ENVIRONMENTAL REPORT - OPERATING LICENSE STAGE
AMENDMENT 10

INSTRUCTION SHEET

REMOVE	INSERT
3.7-1, 3.7-2	3.7-1, 3.7-2
3.7-3	3.7-3, 3.7-4
---	3.7-5
---	3.7-6
5.7-1	5.7-1
6.2-9	6.2-9
G-35	G-35

3.7 SANITARY AND OTHER WASTE SYSTEMS

3.7.1 DESCRIPTION OF SANITARY WASTES

The design operating population of the two-unit plant is 1325 persons. The quantity of discharge is based on an average flow of 20 gallons per day per capita. This rate of flow, which complies with the standards of the Texas Water Commision, results in a flow of approximately 26,500 gallons per day for a two-unit plant. The organic content is estimated to result in a biochemical oxygen demand (BOD_5) of less the 20 parts per million in the sewage plant effluent. The raw sewage is expected to have approximately the composition listed in Table 3.7-1.

No poisonous, toxic, or radioactive matter or heavy metals are expected in the effluent, with the exception of the chlorine used for disinfection.

3.7.2 DESCRIPTION OF SANITARY WASTE SYSTEMS

The sewage collection system will consist of about 2,000 linear feet of 6-inch diameter vitrified clay and ductile iron pipe. These gravity lines will terminate at the wet-wells of the lift stations which pump waste to the sewage treatment plants. Effluent from the Construction Plant is pumped into the west branch of the Colorado River. Effluent from the other treatment plants is pumped into the cooling reservoir.

1. EAST SANITARY WASTE TREATMENT SYSTEM

   The design capacity of the East Sanitary Waste Treatment System is 15,000 gallons per day. 10

   Lift Station

   The lift station consists of a precast reinforced concrete structure which serves as a wet-well for the duplex centrifugal lift pumps. Each pump has a capacity of 100 gallons per minute.

   Equalization Basin

   A 5,000-gallon equalization basin is provided to regulate flows to the treatment unit. The sewage would then be transferred from the equalization basin to the aeration basin by a pneumatic ejector at a constant rate.

   Aeration Basin

   Four 5,000 gallon aeration basins provide 32 hours of aerated detention at average flow. The basins are equipped to supply air at a rate of 72 cubic feet per minute by means of blowers and submerged diffusers.

   Clarifier

   Sedimentation is accomplished in a 5,200 gallon hopper clarifier with an overflow rate of less than 332 gallons per day per square foot.

Chlorination Basin

The clarifier effluent is chlorinated during a contact period of greater than 20 minutes based on peak flow to retain a minimum free residual of 1 part per million of chlorine.

Sludge Storage Tank/Digester

Excess sludge is wasted to a storage basin/aerobic digester, with a 5,149 gallon capacity, to which air is supplied at a rate of at least 18 cubic feet per minute. The digested sludge is collected by scavenger as required and disposed offsite in accordance with applicable federal, state, and local environmental regulations.

Air Supply

Oxygen is provided by two low pressure air blowers and submerged diffusers. The blowers can provide air at a rate of at least 140 cubic feet per minute.

2. CONSTRUCTION AND WEST SANITARY WASTE TREATMENT LIFT STATION

The lift station consists of two precast reinforced concrete structures which serve as wet-wells for duplex centrifugal lift pumps (two pumps per structure). Each pump has a capacity of 125 gallons per minute. The discharge is directed to either or both the Construction Plant or the West Plant.

3. CONSTRUCTION SANITARY WASTE TREATMENT SYSTEM 10

The Construction Sanitary Waste Treatment System is a temporary plant not expected to be in service for the life of the STP. It consists of two parallel units with a combined capacity of 60,000 gallons per day.

Aeration Basin

Twelve 5,000 gallon aeration basins provide 30 hours of aerated detention at the average flow. The basins are equipped to supply air at a rate of 210 cubic feet per minute by means of blowers and submerged diffusers.

Clarifier

Sedimentation is accomplished in four clarifier basins with a total capacity of 20,000 gallons and an overflow rate of less than 600 gallons per day per square foot.

Chlorination Basin

The clarifier effluent is chlorinated during a contact period of greater than 20 minutes based on peak flow to retain a minimum free residual of 1 part per million of chlorine.

Sludge Storage Basin/Digester

Excess sludge is wasted to two storage basin/aerobic digesters, with a 5,000 gallon total capacity, to which air is supplied at a rate of at least 42 cubic feet per minute. The digested sludge is collected by scavenger as required and disposed offsite in accordance with applicable federal, state, and local environmental regulations.

Air Supply

Oxygen is provided by four low pressure air blowers and submerged diffusers. The blowers can provide air at a rate of at least 374 cubic feet per minute.

4. WEST SANITARY WASTE TREATMENT SYSTEM

The West Sanitary Waste Treatment System consists of two parallel units with a combined capacity of 60,000 gallons per day.

Aeration Basin

Sixteen 5,000 gallon aeration basins provide 30 hours of aerated detention at the average flow. The basins are equipped to supply air at a rate of 210 cubic feet per minute by means of blowers and submerged diffusers.

Clarifier

Sedimentation is accomplished in four clarifier basins with a total capacity of 20,000 gallons and an overflow rate of less than 600 gallons per day per square foot. 10

Chlorination Basin

The clarifier effluent is chlorinated during a contact period of greater than 20 minutes based on peak flow to retain a minimum free residual of 1 part per million of chlorine.

Sludge Storage Basin/Digester

Excess sludge is wasted to two storage basin/aerobic digesters, with a 10,300 gallon total capacity, to which air is supplied at a rate of at least 42 cubic feet per minute. The digested sludge is collected by scavenger as required and disposed of offsite in accordance with applicable federal, state, and local environmental regulations.

Air Supply

Oxygen is provided by four low pressure air blowers and submerged diffusers. The blowers can provide air at a rate of at least 374 cubic feet per minute.

5. NUCLEAR TRAINING FACILITY SANITARY WASTE SYSTEM

The design capacity of the Nuclear Training Facility Sanitary Waste System is 14,000 gallons per day.

Lift Station

The lift station consists of a precast reinforced concrete structure which serves as a wet-well for the duplex centrifugal lift pumps. Each pump has a capacity of 38 gallons per minute.

Aeration Basin

Three 5,000 gallon and one 2,500 gallon aeration basins provide 30 hours of aerated detention at the average flow. The basins are equipped to supply air at a rate of 69 cubic feet per minute by means of blowers and submerged diffusers.

Clarifier

10

Sedimentation is accomplished in a 5,000 gallon hopper clarifier with an overflow rate of less than 800 gallons per day per square foot.

Chlorination Basin

The clarifier effluent is chlorinated during a contact period of greater than 20 minutes based on peak flow to retain a minimum free residual of 1 part per million of chlorine.

3.7.3 STANDBY DIESEL ENGINE EXHAUST

Three standby diesel engines per unit are maintained at the power station for emergency use should the offsite power supply to the station be lost. Each standby diesel engine is normally operated for 1 to 2 hours per month to ensure operability should an emergency situation arise. 7

The standby diesel engines exhaust to the atmosphere through muffler systems. Effluents associated with the operation of these engines generally consist of particulates, unburned hydrocarbons, nitric oxides, various oxygenated compounds, and carbon monoxide. No treatment is planned for the effluents from the emergency diesels because of the relatively low emission quantities plus the short periods of operation required for periodic testing and for providing power when the normal power supply system is not available. The estimated discharges of sulfur dioxide and nitric oxides from the diesel engine gaseous effluent (in lbs/1,000 gal fuel) are 75 and 518 respectively. Each diesel engine burns about 300 gallons of no. 2 diesel oil per hour at its continuous rating. The opacity of the exhaust is not expected to exceed 5 percent based upon 15 second Bacharach reading at rated load.

3.7.4 AUXILIARY BOILERS

An auxiliary steam supply is required to furnish steam for the main deaerator, the turbine gland seals, and waste processing when steam is not available from the nuclear steam supply system. The source of this auxiliary steam will be two oil-fired auxiliary steam boilers. The boilers will operate for approximately 720 hours per year. The maximum permitted heat input of each boiler is 185 MBtu per hour. Stack gases will discharged directly to the environment. 7 7

Based on firing no. 2 fuel oil with 0.5 percent sulfur, by weight, the anticipated release of SO_2 at maximum rated load is 92.5 pounds mass per hour. | 7

3.7.5 NONRADIOACTIVE SOLID WASTES

Normal domestic solid wastes resulting from the plant operation will be disposed of in a manner consistent with state, federal, and local environmental regulations.

TABLE 3.7-1

EXPECTED COMPOSITION OF RAW SEWAGE

Constituent	Concentration, mg/liter
Solids, total	675
Dissolved	375
Suspended, total	300
Fixed	75
Volatile	225
Settleable solids, mg/liter	15
Biochemical oxygen demand, 5-day, 20°C	300
Total organic carbon	150
Chemical oxygen demand	350
Nitrogen (total as N)	25
Organic	10
Free ammonia	15
Phosphorus (total as P)	8
Organic	3
Inorganic	5
Chlorides	20
Alkalinity (as $CaCo_3$)	75

10

5.7 OTHER EFFECTS

The material presented in the "Environmental Report--Construction Permit Stage" requires no updating except as discussed below.

5.7.1 Changes in Land Use.

All permanent plant roads will be paved or constructed of crushed limestone or other suitable material. Unpaved road surfaces will be treated, as necessary, during plant operation to minimize fugitive dust emissions. Construction roads that are not intended for use during operation will be removed. The road bed will be graded and seeded to conform to the natural surroundings. 9 10

A computerized accounting system will be established to maintain and update hourly averages of diffusion meteorology, measured effluent release rates, and inventory of fission products released. The system will include the required software to permit plant operators to make short-period dose calculations on demand. For long-period dose calculations, a permanent file of onsite meteorological data will be maintained. 7

6.2.4.2 Fog Monitoring Program

The impact of operating the Cooling Reservoir on local meteorology will be assessed by implementing a two-phase fog monitoring program. The first phase began during May 1987 and will continue until commercial operation of Unit 1. The second phase will begin following startup of Unit 2 and will continue for one year. 10

Fog monitoring is accomplished by the operation of two fog visiometers. One visiometer is located on FM 521 approximately 1 mile northwest of the Units. A second visiometer is located approximately 11 miles west-southwest of the site and will serve as a control location. The visiometers will provide a continuous data record for the monitoring periods.

6.2.5 NONRADIOLOGICAL ECOLOGICAL MONITORING

The applicant is currently evaluating the need to conduct operational non-radiological ecological monitoring. If such monitoring is deemed necessary, a monitoring program will be developed and incorporated into the ER-OL by amendment. 9

Question 291.20

Is the 49,500 gal of waste water produced when each train is regenerated an aggregate of the cation exchange unit, anion exchange unit, and the mixed-bed unit, or is this the volume of waste produced per unit? If an aggregate, specify the constituent streams and the frequency of occurrence.

Response

The waste water generated during makeup demineralizer system regeneration is characterized below. Please note that this represents approximately 48,000 gallons per train.

Train A	Frequency (Days)	Gallons Generated
Softener	3	10,500
Cation	3	19,000
Anion	1.5	12,000
Mixed Bed	40	6,500

10

Train B	Frequency (Days)	Gallons Generated
Softener	3	10,500
Cation	3	19,000
Anion	1.5	12,000
Mixed Bed	40	6,500