENTATION SCHEDULE

Construction in Progress

Complete Construction - March 1977

Commence Operation - July 1977

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6.0

DISCHARGE CATEGORY 104B - UNIT 1 WASTE NEUTRALIZATION TANK EFFLUENT

6.1

PRESENT TREATMENT

The wastes produced in this category by Unit 1 are collected in a large holding tank and treated on a batch basis. The tank is equipped with agitation as well as pump circulation for proper mixing of either the acid or the base with the wastes to obtain the required pH. Past monitoring data has shown that the wastes which are treated in the neutralization tank originate from sources which contribute very negligible amounts of suspended solids or oil and grease. The only parameter requiring treatment is pH.

Since this waste is treated in the tank on a batch basis and the tank geometry is known, the total volume of wastes and the time required to empty the tank is used for flow measurement. A well mixed grab sample of the tank contents taken during discharge is representative of the effluent prior to its combination with other streams.

Since the same type of wastes will be produced by Unit 2, the treatment operation will be essentially identical to that for Unit 1. The Unit 2 waste neutralization tank effluent flow measurement and sampling method will remain the same as for Unit 1.

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7.0 DISCHARGE CATEGORY A\* - 104C (UNIT 1 TURBINE PLANT SUMP),  
102 (UNITS 1 AND 2 AUXILIARY BOILER BLOWDOWN), AND UNIT 2 SUMPS

7.1 PROPOSED TREATMENT

The waste water streams which originate from many sources within each unit are piped to various sumps. These sumps are strategically located for the purpose of collecting and removing the wastes to prevent localized flooding of equipment.

Various in-plant services may contribute oil & grease, suspended solids, iron, and basicity to these waste streams.

Since these pollutants vary in size, type, and quantity and the flows from each source vary, it is proposed that the wastes from Unit 1 (turbine plant sump and auxiliary boiler blowdown) and the sump discharges from Unit 2 (as outlined on the Drawing) be collected in one waste collection hold tank. These wastes will be processed through a proposed treatment facility properly designed to remove pollutants to acceptable limits prior to discharge. As a matter of interest, please be advised that iron does exist in the Unit 1 turbine building sump and is anticipated to exist in the Unit 2 sumps. Further, in that iron is not limited in 104 type streams, analysis will need to be conducted in order to determine the combined 102 and 104 waste stream treatment facility iron poundage limitation.

7.2 SUMMARY DESCRIPTION OF TREATMENT

7.2.1 Waste Collection Hold Tank

A 258,000 gallon tank will be employed to collect wastes in one common vessel. The tank will be equipped with an agitator to assure adequate mixing.

#### 7.2.2 Waste Treatment Facility Feed Pumps

The untreated wastes will be transported at 100 gallons per minute from the waste collection hold tank to the treatment facility using two motor driven feed pumps. Each pump will be capable of handling the design flow.

#### 7.2.3 Waste Treatment Primary Unit

A reactor type clarifier or similar device will be utilized as the first step for treating the wastes. In this unit pH will be adjusted to the acceptable limits. In addition, coagulants and coagulant aids will be added to remove the suspended solids, and iron. The settled sludge produced by this step will be pumped to the facility which is described in Discharge Category 104A. The free floating oils will be surface skimmed and removed to a waste oil storage tank.

#### 7.2.4 Waste Treatment Secondary Unit

The effluent from the primary unit will be pumped through a secondary unit where remaining oil and suspended solids will be removed to such a degree that permit limitations will be met. The polishing phase may be carried out by one of three ways: flotation with air, absorption on filter media, or mechanical filtration with cartridges. Best available technology in conjunction with associated costs will dictate which of the secondary methods are selected. The free and emulsified oils separated from the waste stream in this operation will be removed to the waste oil storage tank as mentioned in 7.2.3. At periodic intervals the oil collected in the tank will be transported off the premises.

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#### 7.2.5 Treated Waste Effluent

A recycle stream, controlled by continuous on-line oil and grease and pH analyzers, will be employed to insure that when the effluent does not meet the permit limitations no discharging will occur. In addition, the treated waste effluent will be monitored for all parameters in accordance with permit criteria prior to discharge.

#### 7.3 IMPLEMENTATION SCHEDULE

The implementation schedule for the proposed facility is as follows:

Commence Construction - March 1, 1976

Complete Construction - March 1, 1977

Commence Operation - July 1, 1977

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8.0 DISCHARGE CATEGORY B\* - UNIT 2 - WASTE NEUTRALIZATION TANK

EFFLUENT

8.1 PROPOSED TREATMENT

The proposed treatment for these wastes is as discussed in Discharge Category 104B. Please see Section 6.1 for explicit details.

8.2 IMPLEMENTATION SCHEDULE

This method of treatment will be followed when Unit 2 becomes operational.

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