A PLAN OF ACTION OF OPERATING PROCEDURES AND

DESIGN MODIFICATIONS OF THE ONCE-THROUGH COOLING SYSTEM FOR

INDIAN POINT UNIT NO. 3,

SUBMITTED IN ACCORDANCE WITH SECTION 2.E(2) OF

FACILITY OPERATING LICENSE NO. DPR-64

AS AMENDED BY AMENDMENT NO. 2

ISSUED APRIL 5, 1976

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NOTICE

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

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BEFORE THE UNITED STATES

NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
Consolidated Edison Company	)	
of New York, Inc. and	)	Docket No. 50-286
Power Authority of the	)	
State of New York	)	
(Indian Point Station	)	
Unit No. 3)	)	

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TABLE OF CONTENTS

		PAGE
1.0	INTRODUCTION	4
	1.1 Definitions	
	1.2 System Description	
	1.2.1 Intake and Discharge Details	
	1.3 System Operating Procedures	
2.0	IMPINGEMENT AND ENTRAINMENT	21
	2.1 Factors Affecting Impingement	
	2.2 Practices to Mitigate Impingement	
	2.3 Impingement Tests Scope	
	2.4 Factors Related to Entrainment	
	2.5 Implimentation of Reduced Flow	
	2.6 Biological Significance of Reduced Flow	
3.0	CHEMICAL DISCHARGES	51
	3.1 Chemical Control	
	3.2 Dissolved Oxygen	
	3.3 Neutralization of Acids and Bases	
	3.4 Reduction of Chlorine Discharges	
4.0	THERMAL DISCHARGES	66
	4.1 Thermal Monitoring	
	4.2 Thermal Shock	
	4.2.1 Procedures	
	4.2.2 Biological Significance of Thermal Shock	
5.0	DESIGN MODIFICATION OF ONCE-THROUGH COOLING SYSTEM	73
	5.1 Mitigating Measures	
	5.1.1 Air Curtain	
	5.1.2 Continuously Operating Traveling Screens	
	5.1.3 Weir Wall	
	5.1.4 Modified Traveling Screens	
	5.1.5 Flume Study	
	5.2 Common Intake Model and Study	
	5.2.1 Model and Study Description	
	5.2.2 Biological Significance of Common Intake	
6.0	REFERENCES	88

1.0 INTRODUCTION

Section 2.E(2) of Facility Operating License No. DPR-64 reads as follows:

A plan-of-action of operating procedures and design modifications of the once-through cooling system for Indian Point Unit No. 3 shall be developed by the licensee in order to take the corrective actions to minimize detrimental effects on aquatic biota in the Hudson River to a practicable minimum during the interim period prior to installation of a closed-cycle cooling system. The plan shall include means of reducing thermal shock, impingement on the intake structure, entrainment of fish eggs, larvae, and plankton, chemical and thermal discharges, and loss of dissolved oxygen below 5.0 ppm; and shall include other mitigating measures available. The plan shall be submitted to the Nuclear Regulatory Commission one month after receipt of the operating license for Unit No. 3, and upon approval by the Commission, the plan shall be implemented so as to eliminate or substantially reduce such adverse effects as are revealed by the monitoring and environmental surveillance and special studies program presented in the Environmental Technical Specifications for once-through cooling.

On December 31, 1975, ownership of Indian Point Unit No. 3 was transferred to the Power Authority of the State of New York. In compliance with the above condition and as a compliment to the Environmental Technical Specification Requirements, Consolidated Edison Company of New York, Inc. submits on its own behalf and as agent for the Power Authority, the following plan to reduce detrimental effects on aquatic biota in the Hudson River to a practicable minimum.

1.1 Definitions

The following terms are used throughout this report and are defined here and in the Environmental Technical Specifications as follows:

THERMAL SHOCK - exposure of organisms to rapid increase or decrease in temperature.

ENTRAINMENT - the forced associated with the exposure of planktonic organisms to the plant circulating water system.

IMPINGEMENT - the contact and/or retention of organisms in the screening structures of the circulating water system (including all types of mesh screens, trash racks and structural configurations which can impinge organisms).

DELTA T - refers to the temperature difference between the intake water temperature and the discharge canal water temperature. (Temperature rise across the Circulating Water System).

DISCHARGE CANAL WATER TEMPERATURE - refers to water temperature measured in the discharge canal, at or near the confluence of the discharge canal water and the Hudson River.

INTAKE WATER TEMPERATURE - refers to water temperature measured in the intake structure forebay to the circulating water system.

THERMAL DISCHARGE - is the addition of heat from other than natural sources to a receiving body of water.

CIRCULATING WATER SYSTEM - includes the intake openings and structure for all units, the condenser cooling water system, the discharge canal, discharge port and structure.

DEICING - refers to melting of surface and frazil ice accomplished by recirculating a portion of the condenser discharged water back to the intake structure thorugh the deicing loop.

ENVIRONMENTAL TECHNICAL SPECIFICATION REQUIREMENTS (ETSR) - Appendix B to the Facility Operating License for Indian Point Nuclear Generating Units No. 1, 2 and 3, issued December 12, 1975.

1.2 System Description

It is the intent of this section to discuss the equipment and operation of Indian Point Unit No. 3 with regard to the intake and discharge of river water.

The cooling system for Indian Point Unit No. 3 is a once-through, or open cycle system. Unit No. 3 produces energy by the controlled fission of uranium in its reactor, this energy being used to generate steam. The No. 3 turbine generator converts the thermal energy of steam to electric energy. Steam from the steam generator expands in the turbine, performing work to drive the electric generator. Portions of the steam are used for reheating partially expanded turbine steam and preheating the condensate that is reused in the steam generator. After all recoverable energy has been extracted from the steam and converted to electricity, the residual energy is transferred to the condensers and discharged via the condenser cooling water to the discharge canal and thence to the Hudson River.

The discharge structure is designed to create mixing in such a way as to reduce water temperature differences in the river. It accommodates the combined cooling water flow from all three Indian Point Units (about 2,058,000 gpm including service water). The outfall structure, as depicted

schematically on figure 1-1, is 270 feet long. Heated water is discharged through twelve (12) ports, 4 feet high by 15 feet wide, spaced 21 feet apart (center to center). The entire structure of ports is itself submerged to a depth of 12 feet (center to surface) at mean low water. The ports described above are equipped with adjustable gates as a means by which the head differential between the canal and the river can be maintained so as to ensure a constant discharge velocity of 10 feet per second at the vena contracta of the ports.

Table 1-1 sets forth the design parameters for the existing once through cooling system.

1.2.1 Intake and Discharge Details

Indian Point Unit No. 3 intake structure is located on the east bank of the Hudson River directly in front of the Unit No. 3 power plant. The center of the structure is 453 ft. south of the center of the Unit No. 1 intake and 572 ft. north of the center of the first discharge port in the Indian Point outfall structure. The intake structure consists of six main intake channels and two small channels. The six main channels carry water to the circulating pumps and the two small channels supply water to the service pumps which in turn supply water to several areas of the plant. Approximately 855,000 gallons per minute of cooling water and service water is drawn through the Unit No. 3 reinforced concrete intake structure.

The circulating water system for Indian Point Unit No. 3 includes the piping and equipment necessary to ensure a reliable flow of river water through the condensers. Components of this system are (a) the Trash Bar Screen and Rake (b) the Traveling Screens, (c) the Chlorination System, (d) the Circulating Water Pumps, (e) the Discharge Canal Level Control Weir and (f) the Deicing Loop.

In front of the intake channel openings there is a curtain wall which extends to 1 ft. below mean low water. Below the

curtain wall there are bar racks which prevent heavy debris and ice from entering the area immediately in front of the fine debris screens. Immediately in front of each fine screen and extending to a depth of 5.5 ft. are four pipes which can discharge heated effluent water to prevent ice from forming on the screens. The components comprising the circulating water system are discussed in detail below.

(a) Trash Bar Screens and Rake

The trash bar screens are located just ahead of the stop log guides in each channel. The trash bar screen consists of fixed perpendicular 1/2 inch by 3 inch bars on 3-1/2 inch centers. The bars extend the full height of the structure and collect large submerged debris. Debris collected at each trash bar screen is removed with the mobile trash rake. This device consists of a rake attached to a frame which slides up and down in channel guides. The guides are positioned for proper relationship between the rake and trash bar screen. The rake frame is attached by means of cables to the hoisting machinery mounted on the head frame. The rake travels at 30 feet per minute vertically and is provided with overload protection. The entire trash rake can traverse the intake structure on rails and it can be positioned over any of the trash bar screens. When the rake

is in the upper position the trash is put into the trash trough and sluiced to the trash pit with Service Water.

(b) Traveling Screens

The fine debris screens are of the vertical traveling type and are positioned at the river edge opening of the intake channels. One of the small intake channels is equipped with a stationary fine screen rather than a traveling screen.

The traveling screens consist of a continuous belt of screen panels. The wire mesh of the screen panels is of stainless steel with 3/8 inch square openings. When the debris collected by the screen is sufficient to cause a differential pressure of 8.5 inches of water across the screen a central control room alarm is sounded and a man is sent to wash the screens. The screens are fitted with thermostatically controlled heaters to prevent ice formation in the operating mechanism in the winter. The heaters can also be manually controlled. There is local control for the heaters at each screen.

When in operation, the continuous belt of screen moves down through the intake channel, around a bottom axle and then up through the incoming flow of cooling water.

The screens rotate about head and foot sprockets and are chain driven by an electric motor through a speed reduction unit (1800 rpm/4.73 rpm) to the small drive sprocket. The driven sprocket is keyed to the head sprocket shaft outside of the splash housing. Debris is picked up on the upward pass and carried by the screen above the water to a point where a high pressure water jet washes the debris into a trough where it is then sluiced to the trash pit. After being cleaned the belt of screen passes over an upper axle and turns down into the channel to make another circuit.

The 3/8 inch mesh of the traveling screens will prevent fish approximately 2 inches long and larger from entering the plant cooling system. The minimum size of screenable fish is dependent upon the body shape of each species. The design velocity of the water approaching the traveling screens is 1 ft./sec. The traveling screens of Unit No. 3 are positioned at the river edge opening of the intake channels to the circulator pump to prevent fish from entering these channels and becoming trapped in front of the screens.

(c) The Chlorination System

A diffuser for the introduction of sodium hypochlorite is positioned in each intake channel between the traveling screen and the circulator pump. When Indian Point Unit No. 1 was first constructed, the location of the chlorination system diffuser in front of the screens caused adverse effects on the fish population. This plant impact was eliminated by relocating the system diffuser behind the screens.

The sodium hypochlorite system is provided for treatment of algae and slime-forming bacteria in the multiple circulating water and service water intake bays at the intake structure. Two pumps take suction from a common header supplied by both existing storage tanks in Unit No. 1. The solution is pumped from the tanks via a high or low range path through flow control valves to the inlet bays. A common header from the flow transmitters is used to carry the solution to the intake structure of Unit 2 or that of Unit 3. The high flow path supplies the circulating water pump inlet bays while the low range path serves the service water pump bays.

Before the solution reaches the diffuser in the inlet bay a manual valve is available for isolation. The diffuser consists of a pipe containing a series of spaced holes

inserted into the inlet bay. For protection of the pumps, recirculation is provided back to the storage tanks through an orificed line which allows a flow of 5 gpm. (See section 3.4 for Reduction of Chlorine discharges).

(d) The Circulating Water Pumps.

The six circulating water pumps are Westinghouse vertical motor driven pumps, one located in each well of the intake structure. Each pump is rated at 140,000 gpm and 21.0 foot total head. Operation of all six pumps is necessary to supply cooling water to the condensers for normal turbine generator operation.

Each pump is driven by a 900 HP, 6600-volt, vertical solid shaft induction motor. An extension shaft supported by two bearings is connected to the motor and pump by two sleeve-type couplings.

Motors are weather-protected with frame heaters, bearing temperature thermocouples and non-reverse ratchet. Total weight of each unit is approximately 92,000 lb.

(e) The Discharge Canal Level Control Weir.

The purpose of the discharge canal level control weir is to maintain the condenser tailpipes submerged regardless of river level or circulating water flow, through the operation of an adjustable elevation weir.

The positioning of this weir is accomplished by an automatically controlled hydraulic pumping station driving hydraulic operating cylinders. These cylinders drive a mechnanical operating mechanism which is attached to the weir by lifting rods. The hydraulic pumping station is controlled by an electro-pneumatic control circuit housed in a panel located in the immediate area of the pumping station.

The weir operates by sliding up and down in stainless steel guide slots which are cast into the cement walls of the discharge canal. In the lowest position, the moveable weir is below the top of the fixed Weir. The upstream weir rises 80 inches and the downstream weir rises a maximum of 160 inches to control the water level in the upstream channel.

The weir operating mechanism consists of two vertical steel support columns, one over the stainless steel guide slots on each side of the tunnel wall. Each column supports a six-

inch bore, 80 inch stroke hydraulic cylinder. Carriages, raised and lowered by the section of the hydraulic cylinders, run up and down the columns on steel wheels. Each carriage travels a total of 80 inches. The upstream weir is attached to the carriages by steel connecting rods and is positioned directly by the carriages. The downstream weir is moved by a roller chain which doubles the distance traveled (160"). This mechanism incorporates two upper travel limit switches and two lower travel limit switches. One set of switches operates the high and low travel limit switches used in the control system and the other set of switches operates the upper and lower travel limit lights.

Normal weir operation is accomplished using one of two duplicate electric motor-driven hydraulic pump and control valve systems.

(f) The De-Icing Loop

To prevent frazzle ice formation on the traveling screens two vertical low head de-icing pumps are provided. Both pumps take suction from the discharge canal after the variable weir through openings provided by timber slide gates. The gates are operated with either a crank or portable drive unit. Open and closed limit switches are mounted on the gate operating mechanism. Each de-icing pump

discharges into a separate 54 inch line supplying a manifold on the river side of the trash bar screens. Each inlet bay receives water from both manifolds. Local instrumentation for the de-icing system consists of a temperature and pressure indicator for each pump discharge line.

TABLE 1-1

DESIGN PARAMETERS FOR INDIAN POINT UNIT NO. 3
ONCE-THROUGH COOLING SYSTEM

		Initial Guaranteed	Maximum Guaranteed	Maximum Calculated
1.	Reactor Power, MWt	3,025	3,087	3,217
2.	Plant Net MWe	965	986	1,033
3.	Turbine Net MWe (@ 1.5" Hg Backpressure)	1,000	1,021	1,068
4.	Condenser Heat Load, 10^6 Btu/hr	6,840	7,050	7,350
5.	Condenser Coolant Flow, gpm	840,000	840,000	840,000
6.	Condenser delta T, °F	16.3	16.8	17.5
7.	Service Water Heat Load, 10^6 Btu/hr	110	120	140
8.	Service Water Flow, gpm	30,000	30,000	30,000
9.	Service Water delta T, °F	7.3	8.0	9.4
10.	Total Heat Load, (4) + (7), 10^6 But/hr	6,950	7,170	7,490
11.	Total Water Flow, (5) + (8), gpm	870,000	870,000	870,000
12.	Resultant delta T, °F	16.0	16.5	17.2

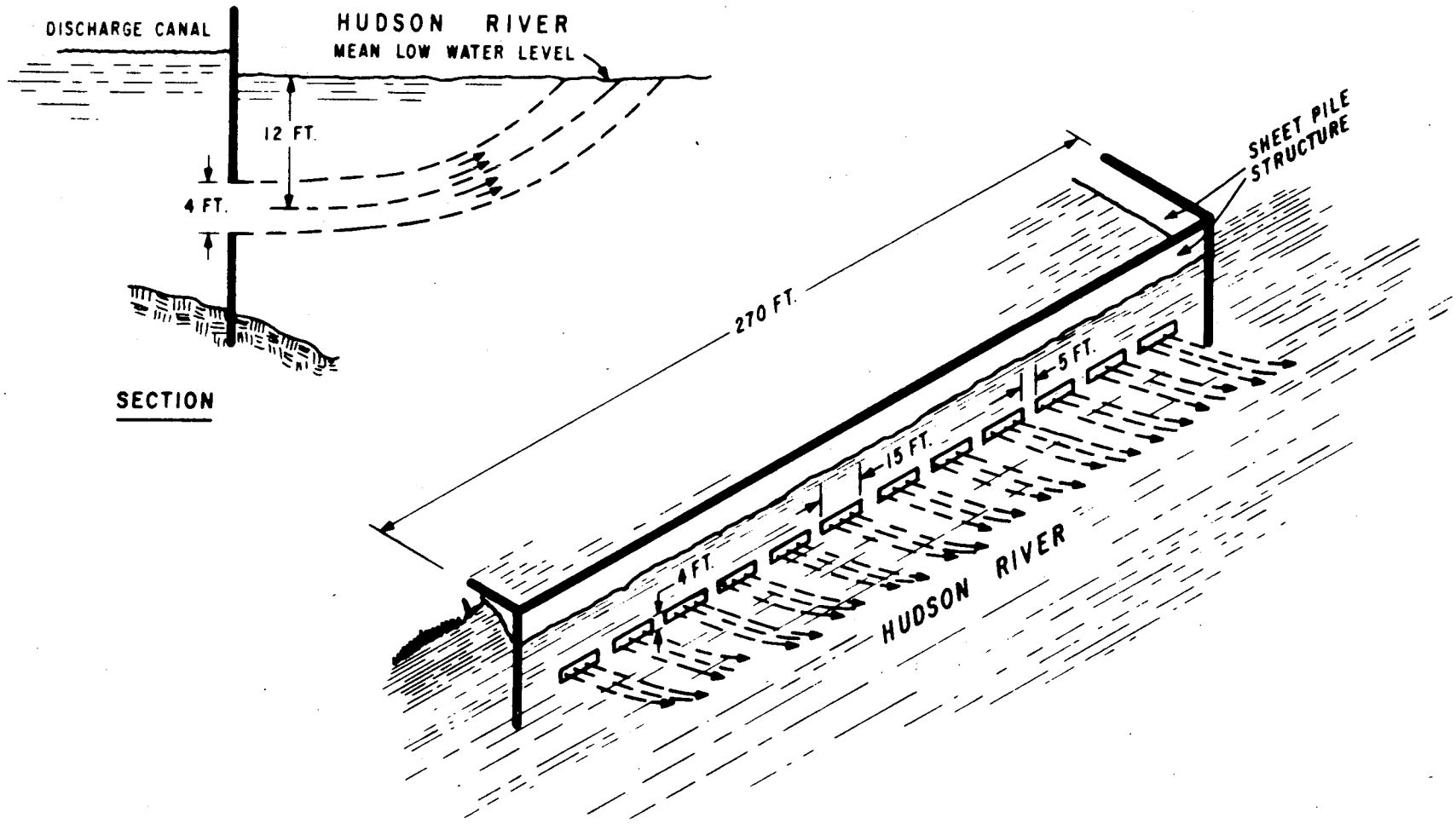


FIGURE 1-1
DIAGRAMMATIC SKETCH OF
INDIAN POINT DISCHARGE STRUCTURE

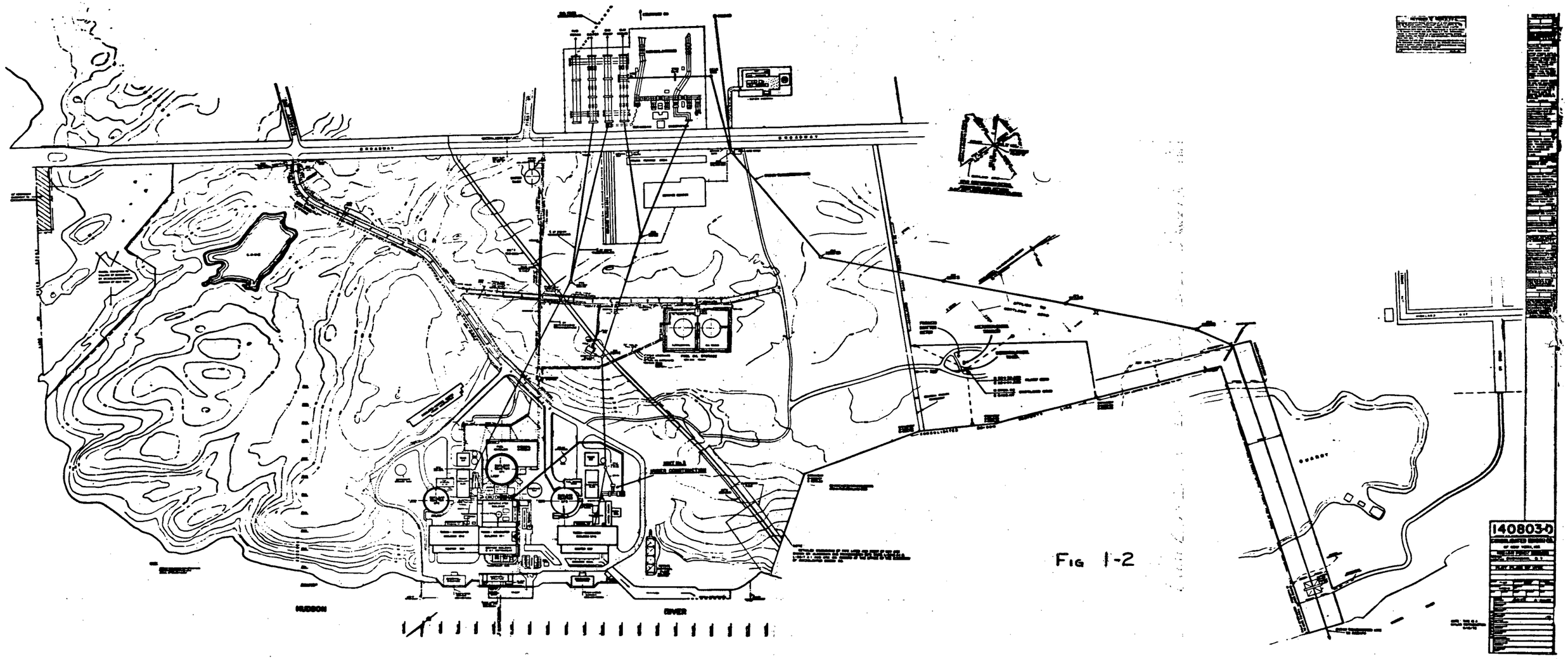


Fig 1-2

DISCHARGE CANAL – THREE UNIT OPERATION

CIRCULATING WATER SYSTEM

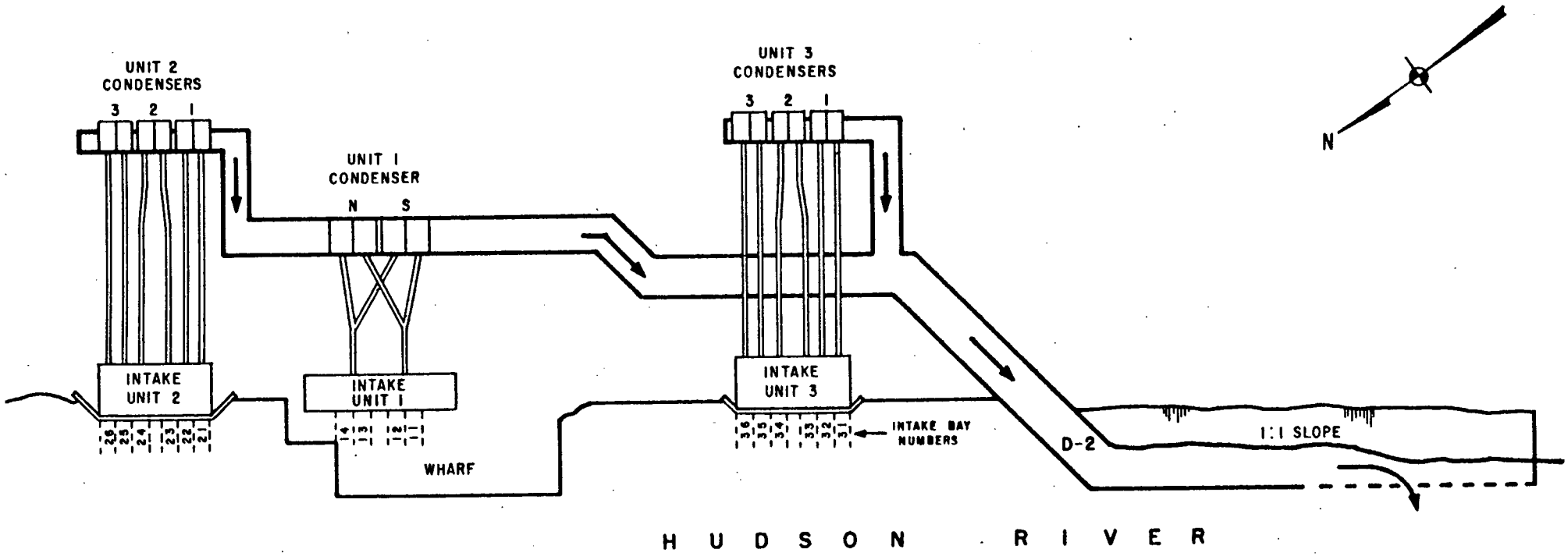


FIGURE 1-3

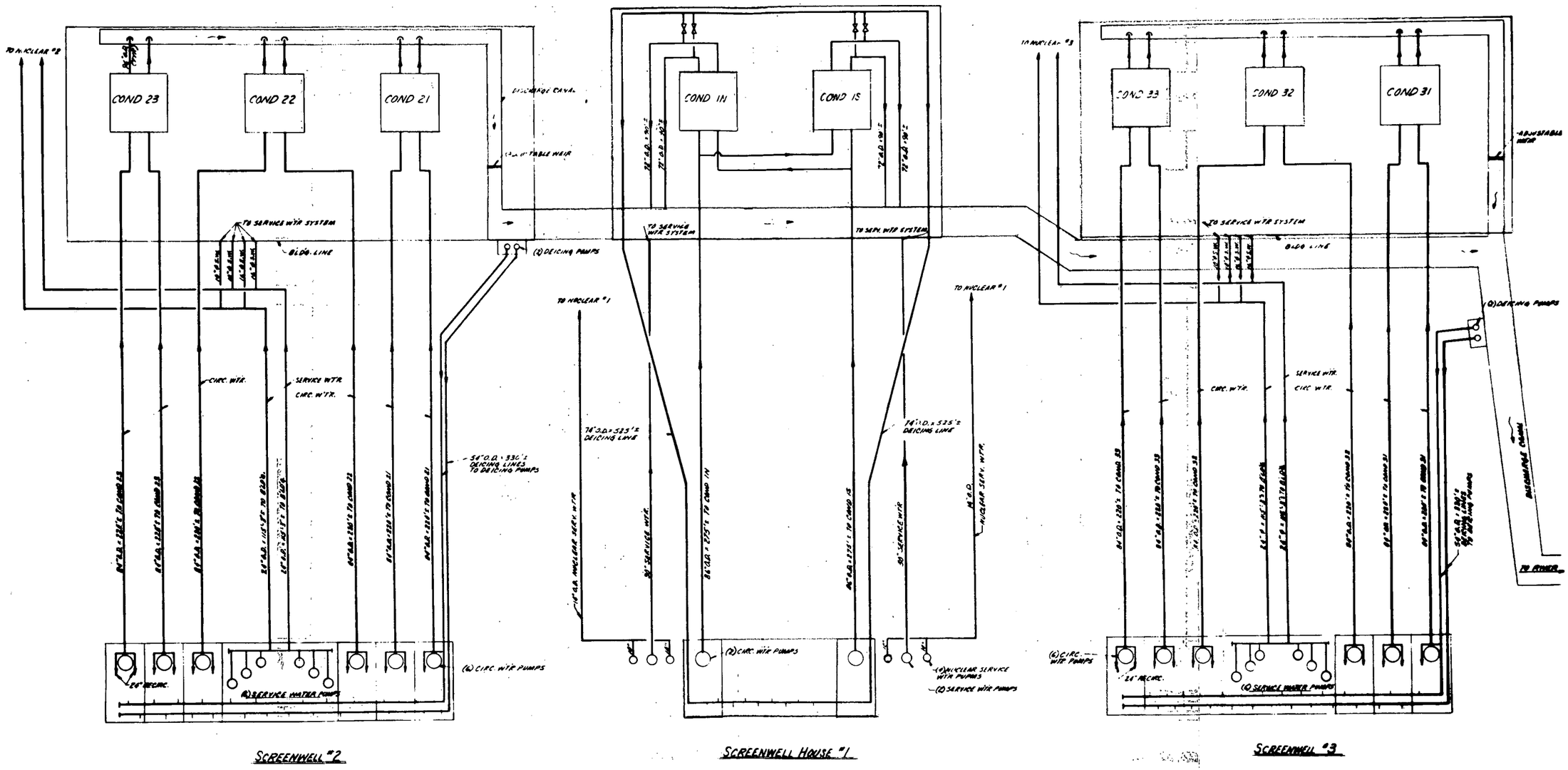
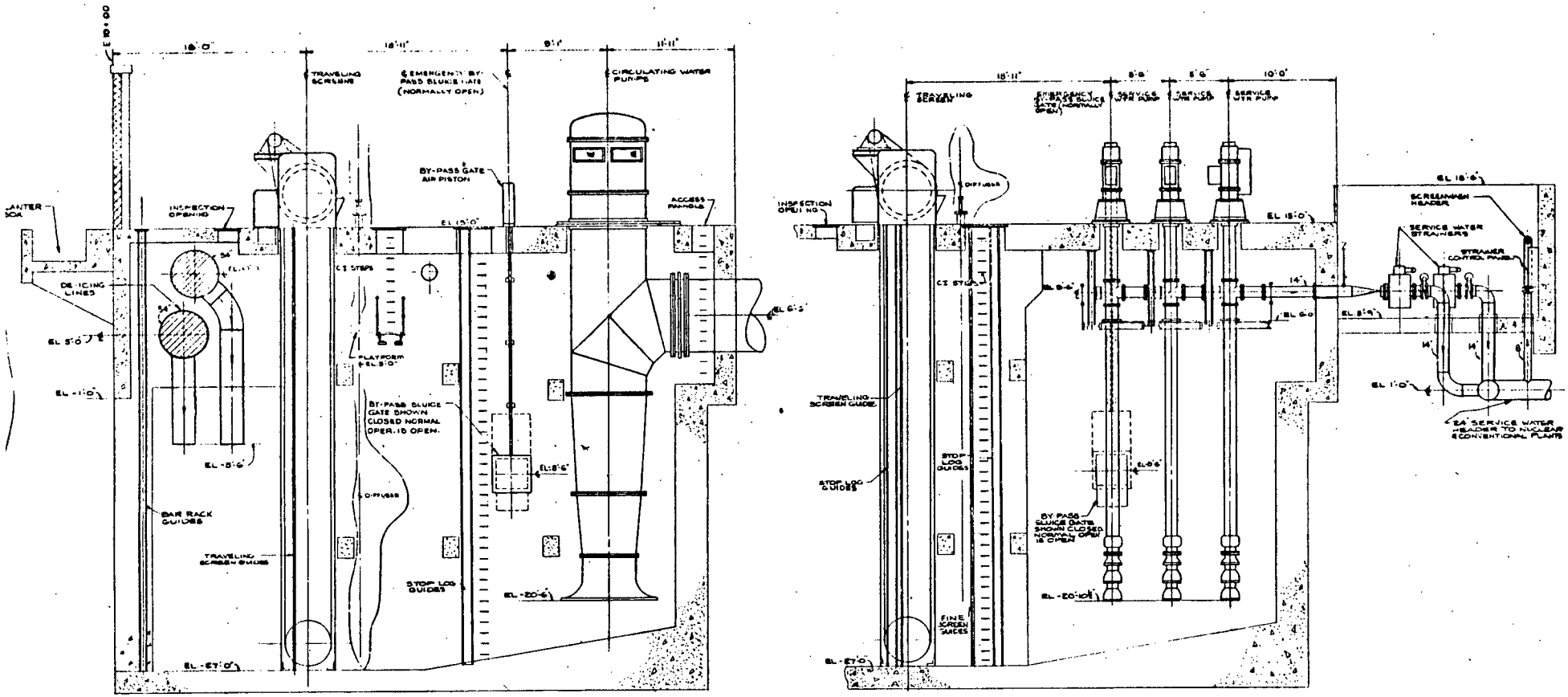

COND 23
COND 22
COND 21
COND 11
COND 12
COND 33
COND 32
COND 31
TO SERVICE WTR SYSTEM
BLDG. LINE
(2) DEICING PUMPS
CIRC. WTR.
SERVICE WTR.
CIRC. WTR.
(6) CIRC. WTR PUMPS
(6) SERVICE WATER PUMPS
TO NUCLEAR #1
TO NUCLEAR #2
TO NUCLEAR #3
(2) CIRC. WTR PUMPS
(2) NUCLEAR SERVICE WTR PUMPS
(2) SERVICE WTR PUMPS
SERVICE WTR.
CIRC. WTR.
(2) SERVICE WATER PUMPS
TO RIVER
SCREENWELL #2
SCREENWELL HOUSE #1
SCREENWELL #3

FIGURE 1-4



SECTION "A-A"
SCALE 1/4" = 1'-0"
DWG. 9321-F-20113

SECTION "B-B"
SCALE 1/4" = 1'-0"
DWG. 9321-F-20113

FIGURE 1-5

WORK THIS DWG WITH DWG #9321-F-20113

WESTINGHOUSE ELECTRIC CORPORA

INTAKE STRUCTURE
GENERAL ARRANGEMENT
SECTIONS

FOR
CONSOLIDATED EDISON COMPAN
INDIAN POINT GENERATING STATION
UNIT NO. 3

RELEASED FOR CONSTRUCTION
FOR APPROVAL

STATE OF NEW YORK

UNITED ENGINEERS & CONSTRUCTORS INC.

9321-F-20123-2

A201811

1.3 SYSTEM OPERATING PROCEDURES

The plant operating procedures contained in this section are subject to revision by the Consolidated Edison Co., in accordance with section 5.0 of the Environmental Technical Specification Requirements, in order to continuously reflect the most up-to-date operating techniques in regard to the systems discussed.

INDIAN POINT STATION

UNIT NO. 3

CIRCULATING WATER SYSTEM OPERATION

SOP-RW-1

Circulating Water System Operation

1.0 Intent

To provide a procedure for the startup, normal operation and shutdown of the circulating water system.

2.0 Precautions and Limitations

2.1 Stop Logs must be removed from the bay of each circulator which is to be started.

2.2 If more than two circulating water pumps are to be started, preparations should be made to adjust the discharge canal gates promptly in order to prevent the differential between the canal and river from exceeding 4'-6".

2.3 Circulating water pump motor starting times shall be in accordance with POI-1.

2.4 Gland seal water shall be applied to all operating circulating water pumps.

2.5 The following are environmental technical specification requirements:

A. The temperature rise across the circulating water system shall not exceed:

1) 17°F when the circulating water system is operating at full flow (19°F when heater or reheater drains empty directly into the condenser or during periods of high air inleakage into the condenser)

2) 28°F when the circulating water system is operating at reduced flow 1

3) 31°F when the circulating water system is operating at reduced flow and one or more of the circulating water pumps is down for maintenance or pump outage or,

4) 31°F when operating at reduced flow and 10% of the normal condenser discharge is recirculated to the inlet for de-icing purposes, or

5) 38°F when operating at reduced flow and 20% of the normal condenser discharge is recirculated to the inlet for de-icing purposes.

NOTES: 1) Temperature rise across the circulating water system is the temperature differential between the river and the discharge canal. The river (average of Unit No. 1, 2 and 3 inlet temperatures), discharge canal and ΔT temperatures are recorded in the Unit No. 1 Control Room. 1

2) Whenever the temperature rise exceeds the above limits for more than 6 hours, an investigation shall be undertaken to determine the cause of the increase and action taken to reduce the temperature rise within the specified limits within 24 hours.

B. The outfall structure gates must be adjusted within 4 hours of any change in the number of operating circulating water pumps to maintain the minimum differential above 18 inches.

C. When the daily average river water temperature is less than 40°F the circulating water flow rate will be reduced to 60% by opening the circulating water recirculation valves and installing orifices in the condenser water box outlets. This must be made within one week after the average intake water temperature reaches 40°F.

D. For the months June through September, discharge canal water temperature shall not exceed 98°F.

NOTES: 1) If this temperature is exceeded for two hours, corrective action shall be taken unless there exists an emergency need for power.

2) If the discharge canal level differential is less than 18 inches for more than two hours, the discharge canal temperature shall not exceed 90°F.

E. Daily fish collections are to be taken of each operating circulating water pump by rotating and backwashing the traveling screens for at least 15 minutes. If the number of fish killed on the intake screens exceeds 5,000 a day for three consecutive days for 15,000 in a single day, immediate corrective action must be taken to reduce the fish kills to acceptable values. This may include shutdown of pumps or operation at reduced flow (recirculation valves open and condenser outlet water box orifices installed). 1

NOTE: If both Unit 2 <u>and</u> Unit 3 are operating <u>and</u> three or more circulating water pumps are operating at either Unit No. 2 or 3 simultaneously with four or more circulating water pumps operating at the other unit action need not be taken until the numbers exceed 10,000 and 30,000 respectively.

F. Chemical discharges require a circulating water system dilution flow of at least 100,000 gpm.

2.6 The blowdown line from auxiliary steam trap AST-1 terminates above the platform in 31 circulating water pump bay; therefore, ensure that valve SB-33 (auxiliary steam to de-icing system) is locked closed and tagged prior to allowing personnel to work on the platform.

2.7 The vibration limits for the circulating water pump casings are as follows:

Up to 25 mils - no action required.

Over 25 mils - bring to the attention of Operations Engineer.

Over 60 mils - shut down pump immediately.

2.8 Ensure that seal water is leaking past the packing glands of the circulating water pumps to verify that the glands are not too tight.

2.9 Whenever the plant operates at less than 200 MW for more than 12 consecutive hours during the May 15 to July 31 period no more than three (3) circulating water pumps shall be used. 1

3.0 Initial Conditions

3.1 Traveling screen and wash system operable for the circulating water pump to be run.

3.2 Service water system operable to provide gland sealing water.

3.3 Water box priming system operable and auxiliary steam available for starting a circulating water pump.

3.4 De-Icing System operable if river water temperature is below 35°F.

3.5 Heat tracing for gland sealing water system including heat lamps in pump skirt area should be operable whenever the ambient temperature is below 40°F.

4.0 Procedure

4.1 Startup

NOTE: In order to limit the amount of auxiliary steam usage and decrease priming time, one water-box section should be primed at a time using one air ejector.

4.1.A Inform the service boiler operator in Unit No. 1 that steam is to be drawn for the priming ejectors.

4.1.B Ensure that all condenser water-box doors are properly closed for affected condenser section(s).

4.1.C Ensure that valves SB-20A and SB-20B (auxiliary steam to priming ejectors 31 and 32) are closed.

4.1.D Open drain valves CA-5 and CV-7 to drain inlet and exhaust lines of any water present. When draining is complete, close these valves.

4.1.E If desired, the weir should now be placed in service, and raised to highest position. See section 4.

4.1.F Slowly open auxiliary steam line root valve SB-1 to warm up steam line.

4.1.G Blowdown auxiliary steam traps AST-2 and AST-3 to insure that lines are free of condensate.

4.1.H Open circulating water pipe priming valve (CW-1) and ensure vacuum breaker (CW-17) is closed for the circulating water line to be primed.

4.1.I Open the condenser water-box air removal valve (CA-2) and ensure vacuum breaker (CA-4) is closed for each condenser water-box section to be primed.

4.1.J Open SB-20A or SB-20B to admit steam to either condenser waterbox priming ejector 31 or 32.

4.1.K Open CA-3A or CA-3B to lift water in the water box section being primed. It should take approximately 20 minutes to prime a water box section.

NOTE: Prime is assured when there is a visible level in the sight glass on the condenser waterbox which is equivalent to an indicated vacuum of 24" Hg on air removal line gauge near lifting jets.

4.1.L At the Circulating Water Pump:

1) Rotate Cuno filter on seal water line and blow it down.
2) Ensure seal water pressure is 35 ± 5 psig.
3) Ensure oil level is within normal range in upper and lower motor bearing sight glasses.

4.1.M Once the waterbox has been primed, start the desired circulating water pump.

NOTE: Pump starting is interlocked with seal water pressure (≥30 psig) and waterbox level (≥El. 24'-7").

4.1.N After approximately 15 seconds the motor current should stabilize at approximately 75 amps.

4.1.O Ensure that seal water is leaking past packing gland to verify that gland is not too tight.

4.1.P Log starting time and running current.

4.1.Q Close the circulating waterbox air removal suction valve (CA-2) for the waterbox section which has just been primed.

4.1.R Close the circulating water pipe priming valve (CW-1) for the circulating water line which has just been primed.

4.1.S If no other circulating water pumps are to be started, shutdown priming system as per section 4.1.U below. If another pump is to be started, proceed as follows:

1) Ensure vacuum breaker valves CW-17 and CA-4 are closed for the water box section to be primed.

2) Slowly open the circulating water pipe priming valve (CW-1) for the circulating water line to be primed.

3) Slowly open the condenser waterbox air removal valve (CA-2) for the condenser waterbox section to be primed.

4) Continue the pump startup as described above (sections 4.1.K through 4.1.R).

4.1.T Adjust weir to maintain stilling well level at a point where circulating water pump motor running currents are lowest.

4.1.U Close suction valve to priming jets (CA-3A and CA-3B).

4.1.V Notify Unit No. 1 service boiler operator that steam is to be secured then close steam supply valve (SB-20A or SB-20B) to the priming ejector.

4.1.W Close steam supply root valve (SB-1) and open drain valves CA-5, CA-7.

4.1.X Adjust outfall structure gates as per SOP-RW-3.

4.2 Normal Operation

4.2.A Monitor circulating water pump motor current and bearing temperatures per POI-3.

4.2.B The normal running bearing temperature is 140°F. Should the temperature of a bearing reach the alarm setpoint (185°F) steps should be taken to shut down the pump. In any case, the bearing temperature should never be permitted to reach 200°F.

4.2.C The normal running current for the pump motors is 70 to 75 amps with no restriction in outlet water box. Current will be much higher with restriction (about 87 amps). Should the pump motor current exceed 75 amperes (without restriction the NPO should be directed to check the waterbox gauge glass and if low, restore the waterbox to the full condition using the waterbox priming system. The maximum current must not exceed 90 amperes.

4.2.D During normal rounds, upper and lower motor bearing lube oil sight glasses of the operating circulating water pumps should be checked.

4.3 Shutdown and Draining

4.3.A Trip the desired circulating water pump(s).

CAUTION

If liquid waste discharge (radiological or chemical) is in progress, release rate should be re-evaluated prior to reduction in circulating water flow.

4.3.B Log shutdown time.

4.3.C Adjust outfall structure gates as per SOP-RW-3.

4.3.D The water can be drained from any waterbox section by opening the vacuum breakers on the outlet waterbox (CA-4) and the associated circulating water line (CW-17) after pump has been shutdown.

NOTE: It is not necessary to drain the waterbox when the pump is stopped.

4.4 Variable Weir Operation

4.4.A Startup

4.4.A.1 Ensure that operating mechanism, lifting rods and hydraulic cylinders are clear to operate.

4.4.A.2 Ensure that hydraulic oil sump level is within normal range in sight glass.

NOTE: If oil in accumulator bank has previously been used, the sump level will be high, but the system will automatically recharge itself.

4.4.A.3 Place the mode selector switches at the local and the Control Room operating stations in the "OFF" position.

4.4.A.4 Close disconnect switches on MCC's 32 and 33 for hydraulic oil pumps 31 and 32 respectively.

4.4.A.5 Select one hydraulic oil pump as the running pump and place that pump selector switch in the "Run" position. This will start the pump. Place the other pump's selector switch in "Standby".

4.4.A.6 Place both mode selector switches in "Auto" and adjust the setpoint to maintain the stilling well level at a point where the circulating water pump motors running currents are lowest.

NOTE: The operator may take manual control of the weir by placing either of the mode selector switches in "Hand". The weir position is now directly controlled by use of the raise and lower pushbuttons.

4.4.B Normal Operation

4.4.B.1 The normal mode of operation is automatic control of the level in the stilling well, however, the operator may override this, as previously stated, and control weir position directly.

4.4.B.2 During normal rounds, the hydraulic oil sump level should be checked in accordance with POI-3.

4.4.B.3 The pressure in the nitrogen receivers should be maintained at 1500 psi.

4.4.C Emergency Operation

4.4.C.1 If the hydraulic oil pumps are unable to supply oil to operate the weir, the gates may be operated by oil stored in the accumulators.

4.4.C.2 The weir gates may be moved up or down by positioning the manually operated 3-way valve.

CAUTION

Sufficient oil is stored in the accumulators for only one complete raising and lowering of the gates.

4.4.D System Shutdown

4.4.D.1 Place one of the mode selector switches in "Hand" and lower the gates completely.

4.4.D.2 Place both mode selector switches in the "Off" position.

4.4.D.3 Place both hydraulic oil pump control switches in the "Off" position.

INDIAN POINT STATION

UNIT NO. 3

INTAKE STRUCTURE OPERATION

SOP-RW-2

Intake Structure Operation

1.0 Intent

To provide procedures for the operation of the bypass gates, cathodic protection, screen wash system and freeze protection located on the Intake Structure.

2.0 Precautions and Limitations

2.1 The bypass gates should be kept in the open position to provide a backup water source to the service water pumps' intake.

2.2 No more than two traveling screens should be washed at one time as this could drop the service water header pressure below 80 psig and cause the washing to be ineffective.

2.3 The screen wash control switches should not be left in the "Auto" position. This requirement is imposed to prevent screen wash actuation without conducting fish count.

2.4 The electrical freeze protection system and traveling screen heaters should be in service whenever the ambient temperature is 35°F or less.

3.0 Initial Conditions

3.1 Screen Wash

3.1.A Service Water is available at intake structure and pressure is above 80 psi, as indicated on the local control cabinet by a red permissive light.

3.1.B Electrical power is available to the screen drive(s) from MCC-31.

3.2 Cathodic Protection

Electrical power is available to the cathodic protection rectifiers from MCC-31.

3.3 By-Pass Gates

Instrument Air must be available to move the gates.

3.4 Electrical Freeze Protection

Electrical power is available from MCC-31.

4.0 Procedure

4.1 Cathodic Protection

4.1.A When a selenium rectifier is not in use, the selenium cells may deform. Therefore, when energizing a rectifier which has been turned off for more than one day, the following procedure should be used:

1) Set the rectifiers rheostat to its lowest setting.

2) Close the breaker on MCC-31 which feeds the rectifier.

3) Energize the rectifier by closing the local breaker in the rectifier cabinet.

4) Allow the unit to operate at this setting for at least two minutes.

5) The output voltage should be raised in at least five steps up to rated output allowing two minutes of operation on each step. This procedure will reform the selenium plates without any damage.

4.1.B When energizing a rectifier which has been off for less than a day the unit should be energized at the lowest voltage setting and slowly raised to rated output.

4.1.C Maintain the oil level above the line indicated on the inside of the transformer cabinet.

4.1.D Using the rheostat adjust the DC current output, if necessary, to the following values:

Rectifier 31 *
Rectifier 32 *
Rectifier 33 *

* To be supplied later.

4.2 Screen Wash

4.2.A Inform the fish testing consultant that the screens are to be washed.

CAUTION

If the number of fish killed on the intake screens exceeds 5,000 a day for three consecutive days or 15,000 in a single day, corrective action must be taken to reduce fish kill below these values.

4.2.B Place the "Man-Auto-Off" screen wash control switch on the local control panel in the "Manual" position. This will admit service water to the spray nozzles and start the screen drive.

CAUTION

1) No more than two screens should be washed at a time in order to maintain required service water pressure.

2) When initiating screen wash verify visually that water is coming out of spray nozzles as screen rotates. Failure of the spray valve to open will still actuate the pressure interlock allowing the screen to rotate and carryover any entrapped debris.

4.2.C When the ΔP across the screen drops to 2.5" H_2O (amber light above control switch de-energized) allow screen to rotate for more than 10 minutes and turn off.

4.2.D Place the screen wash control switch in the "Off" position.

CAUTION

The screen wash control switches are to be left in the "Off" position to prevent screen wash actuation without fish count.

4.3 By-Pass Gates

The position of each bypass gate is controlled by a three way valve (PCV-1317 and PCV-1318) located in cabinet next to the air piston. Moving the valve handle up or down will raise or lower the gate as desired, centering the handle stops all gate movement.

4.4 Freeze Protection

4.4.A Freeze protection for all service water piping including heat lamps on circulating pump gland leak-off is powered from and controlled by electrical heat tracing panel 31. (See SOP-EL-7.)

4.4.B Traveling Screen Heaters

4.4.B.1 Energizing Heaters

4.4.B.1.a Close the screen heater feeder breakers on MCC-31.

4.4.B.1.b Open each screen heater control cabinet and set the control thermostat to 35°F.

4.4.B.1.c Close the heater breaker mounted on the outside of the control cabinet.

4.4.B.1.d Put the control switches on each cabinet in the "Auto" position.

4.4.B.2 De-Energizing Heaters

4.4.B.2.a Place the local heater breakers in the "Tripped" position.

4.4.B.2.b Place the screen heater feeder breakers on MCC-31 in the "Off" position.

INDIAN POINT STATION

UNIT NO. 3

OUTFALL STRUCTURE OPERATION

Outfall Structure Operation

1.0 Intent

To provide a procedure for maintaining the discharge velocity of cooling water from the outfall structure at approximately 10 feet per second so that effective thermal dilution with the Hudson River will be achieved. To create this discharge velocity (10 fps) the head differential across the outfall structure must be at least 20 ± 2".

NOTE: The Facility Technical Specifications (Appendix B) require the above minimum discharge velocity whenever the combined station output is greater than 50% of the maximum station output. 1

2.0 Precautions and Limitations

2.1 At no time shall the differential level between the canal and the river be allowed to exceed 4'-6" as this could cause the outfall structure to collapse.

2.2 Technical Specifications require that adjustments of the gates shall be made within 12 hours after any change in the flow rate of the circulating water pumps.

NOTE: After motorized means are available for the adjustments, the adjustments shall be made within four hours.

2.3 All adjustments to the movable gates or removal of the fixed gates in the outfall structure shall be recorded in a special log to be maintained by Unit No. 3 personnel. Additionally, the final head differential across the outfall structure should be recorded following gate adjustment.

NOTE: Following gate adjustment, it takes approximately 30 minutes for final equilibrium conditions to be reached. 1

2.4 Movable gates 3 and 8 should be left open so as not to interfere with the plankton nets installed on them.

3.0 Initial Conditions

3.1 Fixed discharge ports No. 11 and 12 at the south end of the outfall structure are closed.

3.2 Water level indicators on the canal and river sides of the outfall structure are available. 1

3.3 River water service and main circulating water pumps for each unit are in operation as required for plant conditions.

4.0 Procedure

When a unit changes the number of circulating water pumps it has in operation, an N.P.O. is to be sent to the outfall structure and he, assisted by a Unit 3 N.P.O., will perform the gate manipulations. The gates are to be positioned so as to maintain a differential water level between the canal and river of 20 ± 2".

4.1 If the canal/river differential is below 18" the discharge port movable gates shall be closed in the following sequence until the Δ L reaches 20".

NOTE: Gates are numbered from North to South.

1. Close Gate No. 2.
2. Close Gate No. 4.
3. Close Gate No. 6.
4. Close Gate No. 7.
5. Close Gate No. 10.
6. Close Gate No. 9.
7. Close Gate No. 1 approximately 6".
8. Close Gate No. 5 approximately 6".

Continue steps 7 and 8 until the Δ L reaches 20 ± 2".

CAUTION

Under no circumstances should all gates be completely closed. Therefore, gates 1, 3, 5 and 8 should not be closed by more than 24" from the fully opened position.

4.2 In order to bring the canal/river differential level down, the movable gates are opened in the following order:

1. Open Gate No. 5 approximately 6".
2. Open Gate No. 1 approximately 6".

Repeat steps 1 and 2 until the Δ L is 20 ± 2" or the gates are fully opened then adjust the gates as follows until the Δ L is 20 ± 2":

3. Open Gate No. 9.
4. Open Gate No. 10.
5. Open Gate No. 7.
6. Open Gate No. 6.
7. Open Gate No. 4.
8. Open Gate No. 2.

4.3 The differential water level should be logged once a shift until remote readout indication is installed.

NOTE: Level indicators should be promptly cleaned if a reading cannot be obtained.

INDIAN POINT STATION

UNIT NO. 3

DE-ICING SYSTEM OPERATION

De-Icing System

1.0 Intent

To provide a procedure for the startup and shutdown of the De-Icing System.

2.0 Precautions and Limitations

2.1 The De-Icing System should be put into operation whenever the river water temperature drops below 35°F to prevent formation of frazzle ice.

2.2 The slide gate(s) must be maintained in the full open position during de-icing pump operation.

2.3 Starting times of the de-icing pumps shall be in accordance with POI-1.

2.4 The blowdown line from AST-1 terminates above the platform in 31 circulating water pump bay; therefore, ensure that there are no personnel on the platform before cutting in the steam to the de-icing jets and/or blowing down the trap.

2.5 When one de-icing pump is in service the temperature rise across the circulating water system shall not exceed 28°F; with both de-icing pumps in service it shall not exceed 34°F as per environmental technical specifications.

2.6 Stand clear of exhaust piping from jets to avoid hot condensate falling from exhausted steam.

3.0 Initial Conditions

3.1 Auxiliary steam must be available in order to prime the system.

3.2 Slide gates are operable.

4.0 Procedure

4.1 Priming The System

4.1.A Fully open the slide gate for each pump to be run using either the motor driven slip clutched device or hand crank.

4.1.B Slowly open valve SB-33 (auxiliary steam to intake structure root valve) in order to warm up steam lines. This valve is located near the first landing on the stairwell in the north-west corner of the Turbine Hall.

4.1.C Notify Unit No. 1 Service Boiler Operator that steam is to be drawn for priming ejectors.

4.1.D Open the bypass valves around AST-2, AST-7 and AST-1 to blow down any condensate which has collected in the lines. When the condensate has been blown out of the line close the bypass valve.

CAUTION

The blowdown pipe from AST-1 terminates above the platform in 31 circulating pump bay. Assure that there are no personnel on the platform before blowing down AST-1.

4.1.E Open the drain valves on the drop out pipe and exhauster for the pump to be run.

For Pump No. 31 - CW-16A and SB-39A.
For Pump No. 32 - CW-16B and SB-39B.

When draining has been completed close the valves.

4.1.F If No. 31 pump is to be run, open CW-5A, and CW-6A, in preparation for lifting water in pumps de-icing loop.

If No. 32 pump is to be run, open CW-5B, and CW-6B, in preparation for lifting water in pumps de-icing loop.

4.1.G If No. 31 pump is to be run, open SB-22A to lift water in the loop.

If No. 32 pump is to be run, open SB-22B to lift water in the loop.

NOTE: 20 to 30 minutes required to lift water fully in either loop.

4.1.H Priming of the line is indicated by a water level in the priming tank sight glass.

NOTE: To prevent water carryover out of exhauster, when priming tank level is observed, it may be necessary to throttle the CW-6 valve.

4.2 Pump Startup

4.2.A Notify Control Room that a de-icing pump is to be started.

4.2.B Once the line has been primed as per section 4.1 above, start its associated pump at the local control panel.

NOTE: Pump starting is interlocked with the following: The slide gate must be full open, the line must be completely filled with water and flow must be toward the river.

4.2.C Check the running pumps packing gland and adjust it as necessary to keep it cool to the touch.

4.2.D If No. 31 pump was started, shut CW-5A, CW-6A, and then shut SB-22A. Open drain valves CW-16A and SB-39A.

If No. 32 pump was started, shut CW-5B, CW-6B, and then shut SB-22B. Open drain valves CW-16B and SB-39B.

4.2.E If the second pump is to be started, prime its line as per section 4.1; if not, close valve SB-33 to secure auxiliary steam to the intake structure and drain the priming tank by opening CW-9.

4.3 System Shutdown

4.3.A At the local control panel trip the running de-icing pump(s).

4.3.B If No. 31 pump has been shutdown, open CW-5A and CW-6A. This breaks the vacuum in the line via the exhauster and allows the loop to drain back to the river.

If No. 32 pump has been shutdown, open CW-5B and CW-6B. This breaks the vacuum in the line via the exhauster and allows the loop to drain back to the river.

4.3.C Shut de-icing loop gate(s) for pump(s) previously shutdown. Use either the motor driven slip clutched device provided or hand crank methods.

NOTE: If de-icing pump(s) shutdown is for a short time interval it is not necessary to shut the slide gate(s).

4.3.D Leave the drain valves on the exhausters (SB-39A and SB-39B) in the open position to prevent the accumulation of moisture in the exhauster pipes.

INDIAN POINT STATION

NEUTRALIZATION SYSTEM OPERATION

Neutralization System (Operation Of)

1.0 OBJECTIVE:

To provide a procedure for the operation of neutralization system and to insure that the discharge of the neutralization tank is within the Appendix B to DPR-26 specifications of 6.5 - 8.5 pH units.

2.0 PRECAUTIONS AND LIMITATIONS:

2.1 The tank shall not be discharged if the indicated pH is below 6.5 or above 8.5.

2.2 While the pH is out of spec's., valves N6A1 and N6B1 shall be closed (DISCHARGE MODE)(Panel in OFF position).

2.3 Tank must be in constant recirculation MODE when pH is out of spec's. Valve N6A2 and N6B2 OPEN.

2.4 CAUTION: The caustic tank contains 50% NaOH. This chemical is extremely hazardous. When handling caustic, wear rubber apron, rubber gloves, sleeve protectors, rubber apron and face shield.

2.5 Fill tank only to 6 foot as indicated on the level indicator (LS N3) read out on remote Panel in the Water Treatment Room.

2.6 pH indicator in water treatment plant shall be in READ MODE NOT STAND-BY.

2.7 Circulation pumps should be operated in STAND-BY. When operated in Stand-By the pumps will cut-out at LOW-LEVEL (~2 feet).

2.8 Caustic Injection Pump #1 is set at a stroke of 50, pump #2 is set at 225.

3.0 PROCEDURE:

3.1 Cation or Mixed Bed Regeneration

3.1.1 During the regeneration, use caustic injection pump No. 1 (50 strokes).

3.1.2 Use both recirculation pumps while injecting caustic into both pump discharge lines.

3.1.3 No. 11 caustic injection pump will cut-off at a pH of 3.7.

3.1.4 Manually restart No. 11 caustic pump when the pH falls below 3.7.

3.1.5 Repeat Steps 3.1.3 and 3.1.4, until a stable pH is achieved.

3.1.6 At the end of the regeneration, keep the Neut. Tank in the recirc. mode for 1/2 hour. Mark the chart.

3.1.7 If at end of step 3.1.6, if the pH is above 8.5, put a good cation bed in-service by-passed to drain. At the first indication of a pH decrease, remove the cation from service. If after 15 minutes (at 40,000 #/HR) and there is no drop in pH, remove the cation bed from service.

3.1.8 If at the end of step 3.1.7 the pH is not in spec., make up a dilute Acid Tank (S.G. 1.045) and drain into the neutralization tank.

3.1.9 Recirculate for 15 minutes after either Step 3.1.7 or 3.1.8, then close the recirculation valves. N6A2 and N6B2 and open Discharge Valves (Panel in CLOSE position) N6A1 and N6B1 (pH 6.5 to 8.5).

3.1.10 If the pH is BELOW 6.5 after step 3.1.6, put the pH indicator in STAND-BY and moved the STANDARDIZE pot to below 3.7 pH actuate caustic injection #11 for 1 minute. Revolve the Standardize pot until the indicator reads the zero point as indicated on the instrument face. Put Toggle switch back in the measure position.

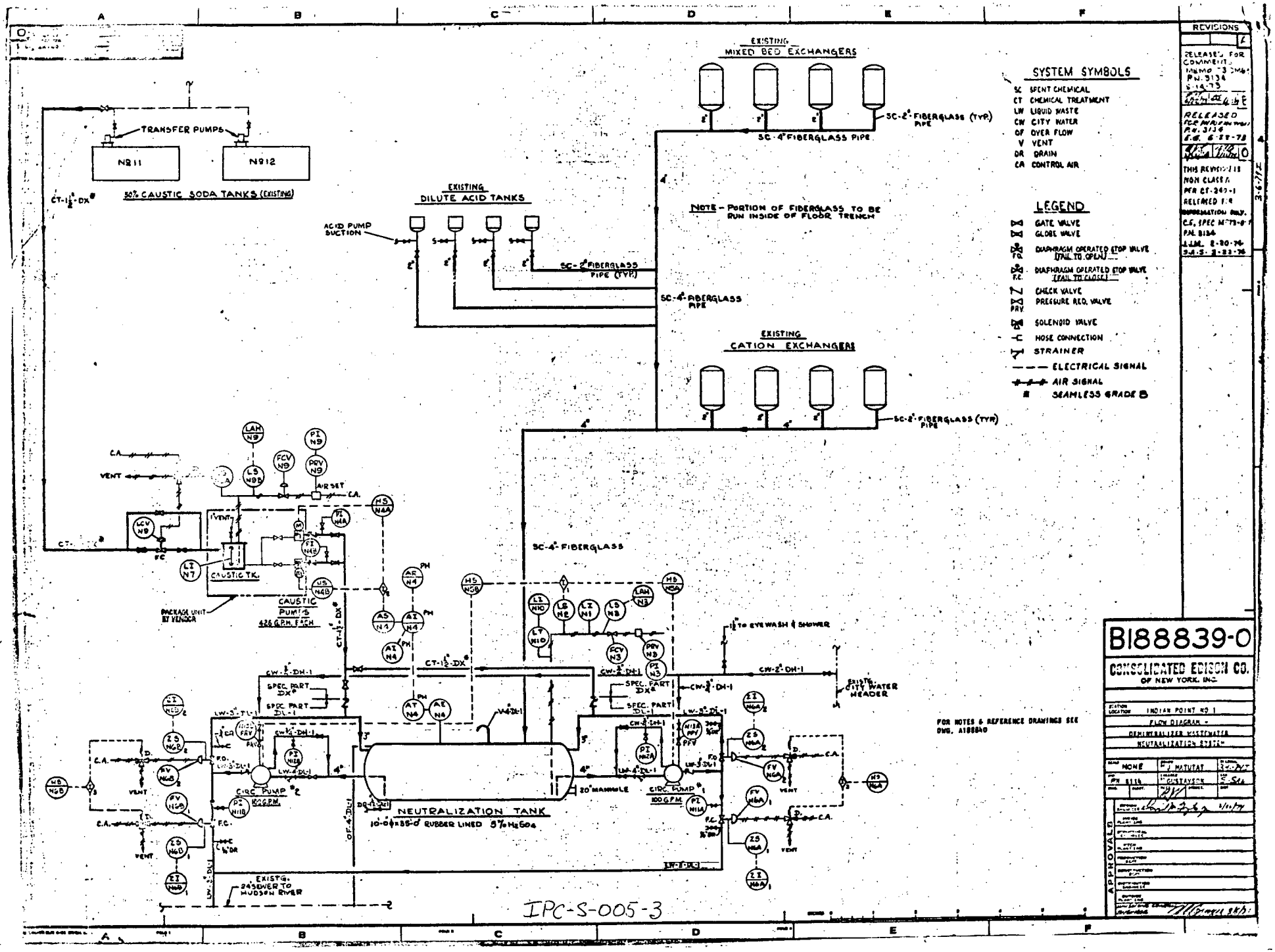
3.1.11 WAIT FOR A STABLE READING.

3.1.12 Repeat Step 3.1.10 on 3.1.11 unit a Stable pH is achieved between 6.5 - 8.5.

3.1.13 Repeat step 3.1.9.

3.2 Reporting:

The chart shall be retained for a minimum of six years. The accuracy of the pH cell and calibration data shall be maintained for a minimum of six years.


EXISTING MIXED BED EXCHANGERS
SC-2" FIBERGLASS (TYP.) PIPE
SC-4" FIBERGLASS PIPE
TRANSFER PUMPS
N211
N212
50% CAUSTIC SODA TANKS (EXISTING)
EXISTING DILUTE ACID TANKS
ACID PUMP SUCTION
SC-2" FIBERGLASS PIPE (TYP.)
SC-4" FIBERGLASS PIPE
NOTE - PORTION OF FIBERGLASS TO BE RUN INSIDE OF FLOOR TRENCH
EXISTING CATION EXCHANGERS
SC-2" FIBERGLASS (TYP.) PIPE
SC-4" FIBERGLASS
SYSTEM SYMBOLS
SC SPENT CHEMICAL
CT CHEMICAL TREATMENT
LW LIQUID WASTE
CW CITY WATER
OF OVER FLOW
V VENT
DR DRAIN
CA CONTROL AIR
LEGEND
GATE VALVE
GLOBE VALVE
DIAPHRAGM OPERATED STOP VALVE (FAIL TO OPEN)
DIAPHRAGM OPERATED STOP VALVE (FAIL TO CLOSE)
CHECK VALVE
PRESSURE RED. VALVE
SOLENOID VALVE
HOSE CONNECTION
STRAINER
ELECTRICAL SIGNAL
AIR SIGNAL
SEAMLESS GRADE B
CAUSTIC TK.
CAUSTIC PUMPS 426 G.P.M. EACH
PACKAGE UNIT BY VENDOR
1½" TO EYE WASH & SHOWER
EXISTG. CITY WATER HEADER
CIRC. PUMP #2 100 G.P.M.
CIRC. PUMP #1 100 G.P.M.
NEUTRALIZATION TANK
10'-0" x 35'-0" RUBBER LINED 5% H2SO4
20" MANHOLE
EXISTG. 24" SEWER TO HUDSON RIVER
FOR NOTES & REFERENCE DRAWINGS SEE DWG. A188840
REVISIONS
RELEASED FOR CONSTRUCTION
RELEASED FOR INFORMATION ONLY
THIS REVISION IS NON CLASS A
B188839-0
CONSOLIDATED EDISON CO. OF NEW YORK, INC.
STATION LOCATION INDIAN POINT NO. 1
FLOW DIAGRAM - DEMINERALIZER WASTEWATER NEUTRALIZATION SYSTEM
SCALE NONE
DRAWN MATUTAT
TRACED GUSTAVSON
APPROVED
IPC-S-005-3

INDIAN POINT STATION

UNIT NOS. 2 and 3

CHLORINATION SYSTEM OPERATION

Chlorination System Operation
(Unit No. 2 & 3 | 1

1.0 OBJECTIVE

To provide a procedure for operating the chlorination system of Unit No. 2 & 3. | 1

2.0 PRECAUTIONS AND LIMITATIONS

2.1 Chlorine demand samples analysis of the river will be taken within two hours in advance of chlorination.

2.2 The total residual chlorine at the confluence shall not exceed 0.5 ppm with the goal being 0.1 ppm maximum. | 1

Ascertain that no other unit is chlorinating. | 1

2.3 The Central Control Room operator should be contacted to determine which circulators are in service.

Maximum time allowed for chlorinating is one hour.

2.4 CAUTION: Use caution when working around the chlorination apparatus. Sodium hypochlorite is a very strong bleaching agent. Stay away from any leaks which may have developed. Observe all safety practices when working around the chlorination system. When hypochlorite comes in contact with the skin or eyes, flush with copious amounts of water.

2.5 Calculate the feed rate in gpm by the following:

* D = flow to be chlorinated (ex. ½ of the total unit circ. flow (gpm).

C = Chlorine demand analyzed 2 hours before chlorination + an effective residual ppm not to exceed 0.5 ppm.

N = ppm of concentrated available chlorine.

X = feedrate of NaOCl (gpm)

$$X = \frac{(D)\ (C)}{N}$$

* Unit No. 2 and 3 individual condenser flows are 84,000 gpm throttled and 140,000 gpm not throttled. 1.

2.6 Insure that the time from the pump start to the 1st. tailpipe residual and discharge canal residual measurements shall be no greater than 5 minutes.

3.0 PROCEDURE

3.1 Energize feeder 21 or 22 located on the dock in panel MCC-21. Choice of feeder depends on the pump selected, 21 feed energizes 21 pump, 22 feeder energizes 22 pump.

3.2 When chlorinating Unit No. 3, the switch mark 2 or 3 on the control panel must be on 3. This de-energizes SOV-1117 and energizes SOV-1118 which allows the NaOCl to flow to Unit No. 3. 1.

3.3 Open the hand valves to all bays having circulators in service. (Valves CL-7 to CL-14).

3.4 Record hypochlorite level in 11 hypochlorite tank.

3.5 Open valves Cl-1 and Cl-2 in the line from the hypochlorite tank to the pumps.

3.6 Open pump outlet valve Cl-3 and recirculation valve Cl-6.

3.7 Open the hand valve to the Fisher Porter flow controller.

3.8 Open the hand valve, CL-15 in the discharge line, from the Fisher Porter controller to Unit No. 2 bays.

3.9 At the panel board set timers 1, 2, and 3 to maximum setting.

3.10 Turn the pump control switch to hand.

3.11 Turn the pump selector switch to the desired pump.

3.12 Press valve switch #1 to open. This will open valve FCV-1161 and allow chlorination of the south bays.

3.13 Turn on the pump and chlorinate for 25 minutes.

3.14 Adjust the setting on the Fisher Porter controller to give the desired flow. Start with about 4 gpm.

3.15 Close valve switch #1.

3.16 Press valve switch #2 to open. This will open valve FCV-1162 and allow chlorination of the north bays. Chlorinate for 25 minutes.

3.17 Close valve switch #2.

3.18 Open valve switch #3. This will open valve FCV-1163 and allow chlorination of the service bays.

3.19 Adjust the low flow Fisher Porter controller to about 1 gpm. Chlorinate for 10 minutes.

3.20 Close valve switch 3.

3.21 Shut down pump.

3.22 Record the hypochlorite level of 11 hypochlorite tank.

3.23 De-energize the system at Panel MCC-21.

3.24 Reports: All results shall be entered in the Chlorination log book.

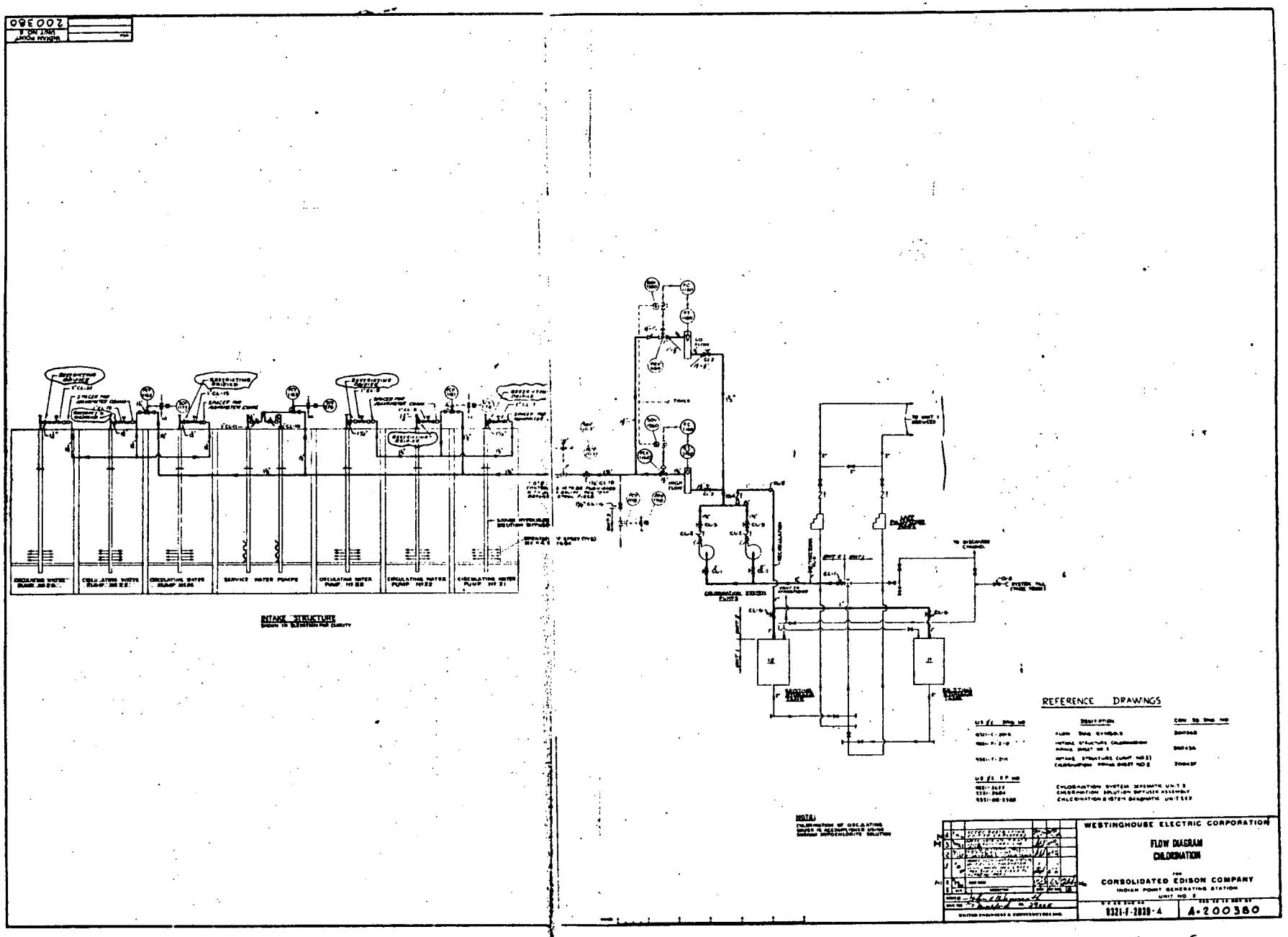

INTAKE STRUCTURE
REFERENCE DRAWINGS
NOTE:
WESTINGHOUSE ELECTRIC CORPORATION
FLOW DIAGRAM
CHLORINATION
CONSOLIDATED EDISON COMPANY
INDIAN POINT GENERATING STATION
UNIT NO 2
0321-F-2030-4
A-200380

Figure 6

INDIAN POINT STATION

UNIT NO. 3

OUTFALL STRUCTURE OPERATION

Outfall Structure Operation

1.0 Intent

To provide a procedure for maintaining the discharge velocity of cooling water from the outfall structure at approximately 10 feet per second so that effective thermal dilution with the Hudson River will be achieved. To create this discharge velocity (10 fps) the head differential across the outfall structure must be at least 20 ± 2".

NOTE: The Facility Technical Specifications (Appendix B) require the above minimum discharge velocity whenever the combined station output is greater than 50% of the maximum station output. 1

2.0 Precautions and Limitations

2.1 At no time shall the differential level between the canal and the river be allowed to exceed 4'-6" as this could cause the outfall structure to collapse.

2.2 Technical Specifications require that adjustments of the gates shall be made within 12 hours after any change in the flow rate of the circulating water pumps.

NOTE: After motorized means are available for the adjustments, the adjustments shall be made within four hours.

2.3 All adjustments to the movable gates or removal of the fixed gates in the outfall structure shall be recorded in a special log to be maintained by Unit No. 3 personnel. Additionally, the final head differential across the outfall structure should be recorded following gate adjustment.

NOTE: Following gate adjustment, it takes approximately 30 minutes for final equilibrium conditions to be reached. 1

2.4 Movable gates 3 and 8 should be left open so as not to interfere with the plankton nets installed on them.

3.0 Initial Conditions

3.1 Fixed discharge ports No. 11 and 12 at the south end of the outfall structure are closed.

3.2 Water level indicators on the canal and river sides of the outfall structure are available. 1

3.3 River water service and main circulating water pumps for each unit are in operation as required for plant conditions.

4.0 Procedure

When a unit changes the number of circulating water pumps it has in operation, an N.P.O. is to be sent to the outfall structure and he, assisted by a Unit 3 N.P.O., will perform the gate manipulations. The gates are to be positioned so as to maintain a differential water level between the canal and river of 20 ± 2".

4.1 If the canal/river differential is below 18" the discharge port movable gates shall be closed in the following sequence until the Δ L reaches 20".

NOTE: Gates are numbered from North to South.

1. Close Gate No. 2.
2. Close Gate No. 4.
3. Close Gate No. 6.
4. Close Gate No. 7.
5. Close Gate No. 10.
6. Close Gate No. 9.
7. Close Gate No. 1 approximately 6".
8. Close Gate No. 5 approximately 6".

Continue steps 7 and 8 until the Δ L reaches 20 ± 2".

CAUTION

Under no circumstances should all gates be completely closed. Therefore, gates 1, 3, 5 and 8 should not be closed by more than 24" from the fully opened position.

4.2 In order to bring the canal/river differential level down, the movable gates are opened in the following order:

1. Open Gate No. 5 approximately 6".
2. Open Gate No. 1 approximately 6".

Repeat steps 1 and 2 until the Δ L is 20 ± 2" or the gates are fully opened then adjust the gates as follows until the Δ L is 20 ± 2":

3. Open Gate No. 9.
4. Open Gate No. 10.
5. Open Gate No. 7.
6. Open Gate No. 6.
7. Open Gate No. 4.
8. Open Gate No. 2.

4.3 The differential water level should be logged once a shift until remote readout indication is installed.

NOTE: Level indicators should be promptly cleaned if a reading cannot be obtained.

INDIAN POINT STATION

UNIT NO. 3

LIQUID WASTE DISCHARGE PROCEDURE

TOI-7

Liquid Waste Discharge Procedure

1.0 Intent

To provide a procedure for discharge of liquid waste prior to initial criticality.

2.0 Precautions and Limitations

2.1 A minimum of 100,000 gpm of dilution flow must be available.

2.2 The quantites of chemicals discharged and their rate of release shall be in accordance with the requirements of the environmental technical specifications.

3.0 Initial Conditions

3.1 The Waste Disposal System is aligned per COL WDS-1 for liquid from the WCT and monitor tanks.

4.0 Procedure

4.1 Waste Condensate Tank Release Procedure

1) When the selected waste condensate tank has been filled place the other tank in service by operating the appropriate following valves:

	31 Tank		32 Tank
Open	1765	or	1764
Open	1767	or	1766

2) Isolate the filled tank by operating the appropriate following valves:

	31 Tank		32 Tank
Close	1765	or	1764
Close	1767	or	1766
Close	1772	or	1771

3) Check the following valve line up:

Open	1773	No. 31 Pump Suction
Open	1774	No. 32 Pump Suction
Open	1777	No. 31 Pump Discharge
Open	1778	No. 32 Pump Discharge
Open	1700G	Isolation Valve PI-1018G
Open	I700H	Isolation Valve PI-1018H
Open	1783	Waste Cond. Pump Common Discharge Stop
Close	1770	Local Sample Isolation
Open	1780	Recirculation Line Isolation

4) Isolate equipment from the waste condensate tanks as follows:

Close	1249	Supply from Monitor Tanks
Close	1784	Discharge to Waste Holdup Tank
Close	1743	Supply from Chemical Drain Tank
Close	1762	Waste Evaporator Bypass

5) Line up to recirculate the filled tank as follows:

	31 Tank	32 Tank
Open	1772	1771
Close	1766	1767
Open	1767	1766

6) Place the low level pump trip control circuit in the position for the tank that has been isolated. (Switch located on wall outside Waste Condensate Tank Cell.)

7) Start either No. 31 or No. 32 Waste Condensate Pump.

8) Allow recirculation to take place for two tank volumes.

NOTE: With one pump in operation this will take approximately 100 minutes.

9) Have the Chemist obtain a sample for analysis, using local sample valve 1770.

10) Determine the release rate and ensure that the quantity to be released does not exceed the maximum allowable in the Environmental Tech. Specs.

11) When the Watch Foreman has determined the release rate, throttle the discharge valve (1777 for No. 31 pump or 1778 for No. 32 pump) until the allowable release rate is indicated on the Boron Recycle Panel.

12) Open locked closed valve 1785.

13) Open Radiation Control Valve RCV-018 and check that the allowable discharge rate is not being exceeded.

14) Throttle recirculation valve 1780 to a cracked open position.

15) Periodically check that the allowable discharge rate is not being exceeded.

16) When the release has been completed close RCV-018 and close lock 1785.

17) Return all valves to their normal operating condition.

4.2 <u>Monitor Tank Release Procedure</u>

1) Isolate the filled tank and place another tank in service per SOP-CVCS-1.

2) Perform the following valve lineup for the filled tank:

	31 Tank	32 Tank
Open	1254B	1254A
Open	1251B	1251A

3) Start a monitor tank pump and recirculate the tank for two tank volumes.

NOTE: With one pump in operation this will take approximately 2.6 hours.

4) Have the Chemist obtain a sample for analysis, then stop the pump.

5) Determine the release rate and ensure that the quantity to be released does not exceed the maximum allowable in the Environmental Tech. Specs.

6) When the Watch Foreman has determined the release rate, perform the following valve lineup:

Close	1780	Waste Condensate Tank Recirc. Line
Close	1783	Waste Condensate Pump Discharge Stop
Close	1784	Discharge to Waste Holdup Tank
Open	1249	Monitor Tank Pump Discharge to WDS
Open	1785	Locked Closed Release Line Isolation
Open	RCV-018	Radiation Control Valve

7) Throttle the appropriate pump discharge valve and tank recirculation valve to a cracked open position.

31 Pump	32 Pump
1242A	1242B
31 Tank	32 Tank
1251B	1251A

8) Start the Monitor Tank pump. Adjust the pump discharge valve to obtain the desired release rate.

9) Periodically check that the allowable discharge rate is not being exceeded.

10) When the release has been completed close RCV-018 and close and lock 1785.

11) Return all valves to their normal operating condition.

4.3 Waste Holdup Tank Release Procedure

1) Insure that the reactor coolant drain tank effluent is being discharged to the CVCS holdup tank in service.

2) Lineup to recirculate the tank as follows:

Open	1737
Open	1732
Start	The waste evaporator feed pump

3) All recirculation to take place for two tank volumes.

NOTE: This will take approximately 4.6 hours.

4) Have the Chemist obtain a sample for analysis, using local sample valve 1734.

5) Have the Watch Foreman determine the release rate and ensure that the quantity to be released does not exceed the maximum allowable in the Environmental Tech. Specs.

The volume of the release liquid can be obtained from level indication and it's changed during recirculation of the tank.

6) Lineup to transfer the waste holdup tank to an empty waste condensate tank.

Open 1797, 1762
Close 1736, 1737
Throttle with 1767 for tank 31 or 1766 for tank 32 to fill the appropriate tank.

7) Place the low level pump trip control circuit in the position for the Waste Condonsate tank that has been receiving waste holdup effluent. (Switch located on wall outside Waste Condensate Tank Cell.)

8) Check open selected waste condensate pumps suction and discharge valves.

9) Check isolated equipment from the waste condensate tanks as follows:

Close	1249	Supply from Monitor Tanks
Close	1784	Discharge to Waste Holdup Tank
Close	1743	Supply from Chemical Drain Tank
Close	1762	Waste Evaporator Bypass

10) Open selected tanks discharge valve.

Tank 31 - 1772
Tank 32 - 1771

11) Open recirculation valve 1780.

12) When the Watch Foreman has determined the release rate, throttle the discharge valve (1777 for No. 31 pump or 1778 for No. 32 pump) until the allowable release rate is indicated on the Boron Recycle Panel.

13) Open locked closed valve 1785.

14) Open Radiation Control Valve RCV-018 and check that the allowable discharge rate is not being exceeded.

15) Throttle recirculation valve 1780 to a cracked open position.

16) Periodically check that the allowable discharge rate is not being exceeded.

17) Throttle with 1767 for waste condensate tank 31 or 1766 for tank 32 to insure that the selected tank level is maintained above the pump trip point until the low level alarm for the waste holdup tank is received.

18) Secure the waste evaporator feed pump.

19) When the release has been completed close RCV-018 and close and lock 1785.

20) Return all valves to their normal operating condition.

F.P.

2.0. IMPINGEMENT AND ENTRAINMENT

2.1 Factors Affecting Impingement

In an attempt to identify major factors influencing variation in levels of fish impingement at the intake screens, Con Edison is studying the impact of several biological and physical variables. Variables studied include conductivity, temperature, dissolved oxygen, tidal stage, time of day, approach velocity, thermal recirculation, and impinged fish condition. The understanding of the reasons for variations in impingement rates resulting from these studies will be used to develop methods of reducing the loss of fish at intake screens to a minimum.

Conductivity, a measure of river salinity, was the only physical variable examined that was found to be strongly related to impingement (Texas Instruments, 1975). It was found that impingement was not directly related to the level of salinity, but rather to the change in salinity associated with the movement of the salt front (defined as 0.3 parts per thousand parts water, Texas Instruments, 1975) through the Indian Point region.

Peaks in the number of fish impinged corresponds to conductivity peaks throughout the year except during midsummer to fall, during which time the salt front is located in a semistable position north of Indian Point.

Studies have shown that different species would dominate impingement collections, depending on the relative position of the salt front and its direction of movement. White perch, which have dominated winter, spring and late fall impingement collections, generally occurred in the saline water just behind the retreating salt front. Atlantic tomcod impingement peaks which generally occurred in early summer, preceeded the incursion of the salt front. (Texas Instruments, 1975).

In addition to salinity-related changes in impingement, distinct daily impingement peaks occur between 2200 and 0600 hours. These impingement peaks may be related to feeding habits, daily migrations, or circadian rhythms. (Texas Instruments, 1975)

Texas Instruments (1975) has also reported that no consistent relationships exist between impingement and temperature, dissolved oxygen, thermal recirculation, head loss or intake velocity. Texas Instruments did note, with reference to differences between winter and summer intake

velocities, that: "differences between species composition, life stage, and metabolic activity during winter (60% flow) make comparisons of velocity effects between the two periods difficult, if not inappropriate."

Another factor potentially affecting impingement is the pathological condition of the fish in the Indian Point region. Fish were examined for parasite load and tissue damage and it was found that 94% (136) of all fish examined displayed moderate to severe tissue damage." (Texas Instruments, 1975) Fish impinged in 1974 had a much higher occurrance of pathological abnormalities than did fish impinged in 1972-73. The Indian Point Impingement Report for 1972-73 (Texas Instruments, 1974) indicated an incidence of pathological conditions in 67% of the fish impinged. In addition only 20% of the impinged fish had moderate to severe tissue damage. These incidences of pathological deterioration and parasite infestation suggested that a weaker segment of the river population was being impinged. The cause of the variation in pathological condition of fish in 1972-73 relative to those collected in 1974 is not known. Based on results of these investigations it may be concluded that Indian Point generating plants act as a selective predator on weaker fish (Texas Instruments, 1975).

2.2 Practices to Mitigate Impingement

Reduced Circulator Water Flow

During periods of the year when the ambient river water temperature is below 40°F the cooling water system is operated in the recirculation mode. In this mode approximately sixty (60) percent of the circulator pump output is directed to the steam condensers and the remaining forty (40) percent is returned to the intake forebay for recirculation through the pump. This operation reduces the intake of water from the river to approximately sixty percent of the full capacity of the pump. By operating in this mode, significant reductions in levels of impingement are attained. (See sections 2.3 and 2.4 for further discussions of the ecological attributes of reduced flow operations).

De-icing System Operation

When river water temperatures drop below 35°F the de-icing loops may be operated to prevent the formation of ice on the intake screens. The de-icing loops divert water that has been heated by passage through the steam condensers to points of discharge in front of the intake screens. When these loops are in operation they further increase the recirculation of river water and reduce the total volume of water withdrawn and consequently reduce intake velocity.

Screen Wash Program

The screens at the mouth of the intake forebays are washed daily to remove debris which accumulates on them during the course of water withdrawal. The washing of the screens serves to reduce head loss across the screen and minimizes water intake velocities through the screens by minimizing flow path blockage.

In addition to regular daily screen washings, head differential monitors sound alarms when the differentials approach design levels. Additional screen washings (with associated impingement monitoring) are made as necessary to maintain acceptable head differentials across the screens.

On occasions marine growths become attached to the intake screens, and the routine washing program does not remove them. When this condition occurs, the screens are washed with a high pressure fire hose which does satisfactorily remove the growths. This auxilliary washing procedure provides assurance that potential head differentials and intake velocities can be maintained within system design specifications.

Corrective Actions

Impingement limits requested for the Indian Point Station specify that when at least four circulators are operating at Unit No. 2 and three circulators are operating at Unit No. 3, or the reverse, corrective action shall be taken when the impingement counts exceed 10,000 fish per day for seven consecutive days or 30,000 fish per day for three consecutive days. At other times such action shall be taken when impingement counts exceed 5,000 fish per day for seven consecutive days or 15,000 fish per day for 3 consecutive days.

When these limits are exceeded a complex set of determinations are made. All available information specific to Indian Point and related to possible causes of the impingement is brought into consideration in the determination of the nature of the corrective action to be taken (damaged screens, excess debris in the river, position and movement of the salt front, the species of fish comprising the majority of the collection, the general condition of the impinged fish, the unit and screens at which the greatest number of fish were collected, the operating status of all circulator pumps, the power level of the plant, and the ambient temperature of the river). In addition, aspects of system operations are considered to

determine the existence of an emergency need for power. Consideration is also given to the impact various corrective actions would have on planned ecological and other experiments and tests at the site, as well as the potential for creation of more adverse environmental impacts at other locations than are being experienced at the moment at Indian Point.

Assessment of Cause of Impingement

To the extent possible, the precise cause of the excessive impingement is determined. Careful examination of the integrity of the screens is made and they are checked for proper seating. Small breaks in the mesh or improper seating of the screen can provide passage for fish into the forebay, where they become fatigued by swimming in the continuous current of the intake water and eventually succumb and become impinged. When breaks in the screen are found repairs are initiated as soon as possible.

On occasion the debris load in the river can be heavy, and can cause significant head loss and increased intake velocity through the screens. To keep the head loss across the screens at acceptable levels, additional washings are made as necessary to minimize the effect of intake velocity on impingement.

Impingement has been related to the movement of the salt front past the plant. An assessment of the position of the front can indicate whether the recent excessive impingement is probably over or is apt to continue for another day. If this front has already passed the plant, the need for corrective action is lessened, and might be fruitless if taken.

The species of fish impinged and their general condition can be important considerations in the determination of the need for corrective action. The presence of rare or endangered species would elicit special consideration, compared to impingement of only species of great abundance and little social or economic value. If the impinged fish are in a relatively poor physical condition, it is probable that their potential for survival was already questionable, and their removal does not constitute a detriment to the ecosystem.

The Site of High Impingement

Attention is paid to those screens and those units which had the highest number of fish impinged. When collection limits have been exceeded, and if corrective action is to be taken by shutting off a circulator, that pump associated with the

screen having the highest counts is shut off, provided, the shutdown of that pump will not stop all flow to a condenser.

Planned Tests and Experiments

Con Edison plans on conducting tests on various fish impingement mitigating measures at Indian Point Unit No. 1 intake during the period in 1976 when that Unit is shut down.

Preparations are presently being made to test a simulated submerged weir, which extends from the bottom of a Unit 1 intake forebay up to an elevation of about minus twelve feet mean low water, as a means of reducing impingement of bottom -oriented fish such as tomcod. Another measure being considered for testing is the use of a continuously operating traveling screen, which may increase survival by reducing the duration of impingement. When such tests are made, if initial results indicate that the measure under study is ineffective in reducing impingement, the tests will be terminated ahead of schedule.

During periods when the tests are being conducted it is intended, if approved by regulatory agencies, that the daily total number of fish impinged at Unit No. 1 will be recorded, but not included in the determination of the daily

total impingement collection for the station. Section 2.5 describes, in detail, the nature of the intended tests.

2.3 Impingement Tests Scope

If necessary regulatory approvals are received, Con Edison plans to investigate the concept that at least a partial solution to the problem of excluding fish from power plant intakes may lie in the withdrawal of water from selective depths of the water column. An underwater wall or submerged weir could potentially reduce the entrapment of benthic fish species such as white perch and tomcod.

Because of the general lack of information on the effectiveness of submerged weirs in alleviating entrapment, studies are needed. Partially blocked intakes can be used to simulate a submerged weir for the purpose of evaluating its general effectiveness and an outline for such a study follows.

Experimental Design Basis

1. Tests with and without partially blocked intakes cannot be run simultaneously since the hydraulic characteristics in the vicinity of the simulated weirs and screens would be different than they would be if only screens or weirs were present.

2. Impingement varies between intakes on any given day.

3. Impingement with a weir during any one time period may not necessarily be comparable to impingement without a weir during a subsequent time period. However, over several periods of time, impingement rate variations between periods may be distributed in a manner which allows comparison of rates with and without weirs.

Experimental Design

Objective I: Monitor fish impingement at Indian Point Unit No. 1.

Task 1 - reduced flow testing (1 circulator) scheduled for late winter, early spring. Monitor fish

impingement at Indian Point Unit No. 1, alternating periods with and without partially blocked intakes. Fish impingement shall be monitored in accordance with the Environmental Technical Specifications.

Task 2 - full flow testing scheduled for April through June. Repeat the monitoring program of Task 1 at full flow conditions.

Objective II: Analyze impingement data and evaluate the performance of the partially blocked intakes in reducing impingement.

Task 1 - Statistically analyze the data at a 90% level of confidence against the null hypothesis that the simulated submerged weir does not significantly reduce impingement rates below the rates experienced when fixed screens are present.

2.4 Factors Related to Entrainment

Con Edison, through New York University (N.Y.U.), has been investigating since 1971 the effects of entrainment of non-screanable organisms by the Indian Point generating station. Organisms subject to entrainment at the Indian Point generating station can be divided into four major catagories. These are:

(1) Planktonic bacteria

(2) Phytoplankton

(3) Zooplankton (other than fishes)

(4) Ichthyoplankton(fish eggs and larvae)

The operation of Indian Point Unit No. 3 will result in two types of entrainment (1) pumped entrainment (organisms pass through the plant along with the cooling water) and (2) plume entrainment (organisms in localized sections of the river become exposed to the cooling water plume by turbulent mixing of effluent cooling water and receiving water in which they are present).

The studies have had two objectives: (1) to measure the temporal and spatial distribution of species potentially subject to entrainment by the Indian Point generating station and (2) to determine whether observed damage to

entrained organisms has adversely affected populations of those organisms in the river (N.Y.U. 1976).

Bacteria

N.Y.U. (1973) has determined that the effects of entrainment on bacteria in the river were insignificant. Although only Indian Point 1 was operating at the time of the N.Y.U. study, the results are applicable to the entrainment effects expected, at Unit 3. The N.Y.U. studies found that temperature increases, both within the plant and at the discharge canal, had no significant effect on bacteria. They did show however that during chlorination a decrease (to about 35%) in adenosine triphosphate (ATP) production did occur, indicating a reduction in bacterial matabolism. The populations showed significant recovery (90%) by the time the water reached the discharge canal (N.Y.U., 1974). It was concluded from these studies that the overall effect of normal plant operation on river populations of bacteria would be negligible.

Phytoplankton

The Hudson River estuary is a typical Atlantic coastal estuary, supporting a highly productive phytoplankton flora with few blooms of noxious algal forms (N.Y.U., 1976 p. 76).

These conclusions were presented by N.Y.U. after a series of laboratory and field studies were conducted. These studies included analyses of intake and discharge canal samples of entrained phytoplankton organisms at Indian Point. Tests run on these samples included photosynthetic activity, chlorophyll content and cell abundance for entrained populations. Results indicated little or no changes in these parameters relative to intake and discharge-canal samples (N.Y.U., 1976, p41). These laboratory conclusions have been reiterated by the N.R.C. (1975 FES IP-3 page V). These results lead Con Edison to the conclusion that once through cooling at Indian Point has no significant impact on phytoplankton populations of the Hudson River.

Microzooplankton

Results of N.Y.U. studies from 1971 to 1974 have found that Hudson River "microzooplankton" populations are dominated by copepods (Eurytemora affinis and Accurta tonsa), protozoans (Centropyxis sp and Difflugia sp). and rotifers, (Bradionus angularis and Nothalca accuminata (N.Y.U., 1974; N.Y.U., 1976). The spatial and temporal occurance of these organisms are dicated by water temperature, salinity.

Studies (N.Y.U. 1974, 1976) indicated that survival of cyclopoid and harpacticoid copepods as well as cladocerans

was between 90-100% upon passage through the plant. Results of plankton samples taken at the Indian Point two discharges indicated that the three above mentioned groups of organisms had and averaged survival rates in excess of 40% while calanoid copepods (E. affinis and A tonsa) were more sensitive, generally showing survival of 50 to 85% in the discharge canal samples (N.Y.U., 1976).

These observations led N.Y.U. (1976) to the following conclusion concerning entrainment of microzooplakton at the Indian Point generating station: "based upon the abundance of species and total numbers, as well as seasonal distribution patterns from 1971-1974, microzooplankton in the river have not been affected by operation of the Indian Point generating station."

Macrozooplankton

Gammarus spp, Monoculodes edwardi, and Neomysis americana dominate the macrozooplankton fauna of the lower Hudson River (N.Y.U. 1973, 1974, 1976).

Results of viability assessment studies based on intake and discharge-canal samples revealed that the dominate macrozooplankton species (Gamaras, Monoculodes, heptodeirus, Chaobrous) survived a rated delta T of 8.3%°C (14.4°F) and

an ambient temperature of 20 to 25°C (68 to 77°F). Entrainment into the cooling-water flow of the Indian Point plant had little effect on survival of these organisms (NYU, 1976). With respect to Gammarus these finding are reiturated and expanded by Ginn et. al. 1976,. Who stated that mature Gammarus spp (G.daiberi and G. tigrinus) showed no significant mortalities following a 60 minute exposure to a delta T of 8.3°C at an ambient of 26.°C. This experiment also showed no latent mortalities after 10 days nor were any subsequent reproductive activities altered.

Neomysis is less heat tolerant then other important macro-zooplankton forms. Neomysis exposed to a temperature of 34.3°C after acclimiation at 26°C, suffers 90% mortality. (NYU, 1974, 1976). It should be noted however that Neomysis is more abundant in November and December. Ambient temperatures at that time are below 60°F. EPA (1976), upon granting a 316(a) variance for Long Island Lighting Company's Northport station stated that: "Thermal tolerance data shows that Neomysis at an acclimation to 41°F has a maximum tolerance of 69.8°F (a delta T of 23°F). This delta T would not be exceeded in the plume during the winter. At acclimation temperatures at 50°F and 59°F maximum tolerance was 67.8°F and 78.8°F." Temperatures in excess of these values would only exist during summer conditions at Indian Point. Also the occurance or absence of Neomysis is linked

to hydrologic factors of the river, most noticably, "salt intrusion" (N.Y.U. 1976). (The passage of the salt front at Indian Point is dependent on several hydrologic and meterological factors. However, it is a limited occurance. A major salt intrusion usually occuring in the summer and retreating in the winter (Texas Instruments, 1974). Furthermore, it should be noted that mortality of Neomysis through entrainment does not mean that these units of energy have left the ecosystem, they are still present either as a food source for other aquatic life.

It should be further noted that N.Y.U. (1976) after reviewing patterns of seasonal occurrences of various macroinvertebrates for the period 1971-1974 has concluded that on the basis of three years of study, the Indian Point plant appears to have little effect on the distribution and abundance of river macrozooplankton. These facts lead Con Edison to the conclusion that the impacts of entrainment on macrozooplankton at Indian Point are insignificant.

Ichthyoplankton

N.Y.U. studies have indicated that significant percentages of entrained life stages of stripped bass survive passage through the plant. (refer to table 2-3). Lawler, Matusky, and Skelly Engineers utilizing data from N.Y.U. collections

have calculated "best estimates" for entrainment of striped bass life stages survival.

Life Stage	Survival Rate
Eggs	20%
Larvae	40%
Juveniles	30%

It should be noted that the Staff (NRC) anticipated potentially increased mortality due to latent effects and subsequently reduced the above listed survival values by 10 percent (Indian Point 3 FES at V-215).

A recent N.Y.U. study found that a significant amount of "mortality" was actually caused by sampling methods utilizing in these studies (N.Y.U. in press). Thus these figures (N.Y.U. and LMS) are presently believed to be conservative.

Texas Instruments (1975)) estimated the combined entrainment impact to striped bass of all power plants operating on the Hudson River during the year 1974 to be a 12.8% reduction in one year old fish. The 1974 estimate of the proportion entrained and cropped at Indian Point Unit 2 was 5.7% (Texas Instruments, 1975). This cropping at Indian Point represented a fivefold increase over the 1973 estimate(Texas Instruments, 1975). Only about half of this increase at Indian point Unit 2 could be atributable to increase in flow through the plant. Half the increase was due to differences in distribution and abundance of the striped bass ichthyoplankton populations in 1974 relative to that in 1973 (Texas Instruments, 1975). Thus entrainment of striped bass eggs and larvae is not simply a function of flow through the plant but also is dependent on availability and abundance of the various life stages at Indian Point. This latter point is a function of year class strength and distribution of the eggs and larvae at the Indian Point site.

Texas Instruments (1975) also estimated the impacts of entrainment of all power plants on white perch eggs and larvae to be less than 5%. Further qualifying this estimate by noting "even this may be an over estimate if some of the white perch ichthyoplankton life stages remain in Hudson River tributaries and hence are not included in population estimates and also are not subject to entrainment." This low estimate of entrainment impact from all plants collectively leads Con Edison to believe that the impacts of Indian Point entrainment on white perch life stages are minimal.

Conclusion of Entrainment Impacts

The conclusion that entrainment of phytoplankton, microzooplankton and macrozooplankton will not have any measureable impact on the aquatic ecosystem in the vicinity of Indian Point has been stated by the NRC:

> "The staff's analysis shows that entrainment of phytoplankton, microzooplankton, and macrozooplankton, except Neomysis, is not expected to have any measurable effect on the aquatic ecosystem in the vicinity of Indian Point"

Con Edison does not believe that the Indian Point generating station has any significant adverse impact to Neomysis or ichthyoplankton.

Con Edison is currently investigating methods to mitigate entrainment impacts Indian Point may have to ichthyoplankton and Neomysis.

2.5 Implementation of Reduced Flow

The New York State Department of Environmental Conservation issued a Consent Order dated April 28, 1972 in which Con Edison became bound to operate Indian Point Unit 2 circulators at reduced flow. Item I.A of the current order reads as follows:

> "Respondent (Con Edison) shall complete the installation of by-pass systems on all circulators at Indian Point Plant No. 2 which shall be designed to maintain a water intake velocity at an average rate of 0.5 (1/2) feet per second. The by-pass system shall be operable by May 15, 1972 and shall be used at all times when the water temperature of the Hudson River in the area of said plant is below forth (40) degrees fahrenheit."

This requirement has been reiterated in Appendix B, Environmental Technical Specification Requirements, to the facility operating license for Indian Point Nuclear Generating Units No. 1, 2, and 3 issued December 12, 1975, in which specification 2.2.1.2 reads as follows:

> When the average intake water temperature is less than 40°F, the area average approach and the intake velocity shall be reduced to approximately 60% of the maximum full flow conditions as per New York State Department of Environmental Conservation requirements. The adjustment in the two types of velocities shall be made within one week after the average intake water temperature reaches 40°F.

During the reduced flow operation the cooling water experiences a longer transit time through the plant and a greater cooling water temperature rise than at full flow. Table 2-1 presents average transit times and expected temperature differentials for circulating water flow at each unit and various combinations thereof.

Table 2-1
Average transit time and expected temperature increase (Differentials) of cooling water flow at Indian Point Units No. 1, 2 and 3 during full power operation.

	Intake to Outfall (minutes)		Temperature Differential (°F)		
Units	Full Flow	Reduced Flow	Unit(s)	Full Flow	Reduced Flow
1	33.8	52.4	1	12.0	18.6
2	15.4	25.2	2	14.6	23.8
3	10.9	17.71	3	16.0	27.5
1+2	11.7	18.6	1+2	13.9	22.3
1+3	10.8	17.5	1+3	14.9	23.9
1+3	8.93	15.6	2+3	15.3	24.9
1+2+3	7.80	12.6	1+2+3	14.8	23.9

2.6 Biological Significance of Reduced Flow

The occurrence of large numbers of impinged fish in 1969 prompted testing of Indian Point No. 1 in various modes of operation in an attempt to determine mitigating measures by which the numbers of fish collected on intake screens could be reduced. Experiments during 1971 at Indian Point 1 showed that by cutting the volume of water utilized for condenser cooling from 140,000 gallons per minute to 84,000 gallons per minute per circulating pump, the number of fish collected on the intake screens could be significantly lowered. Tests performed in October and November, 1971 yielded 76 to 94 percent reductions in impingement rates when the circulator water flow was reduced to 60 percent of full flow. Table 2-2 presents the results of these tests.

Table 2-2. Fish Collections at Unit 1 in October and November, 1971

	Full Flow		Reduced Flow		
Month	Test Days	Avg. No. Fish/Day	Test Days	Avg. No. Fish Day	% Reduction at 60 % Flow
October	10	2190	12	117	94.6
November	19	3958	8	930	76.5

Historically, Fall and Winter seasons generally yielded the highest numbers of fish collected on the intake screens. Thus, during these periods, operation of the circulating water pumps at reduced flow presented a means of reducing impingement impacts on fish populations. Also, during the winter when entrainment of eggs and larvae is minimal, it is possible to operate the circulating water pumps at reduced flow because no plant derating is involved and plant reliability is maintained. During the summer, a reduction in flow is not a preferred method of operation because the concurrent increase in delta T detrimentally affects entrained organisms and plant output is reduced.

Studies by New York University have shown that with the plant operating at the design temperature rise for the full flow cooling water mode, except during chlorination there is a negligible effect on entrained phytoplankton and microzooplankton (New York University, 1973). Furthermore, many of these forms of life are not significantly harmed by the temperature rise and increased transit time associated with the reduced flow operational mode. Because of the rapid regeneration rate of phytoplankton and microzooplankton, the increased mortality which does occur to some of these forms is not expected to result in a significant impact on the populations present in the river.

Some large entrainable organisms may be more severely affected by the reduced flow operational mode. Neomysis, a shrimp-like organism which is a food item of other estuarine organisms (although not as important as Gammarus) may be adversely affected by the reduced flow, while Gammarus, being more temperature tolerant than Neomysis are not affected by temperatures below 95°F. The delta T of 25° F and the increased exposure time to temperatures above ambient will exceed the tolerance limits of Neomysis when the ambient water temperature is above 55°F. The significance of the potential increased mortality to Neomysis at Indian Point is dependent upon the location of the salt front. Neomysis are more abundant in saline water than in fresh water. During periods when the salt front is at or upstream of Indian Point a greater impact on Neomysis populations due to reduced flow operation can be expected. The period when Neomysis are most susceptible to increased mortality generally extends from the summer through October. Curtailing reduced flow operations until November would reduce the potential increased mortality of Neomysis at Indian Point. N.Y.U. studies show that there is no increase in Gammarus mortalities at temperatures less than 95° (acclimation at 77°F) when they are exposed from 5 to 60 minutes. Thus reduced flow (except during the summer when it is not a likely operating mode) is expected to have no significantly adverse effect on the population of key

species of fish which utilize this species of macrozooplankton as a food item.

Tomcod, a bottom oriented fish, may be adversely influenced by the reduced flow operational mode. Tomcod spawn during the winter, their eggs are demersal and adhesive which would minimize the potential for their entrainment. The larvae of Tomcod can be expected to experience higher percentage mortalities, if entrained. New York University laboratory studies indicate, however, that larvae over 44 hours old can tolerate a temperature increase of 26°F for thirty minutes. Consequently temperature-induced mortality will be restricted to a relatively short time period in the development of tomcod larvae.

The bulk of fish eggs and larvae entrained at Indian Point are present from late May through August. Striped bass eggs and larvae peak in late May. New York University studies have shown that an increase in the plant delta T when the ambient river temperature reaches 65°F (about June 15) at reduced flow conditions would reduce the number of organisms entrained but could at the same time result in unacceptable temperature conditions for many of the species present. However, use of the reduced flow operational mode to reduce impingement mortality is not necessary during this time period which is characterized by relatively low impingement

levels. On the basis of studies to date of entrainment mortalities of striped bass, damage to this species is greatly reduced by limiting the delta T across the condensers to approximately 15°F to 17°F.

TABLE 2-3

Means and 95% confidence intervals of percentages alive, stunned, and dead in striped bass entrainment samples, 1973.

	Intakes			Discharge				
Life-stage	I-1	I-2	I-1 & I-2	D-1	D-2	D-P	D-1 & D-2	D-1, D-2 & DP
Live								
Eggs			60.4±6.3				13.5±5.3	
Yolk-sac larvae			26.3±10.6	1.9±3.8	24.2±19.2		11.3±8.7	
Larvae			31.7±6.3					13.7±3.2
Juveniles	55.9±17.7	88.9±13.9	68.3±12.9					21.4±6.7
Stunned								
Yolk-sac larvae			23.5±10.1				7.1±7.4	
Larvae			13.7±4.5					8.3±2.3
Juveniles			8.6±8.2	19.2±8.7	9.3±6.9	36.4±33.5	14.4±5.5	16.6±5.9
Dead			39.6±6.3				86.5±5.3	
Eggs			49.8±11.9	93.2±8.6	66.3±21.6		81.8±10.8	
Yolk-sac larvae								
Larvae			54.6±6.7					78.2±3.8
Juveniles			23.1±11.5	59.8±11.8	68.1±12.2	45.5±34.7	63.8±8.3	62.0±8.1

3.0 CHEMICAL DISCHARGES

It is the purpose of this section to identify the chemical discharges related to the operation of the Indian Point Facility and to discuss the plant procedures relevant to those discharges.

3.1 Chemical Control

Wastes containing lithium hydroxide, potassium chromate, and boric acid are processed by the facility Waste Disposal System prior to discharge. The Waste Disposal System utilizes batch processing. Each batch is sampled and a determination is made that the limits of the Technical Specifications, the NPDES permit and the "401" Certificate will not be exceeded during discharge. In the event that a limit would be exceeded by discharge, the batch is recycled for further processing.

Drewplex 505, sodium hydroxide, disodium phosphate, Betz Liqui-Treat and Betz CL2 are discharged continuously during the operation of the house service boiler blowdown system. The phosphate is analyzed continuously while sodium hydroxide is analyzed routinely to ascertain that the correct chemistry control is maintained. Discharges of Drewplex 505, Betz Liqui-Treat and Betz CL2 are monitored by

means of usage inventory. Maintaining the proper rate of usage determines compliance with the manufacturer's recommendations. Proper chemistry control and chemical usage rate preclude exceeding any limit. Adjustment in the blowdown flow rate and dilution water flow can be made if a limit is being approached. The pH in the discharge canal is monitored at least twice a week to assure no harmful concentrations of acids or bases are discharged. (Environmental Technical Specification limit on pH is 6.5 to 8.5).

Drewgard 100 without zinc is now used in the closed cooling systems at Indian Point. This material is not normally discharged. If a need arises for such discharge, this zinc and heavy metal free material will be discharged according to regulatory limits.

Detergent discharges are maintained within limits by control of total and rate of usage such that the daily average discharge of surfactants remains less than 1.4 kilograms/day (3 lbs/day). The daily maximum is also maintained to within 2.7 kilograms/day (6 lbs/day). Both of these limits are from Units No. 1 & 2 NPDES permit, and maintain the discharge concentration at less than 0.1 ppm surfactacts (detergents).

Sodium hydroxide and sulfuric acid, used in the regeneration of the water treatment plant ion exchange resins, are processed by the neutralization system such that the final solution pH is between 6.5 and 8.5 prior to discharge.

Chlorine discharges are controlled to within Technical Specification limits by controlling and pre-determing the concentration of chlorine used during chlorination cycles.

3.2 Dissolved Oxygen

It has been suggested that Indian Point will lower the D.O. concentration in its circulating water (and thus in the river) because of temperature and pressure effects on the saturation value of D.O. In addition, the increased metabolism of organisms when subjected to higher temperatures may have an influence on the D.O. concentration in the river.

Studies by Quirk, Lawler and Matusky, Consultants have shown the former effects to be relatively unimportant. The loss of D.O. through the cooling system was mathematically modeled using the effects of changes in temperature and pressure on cooling water D.O. concentration. Table 3-1 summarizes the results of this modeling study for the more critical summer conditions when the solubility of Oxygen in the river is at a minimum.

QLM also mathematically modeled the D.O. level in the Hudson River using a model consisting of 28 segments of varying lengths over a stretch of river from Troy Dam to the Battery. This model included (a) transport mechanisms by advection and dispersion, (b) first-order bio-oxidation, (c) reaeration, (d) benthic oxygen intake and (e) constants (zero-order) to account for other mechanisms such as

addition of B.O.D. due to river organism mortality, addition of dissolved oxygen by algal photosynthesis, etc. Table 3-2 summarizes the results of this modeling study.

TABLE 3-1

DISSOLVED OXYGEN LOSS THROUGH INDIAN POINT UNITS (Modeled)
1,2, and 3

Conditions	Unit	Temp.	Influent Conditions Dissolved Oxygen Actual mg/l	Influent Conditions Dissolved Oxygen Saturation mg/l	Effluent Conditions Temp. °F	Effluent Conditions Dissolved Oxygen mg/l	Implant Loss (-) or gain (+) in D.O. mg/l
TIDAL AVERAGE	1	76°	7.11	8.15	88.6	6.91	-0.20
	2	76	7.11	8.15	90.9	6.88	-0.23
	3	76	7.11	8.15	92.2	6.87	-0.24
	1	74°F	7.11	8.29	86.6	6.92	-0.19
	2	74	7.11	8.29	88.9	6.89	-0.22
	3	74	7.11	8.29	90.2	6.88	-0.23
LOW SLACK WATER	1	76°F	7.01	8.15	88.6	6.82	-0.19
	2	76	7.01	8.15	90.9	6.79	-0.22
	3	76	7.01	8.15	92.2	6.78	-0.23
	1	76°F	7.01	8.29	86.6	6.88	-0.18
	2	76	7.01	8.29	88.9	6.80	-0.21
	3	76	7.01	8.29	90.2	6.79	-0.22

TABLE 3-2

THE OVERALL EFFECT ON DISSOLVED OXYGEN CONTENT
OF HUDSON RIVER
OXYGEN CONCENTRATION, mg/l at INDIAN POINT (Modeled)

	Tidal Average	Low Water Slack
NO heating	7.20	7.10
Heating by Bowline Unit 1 and 2 Lovett 1-5 Roseton 1 & 2 and Danskammer 1-4	7.16	7.06
% Loss of D.O.	0.56	0.53
Heating by Bowline, Lovett, Roseton, Danskammer and Indian Point Units 1,2 and 3	7.11	7.01
% Loss of D.O.	1.25	1.25

Field studies were made on August 17, 1972 to verify these models. As a result of these studies and the mathematical models, QLM has concluded that dissolved oxygen reduction in the Indian Point Units No. 1 and 2 cooling water system (inplant loss) will be minor, approximately 0.2 mg/l under summer conditions; and that heating effects, together with the oxygen loss in the condensers will, under the least favorable ambient conditions of flow and temperature, cause a reduction in the river D.O. concentration of approximately 0.1 mg/l below the unheated condition. This change of D.O. concentration will exert a less significant effect on Hudson River biota than that of the existing diurnal cycle (variation of 0.2 mg/l).

A further study of D.O. concentration and how it is influenced by plant operations was conducted during 1974-1975. Representative measurements of the D.O. concentration and temperature at the intake, and confluence of the discharge canal and the river were taken. This study indicated that there was no discernable difference in the D.O. concentration between the intake and discharge due to plant operations.

3.3 Neutralization of Acids and Bases

The neutralization system collects the regenerant wastes from the plants' make up water demineralization facilities and eliminates the discharge of acids and bases from the demineralization system. Total discharge of acids and bases from the plant will therefore be greatly reduced.

The liquid collected will consist of acid and base solutions used to regenerate the resins in the demineralizing plant's ion exchangers. These wastes will be collected and drained to a large holding tank in which they will be neutralized in batch fashion before being released to the discharge canal. Batch neutralization minimizes the amount of neutralizing materials to be added by allowing cross-neutralization between acid and basic solutions.

The solution to be discharged to the discharge canal will contain acid-base salts in a neutral solution which will be essentially harmless to biota and which, after dilution in 100,000 gpm or more of circulating water will be undetectable. This system will eliminate the possibility that acid or basic solutions from the demineralization plant will harm the aquatic life in the vicinity of the discharge in the discharge canal and, although it will increase very slightly the level of dissolved solids released from the

plant, the system will result in an overall increase in the quality of the water leaving the plant (Refer to section 1.3 for the Operating Procedure of the Neutralization System).

3.4 Reduction of Chlorine Discharges

A sodium hypochlorite system is provided for the specific purpose of preventing the growth of fouling slimes on the inner surfaces of the plant condenser cooling water system.

When sodium hypochlorite is dissolved in water, it dissociates to form sodium ions and hypochlorite ions. The hypochlorite ions then react to form hypochlorous acid. The ratio of hypochlorous acid to hypochlorite ion depends upon the pH of the solution. Since it is hypochlrous acid that is the principal disinfectant in chlorine solutions, the efficiency of disinfection will be substantially greater at low pH values where the hypochlorous acid content is greater.

If ammonia is present, chloramines will be formed upon the addition of sodium hypochlorite to the water. The disinfecting properties of chloramines are only a few percent of that of hypochlorous acid. Increasing the amount of ammonia decreases the acid concentration, increases the pH and thus decreases the aquatic impact. Chloramines are more persistent in the natural environment than hypochlorous acid but are not necessarily more toxic.

Chlorine is dissipated in water by reacting with reducing agents as well as with organic substances and organisms. This loss represents the "chlorine demand" of the water. Hypochlorous acid is also decomposed by exposure to daylight (ultra violet rays from the sun).

The Unit No. 1 condenser at Indian Point has four condenser sections. Chlorine, as sodium hypochlorite, is introduced by manually starting a pump, injecting a sodium hypochlorite solution into the cooling water at a point between the traveling screens and the circulating pumps. It is first introduced into two sections of the condenser for one-half hour during the daylight hours. The chlorine is then similarly introduced into the remaining two sections for one-half hour, so that only one-half of the cooling water is chlorinated at a given time. Control of the amount of chlorine injected is achieved by adjustment of the hypochlorite pump stroke and observation of the tank level. The water from the chlorinated and un-chlorinated sections mix within seconds after leaving the condenser resulting in a 1:1 dilution. The chlorine residual dissipates quickly from exposure to daylight and the chlorine demand so that discharge concentrations are usually 0.1 ppm or less. The overall time during which chlorine is added to the condenser is one hour. This procedure is repeated as required on alternate days for a maximum of 3 days each week.

Units No. 2 and 3 condensers have six sections each. The chlorination procedure in both cases will be similar to that of Unit No. 1. That is, one-half of the condenser (3 sections) will be chlorinated manually during the daylight hours for one-half hour followed by chlorination of the other three sections for one-half hour. Flow of sodium hypochlorite will be regulated by adjustment of flow control valves and observation of tank level.

Chemical tests are performed on the condenser outlet to insure adequate chlorination levels in the condenser sections. Tests are also performed on the discharge canal to insure that compliance with the concentration limit of 0.2 ppm (average) and 0.5 ppm (maximum) is maintained.

Present limits allow for chlorination of Units No. 1, 2 and 3 condensers on alternate days so that chlorine could be introduced into the cooling waters of either Units No. 1, 2, or 3 for a maximum of 9 hours per week for one hour each day (River water temperature above 45°F). During full capacity operation the volumes of water treated with chlorine at a given time would be 140,000 gpm from Unit No. 1 and 420,000 gpm each from Units No. 2 and No. 3.

The targets of the chlorine are the fouling organisms growing on the inner surfaces of the condenser cooling

system. An exposure time of one-half hour, three days per week has effectively controlled such growths at Indian Point Unit No. 1.

In comparison with the target fouling organisms, the organisms passing through the condeners in the cooling water at the time of chlorination are exposed to full application concentration in the condensers for less than 15 seconds, and exposure to the decreasing concentrations in the cooling water discharge for an additional few minutes, the exact concentraton and time depending upon the effective dilution and dissipation rates.

While it is expected that some of these non-target organisms in the cooling water are killed during the chlorination period, studies of the phytoplankton and zooplankton populations have produced no indication that chlorination had a discernible effect on these populations in the river.

Laboratory bioassay tests on fish population found in the Hudson River near Indian Point by New York University resulted in 100% survival of small white perch and striped bass for three hours when exposed to 0.75 ppm and 0.60 ppm initial chlorine residual that dissipated to undetectable limits within one and one-half hours.

The Environmental Technical Specifications allow chlorination to be performed from April to November (river water temperature above 45°F). For the past two years it has been found that chlorinations are necessary only during July and August at a frequency of once per week. This has resulted in a ten-fold reduction of chlorine released to the environment. This reduced schedule will be maintained until inspections indicate the necessity for increased chlorine frequency.

4.0 THERMAL DISCHARGES

The Environmental Technical Specifications contain certain thermal limitations and monitoring requirements for the Plant's Circulating Water System. This section will discuss the thermal monitoring system placed into effect in compliance with those specifications.

4.1 Thermal Monitoring

The existing water temperature monitoring system was designed to monitor and record the influent and effluent water temperatures associated with the operation of the entire Indian Point Facility (Units 1, 2 & 3). This water temperature monitoring system is provided to ensure compliance with Federal and State requirements for thermal monitoring under all plant operating conditions.

The system consists of six (6) temperature sensors (RTD's), each with an accuracy of ±0.5°F and a sensitivity of 0.1°F. One temperature sensor is installed at the intake bay of each Unit (1, 2, & 3) at a depth representative of the average intake temperature in the forebay. Three (3) temperature sensors traverse the discharge canal before the confluence with the river at a depth of 5.5 feet below mean low water. Each of the sensors contain a composite network

themistor assembly consisting of precise resistors and thermistors which produce a linear resistance change with change in temperature.

All temperature sensor signals are conditioned in a Remote Temperature Computer to provide calibrated analog voltages for processing and recording. These analog voltages are continuously available. The outputs of the three intake temperature signal conditioners are fed into a summing amplifier to compute the average intake water temperature. The outputs of the three signal conditioners associated with the discharge canal temperature are also fed into a summing amplifier to provide the average of the three measured discharge water temperatures. All intake and discharge temperature signals feed malfunction decoders which provide an alarm signal to activate an alarm contact in the Temperature Control Panel. This alerts the operator when one of these six temperature signal circuits has malfunctioned.

The signal conditioned intake and discharge water temperatures from the Remote Temperature Computer are recorded on an analog recorder at the Temperature Control Panel. The difference between the average discharge and average intake water temperature is also recorded. Analog recording is accomplished on a 5-channel analog recorder,

Leeds and Northrup Model 880. The chart paper is divided into two 4-inch charts. The left hand chart section records the absolute temperature and the right side records the temperature difference and an event trace representative of the temperature difference rate of change. The recorder has a chart drive speed of two inches per hour and sufficient chart paper length to operate continuously for 22-1/2 days.

The recorder is equipped with three adjustable alarm contacts which can be used to control annunciators. One alarm contact is on the pen recording the discharge canal temperature and two contacts are provided on the temperature difference (delta T) pen. The two remaining alarm contacts in the Temperature Control Panel are controlled by signals derived in the digital alarm circuit in the Remote Temperature Computer. An alarm is sounded if the discharge canal temperature approaches an increase of 15°F within one hour or if the discharge canal temperature approaches a decrease of 7°F within one hour.

Additionally, the Temperature Control Panel is equipped with a three-way switch so that any one of the intake temperatures (Unit 1, 2 or 3) can be selected for individual recording.

4.2. Thermal Shock

4.2.1 Procedures

The Environmental Technical Specification Requirements for Unit No. 3 require a discharge canal head differential of 1.5 to 1.7 feet to maintain a discharge velocity through the ports of 10 feet per second. This discharge velocity requirement as described in the section that follows, limits the biological implications of potential thermal shock incidents at Indian Point.

In addition, the ETSR for Indian Point Unit No. 3 limits the rate of change of temperature in the discharge canal during normal plant operation. The rate of temperature change in the canal may not exceed 15°F per hour during normal power increase and 7°F per hour during normal power reductions. This limit on temperature change largely eliminates the potential for thermal shock during normal operation and is further discussed in the section that follows.

4.2.2 Biological Significance of Thermal Shock

As required in the plant's Environmental Technical Specifications during normal descent from power the rate of change of temperature in the discharge canal is limited to safeguard aquatic biota from the potential of thermal shock. Temperature decrease during normal operation of the plant can be no more than 7°F per hour. These limits provide assurance under normal operating conditions that minimal stress will be induced in river organisms from thermal shock.

The possibility of a rapid shutdown at Indian Point is remote, due to the normal operation of at least two units (3 units when Unit 1 returns to generation). The potential for two units to go off line simultaneously is relatively low.

The likelihood of thermal shock incidents is further reduced due to a number of mitigating factors. In the canal, the exit velocity through the discharge ports will be maintained at about 10 fps, which will prevent fishes from swimming into the discharge canal. If fishes are excluded from the discharge canal they will not become acclimated to the full plant temperature rise.

Another factor related to potential thermal shock problems is the stability of the heated area. The American Nuclear Society (1974) stated that thermal shock complications resulted from the creation of a warm "habitat" which, during the colder months, is occupied by aquatic organisms in preference to nearby waters. The habitat concept requires that the heated plume be somewhat stable in terms of location. Such would be the case for heated water discharged into a cove, bay, canal, creek or small river, or any other restricted area which remained as a separate environment with temperatures above those in contiguous natural waters. Most incidents of mortality from thermal shock have been recorded in such areas. Heated water discharged into an estuary, such as the Hudson River, usually does not form a stabilized plume or "habitat" due to reversing tidal currents, turbulence, and large flow volumes which provide a high dilution factor.

As mentioned earlier, the heated effluent is discharged at a velocity of 10 fps, and upon discharge will have an immediate 1:1 dilution with ambient temperature river water. This fact coupled with the size of the Hudson River estuary system and its tidal nature precludes formation of a stable habitat.

The circumstances described above indicate that lethal thermal shock to fish will be a rare event and would be restricted to fish residing in the discharge canal. In addition, if a lethal condition occurred, the loss of fishes in the discharge canal would represent a very small proportion of the existing populations in the River. Based on the discharge canal sampling, white catfish is the predominant species in the discharge canal and therefore is the species most likely to be affected. This species has a relatively large, thriving population in the Hudson River which would not be affected by thermal shock. Sampling in the discharge canal to date indicates that species of high sport or commercial value are not found in large numbers, and thermal shock to these species would have a negligible effect on their total population.

5.0 DESIGN MODIFICATION OF ONCE-THROUGH COOLING SYSTEM

This section discusses modifications to the present design of intake and discharge structures which can be made as possible permanent solutions to biological problems which may be identified by the ecological study program. The intake and discharge systems for the Indian Point facility have already undergone substantial modifications for the purpose of reducing potential detrimental effects on the aquatic biota of the Hudson River. Fine fixed screens have been placed in front of the intakes at Indian Point Units No. 1 and 2 in order to prevent the entrance of large fish into the forebays. This modification eliminated the impingement of large fish which occurred during the early stages of Indian Point Unit No. 1 operation. At Indian Point Unit No. 3, traveling screens were placed at the entrance to the forebay in order to keep large fish out of the forebay and also possibly to reduce the impingement of small fish which has occurred on the fixed fine screens at Indian Point Units No. 1 and 2.

The discharge has been substantially modified by the construction of an outfall structure which channels the effluent of all three units south (downstream) of the facility in order to minimize recirculation of heated effluent (Refer to figure 5-1). The discharge structure

releases effluents through submerged ports with adjustable gates to achieve rapid mixing of the thermal effluents (Refer to figure 1-1).

Furthermore, all three units at Indian Point have been equipped with pump recirculation systems which enable a flow reduction to approximately 60% of full flow, when necessary to reduce fish impingement at times when such reduction does not result in a thermal discharge in excess of State and Environmental Technical Specification criteria.

Con Edison does not believe that there are any further structural modifications that can be made as possible interim solutions to potential problems pending completion of the ecological study program. The operating procedures discussed previously are the only feasible additional interim mitigation measures. Additional structural modifications cannot prudently be undertaken until after completion of the ecological study program. Such modifications can then be properly directed to the appropriate solution of the biological problems identified by that program.

5.1. Mitigating Measures

5.1.1 Air Curtain

Results of tests and statistical analysis by Texas Instruments (1975) demonstrated that air curtain operation does not significantly reduce the impingement of fish at Indian Point Unit No. 2. Texas Instruments (1975) states that air curtains are ineffective as a behavioral avoidance stimulus in turbid water and darkness. This conclusion is also supported by Bates and Van Derwalker (1969) who also concluded that air curtains were ineffective in diverting juvenile salmon in turbid waters. As a result of these studies Con Edison has concluded that the air curtain is ineffective as a mitigative measure to reduce impingement. Con Edison has therefore requested the approval of the NYS Department of Environmental Conservation to dispense with the operation of the air curtain at Indian Point Units No. 1 & 2.

5.1.2 Continuously Operating Traveling Screens

Texas Instruments conducted tests with the presently designed traveling screens operating continuously as a means to enhance impingement survival. They found that: "no significant difference between fixed and traveling screens

was established" and that "on the basis of these results, neither screen design has an apparent advantage in reducing impingement." It is interesting to note however, that Texas Instruments (1975) did report that fish removed from the continuously washed traveling screens were in apparent better condition than those removed from the fixed screens. The present design of the traveling screens does not make provision for a trough to retain impinged fish. Only a flat lip of metal exists on the screens to hold the fish until they can be washed into a sluiceway and returned to the river.

As a continuing aspect of Con Edison's ecological study program additional impingement mitigation studies are planned for 1976. These studies incorporate the most promising modes of mitigation from past studies and recent advances in the state of the art of intake design by the utility industry. Studies for 1976 to mitigate or alleviate impingement, include installation of a wier wall and an Envirex modified traveling screen (Refer to Sections 5.1.3 and 5.1.4)

5.1.3 Weir Wall

Atlantic Tomcod and White Perch account for 70% of fish impinged at Indian Point. Both of these fish are primarily bottom feeding species, thus spending most of their time in the lower half of the water column. Con Edison believes that installation of a fish protection device that would selectively cause intake water to be drawn only from the top of the water column would effectively reduce impingement of these bottom dwelling species. A similar device is being tested by the Massachusetts Division of Marine Fisheries (Fairbanks, et. al. 1971) for a power plant on the Cape Cod Canal to prevent the impingement of winter flounder, which is a bottom orientated fish. Results of this program are not yet available.

As described in Section 2.5 a simulated submerged weir will be tested at Indian Point Unit No. 1 in order to evaluate its effectiveness at minimizing impingement during cold seasons and when the pumps are operating at reduced flow. The weir wall will also be tested during the spring of 1977 when the pumps are operating at full flow.

5.1.4 Modified Traveling Screens

Another study planned for 1976 is the installation of an Envirex continuously traveling screen. This screen system was tested at the VEPCO Surry Plant and found to yield over 90% survival of impinged fish. Many of the species impinged at Surry are also present in the Hudson River and comparable survival rates are anticipated. Briefly, the traveling screen is modified by installing a trough to the lip of each screen section of a conventional traveling screen. The trough enables retention of the impinged fish as well as a pool of water to enhance the survival of the fish. The impinged fish in their troughs are lifted from the water and washed into another water filled trough which carries them back to the river, some distance from the plant intake. Con Edison feels the impressive survival rates of impinged fish at Surry warrant further study of this methodology at Indian Point. Con Edison is presently considering the installation of an Envirex traveling screen at Indian Point Unit No. 1 for test purposes.

5.1.5 Flume Study

Under contract to Con Edison, Stone and Webster Engineers, Inc. is currently concluding their research at the Alden Research Laboratories to evaluate possible intake modifications which could divert fish from the intakes at the Indian Point Facility in order to reduce fish impingement. Devices which have provided favorable results thus far include louvers and angled screens. The final results of this study are expected to be available in early summer of 1976. At that time Con Edison will initiate an evaluation of potential intake modifications or further prototype testing at the Indian Point Facility.

5.2. Common Intake Model And Study

5.2.1 Model and Study Description

The concept of a common intake structure for all units at the Indian Point Facility was developed by Con Edison as a possible method of minimizing the impingement of fish at the intake screens of the once-through cooling system. The design of the structure is based on the assumption that impingement can be alleviated by lowering intake velocity, by having the structure closer to the mainstream flow of the river, and by having only traveling screens in the structure. Before such a structure were built, however, it would have to be determined that impingement would result in a serious biological impact, that such impact would be substantially alleviated by the new structure and that no other changes in the circulating water system were required. The biological studies underway are designed to provide the information necessary to make these determinations.

The common intake design consists of a structure with a total length of about 570 feet, starting at a point approximately 165 feet north of the Unit No. 2 intake centerline located at a distance of about 160 feet out into the river, away from the present intakes (Refer to figures 5-2 and 5-3). The design allows for 32 traveling screens

sized to allow full once-through flow for all three units at the Indian Point Facility (2,058,000 gpm) with an overall approach velocity of 0.5 feet per second. In addition to the actual intake structure, related work consists of sheet pilings to create an enclosed lagoon between the present intakes and the common intake, and fill which creates both a channel in back of the structure and a road leading up to the structure.

In front of the structure the design calls for concrete pilings which serve both to straighten the flow and to hold bar-racks in place. These bar-racks would keep large debris from hitting and damaging the traveling screens. After the flow passes the screens, it would be guided in the direction of the intakes by concrete vanes behind the screens.

Service water for washing screens would be available from pumps located near the centerline of the structure, between bays 16 and 17. The water would be taken from the enclosed lagoon and would be returned to the river after debris has been collected in a trash pit. Screen washings would take place intermittently in much the same manner as is now the operation at the existing intakes. The washing operation could be started manually or automatically if the water level differential across the structure passed a predetermined level. In the design there is provision for

the use of a fixed back-up screen behind the traveling screen. Another screen would be located at each Unit's intake bays in front of the circulating water pumps. The intakes bays of the common intake design are 13'- 4" wide and would contain traveling screens similar in size to those presently used at the intakes of Units No. 2 and 3.

Each of the 32 bays in the present design can withdraw water from an elevation of -1 foot MSL to a level of -30 feet MSL. A moveable bulkhead or weir could also be provided in order to avoid taking water from a certain portion of the water column. The purpose of such a system would be to reduce impingement from that certain portion of the water column if it was determined by the present studies that such action would tend to reduce impingement.

The La Salle Hydraulic Laboratory has performed modeling studies of the structure in an undistorted 1/30 scale model. La Salle found that the original design, without deflector walls and with a different pier configuration, caused uneven flow through the screens and excessive velocity in the screens nearest the present intakes. The present design, as modified, results in a much more evenly distrubuted flow. According to the La Salle report on the common intake structure, flow through the intakes reaches a maximum of about 0.7 feet per second in some of the intakes. Other

intakes exhibit a maximum of 0.6 feet per second. In general, there is a small reverse-flow area at the top of bays in the area behind the bulkheads. This backflow is not enough to affect the average flow since the bays are sized larger than necessary for the required 0.5 feet per second average velocity.

An additional consideration in the design of a common intake is that impingement and entrainment may be further reduced depending upon the water column height from which water is drawn. At the time the criteria for the present design was established it was thought that minimum impingement effects would result if water was not taken from the upper 5 feet in the water column or from below a depth of 30 feet. This is the reason for the presence of a bulkhead and for the location of the bottom at -30 feet MSL, some 5 to 10 feet above the natural river bottom. However, if it was found by the present biological studies that the proposed location would tend to draw in too many fish (impingement) or aquatic microorganisms (entrainment), several alternatives are open.

The first alternative is locating the structure further out into the river. This would result in considerably higher construction costs due to the steepness of the river bed. It might also result in the creation of an obstruction to navigation. A second possible solution is dredging the

river in front of the structure to create a deeper water column. This however, might not be a viable approach since dredging may affect currents, causing an attraction to fish. A third alternative might be the redesign of the structure to have more bays of shallower depth. This last alternative, although feasible, would result in a much longer structure which would extend far beyond the present water shoreline in front of the units, changing the flow characteristics of the system. A weir going up to one-half of the height of the water column might also serve to allow water to be withdrawn from the top half of the water column only.

A common intake structure would have several potential advantages over the existing intake systems. The approach velocities to the intake screens would be less than the existing velocities (and when one unit is not operating the intake velocity would be reduced even further). The structure would be located in an area where fish are less likely to congregate due to the high tidal current velocity. Moreover, water would be withdrawn from a depth stratum which is thought to contain fewer organisms (subject to identification by the studies). The present biological studies should determine the importance of impingement and entrainment and indicate whether the common intake structure or other mitigating measures would be best suited to

minimize the possible long term impact of once-through cooling on the river.

5.2.2 Biological Significance of Common Intake

The use of the Common Intake would be a permanent method to reduce intake flow velocities, as opposed to seasonal reduction accomplished by modification of circulator pump flow conditions, thereby reducing the numbers of impinged and entrained organisms. The basic theory supporting the use of the common intake structure concept is that an increased area for water intake can be provided resulting in the reduction of water flow velocity through the screens. The Consent Order of April 28, 1972 stated a design specification for an intake velocity of .5 feet per second. In order to accomplish a .5 fps approach velocity the total screen area of a common intake system has to be approximately twice the total fixed screen area now existing for Units No. 1, 2, and 3.

The actual construction of a common intake would cause some short range environmental impacts. Some dredging in front of the plant would occur prior to the construction of the structure. This dredging would result in a temporary disruption of the aquatic and the benthic environments. Benthic fauna, primarily sessile forms in the area would be

destroyed by either actual removal or by siltation from materials suspended in the water during dredging. The temporary increase in suspended solids and turbidity during the dredging may cause fish and other free moving aquatic organisms to avoid this area while work is in progress.

The dredging disturbance could also have an impact on Hudson River water quality. Bottom sediments of the Hudson River contain concentration of heavy metals and hydrocarbons. The influence of these compounds on water quality is dependent upon their chemical form and bonding within the sediment. A high concentration of a metal in a given sediment does not necessarily imply that large concentrations of that metal may be released upon dispersion of the sediment. (Windom, 1973).

During the operation of dredging, dissolved oxygen levels will probably be lowered for a short duration. Probably only sessile organisms would be adversely affected, if at all. Motile organisms could move out of the area to avoid any decrease in oxygen concentrations.

An irreversible adverse environmental impact would be loss of the bottom habitat that the structure would occupy. However, this loss is not considered to be significant

relative to the extent of bottom habitat within the river and the fact that some of it has been previously disturbed.

Con Edison believes the start of actual construction of a common intake for Indian Point should await completion of the ecological study program and determination of whether or not a closed cycle cooling system is needed. At that time, a better judgement can be rendered on the advisability of proceeding with such alternative mitigation measures as a submerged weir, continuously operating traveling screens, a louver system or a common intake structure for the Indian Point Facility.

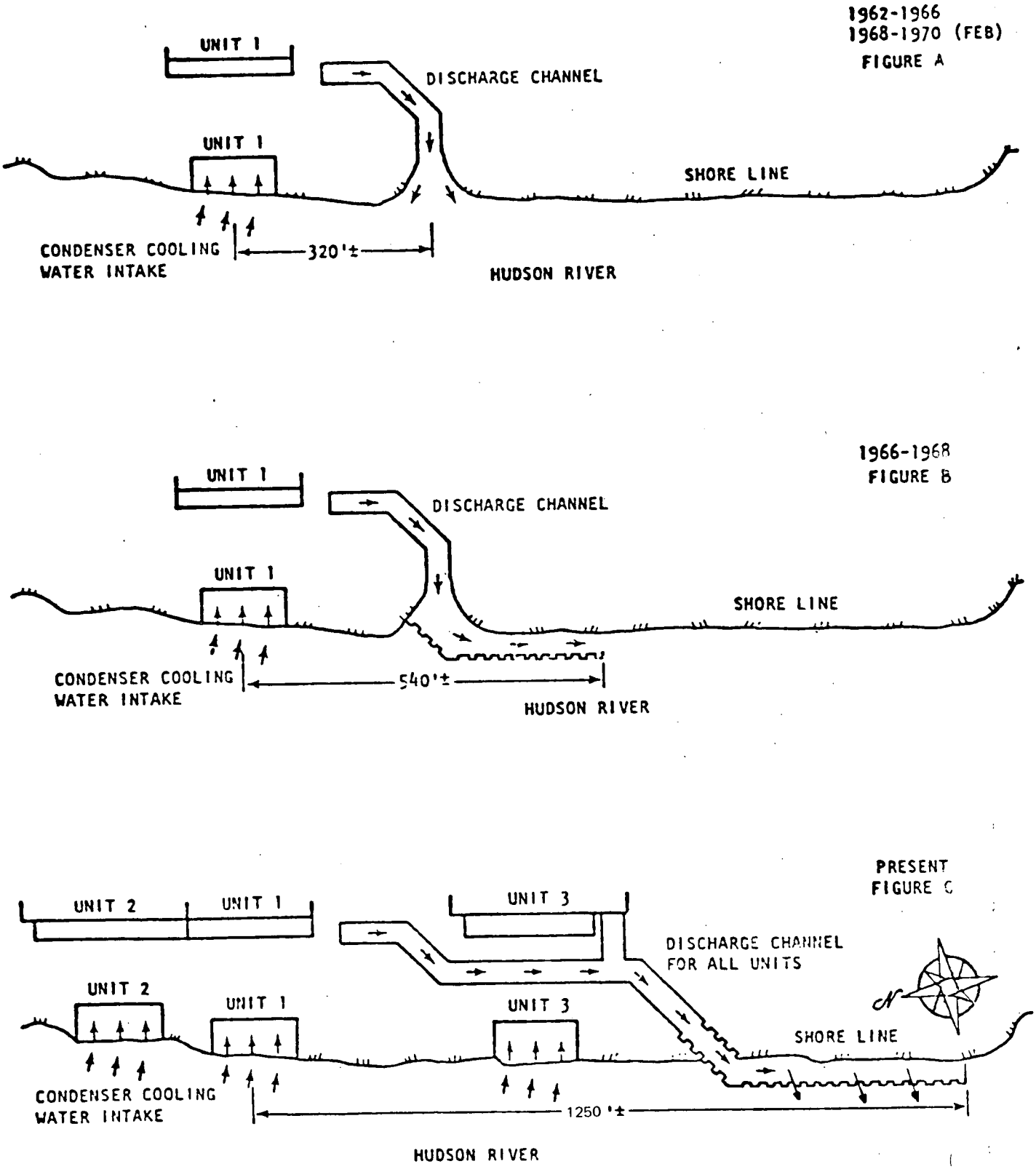


Figure 5-1 The Evolution of the Indian Point Intake and Discharge Structures

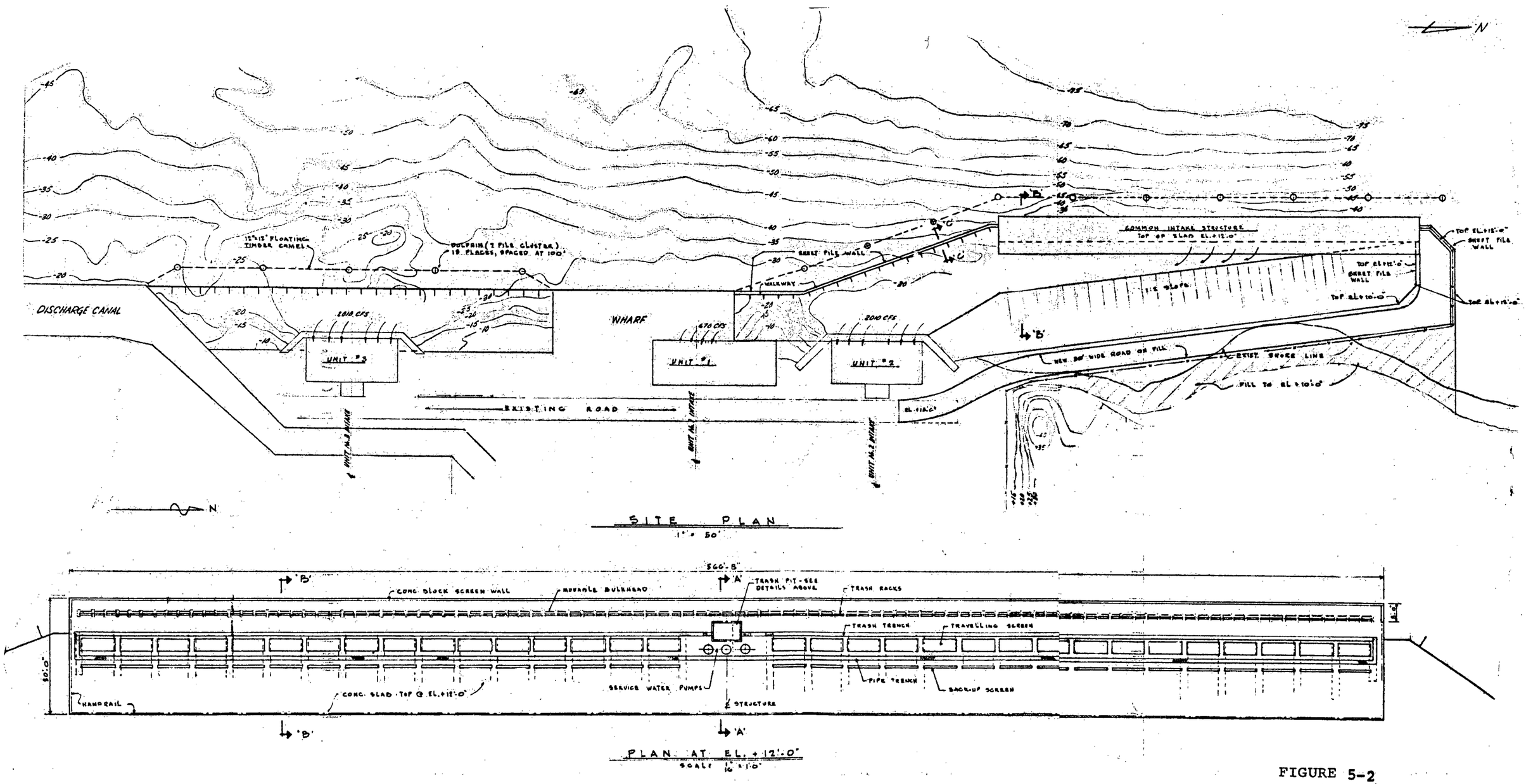

N
DISCHARGE CANAL
12'x12' FLOATING TIMBER CAMEL
DOLPHIN (7 PILE CLUSTER) 19 PLACES, SPACED AT 100'
2818 CFS
WHARF
670 CFS
2010 CFS
UNIT #3
UNIT #1
UNIT #2
SHEET PILE WALL
WALKWAY
COMMON INTAKE STRUCTURE
TOP OF SLAB EL.+12.0'
TOP EL.+12'-0"
SHEET PILE WALL
TOP EL.+12'-0"
SHEET PILE WALL
TOP EL.+10'-0"
TOP EL.+12'-0"
ICE SLOPE
NEW 30' WIDE ROAD ON FILL
EXIST. SHORE LINE
FILL TO EL.+10'-0"
EXISTING ROAD
UNIT #3 INTAKE
UNIT #1 INTAKE
UNIT #2 INTAKE
SITE PLAN
1" = 50'
N
'B'
'A'
56'-8"
CONC. BLOCK SCREEN WALL
MOVABLE BULKHEAD
TRASH PIT - SEE DETAILS ABOVE
TRASH RACKS
TRASH TRENCH
TRAVELLING SCREEN
PIPE TRENCH
BACK-UP SCREEN
SERVICE WATER PUMPS
℄ STRUCTURE
CONC. SLAB - TOP @ EL.+12'-0"
HANDRAIL
8'-0"
PLAN AT EL. +12'-0"
SCALE 1/16" = 1'-0"

FIGURE 5-2

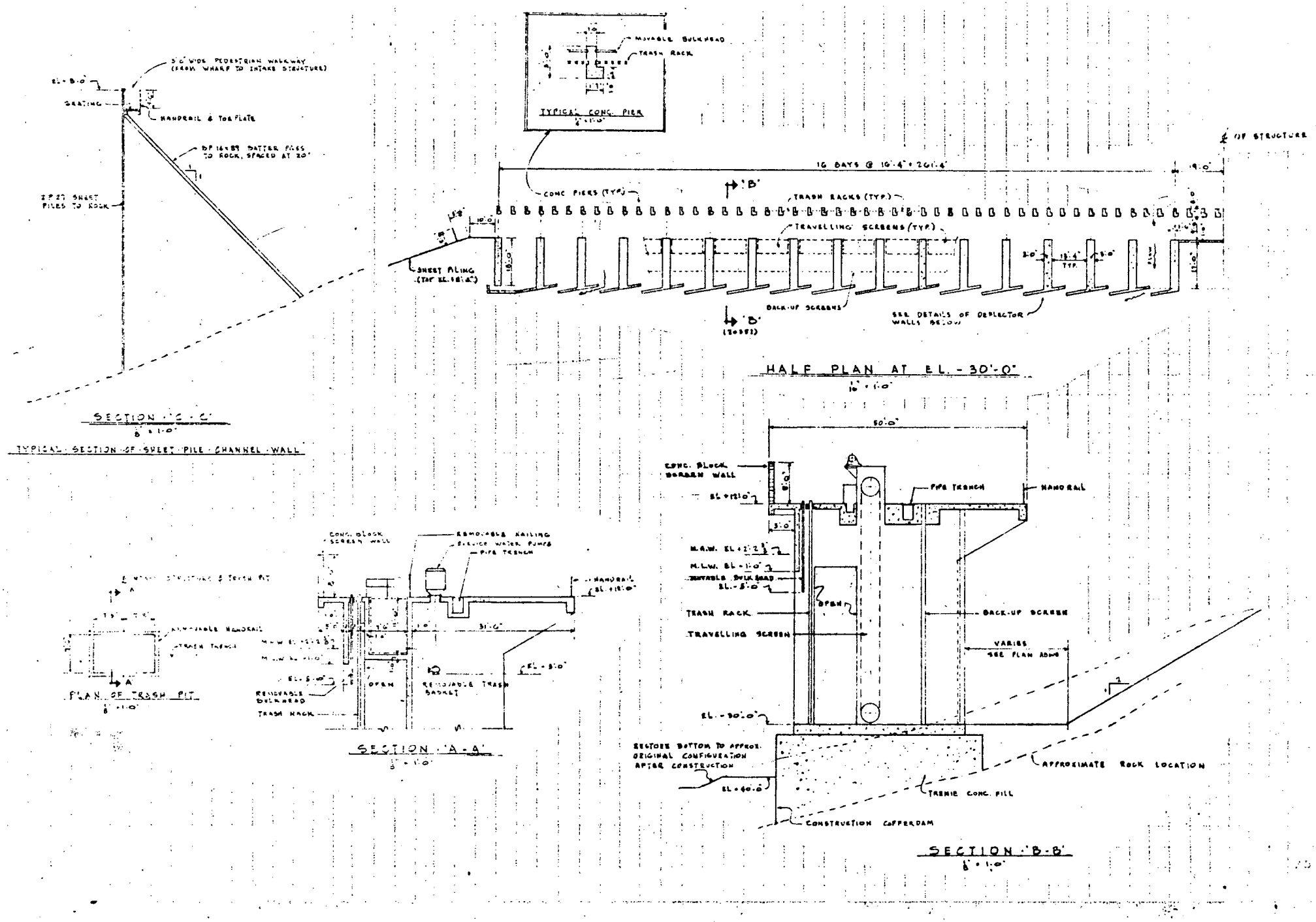

SECTION 'C-C'
TYPICAL SECTION OF SHEET PILE CHANNEL WALL
GRATING
HANDRAIL & TOE PLATE
SHEET PILES TO ROCK
TYPICAL CONC. PIER
MOVABLE BULKHEAD
TRASH RACK
HALF PLAN AT EL. -30'-0"
16 BAYS @ 19'-4" = 261'-4"
CONC PIERS (TYP)
TRASH RACKS (TYP)
TRAVELLING SCREENS (TYP)
SHEET PILING
BACK-UP SCREENS
SEE DETAILS OF DEFLECTOR WALLS BELOW
℄ OF STRUCTURE
PLAN OF TRASH PIT
REMOVABLE HANDRAIL
TRASH TRENCH
SECTION 'A-A'
CONC. BLOCK SCREEN WALL
REMOVABLE RAILING
SERVICE WATER PUMPS
PIPE TRENCH
HANDRAIL
REMOVABLE BULKHEAD
TRASH RACK
REMOVABLE TRASH BASKET
OPEN
SECTION 'B-B'
CONC. BLOCK SCREEN WALL
PIPE TRENCH
HANDRAIL
M.H.W.
M.L.W.
MOVABLE BULKHEAD
TRASH RACK
TRAVELLING SCREEN
BACK-UP SCREEN
VARIES SEE PLAN ABOVE
EL. -30'-0"
SECTION BOTTOM TO APPROX. ORIGINAL CONFIGURATION AFTER CONSTRUCTION
APPROXIMATE ROCK LOCATION
TREMIE CONC. FILL
CONSTRUCTION COFFERDAM

FIGURE 5-3

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Gammarus spp. (Amphipoda)
Following Short-Term Exposure
to Elevated Temperature
Ches. Sci. 17C1): 8-14

31-7

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INDIAN POINT GENERATING STATION ENTRAINMENT AND NEAR FIELD RIVER STUDIES

1977 ANNUAL REPORT

Consolidated Edison Company of New York, Inc.

4 IRVING PLACE
NEW YORK, NEW YORK 10003

and

Power Authority of the State of New York

10 COLUMBUS CIRCLE
NEW YORK, NEW YORK 10019

ECOLOGICAL
ANALYSTS
INC.

8102040447

EA Report CON01K1

INDIAN POINT GENERATING STATION
ENTRAINMENT AND NEAR FIELD RIVER STUDIES
1977 ANNUAL REPORT

Prepared for:

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New York, New York 10003

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Power Authority of the State of New York
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December 1980

CONTENTS

	Page
CHAPTER 1: INTRODUCTION	1-1
CHAPTER 2: SITE DESCRIPTION	
2.1 The River	2-1
2.2 The Plant	2-1
CHAPTER 3: METHODS	
3.1 Near Field River Study	3-1
3.1.1 Sampling Stations	3-1
3.1.2 Sampling Procedures	3-1
3.1.2.1 Microzooplankton	3-1
3.1.2.2 Macrozooplankton and Ichthyoplankton	3-1
3.1.2.3 Water Quality Measurements	3-4
3.1.3 Analytical Procedures	3-4
3.2 Entrainment Abundance Study	3-5
3.2.1 Sampling Stations	3-5
3.2.2 Sampling Procedures	3-5
3.2.2.1 Sample Collection	3-5
3.2.2.2 Sample Sorting and Processing	3-8
3.2.2.3 Water Quality Measurements	3-8
3.2.3 Analytical Procedures	3-8
3.3 River Transect Study	3-10
3.3.1 Sampling Procedures	3-10
3.3.2 Analytical Procedures	3-12
REFERENCES	
Appendix A. Water Quality Data, Entrainment and Near Field River Studies, Indian Point Generating Station, 1977	
Appendix B. Taxa Occurrence at Standard River Stations, Indian Point Generating Station, 1971-1979	
Appendix C. Abundance of Selected Taxa Collected at Standard River Stations, Indian Point Generating Station, 1977	

Appendix D. Seasonal Abundance of Selected Taxa Collected at Standard River Stations, Indian Point Generating Station, 1977

Appendix E. Entrainment Abundance of Striped Bass Early Developmental Stages, Indian Point Generating Station, 1977

Appendix F. Seasonal Entrainment Abundance of Striped Bass Early Developmental Stages, Indian Point Generating Station, 1977

Appendix G. Entrainment Abundance of Selected Macrozooplankton Taxa, Indian Point Generating Station, 1977

Appendix H. Seasonal Entrainment Abundance of Selected Macrozooplankton Taxa, Indian Point Generating Station, 1977

Appendix I. Abundance of Striped Bass Early Developmental Stages at River Transect Stations, Indian Point Generating Station, 1977

Appendix J. Seasonal Abundance of Striped Bass Early Developmental Stages at River Transect Stations, Indian Point Generating Station, 1977

Appendix K. Length Frequency Distributions for Striped Bass Collected During Entrainment and Near Field River Studies, Indian Point Generating Station, 1977

LIST OF FIGURES

Number	Title
2-1	Location of the Indian Point Generating Station on the Hudson River Estuary.
2-2	Diagram of the Indian Point Generating Station circulating water system.
2-3	Indian Point Generating Station discharge structure.
3-1	River standard station sampling locations in the vicinity of the Indian Point Generating Station.
3-2	Diagram of the Indian Point Generating Station circulating water system showing location of sampling stations.
3-3	Stationary net sampling apparatus used to collect samples at Stations I2, I3, and D1 during the entrainment abundance study conducted at the Indian Point Generating Station, 1977.
3-4	River transect station locations in the vicinity of the Indian Point Generating Station, 1977.

LIST OF TABLES

Number	Title
2-1	Average calculated transit times for cooling water during full flow operation of Indian Point Generating Station--Units 1, 2, and 3 operating individually and simultaneously.
2-2	Estimated mean flow velocities at various locations in the Indian Point condenser cooling water system.
2-3	Predicted temperature rise of condenser cooling water at Unit 2, Indian Point Generating Station.
2-4	Predicted temperature rise of condenser cooling water at Unit 3, Indian Point Generating Station.
2-5	Circulating water flow at Unit 1, Indian Point Generating Station, 1977.
2-6	Circulating water flow at Unit 2, Indian Point Generating Station, 1977.
2-7	Circulating water flow at Unit 3, Indian Point Generating Station, 1977.
3-1	Sampling schedule for microzooplankton, macrozooplankton, and ichthyoplankton collections at standard stations in the vicinity of the Indian Point Generating Station, 1977.
3-2	Sampling dates, sampling stations, and unit operation during the 1978 entrainment abundance study at the Indian Point Generating Station, 1977.

1. INTRODUCTION

The 1977 entrainment and near field studies described herein represent the continuation of a research program conducted from 1971 through 1976, designed to evaluate the effects of the Indian Point plant on Hudson River organisms subject to entrainment. The scope of the 1977 research consisted of three principal study efforts: the near field river study, the entrainment abundance study, and the river transect study. The objectives of these study efforts were as follows:

1. The near-field river study was conducted to define the species composition, abundance, and distribution of microzooplankton, macrozooplankton, and ichthyoplankton in the vicinity of the Indian Point plant. Plankton tows were conducted at seven standard stations in the Hudson River (river miles 40.0-43.7) during the day and at night.
2. The entrainment abundance study was designed to examine diurnal variations in the densities of selected organisms (i.e., striped bass early life stages, and the macrozooplankton taxa Gammarus spp., Neomysis americana, Monoculodes edwardsi, and Chaoborus punctipennis) entrained by the Indian Point plant's cooling water systems. Sampling was conducted using stationary plankton nets located at the plant intakes and discharge canal.
3. The river transect study was designed to provide abundance information on striped bass early life stages in the immediate vicinity of the Indian Point plant for comparison with striped bass abundance data collected at plant intake and discharge stations.

During 1977, emphasis was directed towards applying sampling designs, sampling gear, and collection techniques consistent with those used in previous study years to maintain year-to-year comparability among study efforts. In this regard, plankton nets have remained the primary collection gears throughout this multiyear research program. During previous study years (1971-1976), New York University Medical Center (NYU) conducted all aspects of the study program, including field collection, sample processing, data analysis, and report production (NYU 1973, 1974, 1976(a), 1976(b), 1976(c), 1977, and 1978). However, in 1977, NYU performed all field collections, and laboratory analysis of microzooplankton and macrozooplankton samples, whereas ichthyoplankton sample processing and data tape production were conducted by Lawler, Matusky & Skelly Engineers (LMS). All collection and laboratory sample processing data were then transmitted to Ecological Analysts, Inc. (EA) for data reduction and report preparation. Additional studies were conducted by EA in 1977 to examine the survival of ichthyoplankton entrained through the condenser cooling water system of the Indian Point plant. These studies, which utilized pump/larval table collection systems designed to reduce the effects of velocity differences between plant intake and discharge stations, are described in EA 1978.

The format of this report is such that the site description and material and methods are presented in separate text chapters (Chapters 2 and 3, respectively). Study results are presented as data tables and figures in Appendix A through K, as follows:

- Appendix A contains water chemistry data for all study efforts.
- Appendixes B through D present results of the near field river study, including the occurrence of taxa collected at standard river stations from 1971 through 1977 and densities of selected microzooplankton, macrozooplankton, and ichthyoplankton collected in 1977.
- Appendixes E through H present data relative to the entrainment abundance study, including densities of striped bass (all developmental stages), *Gammarus* spp., *Neomysis americana*, *Monoculodes edwardsi*, and *Chaoborus punctipennis* collected at plant intake and discharge stations.
- Appendixes I and J provide data pertaining to the river transect study, including densities of striped bass developmental stages collected at the river transect stations, and comparison of these densities with striped bass collected at plant intake and discharge stations.
- Appendix K depicts length-frequency data for striped bass collected during all study efforts.

CHAPTER 2: SITE DESCRIPTION

2.1 THE RIVER

The Indian Point Generating Station is located on the east bank of the Hudson River, between Peekskill and Haverstraw bays, near the town of Buchanan, New York. The plant is 69 river kilometers (43 mi) north of the Battery in New York City (Figure 2-1). In the vicinity of the Indian Point plant, the Hudson River has a surface width of approximately 1,524 m (5,000 ft) and a cross-sectional area of approximately 14,865 m^2 (160,000 ft^2). Within 60 m (200 ft) of the plant, river depths range from about 3 to 12 m (10 to 40 ft) below mean sea level.

Flow rates in this section of the river are controlled predominantly by the tides. Mean tidal flows are on the order of 3,964 m^3 per second (140,000 cfs), whereas freshwater flows typically range from about 156 m^3 per second (5,500 cfs) in August to about 906 m^3 per second (32,000 cfs) in April (Con Edison 1977a, p. 2-1).

Seasonal trends in salinity are controlled primarily by freshwater flow. The salt front (0.1 ppt salinity) generally remains below Indian Point during the months of March, April, and May, when freshwater flows of more than 566 m^3 per second (20,000 cfs) are normally present. During the period of low freshwater flow, (generally July through October [see Table 2-2 in Con Edison 1977a]), the salinity in the vicinity of Indian Point may fluctuate rapidly as a function of tidal stage and height.

Ambient river temperatures in the Indian Point area typically range from 0 to 27 C over the course of a year (see Table 2-3 in Con Edison 1977a).

2.2 THE PLANT

The Indian Point Generating Station consists of three nuclear-fueled electric generating units. Unit 1, owned by Con Edison, has not been operated for commercial production since October 1974, although its circulating water and service water pumps are operated occasionally. Unit 2, owned and operated by Con Edison, has been in operation since 28 September 1973 and has a net rated capacity of 873 MWe. Unit 3, owned and operated by the Power Authority of the State of New York, has been in operation since 30 August 1976 and has a net rated capacity of 965 MWe. All three units use Hudson River water for once-through cooling.

Each unit has a separate shoreline intake structure for the withdrawal of water from the Hudson River (Figure 2-2). The intake structure for Unit 1 has four rectangular openings that extend 8.0 m (26 ft) below mean low water. The intake structures for Units 2 and 3 each have six intake openings extending 8.2 m (27 ft) below mean low water. The intakes to Units 1 and 2 are equipped with fixed screens at the entrance to the intake bays and vertical traveling screens located behind the fixed screens, whereas the intake to Unit 3 has only vertical traveling screens at the entrance to the intake bays. All screens are 9.5 mm (0.375 in.) square mesh, with the exception of an experimental fine-mesh (2.5 mm) traveling screen located at Unit 1 intake.

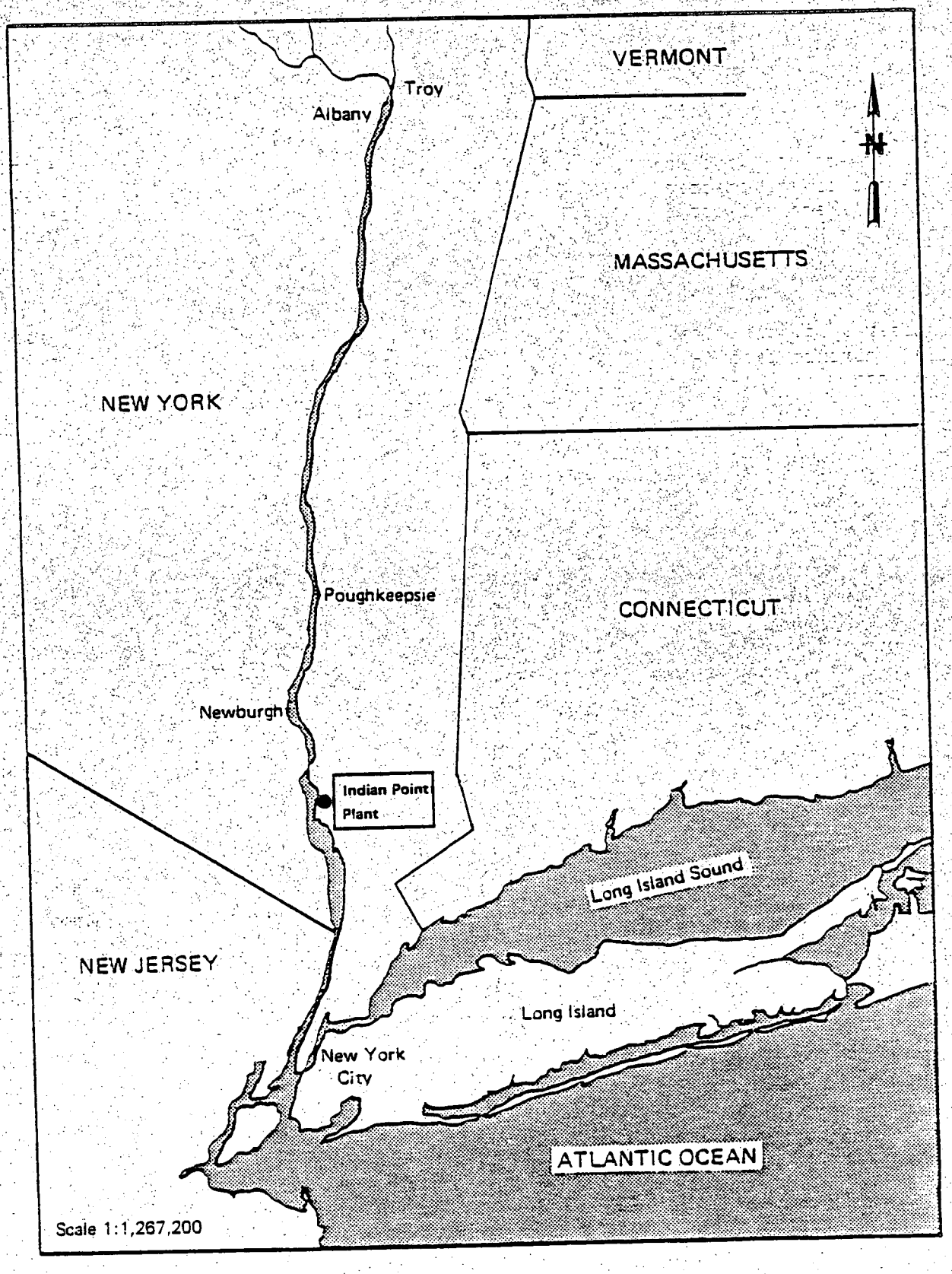

Figure 2-1. Location of the Indian Point Generating Station on the Hudson River Estuary.

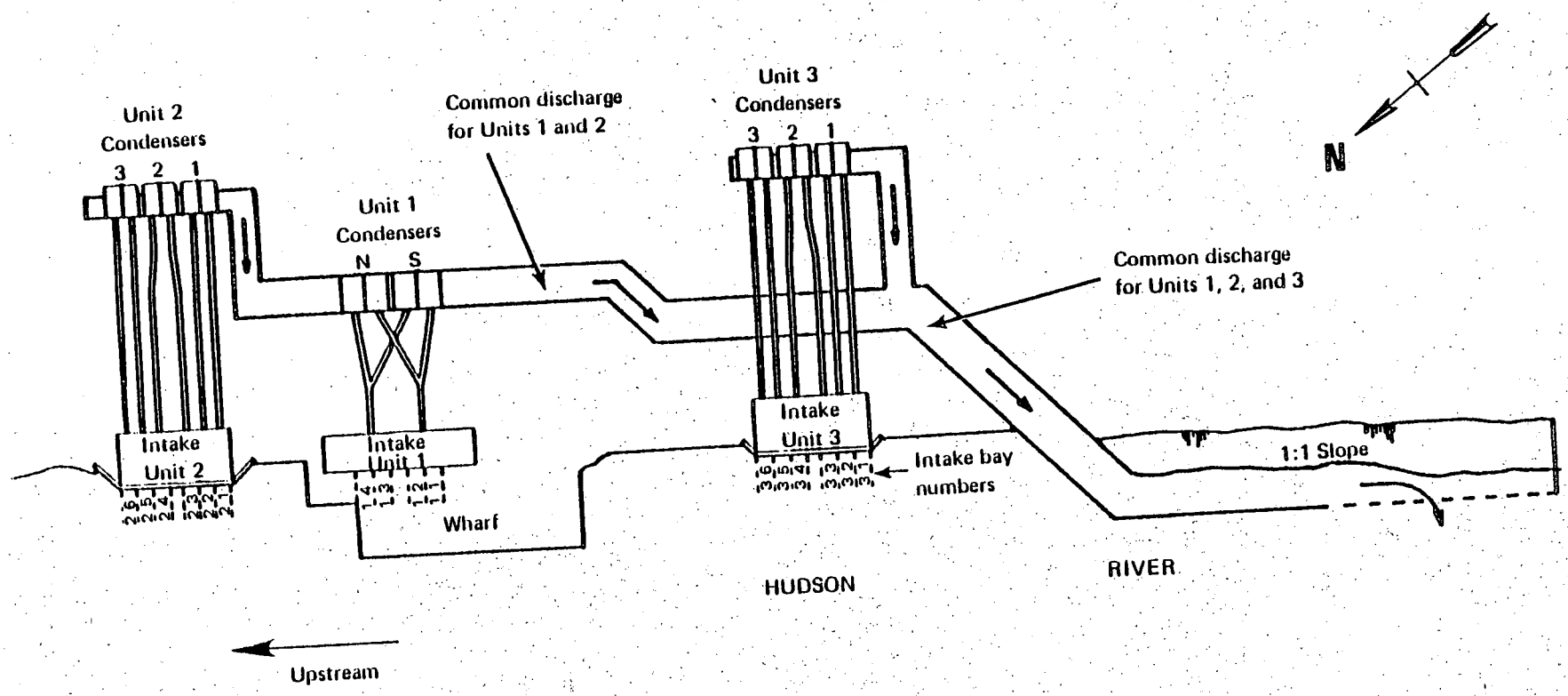

Figure 2-2. Diagram of the Indian Point Generating Station circulating water system (adapted from Con Edison 1977b).

Circulating water pumps with rated capacities of 530 m^3 per minute (140,000 gpm) are used to pump Hudson River water through the condenser cooling system of each unit. Unit 1 has two circulating water pumps with a total rated capacity of 1,060 m^3 per minute (280,000 gpm), and two service water pumps with a combined rated capacity of 144 m^3 per minute (38,000 gpm). Units 2 and 3 each have six circulating water pumps that withdraw water from separate intake bays (Figure 2-2). The circulating water systems for all units are designed to operate at either 100 or 60 percent flow. When the ambient water temperature is above 4.4 C (40 F) (spring through fall), the circulating pumps are operated so that the rated maximum cooling water flow for each unit is 3,178 m^3 per minute (840,000 gpm). During the winter, 40 percent of the cooling water is returned to the circulating pumps without passing through the condenser, reducing the rated maximum intake flow for each unit to 1,908 m^3 per minute (504,000 gpm). Service water for Units 2 and 3 is drawn through a separate intake forebay located at the center of each intake; the rated maximum total service water flow for Units 2 and 3 is 114 m^3 per minute (30,000 gpm).

The cooling water and service water from all three units flow into a common discharge canal. The combined discharge is returned to the Hudson River via an outfall structure (Figure 2-3) located downstream of Unit 3. The outfall structure consists of 12 ports submerged to a depth of 3.6 m (12 ft from center of port to water surface) at mean low water.

Calculated transit times of cooling water traveling from intake to river outfall for Units 2 and 3, when operating at full pumping capacity is 9.7 minutes for Unit 2 and 5.6 minutes for Unit 3. The calculated transit time from the intake to the condensers is about 1.5 minutes, and the calculated transit time through the condensers is 0.14 minutes for both units. Thus, much of the total transit time through the cooling water systems of Unit 2 and Unit 3 occurs in the discharge canal. Because the discharge canal receives cooling water from all three units, transit times through the canal are dependent upon the total circulating water flow through all units combined. Calculated transit times from the intake to the common discharge ports for various unit operational conditions are summarized in Table 2-1.

Estimated cross-sectional velocities of the river cooling water vary at different locations within the Indian Point plant condenser cooling water system (Table 2-2). Estimated flow velocities are lowest at the intakes, ranging from 0.57 ft/sec at Unit 1 (when circulating water pumps are operating), to 0.84 ft/sec at the intakes of Units 2 and 3. Estimated water velocities at various locations along the common discharge canal are consistently higher than velocities at the intakes, and vary according to the number of circulating pumps operating at each unit. At the submerged discharge ports, however, the estimated velocity of cooling water is 10.0 ft/sec, regardless of the number of units operating.

The temperature rise (delta-T) encountered by organisms passing through the condenser cooling systems of the Indian Point plant depends on the cooling water flow rates and levels of power output (Tables 2-3 and 2-4). At Unit 2, with six pumps operating at full flow and the unit at 100 percent capacity, the predicted condenser temperature rise ranges from 8.8 to 8.9 C (15.8-16.1 F), depending upon river temperature. During full capacity winter operation, with Unit 2 circulating pumps operating at 60 percent flow capacity (i.e.,

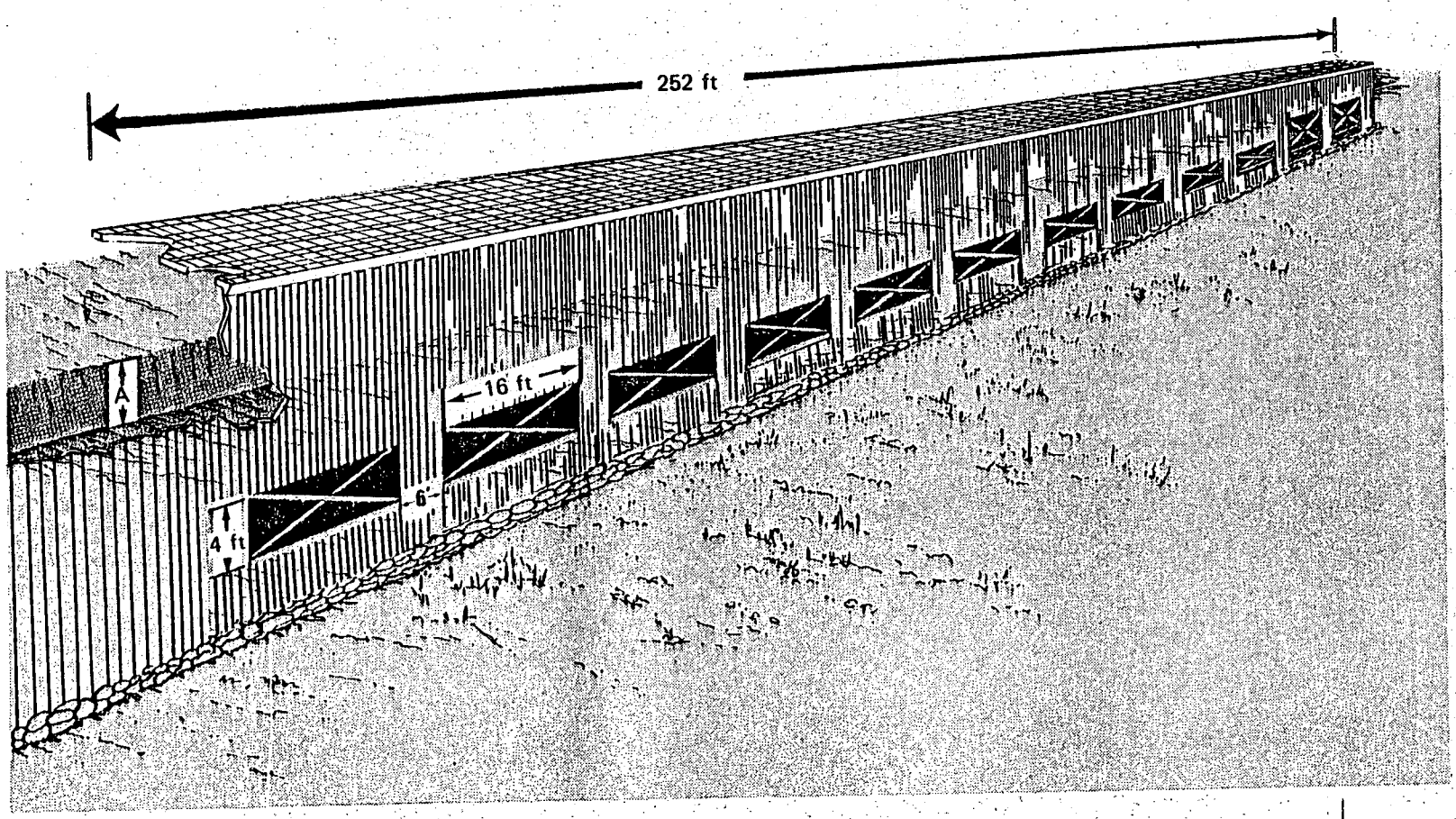

Figure 2-3. Indian Point Generating Station discharge structure (A = discharge canal water level relative to river surface).

TABLE 2-1 AVERAGE CALCULATED TRANSIT TIMES FOR COOLING WATER DURING FULL FLOW OPERATION OF INDIAN POINT GENERATING STATION--UNITS 1, 2 AND 3 OPERATING INDIVIDUALLY AND SIMULTANEOUSLY

Individual Operation (time in minutes)[a]

	Unit 1	Unit 2	Unit 3
Intake to Common Discharge Ports	33.23	12.85	8.77

Simultaneous Operation of Units 2 and 3[b]
(Unit 1 not operating)

Unit 2 Intake to Common Discharge Ports (time in minutes)

Circulating Pumps Operating at Unit 3	Circulating Pumps Operating at Unit 2: 3	4	5	6
3	17.7	14.4	12.3	10.8
4	16.8	13.7	11.7	10.3
5	16.2	13.2	11.3	10.0
6	15.6	12.8	11.0	9.7

Unit 3 Intake to Common Discharge Ports (time in minutes)

Circulating Pumps Operating at Unit 3	Circulating Pumps Operating at Unit 2: 3	4	5	6
3	9.6	8.3	7.4	6.7
4	8.7	7.6	6.8	6.3
5	8.0	7.1	6.4	5.9
6	7.5	6.7	6.1	5.6

(a) Source: NYU 1978, Table 1-1.
(b) Source: Personal Communication; Consolidated Edison Company of New York, Inc., 10 January 1980.

Note: Calculated transit times are based on pumps operating at 100 percent flow (312 cfs); calculated transit time through condenser: 0.14 minutes.

TABLE 2-2 ESTIMATED CROSS-SECTIONAL FLOW VELOCITIES AT VARIOUS LOCATIONS IN THE INDIAN POINT CONDENSER COOLING WATER SYSTEM[a]

Location	Flow Velocity (feet per second)						
	Generating Units Operational						
	1	2	3	1+2	1+3	2+3	1+2+3
Intakes							
Unit 1	0.57	--	--	--	--	--	--
Unit 2	--	0.84	--	--	--	--	--
Unit 3	--	--	0.84	--	--	--	--
Discharge Canal							
Discharge of Units 1 and 2[b]	1.03	2.82	--	3.85	--	--	--
Discharge of Units 1, 2, and 3[b]	0.79	2.17	2.17	2.97	2.97	4.35	5.14
Discharge Ports[c]	10.0	10.0	10.0	10.0	10.0	10.0	10.0

(a) Flow velocities presented are based on unit operation at 100 percent of design flow at mean tide level in the Hudson River. Velocities decrease by 40 percent when the units are operating at 60 percent of design flow.
(b) See Figure 2-2 for discharge locations.
(c) Passage of water through the submerged discharge ports during various plant operational modes is regulated to maintain a constant velocity.

Source: NYU (1978).

TABLE 2-3 PREDICTED TEMPEATURE RISE (C) OF CONDENSER COOLING WATER AT UNIT 2, INDIAN POINT GENERATING STATION

Plant Capacity (MWe)	River Temperature (C)	Pumps Operated with No Recirculation				Pumps Operated with 40% Recirculation			
		6 pumps	5 pumps	4 pumps	3 pumps	6 pumps	5 pumps	4 pumps	3 pumps
906 (100% load)	4.4	--	--	--	--	14.6	17.6	22.6	*
	10.0	8.8	10.4	13.1	17.9	14.7	17.7	22.7	*
	15.6	8.8	10.5	13.1	18.1	--	--	--	--
	21.1	8.9	10.6	13.2	*	--	--	--	--
	26.7	8.9	10.7	13.5	*	--	--	--	--
766 (75% load)	4.4	--	--	--	--	12.6	15.2	19.1	24.4
	10.0	7.5	9.1	11.4	15.3	12.7	15.3	19.2	24.4
	15.6	7.6	9.1	11.5	15.4	--	--	--	--
	21.1	7.6	9.2	11.6	15.7	--	--	--	--
	26.7	7.7	9.2	11.7	*	--	--	--	--
510 (50% load)	4.4	--	--	--	--	8.8	10.7	13.4	17.2
	10.0	5.2	6.4	8.1	10.8	8.9	10.8	13.5	17.2
	15.6	5.3	6.4	8.1	10.8	--	--	--	--
	21.1	5.3	6.5	8.2	11.0	--	--	--	--
	26.7	5.4	6.6	8.2	11.2	--	--	--	--

*Turbine backpressure higher than 3.5-in Hg.

Dash (--) indicates operating mode not appropriate at these temperatures.

Source: Con Edison 1977a.

TABLE 2-4 PREDICTED TEMPEATURE RISE (C) OF CONDENSER COOLING WATER AT UNIT 3, INDIAN POINT GENERATING STATION

Plant Capacity (MWe)	River Temperature (C)	Pumps Operated with No Recirculation				Pumps Operated with 40% Recirculation			
		6 pumps	5 pumps	4 pumps	3 pumps	6 pumps	5 pumps	4 pumps	3 pumps
1000 (100% load)	4.4	--	--	--	--	16.0	19.3	24.7	*
	10.0	9.5	11.5	14.3	19.6	16.2	19.4	24.8	*
	15.6	9.6	11.6	14.4	19.8	--	--	--	--
	21.1	9.6	11.6	14.5	*	--	--	--	--
	26.7	9.7	11.7	14.8	*	--	--	--	--
766 (75% load)	4.4	--	--	--	--	12.6	15.2	19.1	25.6
	10.0	7.5	9.1	11.4	15.3	12.7	15.3	19.2	25.6
	15.6	7.6	9.1	11.5	15.4	--	--	--	--
	21.1	7.6	9.2	11.6	15.7	--	--	--	--
	26.7	7.7	9.2	11.7	*	--	--	--	--
510 (50% load)	4.4	--	--	--	--	8.8	10.7	13.4	18.3
	10.0	5.2	6.4	8.1	10.8	8.9	10.8	13.5	18.3
	15.6	5.3	6.4	8.1	10.8	--	--	--	--
	21.1	5.3	6.5	8.2	11.0	--	--	--	--
	26.7	5.4	6.6	8.2	11.2	--	--	--	--

* Turbine backpressure higher than 3.5-in. Hg.

Dash (--) indicates operating mode not appropriate at these temperatures.

Source: Con Edison 1977a

40 percent recirculation), the predicted condenser temperature rise is approximately 14.7 C (26.5 F). At Unit 3, the predicted condenser temperature rise ranges from 9.5 to 9.7 C (17.1-17.4 F) for 100 percent capacity with six pumps operating at full flow; during winter operation, the predicted temperature rise is approximately 16.1 C (29 F). The higher predicted condenser temperature rise for Unit 3, compared to that for Unit 2, is due to the fact that Unit 3 has a higher rated generating capacity than Unit 2, but uses the same volume of cooling water.

During the 1977 sampling season (March through December), Unit 2 was not in operation from 14 April to 15 May, from 1 July to 7 August, from 18 to 22 August; Unit 3 did not operate from 7 to 12 April or from 9 October to 15 December. Although Unit 1 was not in operation during the sampling season, the circulating pumps were operated occasionally. A summary of the total estimated water flow (service and cooling water) through all three units during the 1977 sampling season is presented in Tables 2-5, 2-6, and 2-7.

TABLE 2-5 CIRCULATING WATER FLOW (INCLUDING SERVICE WATER) AT UNIT 1, INDIAN POINT GENERATING STATION, 1977

	Estimated Circulating Water Flow (Million Gallons per Day)											
Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	27	27	27	27	27	189	189	189	207	181	184	27
2	27	27	27	27	27	264	189	189	207	181	184	27
3	27	27	27	27	27	391	189	189	207	327	184	27
4	27	27	27	27	27	391	189	189	207	337	184	26
5	27	27	27	27	27	391	189	189	207	338	184	25
6	27	27	27	27	27	391	189	189	207	338	184	25
7	27	27	27	27	27	391	189	189	352	338	184	25
8	27	27	27	27	27	391	189	189	363	338	184	25
9	27	27	27	27	27	391	189	220	363	338	184	25
10	27	27	27	27	27	391	189	199	363	338	184	25
11	27	27	27	27	27	391	189	208	363	338	184	25
12	27	27	27	27	27	391	189	208	363	328	184	71
13	27	27	27	27	27	391	171	184	314	25	184	181
14	27	27	27	27	27	391	117	183	181	25	184	181
15	27	27	27	27	27	391	189	181	181	25	85	181
16	27	27	27	27	27	391	189	181	181	25	158	181
17	27	27	27	27	27	391	189	181	181	25	184	181
18	27	27	27	27	27	391	189	181	181	26	184	181
19	27	27	27	27	146	391	189	181	202	27	152	181
20	27	27	27	27	229	391	189	181	338	27	27	184
21	27	27	27	27	229	391	391	181	338	27	27	184
22	27	27	27	27	229	391	391	181	338	27	27	184
23	27	27	27	27	198	391	391	182	338	27	27	184
24	27	27	27	27	189	139	391	197	338	91	27	184
25	27	27	27	27	189	139	391	204	338	85	27	184
26	27	27	27	27	189	391	391	181	338	27	27	184
27	27	27	27	27	189	310	391	181	338	27	27	184
28	27	27	27	27	189	189	391	181	289	27	27	184
29	27		27	27	189	189	343	181	181	27	27	184
30	27		27	27	189	189	189	181	181	27	27	184
31	27		27		189		189	212		54		184

Source: Con Edison 1978.

TABLE 2-6 CIRCULATING WATER FLOW (INCLUDING SERVICE WATER) AT UNIT 2, INDIAN POINT GENERATING STATION, 1977

	Estimated Circulating Water Flow (Million Gallons per Day)											
Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	513	580	634	634	22	1,246	1,246	29	1,218	1,238	996	802
2	513	291	632	634	22	1,246	786	29	1,238	1,238	996	802
3	513	72	634	634	22	1,236	538	29	1,238	1,238	996	802
4	513	29	634	600	22	1,200	32	49	1,238	1,238	996	802
5	513	35	634	615	22	1,246	29	230	1,238	1,218	996	788
6	513	634	634	751	22	1,246	29	575	1,238	1,238	996	788
7	513	634	634	956	22	1,246	29	1,044	1,242	1,238	982	788
8	513	634	634	1,047	22	1,246	29	1,044	1,246	1,238	932	788
9	513	571	634	1,158	22	1,246	29	1,044	1,246	1,238	806	788
10	513	533	537	1,158	25	1,246	29	1,044	1,246	1,238	709	788
11	513	513	276	770	36	1,246	29	1,044	1,246	1,232	773	788
12	513	513	278	549	36	1,246	34	1,046	1,246	847	721	744
13	513	617	273	432	29	1,246	32	1,246	1,246	634	721	671
14	513	573	507	154	605	1,246	30	1,230	1,246	797	773	626
15	513	608	634	29	1,238	1,246	36	1,232	1,246	1,241	802	654
16	513	634	634	29	1,238	1,246	36	1,044	1,246	1,173	802	747
17	522	634	634	29	1,238	1,246	36	1,046	1,246	772	802	747
18	536	634	634	29	1,238	1,246	36	1,022	1,246	672	802	747
19	634	634	634	29	1,238	1,246	36	641	1,246	1,047	802	747
20	634	634	634	29	1,238	1,246	36	641	1,246	1,038	802	747
21	634	634	634	29	1,238	1,232	36	641	1,246	1,105	802	747
22	634	634	634	36	1,238	1,191	34	1,297	1,246	1,224	802	747
23	634	626	634	36	1,238	1,173	29	1,246	1,246	1,222	802	747
24	623	594	634	36	1,238	1,034	29	1,246	1,246	1,220	802	747
25	536	487	634	15	1,238	842	29	1,246	1,246	1,208	802	747
26	392	441	634	22	1,238	1,157	29	1,213	1,246	1,045	802	747
27	342	561	634	22	1,240	1,246	29	1,160	1,240	626	802	747
28	150	634	634	22	1,246	1,246	29	1,246	1,240	551	802	747
29	164		634	22	1,246	1,246	29	1,246	1,195	571	802	747
30	513		634	22	1,246	1,246	29	1,246	1,238	996	802	747
31	513				1,246		29	1,223		996		747

Source: Con Edison 1978.

TABLE 2-7 CIRCULATING WATER FLOW (INCLUDING SERVICE WATER) AT UNIT 3, INDIAN POINT GENERATING STATION, 1977

	Estimated Circulating Water Flow (Million Gallons per Day)											
Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	626	626	626	747	1,238	1,238	1,238	1,246	1,246	1,246	14	22
2	626	626	626	747	1,238	1,238	1,238	1,246	1,246	1,246	14	22
3	626	626	597	747	1,192	1,223	1,238	1,246	1,246	1,246	14	22
4	599	626	626	747	1,144	1,106	1,082	1,246	1,246	1,246	14	22
5	580	626	586	747	1,228	1,187	1,004	1,246	1,246	1,246	14	29
6	595	626	626	418	1,230	1,238	1,246	1,246	1,246	1,246	14	29
7	596	626	626	138	1,235	1,238	1,246	1,246	1,246	704	14	29
8	626	626	611	74	1,223	1,240	1,246	1,246	1,246	640	14	29
9	626	626	594	143	1,231	1,246	1,246	1,246	1,246	351	14	29
10	626	626	678	143	1,223	1,246	1,246	1,246	1,246	230	14	29
11	626	626	747	205	1,231	1,246	1,246	1,246	1,246	230	14	29
12	626	626	704	670	1,231	1,246	1,246	1,246	1,246	230	14	29
13	626	626	747	729	1,231	1,168	1,109	1,246	1,135	82	14	29
14	626	626	747	850	1,231	1,077	613	1,246	1,246	27	14	117
15	628	626	747	1,031	1,231	1,238	1,246	1,246	1,246	29	14	388
16	634	626	747	1,214	1,231	1,238	1,246	1,246	1,246	29	14	726
17	634	626	748	1,238	1,231	1,231	1,246	1,246	1,246	29	14	755
18	634	626	747	1,238	1,231	1,231	1,246	1,246	1,246	29	14	755
19	629	626	708	1,154	1,231	1,231	1,246	1,246	1,246	29	14	755
20	619	536	735	1,238	1,231	1,231	1,246	1,246	1,246	29	14	694
21	619	505	747	1,238	1,231	1,193	1,246	1,246	1,246	29	14	755
22	619	505	747	1,238	1,231	1,175	1,246	1,246	1,246	26	14	755
23	619	532	710	1,238	1,235	1,168	1,246	1,246	1,246	22	14	755
24	626	626	747	1,238	1,238	1,188	1,246	1,246	1,246	22	20	755
25	624	588	747	1,238	1,238	1,071	1,246	1,246	1,246	22	22	755
26	626	527	747	1,238	1,238	835	1,246	1,246	1,246	14	22	746
27	626	626	747	1,238	1,238	1,162	1,246	1,246	1,246	14	22	734
28	626	626	747	1,238	1,238	1,238	1,246	1,246	1,246	14	22	755
29	626		747	1,184	1,238	1,238	1,131	1,208	1,246	14	22	728
30	626		747	1,238	1,238	1,238	969	1,246	1,246	14	22	755
31	626				1,238		1,159	1,246		14		755

Source: Con Edison 1978.

CHAPTER 3: METHODS

3.1 NEAR FIELD RIVER STUDY

3.1.1 Sampling Stations

The near field river study was designed to determine the temporal and spatial distribution of entrainable organisms (ichthyoplankton, macrozooplankton, and microzooplankton) in the vicinity of the Indian Point Generating Station. Sampling was conducted at seven standard river stations located between river miles 40.0 and 43.7 (64.4-70.3 km), as shown in Figure 3-1. Station locations were similar to those sampled by New York University Medical Center during studies conducted from 1971 through 1976 (NYU 1978). Samples were collected at Stations A and B to monitor the abundance of planktonic organisms in the near field area north of the plant, whereas samples were collected at Stations F and G to monitor the abundance of planktonic organisms in the near field area south of the plant. Samples collected at Stations C, D, and E provided information on the abundance of planktonic organisms in the area offshore of the plant. Each station was defined by specific north and south limits and upriver and downriver bearing axes. The depth at all station locations was approximately 15 m (50 ft).

3.1.2 Sampling Procedures

3.1.2.1 Microzooplankton

Microzooplankton samples were collected both during the day and at night at each sampling station once every 2 weeks from May through November 1977 (Table 3-1). Microzooplankton samples were collected by vertically towing a 75 µm mesh (Number 20) conical plankton net (0.5 m diameter opening, 1.8 m long) through the upper 10 m of the water column at each station.* After collection, organisms and detritus were washed into a sample container and preserved in 10 percent formalin.

Preserved samples were transported to the NYU laboratory for processing. At the laboratory, two 1 ml aliquots from each sample were placed in a Sedgwick-Rafter cell. Microzooplankton within each aliquot were counted and identified at 100X magnification.

3.1.2.2 Macrozooplankton and Ichthyoplankton

Macrozooplankton and ichthyoplankton were collected in separate duplicate samples during the 1977 sampling season. Samples were collected at each standard station during the day and at night monthly in April, weekly from May through July, and monthly from August through December (Table 3-1).

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* Replicate ("A" and "B" series) microzooplankton samples were collected at each station during all standard station sampling efforts to provide a contingency in the event that samples were voided or lost in the field. Generally, only "A" series samples were processed in the laboratory. In the case of a voided "A" series sample, however, the corresponding "B" series replicate sample was processed in its place.

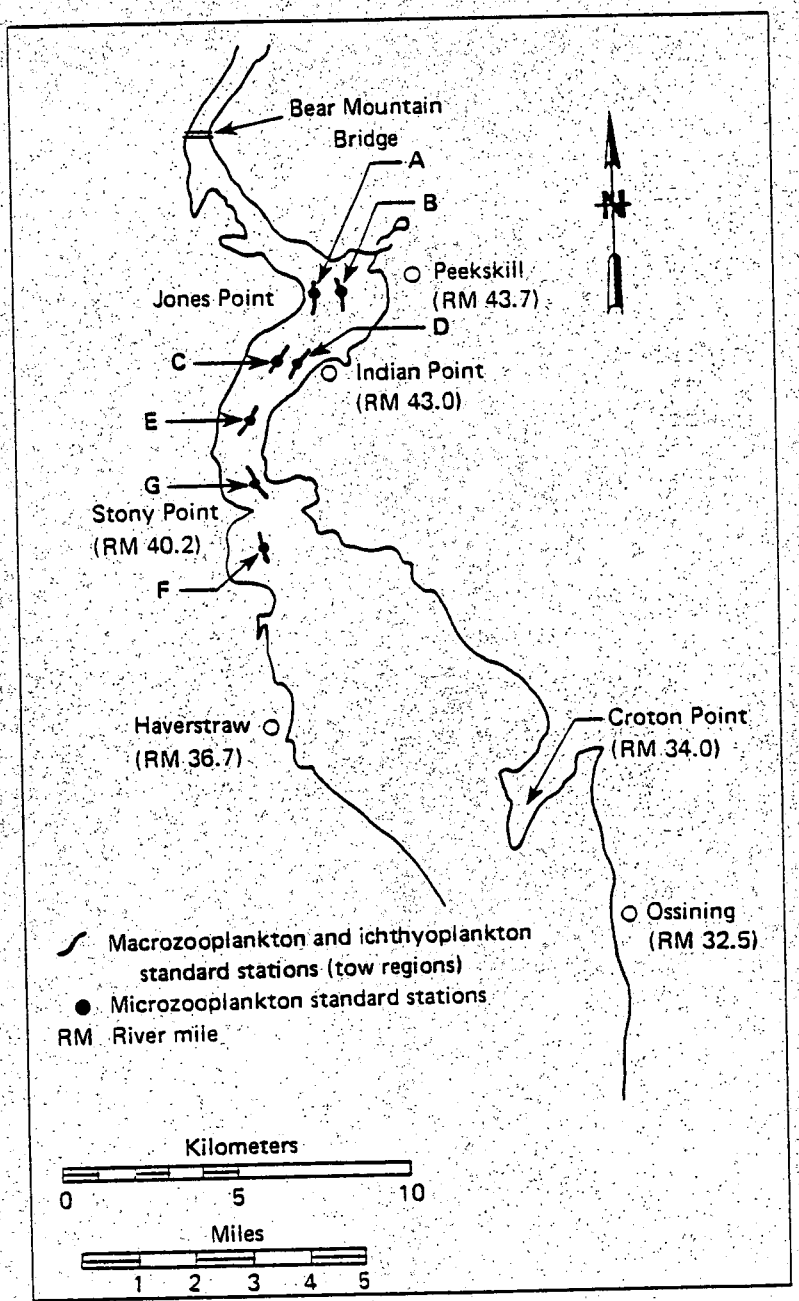

Figure 3-1. River standard station sampling locations in the vicinity of the Indian Point Generating Station.

TABLE 3-1 SAMPLING SCHEDULE FOR MICROZOOPLANKTON, MACROZOOPLANKTON, AND ICHTHYOPLANKTON COLLECTIONS AT STANDARD STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

Sampling Week	Microzooplankton	Macrozooplankton	Ichthyoplankton
12 APR		X	X
2 MAY	X	X	X
9 MAY		X	X
16 MAY	X	X	X
23 MAY		X	X
2 JUN	X	X	X
6 JUN			X
13 JUN	X	X	X
23 JUN		X	X
27 JUN	X		X
7 JUL		X	X
11 JUL	X		X
18 JUL		X	X
25 JUL	X	X	X
9 AUG	X		
15 AUG		X	X
22 AUG	X		
8 SEP	X		
14 SEP		X	X
21 SEP	X		
4 OCT	X		
13 OCT	X	X	X
1 NOV	X		
14 NOV	X	X	X
29 NOV	X		
5 DEC		X	X

Macrozooplankton and ichthyoplankton were collected using 571 μm mesh (Number 0) plankton nets (0.5 m diameter opening, 3.7 m long). Each sampling net was equipped with a standard vane General Oceanics digital flowmeter (Model 2030) to determine the volume of water sampled. Ten-minute tows were made simultaneously at the surface, middepth, and bottom, towing into the prevailing current. During slack tide, tows were conducted in an upstream direction. During all tows, boat engine speed was adjusted to approximately 2,000 rpm. At the end of each tow, organisms and detritus were washed into the removable codend of the plankton net, poured into a sample container, and preserved in 10 percent formalin.

Preserved ichthyoplankton samples were transported to the Lawler, Matusky & Skelly Engineers (LMS) laboratory for sample processing, whereas macrozooplankton samples were processed at the NYU laboratory. At both laboratories, macrozooplankton, and ichthyoplankton were sorted from the sample debris, identified, and counted. During periods of high abundance, macrozooplankton samples and those ichthyoplankton samples containing a large number of bay anchovy eggs (more than about 4,000), were subsampled using a Folsom plankton splitter. Sample splits did not exceed 1/8 of the initial sample, and a minimum of 250 macrozooplankton or fish eggs were enumerated and identified per sample. Subsampling was not conducted for ichthyoplankton larvae or juveniles. In addition, the total lengths of up to 30 striped bass larvae and juveniles collected per sample were determined to the nearest 0.1 mm.

3.1.2.3 Water Quality Measurements

Upon completion of ichthyoplankton collections at each standard station, water quality measurements were made at two sampling depths (surface and bottom). Water temperature, dissolved oxygen, conductivity, and pH were measured according to standard methods (APHA 1971).

3.1.3 Analytical Procedures

The abundance of selected microzooplankton, macrozooplankton, and ichthyoplankton taxa in the vicinity of the Indian Point plant was determined as the ratio of the number of organisms in a sample to the total volume of river water sampled (density). Because the microzooplankton samples were subsampled to obtain counts, densities of microzooplankton taxa were determined according to the following formula (modified from APHA 1975):

$$\text{river density (number/liter)} = \frac{N}{C} \times \frac{S}{V}$$

where

N = number of organisms counted
S = volume of concentrated sample (ml)
C = volume of aliquots counted (ml)
V = volume of sample collected (liters)

For macrozooplankton and ichthyoplankton samples that were subsampled during processing, densities of macrozooplankton and fish eggs were determined according to the formula:

$$\text{density (number/1,000 m}^3) = \frac{N/P}{V} \times 1{,}000$$

where

N = number of organisms counted
P = proportion of sample that was processed
V = volume of sample collected (m^3)

Before density estimates were calculated, total volume estimates of water sampled for each collection were examined to identify possible aberrant flowmeter readings, as indicated by extremely high or low volume measurements. For this analysis, all volume estimates for ichthyoplankton samples collected at the seven standard river stations and samples collected at the three river transect stations (see Section 3.3) were combined and grouped by depth (surface, middepth, or bottom samples). Samples with volume estimates more than 3.09 standard deviations from the mean (corresponding to an alpha level of 0.002) were identified and excluded from subsequent data analysis. For ichthyoplankton standard station and river transect collections, a total of two samples were excluded from the surface group, three samples were excluded from the middepth group, and two samples were excluded from the bottom group.

3.2 ENTRAINMENT ABUNDANCE STUDY

3.2.1 Sampling Stations

Ichthyoplankton and macrozooplankton were collected at two intake stations and at two discharge stations at the Indian Point plant (Figure 3-2) to determine the abundance of selected taxa. Stations I2 and I3 were located at the intakes to Unit 2 and Unit 3, respectively; Station I2 was located in forebay 25 between the trash racks and the traveling screen, whereas Station I3 was located approximately 3 m in front of the Unit 3 intake structure at forebay 34. Station D1 was located upstream of the point where discharge water from Unit 3 enters the common discharge canal, and Station D2 was located in the common discharge canal for Units 2 and 3.

3.2.2 Sampling Procedures

3.2.2.1 Sample Collection

Entrainment abundance samples were collected weekly from May through July, and monthly from August through December. Samples were collected at Stations I2, D1, and D2 when Unit 2 was online, and at Stations I3 and D2 when Unit 3 was online. Dates on which sampling was conducted at each station, together with unit operation information for those dates, are presented in Table 3-2.

Samples were collected from the surface, middepth, and bottom at the intake stations and discharge Station D1 using 571 μm mesh (Number 0) conical plankton nets (0.5 m diameter opening); however, sampling at discharge Station D2 was conducted only at the surface because of high water velocities and the consequent inability to maintain sampling frames at this location. Due to space limitations, plankton nets used at the intake stations were 1.2 m long, whereas nets used at the discharge station were 1.8 m long. Duplicate samples were collected at each sampling depth per station; samples collected from one

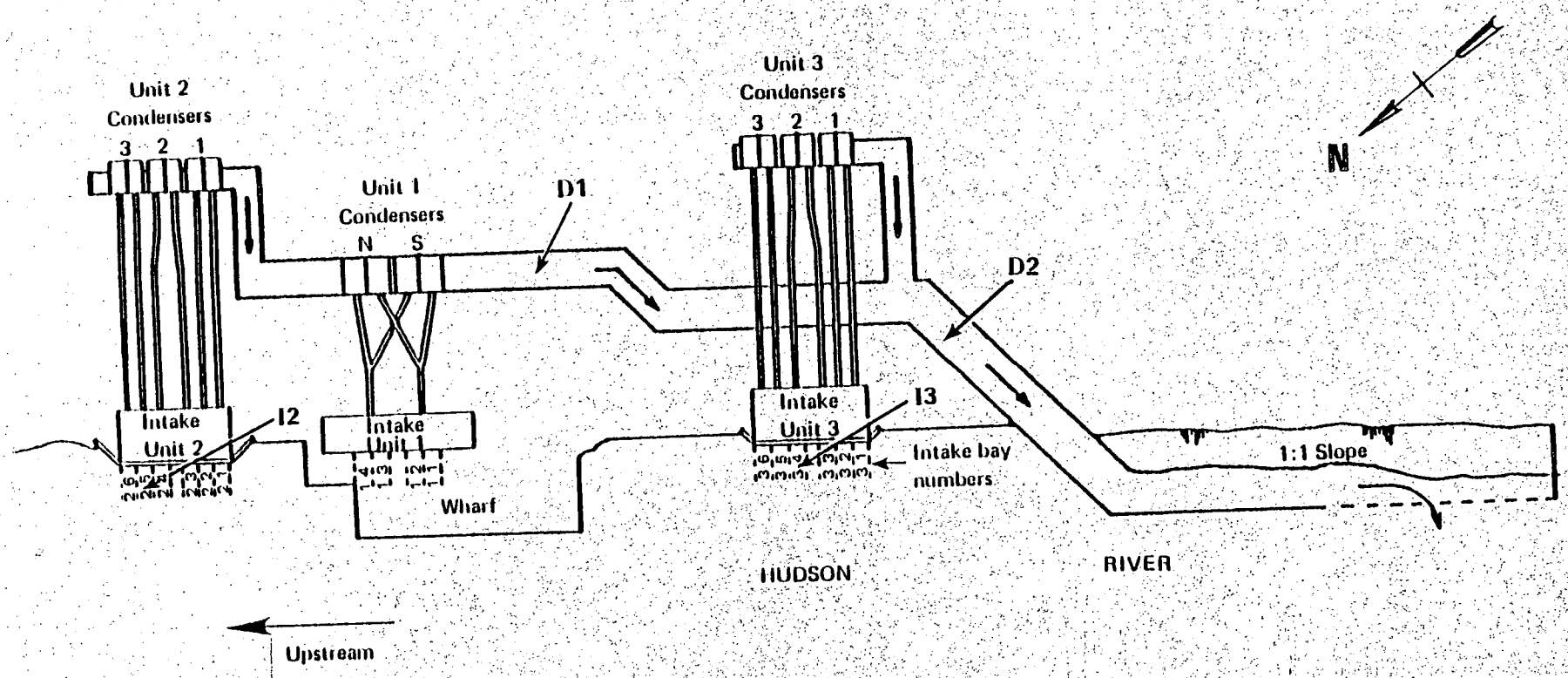

Figure 3-2. Diagram of the Indian Point Generating Station circulating water system showing location of sampling stations (adapted from Con Edison 1977b).

TABLE 3-2 SAMPLING DATES, SAMPLING STATIONS, AND UNIT OPERATION DURING THE ENTRAINMENT ABUNDANCE STUDY AT THE INDIAN POINT GENERATING STATION, 1977

Sampling Date	Units Operating	Sampling Stations
3 MAY	Unit 3	I3, D2
10 MAY	Unit 3	I3, D2
17 MAY[a]	Unit 2 and Unit 3	I3, I2, D1, D2
24 MAY[a]	Unit 2 and Unit 3	I3, I2, D1, D2
31 MAY	Unit 2 and Unit 3	I3, I2, D1, D2
7 JUN[a]	Unit 2 and Unit 3	I3, I2, D1, D2
14 JUN	Unit 2 and Unit 3	I3, I2, D1, D2
21 JUN	Unit 2 and Unit 3	I3, I2, D1, D2
28 JUN	Unit 2 and Unit 3	I3, I2, D1, D2
5 JUL	Unit 3	I3, D2
12 JUL	Unit 3	I3, D1, D2
19 JUL	Unit 3	I3, D1, D2
26 JUL	Unit 3	I3, D1, D2
16 AUG	Unit 2 and Unit 3	I3, I2, D1, D2
12 SEP	Unit 2 and Unit 3	I3, I2, D1, D2
25 OCT	Unit 2	I2, D1, D2
15 NOV	Unit 2	I2, D1, D2
6 DEC	Unit 2	I2, D1, D2

(a) Collections for ichthyoplankton during these sampling weeks was extended to 48 hours.

net were analyzed for ichthyoplankton, whereas samples collected with the other net were analyzed for macrozooplankton. The nets at Stations I2, I3, and D1 were mounted on a vertical frame that was raised and lowered by a pulley mounted on the top of the frame (Figure 3-3). Each net was equipped with a flowmeter mounted in the center of the net mouth to determine the volume of water sampled; TSK flowmeters were used to determine sample volumes at the intake stations, whereas General Oceanics digital flowmeters (Model 2030) were used for volume determinations at discharge stations.

Five-minute samples were collected simultaneously at each station with each net once every 2 hours throughout a 12-hour sampling effort, resulting in a total of 21 samples at Stations I2, I3, and D1 (7 collection periods, 3 sampling depths). Each 12-hour sampling effort was scheduled so that the fourth collection period occurred approximately at dusk. On three occasions during the 1977 sampling season, sample collection for ichthyoplankton was extended beyond the scheduled 12-hour sampling effort (Table 3-2). During these sampling efforts, sampling was conducted every 2 hours over a 48-hour period to correspond with simultaneous collections at the river transect stations (Section 3.3). After collection, organisms and detritus were carefully washed from the nets into a removable codend and preserved in 10 percent formalin.

3.2.2.2 Sample Sorting and Processing

Ichthyoplankton samples were transported to the LMS laboratory for sample processing; macrozooplankton samples were processed at the NYU laboratory. Macrozooplankton and ichthyoplankton were sorted from the samples, identified, and counted. During periods of high abundance, macrozooplankton samples and ichthyoplankton samples containing large numbers of bay anchovy eggs (more than about 4,000) were subsampled using a Folsom plankton splitter. Sample splits did not exceed 1/8 of the initial sample, and a minimum of 250 macrozooplankton or fish eggs were enumerated and identified per sample. In addition, the total lengths of up to 30 striped bass per sample were determined to the nearest 0.1 mm.

3.2.2.3 Water Quality Measurements

Measurements of surface water temperature were conducted in conjunction with all sample collections. Individual water temperature measurements were obtained at all four plant stations.

3.2.3 Analytical Procedures

Entrainment abundance was examined for five selected taxa: striped bass (all early developmental stages), *Gammarus* spp., *Neomysis americana*, *Monoculodes edwardsi*, and *Chaoborus punctipennis*. The abundance of these organisms collected at each station was determined as the ratio of the number of organisms in each sample to the volume of water sampled (number per 1,000 m^3). For samples that were subsampled during processing, abundance was determined by calculating densities according to the formula:

$$\text{density (number/1,000 m}^3) = \frac{N/P}{V} \times 1{,}000$$

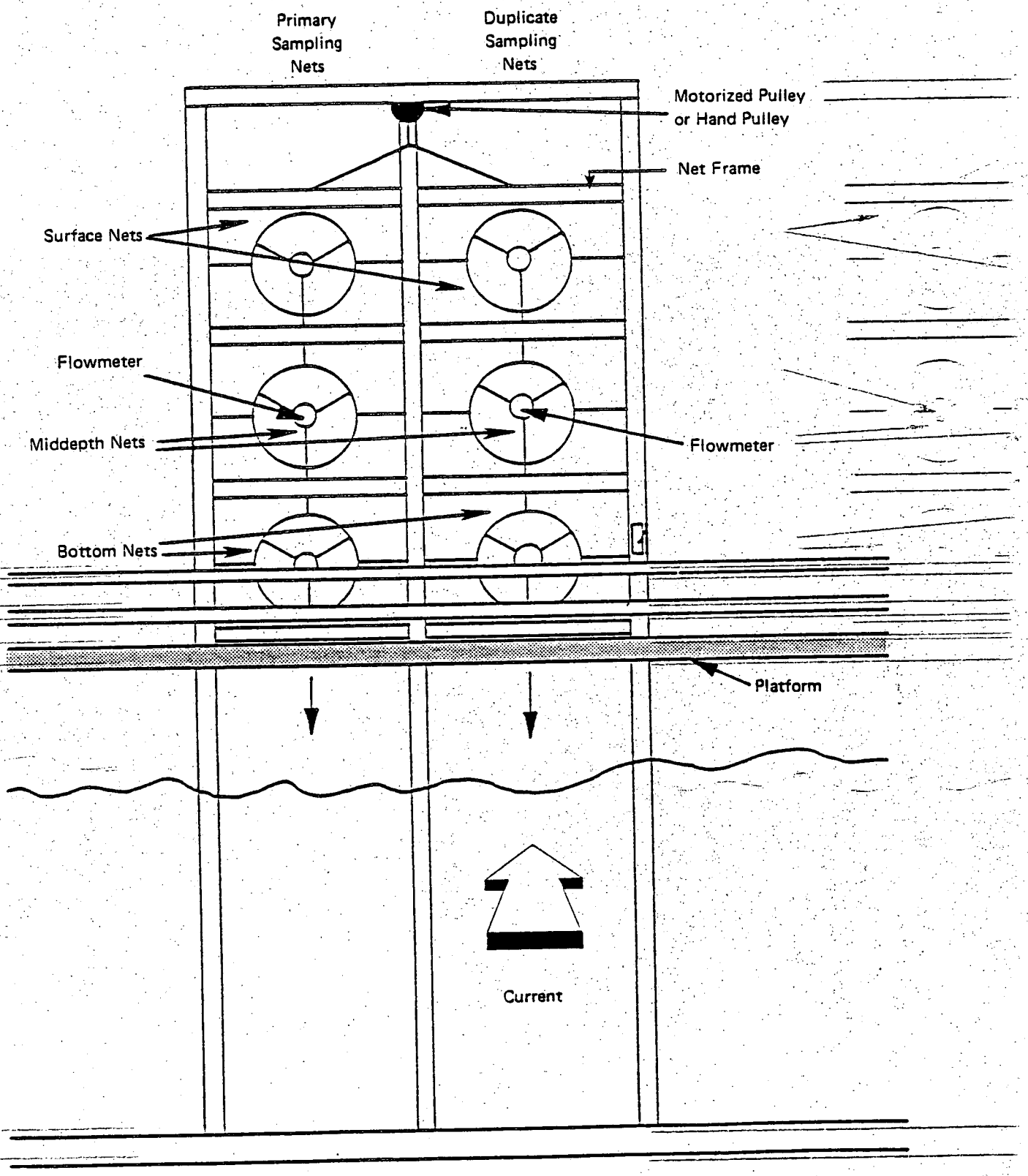

Figure 3-3. Stationary net sampling apparatus used to collect samples at Stations I2, I3, and D1 during the entrainment abundance study conducted at the Indian Point Generating Station, 1977.

where

N = number of organisms counted
P = proportion of sample that was processed
V = volume of sample collected (m^3)

Before densities were calculated, estimates of the volumes of water sampled were examined to identify possible aberrant flowmeter readings, as indicated by extremely high or low volume measurements. At the intake stations, separate analyses were conducted for each sampling depth whereas at the discharge stations, sample volumes for all sampling depths were combined before analysis because of the higher velocities and uniform flow of the water in the discharge canal. Samples with volume estimates more than 3.09 standard deviations from the mean were identified for each group and excluded from subsequent data analysis. In addition, samples collected at all stations with volumes less than 1.77 m^3 (corresponding to a velocity of 0.1 ft per sec) were excluded to eliminate density estimates based on potentially inaccurate flowmeter readings at low velocities. A total of 11 samples were excluded from the Station I3 collections, 6 samples were excluded from the Station I2 collections, 10 samples were excluded from the Station D1 collections, and 2 samples were excluded from the Station D2 collections as a result of this analysis.

3.3 RIVER TRANSECT STUDY

3.3.1 Sampling Procedures

Transect sampling was conducted weekly from May through July at three river stations paralleling the Indian Point plant (Figure 3-4). The locations of the midchannel transect (Station RC) and eastchannel transect (Station RD) were consistent with the locations of standard Stations C and D, respectively (Figure 3-1). The third transect (Station RW) was located along the west shore. At Stations RC and RD sampling was conducted along a depth contour of 15.2 m; the depth at Station RW was approximately 10.7 m.

Ichthyoplankton tows were made simultaneously along the three transects with three sampling vessels (one positioned on each transect). Each vessel was rigged to sample concurrently at the surface, middepth, and bottom with 571-µm mesh (Number 0) plankton nets (0.5-m diameter opening, 3.7 m long). All tows were of 10-minute duration and were made into the prevailing current; during slack tidal conditions, tows were made upstream against the net river flow. To maintain comparability relative to plant entrainment abundance studies, transect sampling (May through July) was scheduled to correspond with entrainment sampling (Section 3.2.2.1). At start times consistent with entrainment collections, tows were made along each transect once every 2 hours over a 12-hour period; the fourth collection period occurred approximately at dusk. On the three sampling efforts when ichthyoplankton sampling at plant stations was extended to 48 hours (i.e., 17 May, 24 May, and 7 June), concurrent ichthyoplankton sampling was also conducted for 48 hours at river transect stations.

Each sampling net was equipped with a standard vane General Oceanics digital flowmeter (Model 2030) to determine the volume of water sampled. After collection, organisms and detritus were carefully washed from the nets into

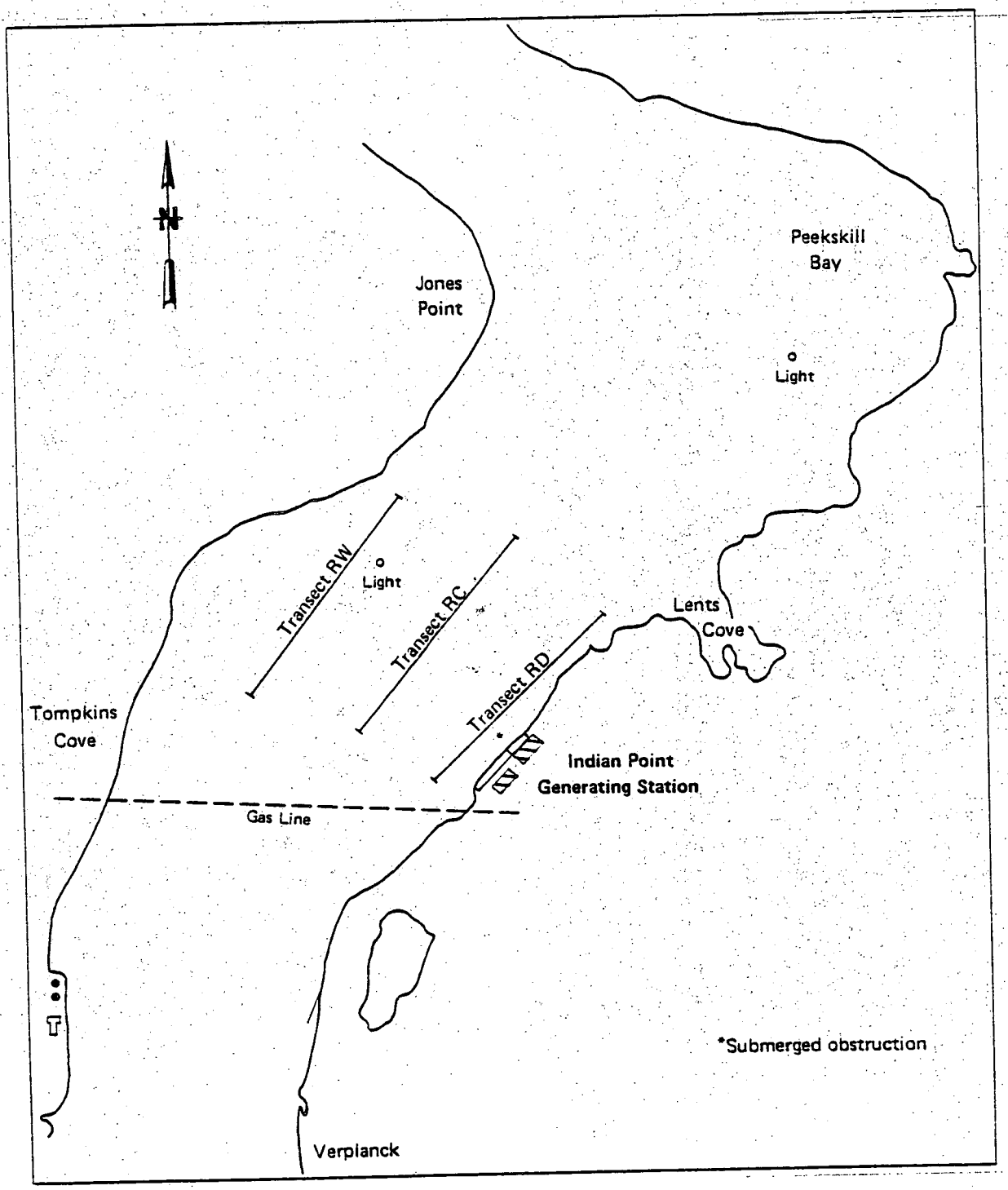

Figure 3-4. River transect station locations in the vicinity of the Indian Point Generating Station, 1977.

removable codend collection cups. The sample contents were then poured into sample containers and preserved in 10 percent formalin. Preserved samples were subsequently transported to the laboratory contractor (LMS) where ichthyoplankton in the samples were sorted, identified, and counted. Total lengths of up to 30 striped bass per sample were measured to the nearest 0.1 mm.

At the end of each set of transect tows, water quality measurements were recorded at the east shore transect (Station RD) at the surface and bottom sampling depths. Water temperature, dissolved oxygen, and conductivity, were measured according to standard methods (APHA 1971).

3.3.2 Analytical Procedures

Consistent with the procedures for estimating entrainment densities (Section 3.2.3.1), densities for striped bass life stages collected in transect samples were calculated as the ratio of the number of organisms collected in each sample to the volume of water sampled (number per 1,000 m^3).

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APPENDIX A

WATER QUALITY DATA, ENTRAINMENT AND NEAR FIELD RIVER STUDIES, INDIAN POINT GENERATING STATION, 1977

APPENDIX A TABLES

Title	Number
A.1 NEAR FIELD RIVER STUDY	
Water Temperature (Day)	A.1-1
Water Temperature (Night)	A.1-2
Salinity (Day)	A.1-3
Salinity (Night)	A.1-4
Dissolved Oxygen (Day)	A.1-5
Dissolved Oxygen (Night)	A.1-6
Conductivity (Day)	A.1-7
Conductivity (Night)	A.1-8
pH	A.1-9
A.2 ENTRAINMENT ABUNDANCE STUDY	
Average Water Temperature	A.2-1
A.3 RIVER TRANSECT STUDY	
Average Temperature, Dissolved Oxygen, Conductivity, and Salinity	A.3-1

TABLE A.1-1 WATER TEMPERATURE (C) RECORDED DURING ICHTHYOPLANKTON SAMPLING AT STANDARD RIVER STATIONS DURING THE DAY IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
				SURFACE				
12 APR 77	6.8	6.3	6.5	7.3	6.7	7.7	6.7	6.9
2 MAY 77	12.4	13.0	12.2	12.9	12.8	13.1	12.8	12.7
9 MAY 77	12.1	12.0	12.1	12.5	13.5	13.1	13.2	12.6
16 MAY 77	14.3	15.5	13.4	14.3	14.8	13.9	14.6	14.4
23 MAY 77	15.9	16.5	16.6	17.2	17.0	—	17.5	16.8
2 JUN 77	19.4	19.2	20.2	20.6	20.8	21.0	20.6	20.3
6 JUN 77	19.6	19.6	20.0	22.0	21.3	20.6	21.0	20.6
13 JUN 77	20.6	20.0	19.4	19.8	20.9	20.0	19.9	20.1
23 JUN 77	21.4	21.7	22.5	21.8	23.6	22.5	23.3	22.4
27 JUN 77	23.3	23.1	23.8	23.7	25.7	23.9	24.3	24.0
7 JUL 77	24.3	24.0	24.9	24.1	25.0	25.4	25.7	24.8
11 JUL 77	25.3	25.7	25.4	—	25.0	—	25.5	25.4
18 JUL 77	26.5	26.2	27.0	28.0	26.8	26.2	26.6	26.8
25 JUL 77	26.6	26.7	26.9	26.8	28.0	26.5	27.7	27.0
15 AUG 77	26.5	—	27.1	—	27.4	27.8	27.5	27.3
14 SEP 77	24.6	24.2	24.6	26.5	24.3	24.0	23.9	24.6
13 OCT 77	14.6	14.3	14.3	18.0	14.6	15.7	14.9	15.2
14 NOV 77	11.3	9.5	9.3	11.2	9.6	9.4	9.7	10.0
5 DEC 77	4.7	4.7	4.8	4.5	5.6	4.9	5.2	4.9
MEAN	18.4	17.9	18.5	18.3	19.1	18.6	19.0	18.5
				BOTTOM				
12 APR 77	6.7	6.3	6.5	6.8	6.5	7.0	6.6	6.6
2 MAY 77	11.9	12.2	12.2	12.5	12.7	12.6	12.8	12.4
9 MAY 77	12.2	11.9	12.3	12.4	12.3	13.0	13.0	12.4
16 MAY 77	13.2	14.0	13.2	14.2	14.4	13.7	13.8	13.8
23 MAY 77	15.9	15.9	15.8	16.0	16.2	17.7	16.6	16.3
2 JUN 77	19.0	18.9	12.0	20.3	20.0	19.6	20.3	18.6
6 JUN 77	19.7	19.6	20.0	20.6	20.2	20.4	20.3	20.1
13 JUN 77	19.5	19.2	19.3	19.1	19.6	19.6	19.6	19.4
23 JUN 77	21.8	21.8	21.8	21.8	21.6	22.2	22.6	21.9
27 JUN 77	—	—	23.3	23.9	23.3	23.3	23.0	23.4
7 JUL 77	24.4	24.2	24.6	24.2	24.8	25.0	25.1	24.6
11 JUL 77	24.6	25.0	25.1	24.6	24.9	25.1	25.1	24.9
18 JUL 77	25.7	25.7	25.9	27.1	26.7	26.2	25.9	26.2
25 JUL 77	27.0	26.7	27.2	26.9	26.9	27.0	26.7	26.9
15 AUG 77	26.4	26.4	26.6	27.0	26.8	26.4	26.8	26.6
14 SEP 77	24.3	24.2	24.4	25.6	24.0	24.0	23.8	24.3
13 OCT 77	14.6	14.2	14.7	14.7	14.7	15.4	14.7	14.7
14 NOV 77	9.4	9.3	9.4	9.8	9.6	9.4	9.5	9.5
5 DEC 77	4.5	4.7	4.8	4.6	5.1	4.9	5.2	4.8
MEAN	17.8	17.8	17.8	18.5	18.4	18.9	18.5	18.3

Note: Dashes (—) indicate data not available

TABLE A.1-2 WATER TEMPERATURE (C) RECORDED DURING ICHTHYOPLANKTON SAMPLING AT STANDARD RIVER STATIONS DURING THE NIGHT IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
				SURFACE				
26 APR 77	10.9	10.5	10.4	10.4	10.6	10.3	10.5	10.5
5 MAY 77	12.7	11.9	12.3	13.9	12.3	12.8	13.2	12.7
12 MAY 77	13.0	12.9	12.7	12.7	13.9	12.8	13.6	13.1
2 JUN 77	19.7	19.8	19.9	20.6	19.9	20.3	19.9	20.0
16 JUN 77	22.2	19.4	--	—	—	—	—	20.8
23 JUN 77	22.3	22.0	22.2	22.4	24.4	23.7	23.1	22.9
30 JUN 77	23.0	23.1	24.3	24.8	24.2	24.3	24.6	24.0
7 JUL 77	24.7	24.5	25.2	24.8	25.0	25.7	25.5	25.1
14 JUL 77	25.0	--	25.3	25.5	25.1	25.8	25.1	25.3
21 JUL 77	26.8	26.6	27.3	26.9	28.6	28.2	28.1	27.5
28 JUL 77	26.5	25.9	25.8	26.2	25.7	25.5	25.8	25.9
25 AUG 77	26.0	26.2	25.9	26.2	25.4	25.3	25.4	25.8
15 SEP 77	23.9	23.8	23.7	25.3	25.4	24.6	24.0	24.4
20 OCT 77	11.8	11.7	11.6	15.0	11.8	12.3	12.2	12.3
16 NOV 77	9.8	9.8	9.8	9.4	9.4	9.8	9.8	9.7
6 DEC 77	3.9	4.0	3.8	10.8	4.2	4.4	4.9	5.1
MEAN	18.9	18.1	18.7	19.7	19.1	19.1	19.0	18.9
				BOTTOM				
26 APR 77	10.9	10.5	10.4	10.4	10.6	10.4	10.5	10.5
5 MAY 77	11.8	11.7	12.1	12.5	11.8	12.6	12.9	12.2
12 MAY 77	12.1	12.2	12.6	12.7	12.7	12.6	13.0	12.6
2 JUN 77	20.0	19.8	20.0	20.6	20.0	20.2	19.9	20.1
16 JUN 77	20.2	19.7	—	—	—	—	—	20.0
23 JUN 77	22.4	22.1	22.5	22.5	22.9	22.3	23.0	22.5
30 JUN 77	23.0	23.0	23.7	24.1	24.3	24.4	24.5	23.9
7 JUL 77	24.8	24.8	25.2	24.9	25.2	24.9	25.0	25.0
14 JUL 77	25.3	24.8	25.0	24.6	24.8	25.4	25.2	25.0
21 JUL 77	27.0	26.8	27.4	26.8	27.6	27.9	27.8	27.3
28 JUL 77	26.5	26.4	26.5	26.2	25.7	25.4	25.5	26.0
25 AUG 77	25.4	25.4	25.8	25.4	25.2	25.0	25.2	25.3
15 SEP 77	24.0	23.7	24.0	24.1	24.2	24.3	24.1	24.1
20 OCT 77	11.4	11.6	11.7	11.7	11.6	11.8	11.9	11.7
16 NOV 77	10.0	9.8	9.7	9.2	9.5	9.8	9.8	9.7
6 DEC 77	3.8	4.2	3.9	5.4	4.2	4.4	4.8	4.4
MEAN	18.7	18.9	18.7	18.7	18.7	18.8	18.9	18.8

Note: Dashes (--) indicate data not available.

TABLE A.1-3 SALINITY (ppt) RECORDED DURING ICHTHYOPLANKTON SAMPLING AT STANDARD RIVER STATIONS DURING THE DAY IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
				SURFACE				
12 APR 77	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1
2 MAY 77	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
9 MAY 77	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.2
16 MAY 77	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
23 MAY 77	0.2	0.2	0.2	0.2	0.2	—	0.2	0.2
2 JUN 77	1.0	0.8	1.4	1.5	2.0	2.5	2.2	1.6
6 JUN 77	0.7	0.7	0.9	0.9	1.2	—	1.4	1.0
13 JUN 77	2.1	1.8	1.8	0.9	1.7	2.9	2.5	2.0
23 JUN 77	1.7	2.2	1.8	2.2	1.9	2.4	2.2	2.1
27 JUN 77	2.0	1.5	2.6	2.0	2.8	3.1	2.7	2.4
7 JUL 77	1.2	1.1	1.7	1.3	1.8	2.7	2.4	1.7
11 JUL 77	2.7	2.8	2.8	—	2.1	—	3.3	2.7
18 JUL 77	3.3	2.7	3.6	4.1	3.9	3.9	3.6	3.6
25 JUL 77	3.3	3.0	3.7	3.4	4.2	4.5	4.3	3.8
15 AUG 77	0.4	—	0.4	—	0.4	0.5	0.5	0.4
14 SEP 77	5.5	5.1	5.9	6.1	6.4	7.0	6.9	6.1
13 OCT 77	0.3	0.4	0.4	0.4	0.4	0.7	0.6	0.5
14 NOV 77	0.5	0.4	0.6	0.3	0.4	0.3	0.4	0.4
5 DEC 77	0.4	0.5	0.4	0.4	0.4	0.4	0.3	0.4
MEAN	1.4	1.3	1.5	1.4	1.6	2.0	1.8	1.6
				BOTTOM				
12 APR 77	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1
2 MAY 77	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
9 MAY 77	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.2
16 MAY 77	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
23 MAY 77	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
2 JUN 77	1.0	0.8	2.1	1.6	2.3	3.4	2.3	1.9
6 JUN 77	0.7	0.7	1.0	0.9	—	2.0	1.5	1.1
13 JUN 77	2.3	2.2	3.0	4.0	3.1	3.3	3.6	3.1
23 JUN 77	2.3	2.2	2.3	2.2	2.0	3.3	3.1	2.5
27 JUN 77	—	—	3.2	2.2	3.6	4.6	4.2	3.6
7 JUL 77	1.5	1.2	1.8	1.3	1.9	3.6	2.8	2.0
11 JUL 77	2.7	3.0	3.1	2.3	2.8	4.8	3.9	3.2
18 JUL 77	3.6	3.4	3.8	4.0	4.4	4.2	3.8	3.9
25 JUL 77	3.8	3.1	4.2	3.4	4.8	5.5	5.2	4.3
15 AUG 77	0.4	0.4	0.4	0.4	0.5	0.6	0.5	0.5
14 SEP 77	5.6	5.5	6.2	5.6	6.5	7.3	6.9	6.2
13 OCT 77	0.3	0.4	0.3	0.5	0.4	1.2	0.8	0.6
14 NOV 77	0.5	0.3	0.6	0.4	0.3	0.3	0.3	0.4
5 DEC 77	0.4	0.4	0.3	0.4	0.3	0.3	0.4	0.4
MEAN	1.4	1.4	1.8	1.6	1.9	2.4	2.1	1.8

Note: Dashes (—) indicate data not available

TABLE A.1-4 SALINITY (ppt) RECORDED DURING ICHTHYOPLANKTON SAMPLING AT STANDARD RIVER STATIONS DURING THE NIGHT IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
				SURFACE				
26 APR 77	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2
5 MAY 77	0.3	0.2	0.2	0.3	0.2	0.1	0.2	0.2
12 MAY 77	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
2 JUN 77	1.3	1.3	1.2	1.6	1.5	1.4	1.4	1.4
16 JUN 77	2.7	1.7	—	—	—	—	—	2.2
23 JUN 77	2.2	1.7	2.4	2.1	2.4	2.9	3.2	2.4
30 JUN 77	1.2	1.2	1.7	1.9	2.2	3.2	2.9	2.0
7 JUL 77	1.8	1.6	2.2	1.8	2.1	2.9	2.6	2.1
14 JUL 77	3.1	—	4.1	3.9	3.2	3.5	3.0	3.5
21 JUL 77	2.7	2.7	3.5	3.1	3.5	4.3	4.3	3.4
28 JUL 77	3.2	2.8	3.6	4.2	4.7	5.2	5.1	4.1
25 AUG 77	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4
15 SEP 77	4.7	4.5	4.7	5.5	5.1	5.6	5.3	5.1
20 OCT 77	0.4	0.4	0.4	0.2	0.1	0.5	0.7	0.4
16 NOV 77	0.4	0.4	0.4	0.4	0.3	0.4	0.4	0.4
6 DEC 77	0.3	0.3	0.4	0.3	0.4	0.4	0.4	0.4
MEAN	1.6	1.3	1.7	1.7	1.8	2.1	2.0	1.7
				BOTTOM				
26 APR 77	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
5 MAY 77	0.2	0.2	0.2	0.2	—	0.2	0.2	0.2
12 MAY 77	—	0.2	0.2	0.2	0.2	0.2	0.2	0.2
2 JUN 77	1.5	1.3	1.5	1.7	1.6	1.4	1.5	1.5
16 JUN 77	2.4	2.9	—	—	—	—	—	2.7
23 JUN 77	2.2	2.0	2.8	2.1	3.1	4.3	3.6	2.9
30 JUN 77	1.4	1.2	2.2	1.9	3.4	3.6	3.4	2.4
7 JUL 77	2.1	1.9	2.8	2.0	3.2	4.2	3.6	2.8
14 JUL 77	4.6	4.5	5.7	6.9	7.0	4.8	4.5	5.3
21 JUL 77	3.3	3.1	3.7	3.0	4.0	5.0	4.6	3.8
28 JUL 77	3.9	3.1	4.1	4.6	5.2	6.1	5.7	4.7
25 AUG 77	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.4
15 SEP 77	4.9	4.8	5.0	5.5	5.3	5.9	5.9	5.3
20 OCT 77	0.3	0.4	0.3	0.3	0.6	0.3	0.4	0.4
16 NOV 77	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3
6 DEC 77	0.4	0.4	0.4	0.2	0.4	0.4	0.4	0.4
MEAN	1.9	1.8	2.0	2.0	2.5	2.5	2.3	2.1

Note: Dashes (—) indicate data not available.

TABLE A.1-5 DISSOLVED OXYGEN (ppm) RECORDED DURING ICHTHYOPLANKTON SAMPLING AT STANDARD RIVER STATIONS DURING THE DAY IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
				SURFACE				
12 APR 77	11.2	11.0	11.0	11.8	11.4	11.2	11.2	11.3
2 MAY 77	9.6	9.4	9.8	9.5	10.0	9.5	9.8	9.7
9 MAY 77	9.8	9.3	--	9.8	9.3	9.4	8.9	9.4
16 MAY 77	9.4	9.8	9.2	9.1	9.1	9.5	9.8	9.4
23 MAY 77	8.6	9.2	8.7	9.0	8.6	—	9.5	8.9
2 JUN 77	8.7	8.7	8.7	9.1	9.0	8.8	8.8	8.8
6 JUN 77	7.8	8.8	7.9	8.7	8.0	--	7.7	8.2
13 JUN 77	7.5	7.5	7.2	7.4	6.8	6.9	7.4	7.2
23 JUN 77	6.9	6.6	6.8	7.4	7.3	7.0	7.0	7.0
27 JUN 77	7.6	7.6	7.2	7.9	7.2	8.1	8.2	7.7
7 JUL 77	6.4	6.5	5.9	5.8	6.8	5.9	6.0	6.2
11 JUL 77	6.6	5.9	6.7	—	6.2	—	6.7	6.4
18 JUL 77	6.1	6.0	5.7	6.2	6.6	6.0	5.6	6.0
25 JUL 77	5.9	5.6	6.1	6.5	6.1	6.3	6.2	6.1
15 AUG 77	5.5	—	4.6	—	5.8	5.8	5.3	5.4
14 SEP 77	5.7	6.0	6.2	6.2	6.3	6.4	6.1	6.1
13 OCT 77	8.5	9.0	8.8	10.4	9.1	8.5	8.7	9.0
14 NOV 77	9.5	10.0	10.5	10.3	10.6	10.7	10.7	10.3
5 DEC 77	9.4	11.7	12.6	12.0	12.0	12.0	11.6	11.6
MEAN	7.9	8.3	8.0	8.7	8.2	8.3	8.2	8.2
				BOTTOM				
12 APR 77	11.0	11.8	11.4	11.4	11.2	11.8	11.4	11.4
2 MAY 77	10.2	9.0	9.6	10.2	9.6	9.0	—	9.6
9 MAY 77	9.5	9.7	—	9.6	9.4	9.8	9.3	9.6
16 MAY 77	9.0	9.3	9.8	9.3	9.3	9.5	9.6	9.4
23 MAY 77	9.0	—	8.9	9.0	—	8.7	8.8	8.9
2 JUN 77	7.8	8.9	8.9	8.7	8.7	7.6	7.6	8.3
6 JUN 77	7.8	7.6	7.1	7.9	—	7.5	7.7	7.6
13 JUN 77	6.7	6.9	6.8	7.1	7.1	7.2	6.6	6.9
23 JUN 77	6.7	6.7	7.4	7.4	6.4	7.4	6.9	7.0
27 JUN 77	—	—	7.7	6.8	7.5	7.2	7.3	7.3
7 JUL 77	5.7	5.8	5.1	5.7	5.7	5.7	6.2	5.7
11 JUL 77	5.4	5.3	4.7	5.1	5.9	6.8	4.7	5.4
18 JUL 77	5.1	4.7	5.0	5.1	5.3	5.7	4.8	5.1
25 JUL 77	6.2	5.7	5.6	5.7	5.5	5.0	5.3	5.6
15 AUG 77	5.0	4.8	4.8	5.0	4.8	7.0	5.2	5.2
14 SEP 77	5.6	5.6	5.8	6.1	5.6	6.1	6.1	5.8
13 OCT 77	9.3	8.6	9.0	9.4	8.4	8.0	8.3	8.7
14 NOV 77	10.4	10.0	10.6	10.6	10.8	11.0	10.6	10.6
5 DEC 77	9.0	12.9	11.6	11.8	12.3	11.5	11.3	11.5
MEAN	7.7	7.8	7.8	8.0	7.9	8.0	7.6	7.8

Note: Dashes (—) indicate data not available

TABLE A.1-6 DISSOLVED OXYGEN (ppm) RECORDED DURING ICHTHYOPLANKTON SAMPLING AT STANDARD RIVER STATIONS DURING THE NIGHT IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
				SURFACE				
26 APR 77	10.0	10.4	10.0	9.8	10.6	10.5	10.0	10.2
5 MAY 77	11.0	9.1	8.7	5.0	6.5	8.9	10.2	8.5
12 MAY 77	10.0	10.0	9.8	9.7	9.9	9.8	9.9	9.9
2 JUN 77	9.0	8.4	8.3	8.0	8.5	8.5	8.6	8.5
16 JUN 77	—	—	—	—	—	—	—	—
23 JUN 77	6.9	7.8	7.0	7.9	7.8	7.4	7.8	7.5
30 JUN 77	6.5	6.9	6.8	6.8	7.6	6.9	7.1	6.9
7 JUL 77	5.6	5.7	5.5	6.1	6.2	7.4	6.2	6.1
14 JUL 77	6.2	—	6.0	5.4	5.8	5.7	5.5	5.8
21 JUL 77	5.9	5.8	5.1	4.7	5.5	5.7	5.8	5.5
28 JUL 77	6.2	5.7	6.1	5.7	—	6.2	6.5	6.1
25 AUG 77	—	6.5	6.3	6.0	6.7	7.1	7.0	6.6
15 SEP 77	6.9	6.0	6.8	6.4	6.4	6.6	6.5	6.5
20 OCT 77	9.5	9.7	9.8	9.6	9.9	9.4	9.3	9.6
16 NOV 77	9.3	10.0	9.5	9.9	9.6	10.2	9.6	9.7
6 DEC 77	12.5	11.8	12.1	11.4	11.0	12.1	11.7	11.8
MEAN	8.3	8.1	7.9	7.5	8.0	8.2	8.1	8.0
				BOTTOM				
5 MAY 77	8.7	8.7	8.7	8.5	—	9.6	9.4	8.9
12 MAY 77	—	10.0	9.0	10.9	—	9.5	12.0	10.3
2 JUN 77	8.3	8.0	8.4	7.9	7.9	8.7	8.1	8.2
16 JUN 77	—	—	—	—	—	—	—	—
23 JUN 77	6.6	7.1	6.5	6.8	7.5	9.1	8.4	7.4
30 JUN 77	6.9	6.9	6.8	6.8	6.4	6.7	6.6	6.7
7 JUL 77	5.4	5.9	6.1	6.0	6.5	5.8	5.9	5.9
14 JUL 77	5.5	5.0	4.8	5.5	4.3	4.9	5.3	5.0
21 JUL 77	5.1	5.9	4.6	5.1	4.7	4.8	5.0	5.0
28 JUL 77	5.7	—	5.6	6.0	5.6	6.1	6.6	5.9
25 AUG 77	6.2	6.0	6.2	6.0	6.3	6.8	6.4	6.3
15 SEP 77	6.2	5.6	6.0	5.6	6.2	6.2	6.0	6.0
20 OCT 77	10.0	9.8	10.1	9.5	9.5	10.1	9.3	9.8
16 NOV 77	9.7	9.8	10.2	10.2	9.5	10.2	9.8	9.9
6 DEC 77	12.2	11.6	12.1	11.8	12.1	11.8	11.6	11.9
MEAN	7.6	7.7	7.7	7.8	7.4	8.1	8.0	7.8

Note: Dashes (—) indicate data not available.

TABLE A.1-7 CONDUCTIVITY (µmho) RECORDED DURING ICHTHYOPLANKTON SAMPLING AT STANDARD RIVER STATIONS DURING THE DAY IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
				SURFACE				
12 APR 77	40.0	80.0	100.0	20.0	100.0	120.0	120.0	82.9
2 MAY 77	350.0	340.0	300.0	320.0	360.0	340.0	320.0	332.9
9 MAY 77	380.0	350.0	360.0	320.0	340.0	320.0	380.0	350.0
16 MAY 77	320.0	250.0	280.0	250.0	240.0	250.0	240.0	261.4
23 MAY 77	330.0	320.0	320.0	290.0	380.0	340.0	350.0	332.9
2 JUN 77	1680.0	1320.0	2360.0	2680.0	3500.0	4300.0	3720.0	2794.3
6 JUN 77	1280.0	1180.0	1580.0	1600.0	2150.0	—	2450.0	1706.7
13 JUN 77	3580.0	3150.0	3040.0	1500.0	3000.0	4760.0	4190.0	3317.1
23 JUN 77	3020.0	3780.0	3300.0	3890.0	3550.0	4250.0	3990.0	3682.9
27 JUN 77	3600.0	2840.0	4800.0	3600.0	5200.0	5500.0	4980.0	4360.0
7 JUL 77	2250.0	2120.0	3150.0	2420.0	3500.0	5000.0	4500.0	3277.1
11 JUL 77	5080.0	5320.0	5180.0	3960.0	4020.0	6020.0	6100.0	5097.1
18 JUL 77	6280.0	5150.0	6800.0	7950.0	7400.0	7300.0	6800.0	6811.4
25 JUL 77	6200.0	5800.0	7040.0	6460.0	8000.0	8350.0	8200.0	7150.0
15 AUG 77	738.0	682.0	825.0	900.0	915.0	1025.0	1000.0	869.3
14 SEP 77	9700.0	9000.0	10400.0	11020.0	11000.0	11960.0	11720.0	10685.7
13 OCT 77	530.0	600.0	700.0	750.0	660.0	1200.0	1020.0	760.0
14 NOV 77	680.0	600.0	780.0	500.0	500.0	430.0	500.0	570.0
5 DEC 77	520.0	550.0	500.0	500.0	500.0	500.0	380.0	492.9
MEAN	2450.4	2285.9	2727.1	2575.3	2911.3	3442.5	3208.4	2795.3
				BOTTOM				
12 APR 77	50.0	20.0	80.0	50.0	80.0	120.0	50.0	64.3
2 MAY 77	320.0	300.0	320.0	300.0	360.0	300.0	300.0	314.3
9 MAY 77	380.0	280.0	380.0	280.0	280.0	320.0	300.0	317.1
16 MAY 77	340.0	280.0	250.0	250.0	220.0	220.0	220.0	254.3
23 MAY 77	300.0	320.0	300.0	290.0	340.0	290.0	350.0	312.9
2 JUN 77	1680.0	1360.0	2900.0	2700.0	3900.0	5600.0	3900.0	3148.6
6 JUN 77	1300.0	1200.0	1800.0	1580.0	—	3500.0	2620.0	2000.0
13 JUN 77	3830.0	3660.0	4950.0	6340.0	5150.0	5320.0	5900.0	5021.4
23 JUN 77	4100.0	3850.0	3980.0	3870.0	3580.0	5750.0	5350.0	4354.3
27 JUN 77	4840.0	3500.0	5700.0	4120.0	6300.0	7950.0	7250.0	5665.7
7 JUL 77	2820.0	2320.0	3420.0	2400.0	3600.0	6620.0	5250.0	3775.7
11 JUL 77	4980.0	5540.0	5720.0	4280.0	5250.0	8520.0	7020.0	5901.4
18 JUL 77	6620.0	6350.0	7000.0	7600.0	8200.0	7777.0	6980.0	7218.1
25 JUL 77	7250.0	6000.0	7940.0	6500.0	9000.0	10200.0	9600.0	8070.0
15 AUG 77	740.0	780.0	840.0	868.0	938.0	1230.0	1060.0	922.3
14 SEP 77	9800.0	9550.0	10820.0	10080.0	11200.0	12400.0	11700.0	10792.9
13 OCT 77	550.0	550.0	550.0	850.0	700.0	1820.0	1200.0	888.6
14 NOV 77	650.0	440.0	820.0	500.0	450.0	480.0	400.0	534.3
5 DEC 77	500.0	500.0	400.0	500.0	400.0	400.0	450.0	450.0
MEAN	2686.8	2463.2	3061.6	2808.3	3330.4	4148.3	3678.9	3167.0

Note: Dashes (—) indicate data not available

TABLE A.1-8 CONDUCTIVITY (μmho) RECORDED DURING ICHTHYOPLANKTON SAMPLING AT STANDARD RIVER STATIONS DURING THE NIGHT IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
				SURFACE				
26 APR 77	320.0	250.0	340.0	320.0	280.0	50.0	300.0	265.7
5 MAY 77	380.0	280.0	320.0	450.0	320.0	150.0	340.0	320.0
12 MAY 77	400.0	280.0	340.0	360.0	340.0	360.0	340.0	345.7
2 JUN 77	2250.0	2280.0	2150.0	2800.0	2600.0	2400.0	2340.0	2402.9
16 JUN 77	4720.0	2950.0	—	—	—	—	—	3835.0
23 JUN 77	3840.0	3040.0	4180.0	3750.0	4500.0	5150.0	5620.0	4297.1
30 JUN 77	2250.0	2180.0	3150.0	3640.0	4150.0	5850.0	5250.0	3781.4
7 JUL 77	3350.0	3020.0	4200.0	3450.0	3888.0	5420.0	4900.0	4032.6
14 JUL 77	5750.0	—	7500.0	7150.0	5900.0	6500.0	5600.0	6400.0
21 JUL 77	5250.0	5200.0	6700.0	5900.0	6880.0	8250.0	8300.0	6640.0
28 JUL 77	6040.0	5250.0	6600.0	7840.0	8580.0	9280.0	9200.0	7541.4
25 AUG 77	625.0	620.0	700.0	782.0	830.0	845.0	820.0	746.0
15 SEP 77	8300.0	7820.0	8250.0	9800.0	9100.0	9900.0	9300.0	8924.3
20 OCT 77	520.0	520.0	520.0	350.0	100.0	800.0	1000.0	544.3
16 NOV 77	550.0	500.0	520.0	600.0	400.0	500.0	520.0	512.9
6 DEC 77	400.0	400.0	480.0	480.0	450.0	440.0	500.0	450.0
MEAN	2809.1	2306.0	3063.3	3178.1	3221.2	3726.3	3622.0	3129.2
				BOTTOM				
26 APR 77	350.0	280.0	300.0	280.0	300.0	300.0	320.0	304.3
5 MAY 77	280.0	300.0	320.0	280.0	—	280.0	300.0	293.3
12 MAY 77	—	220.0	360.0	340.0	320.0	350.0	340.0	321.7
2 JUN 77	2580.0	2300.0	2520.0	2900.0	2680.0	2500.0	2600.0	2582.9
16 JUN 77	4100.0	4850.0	—	—	—	—	—	4475.0
23 JUN 77	3980.0	3580.0	4920.0	3760.0	5420.0	7380.0	6250.0	5041.4
30 JUN 77	2580.0	2280.0	4000.0	3500.0	6070.0	6450.0	6240.0	4445.7
7 JUL 77	4000.0	3520.0	5250.0	3800.0	5850.0	7500.0	6620.0	5220.0
14 JUL 77	8250.0	8100.0	10100.0	11950.0	12100.0	8600.0	8150.0	9418.8
21 JUL 77	6380.0	5850.0	7150.0	5820.0	7580.0	9430.0	8800.0	7287.1
28 JUL 77	7360.0	5950.0	7700.0	8500.0	9360.0	10900.0	10150.0	8560.0
25 AUG 77	760.0	690.0	765.0	852.0	850.0	890.0	830.0	805.3
15 SEP 77	8550.0	8350.0	8750.0	9600.0	9250.0	10300.0	10200.0	9285.7
20 OCT 77	500.0	540.0	480.0	480.0	860.0	480.0	650.0	570.0
16 NOV 77	450.0	450.0	480.0	580.0	450.0	450.0	480.0	477.1
6 DEC 77	420.0	420.0	520.0	300.0	480.0	480.0	540.0	451.4
MEAN	3369.3	3281.2	3574.3	3529.5	4397.9	4419.3	4164.7	3819.5

Note: Dashes (—) indicate data not available.

TABLE A.1-9 ESTIMATED pH VALUES IN THE VICINITY OF THE INDIAN POINT GENERATING STATION[a], 1977

Date	pH
12 APR 77	7.4
2 MAY 77	7.4
9 MAY 77	7.3
16 MAY 77	7.6
23 MAY 77	8.0
2 JUN 77	7.5
6 JUN 77	7.5
13 JUN 77	7.6
23 JUN 77	7.8
27 JUN 77	7.9
7 JUL 77	7.5
11 JUL 77	7.7
18 JUL 77	7.5
25 JUL 77	7.5
15 AUG 77	7.3
14 SEP 77	7.6
13 OCT 77	7.4
14 NOV 77	7.4
5 DEC 77	7.1

(a) Source: Texas Instruments 1978

TABLE A.2-1 AVERAGE WATER TEMPERATURES (C) RECORDED DURING THE ENTRAINMENT ABUNDANCE STUDY AT THE INDIAN POING GENERATING STATION, 1977[a]

Date	Sampling Stations			
	I2	I3	D1	D2
3 MAY	--	12.8	--	23.0
10 MAY	--	13.0	--	21.7
17 MAY	15.7	15.7	24.9	24.7
24 MAY	18.9	--	--	27.1
31 MAY	19.4	--	26.2	28.8
7 JUN	19.9	--	28.3	28.0
14 JUN	19.9	--	--	25.4
21 JUN	22.0	--	30.2	30.6
28 JUN	23.0	--	32.3	32.5
5 JUL	--	25.3	--	33.8
12 JUL	--	24.4	--	33.5
19 JUL	--	26.7	--	35.1
26 JUL	--	26.7	--	31.9
16 AUG	26.9	--	34.5	34.6
12 SEP	25.3	--	34.0	33.6
25 OCT	11.5	--	--	20.1
15 NOV	11.2	--	--	23.3
6 DEC	6.5	--	--	19.4

(a) Averaged over all sampling depths and collection periods.

TABLE A.3-1 AVERAGE WATER TEMPERATURES, DISSOLVED OXYGEN, CONDUCTIVITY, AND SALINITY. RECORDED AT THE EAST SHORE STATION (RD) DURING THE RIVER TRANSECT STUDY AT THE INDIAN POINT GENERATING STATION, 1977[a]

Date	Temperature (C)	Dissolved Oxygen (ppm)	Conductivity (μmho)	Salinity (ppt)
3 MAY	13.1	9.8	325.7	0.2
10 MAY	12.5	9.0	279.2	0.2
17 MAY	15.1	9.0	314.8	0.2
24 MAY	18.4	8.9	331.2	0.2
31 MAY	19.6	9.0	2,593.6	1.5
7 JUN	19.6	7.5	2,471.0	1.5
14 JUN	19.8	6.9	411.4	0.2
21 JUN	22.1	7.4	4,287.9	2.4
28 JUN	23.7	7.6	4,222.1	2.3
5 JUL	25.3	7.6	3,331.4	1.7
12 JUL	24.9	6.0	5,627.9	3.1
19 JUL	27.0	5.5	7,005.0	3.7
26 JUL	26.7	5.9	6,200.0	3.3
16 AUG	27.0	5.3	923.8	0.4
12 SEP	25.0	6.2	10,918.6	6.2
Mean	20.1	7.8	2,584.8	1.5

(a) Averaged over all sampling depths and collection periods.

Note: pH data not available.

APPENDIX B

TAXA OCCURRENCE AT STANDARD RIVER STATIONS, INDIAN POINT GENERATING STATION, 1971-1977

APPENDIX B TABLES

	Title	Number
B.1	MICROZOOPLANKTON TAXA	B.1-1
B.2	MACROZOOPLANKTON TAXA	B.2-1
B.3	ICHTHYOPLANKTON TAXA	B.3-1

TABLE B.1-1 MICROZOOPLANKTON TAXA COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1971-1977[a]

Taxa	1971	1974	1975	1976	1977
Rotifera					
Asplanchna spp.	X	X	X	X	X
Brachionus angularis	X	X	X	X	
B. calyciflorus	X	X	X	X	
B. quadridentata		X	X	X	
Brachionus spp.					X
Callotheca spp.	X				
Conochiloides spp.					X
Filinia longiseta	X	X	X	X	X
Keloicottia longispina	X	X	X	X	
Keratella cochlearis	X	X	X	X	
K. quadrata	X	X	X	X	
K. serrulata		X	X		
K. taurocephla	X				
Lecane spp.		X	X		X
Monostyla spp.	X				
Notholca acuminata	X	X	X	X	
Philodina spp.	X	X	X	X	X
Platyias patulus		X	X	X	
P. quadricornis		X	X		
Ploesoma truncatum	X	X	X	X	
Ploesoma spp.					X
Polyarthra spp.	X	X	X	X	
Synchaeta spp.		X	X		
Trichocerca spp.	X	X	X	X	X
Hexarthra					X
Unidentified rotifers	X	X	X	X	X
Nematoda	X	X	X	X	
Annelida larvae	X	X	X	X	X
Gastropod veliger	X	X	X	X	X
Pelecypod veliger	X	X	X	X	
Crustacea					
Copepoda					
Acartia tonsa	X	X	X	X	X
Canthocamptidae	X	X	X	X	X
Canuellidae	X	X	X	X	X
Cyclops bicuspidatus	X	X	X	X	
Diaptomus spp.					X
Ectinosoma cuticorne	X	X	X	X	X
Epischura spp.	X	X	X		X
Ergasilus spp.	X	X	X	X	X
Eurytemora affinis	X	X	X	X	
Halicyclops fosteri	X	X	X	X	X

(a) The occurrence of microzooplankton taxa from 1971 through 1976 was based on analysis by NYU (NYU 1978).

TABLE B.1-1 (CONT.)

Taxa	1971	1974	1975	1976	1977
Mesocyclops edax				X	
Unidentified harpacticoid					X
Unidentified nauplius	X	X	X	X	X
Unidentified copepodids	X	X	X	X	X
Cladocera					
Bosmina longirostris	X	X	X	X	
Bosmina spp.					X
Unidentified Chydorid	X	X	X	X	X
Daphnia pulex	X	X	X	X	
D. retrocurva					
Daphnia spp.					X
Diaphanosoma brachyurum	X	X	X	X	X
Leptodora kindtii	X	X	X	X	X
Leydigia quadrangularis					
Moina spp.	X	X	X		
Cirripedia nauplius	X	X	X	X	X
Ostracoda	X	X	X	X	X
Isopoda					X
Decapoda zoea					X
Tardigrada	X	X	X	X	

TABLE B.2-1 MACROZOOPLANKTON COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1971-1977[a]

Taxa	1971	1972	1974	1975	1976	1977
Ctenophora			X	X	X	
Coelenterata (= Cnidaria)						
Medusae	X	X	X	X	X	
Annelida						
Oligochaeta	X	X	X	X	X	X
Polychaeta	X	X	X	X	X	X
Hirudinea		X	X	X	X	X
Mollusca						
Gastropoda	X	X				
Pelecypoda	X	X		X		
Crustacea						
Copepoda						
Caligus spp.			X			
Branchyura						
Argulus spp.			X	X	X	X
Malacostraca						
Cumacea		X	X	X	X	X
Mysidacea						
Neomysis americana	X	X	X	X	X	X
Chiridotea almyra	X	X	X	X	X	
Chiridotea spp.						X
Cyathura polita	X	X	X	X	X	
Cyathura spp.						X
Edotea spp.	X	X	X	X	X	X
Cirolana spp.			X	X	X	
Cassidinidea lunifrons					X	
Amphipoda						
Gammarus spp.	X	X	X	X	X	X
Monoculodes edwardsi	X	X	X	X	X	X
Leptocheirus plumulosus	X	X	X	X	X	
Leptocheirus spp.						X
Corophium spp.	X	X	X	X	X	X

(a) The occurrence of macrozooplankton taxa from 1971 through 1976 was based on analysis by NYU (1978).

TABLE B.2-1 (CONT.)

Taxa	1971	1972	1974	1975	1976	1977
Decapoda						
Crangon septemspinosa	X	X	X	X	X	
Crangon spp.						X
Decapod larvae (zoea)		X	X	X	X	
Palaemonetes spp.				X	X	
Insecta						
Odonata (nymphs and adults)	X	X	X	X	X	
Diptera (larvae, pupae, or adults)						
Chaoborus spp.	X	X	X	X	X	X
Chironomidae	X	X	X	X	X	X
Unidentified dipteran						X
Plecoptera (nymphs)				X		
Trichoptera (larvae)					X	
Unidentified Insecta						X
Hydracarina (= Acari)	X	X	X	X	X	

TABLE B.3-1 ICHTHYOPLANKTON TAXA COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1971-1977[a]

Taxa	1971	1972	1973	1974	1975	1976	1977
Atlantic sturgeon	X	X			X	X	
American eel	X	X	X	X	X	X	
Herrings (Alosa spp.)[b]	X	X	X	X	X	X	X
Atlantic menhaden	X						
Anchovies (Engraulidae)	X	X	X	X	X	X	X
Smelts (Osmeridae)	X	X	X	X	X	X	X
Minnows and Carps (Cyprinidae)	X	X	X	X	X	X	X
White catfish			X		X	X	
Atlantic tomcod	X	X	X	X	X	X	
Killifishes (Cyprinodontidae)	X		X		X	X	
Silversides (Atherinidae)	X	X	X	X	X	X	X
Sticklebacks (Gasterosteidae)			X				
Pipefishes (Syngnathidae)	X		X	X	X	X	
White perch	X	X	X	X	X	X	X
Striped bass	X	X	X	X	X	X	X
Sunfishes (Centrarchidae)			X	X	X	X	
Yellow perch	X	X	X	X	X	X	X
Darters (*Etheostoma* spp.)	X	X	X	X	X	X	X
Crevalle jack	X						
Silver perch			X				
Weakfish		X	X	X	X	X	
Gobies (Gobiidae)				X		X	
Windowpane flounder					X		
Hogchoker	X	X	X	X	X	X	

(a) The occurrence of ichthyoplankton taxa from 1971 through 1976 was previously reported by NYU (1978).

(b) Includes blueback herring, alewife, and American shad.

APPENDIX C

ABUNDANCE OF SELECTED TAXA COLLECTED AT STANDARD RIVER STATIONS, INDIAN POINT GENERATING STATION, 1977

APPENDIX C TABLES

Title	Number
C.1 MICROZOOPLANKTON ABUNDANCE	
Total Microzooplankton	C.1-1
Total Crustaceans	C.1-2
Total Rotifers	C.1-3
Total Copepods (all life stages)	C.1-4
Total Adult Copepods	C.1-5
Total Copepodids	C.1-6
Total Copepod Nauplii	C.1-7
Acartia tonsa (copepodids and adults)	C.1-8
Eurytemora affinis (copepodids and adults)	C.1-9
Total Cladocerans	C.1-10
Bosmina longirostris	C.1-11
Diaphanosoma brachyurum	C.1-12
Cyclops bicuspidatus	C.1-13
Halicyclops fosteri	C.1-14
C.2 MACROZOOPLANKTON ABUNDANCE	
Total Macrozooplankton	C.2-1
Gammarus spp. (Surface)	C.2-2
Gammarus spp. (Middepth)	C.2-3
Gammarus spp. (Bottom)	C.2-4
Neomysis americana (Surface)	C.2-5
Neomysis americana (Middepth)	C.2-6
Neomysis americana (Bottom)	C.2-7
Monoculodes edwardsi (Surface)	C.2-8
Monoculodes edwardsi (Middepth)	C.2-9
Monoculodes edwardsi (Bottom)	C.2-10
Chaoborus punctipennis (Surface)	C.2-11
Chaoborus punctipennis (Middepth)	C.2-12
Chaoborus punctipennis (Bottom)	C.2-13
C.3 ICHTHYOPLANKTON ABUNDANCE	
Total Ichthyoplankton Eggs	C.3-1
Total Ichthyoplankton Yolk-Sac Larvae	C.3-2
Total Ichthyoplankton Post Yolk-Sac Larvae	C.3-3
Striped Bass Eggs (Surface)	C.3-4
Striped Bass Eggs (Middepth)	C.3-5
Striped Bass Eggs (Bottom)	C.3-6
Striped Bass Yolk-Sac Larvae (Surface)	C.3-7
Striped Bass Yolk-Sac Larvae (Middepth)	C.3-8
Striped Bass Yolk-Sac Larvae (Bottom)	C.3-9
Striped Bass Post Yolk-Sac Larvae (Surface)	C.3-10
Striped Bass Post Yolk-Sac Larvae (Middepth)	C.3-11
Striped Bass Post Yolk-Sac Larvae (Bottom)	C.3-12

Title	Number
White Perch Eggs	C.3-13
White Perch Yolk-Sac Larvae	C.3-14
Alosa spp. Yolk-Sac Larvae	C.3-15
Bay Anchovy Eggs	C.3-16
Bay Anchovy Yolk-Sac Larvae	C.3-17

TABLE C.1-1 DENSITIES (No./liter) OF TOTAL MICROZOOPLANKTON COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
DAY								
5 MAY 77	31.3	41.3	27.2	24.3	25.7	24.2	44.6	31.2
18 MAY 77	26.5	41.1	49.8	20.4	22.0	24.2	46.0	32.9
2 JUN 77	961.0	360.6	350.8	313.7	224.0	236.7	367.7	402.1
15 JUN 77	90.6	205.8	125.1	142.2	126.8	393.6	79.6	166.2
27 JUN 77	116.9	228.7	138.5	92.6	89.4	232.0	156.3	150.6
12 JUL 77	78.1	71.3	83.8	84.4	65.6	187.3	92.4	94.7
26 JUL 77	62.6	172.7	63.1	30.2	36.1	88.7	65.2	74.1
9 AUG 77	104.1	225.7	70.5	117.6	62.8	184.0	232.6	142.5
22 AUG 77	42.8	30.6	85.6	84.1	62.1	126.2	47.9	68.5
8 SEP 77	62.2	84.8	69.1	306.1	273.7	199.6	77.8	153.3
21 SEP 77	45.3	26.2	39.9	32.5	15.1	26.0	25.0	30.0
4 OCT 77	191.6	136.2	92.3	132.9	102.6	152.0	175.5	140.4
18 OCT 77	29.5	21.0	20.1	16.4	14.4	19.9	48.1	24.2
1 NOV 77	15.4	24.2	23.5	17.6	17.9	15.4	23.5	19.6
15 NOV 77	10.1	18.1	19.6	20.5	18.7	16.4	23.9	18.2
29 NOV 77	8.5	11.1	6.1	10.5	11.6	10.6	8.0	9.5
MEAN	117.3	106.2	79.1	90.4	73.0	121.0	94.6	97.4
NIGHT								
5 MAY 77	17.9	20.5	21.4	20.2	20.1	34.4	16.3	21.5
25 MAY 77	230.8	260.0	191.1	145.7	161.6	178.8	188.4	193.8
2 JUN 77	393.8	513.3	410.1	432.2	446.7	372.7	468.9	434.0
15 JUN 77	71.9	204.4	129.7	117.5	89.7	381.1	206.5	171.5
30 JUN 77	160.1	87.4	61.4	102.1	112.6	135.6	113.4	110.4
12 JUL 77	103.6	184.0	141.8	141.6	161.8	154.5	158.7	149.4
27 JUL 77	71.0	44.5	150.6	36.3	28.3	81.8	150.2	80.4
9 AUG 77	125.8	216.2	264.7	189.2	223.2	264.6	282.1	223.7
23 AUG 77	99.7	146.1	145.7	63.7	32.1	57.8	196.9	106.0
8 SEP 77	108.8	128.2	133.2	89.0	87.1	180.5	132.0	122.7
21 SEP 77	14.8	57.8	64.7	18.2	11.6	150.3	41.4	51.3
4 OCT 77	96.3	110.7	68.1	73.2	54.2	63.0	73.8	77.0
18 OCT 77	19.0	19.3	20.5	18.2	26.7	22.1	25.9	21.7
1 NOV 77	15.5	24.2	18.3	18.5	14.0	18.8	21.5	18.7
15 NOV 77	22.2	22.0	22.1	19.7	23.8	17.6	15.8	20.5
29 NOV 77	2.7	7.5	3.7	9.5	9.3	8.2	5.3	6.6
MEAN	97.1	127.9	115.4	93.4	93.9	132.6	131.1	113.1

TABLE C.1-2 DENSITIES (No./liter) OF TOTAL CRUSTACEANS COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
				DAY				
5 MAY 77	9.9	13.1	10.6	7.1	11.3	10.6	18.5	11.6
18 MAY 77	12.2	12.5	18.0	7.5	10.3	10.2	17.5	12.6
2 JUN 77	809.3	200.1	237.9	202.7	149.7	176.0	292.5	295.5
15 JUN 77	89.9	204.3	124.1	141.0	126.3	387.2	72.7	163.6
27 JUN 77	116.7	228.3	137.6	92.1	89.0	229.4	151.7	149.3
12 JUL 77	75.6	64.6	77.8	76.0	62.5	171.4	80.9	87.0
26 JUL 77	59.1	170.8	57.4	28.2	32.7	80.0	58.7	69.6
9 AUG 77	98.6	211.0	65.6	111.1	59.3	168.7	222.7	133.9
22 AUG 77	42.5	29.9	84.7	83.7	61.6	124.0	45.4	67.4
8 SEP 77	53.9	76.3	59.1	265.7	231.8	169.4	69.9	132.3
21 SEP 77	42.7	25.2	38.8	30.7	14.3	25.3	23.3	28.6
4 OCT 77	147.6	105.6	66.8	115.6	84.3	129.2	147.4	113.8
18 OCT 77	20.9	13.1	16.0	10.4	10.0	12.4	40.6	17.6
1 NOV 77	7.4	16.1	12.0	12.1	12.9	6.6	14.0	11.6
15 NOV 77	2.3	4.9	3.3	7.3	8.4	2.4	5.7	4.9
29 NOV 77	2.3	3.4	2.1	2.9	3.5	3.1	2.5	2.8
MEAN	99.4	86.2	63.2	74.6	60.5	106.6	79.0	81.4
				NIGHT				
5 MAY 77	10.4	9.4	10.3	7.9	8.8	13.0	8.2	9.7
25 MAY 77	63.7	89.4	54.0	51.8	49.6	64.7	60.1	61.9
2 JUN 77	216.8	197.5	219.6	205.4	247.5	271.4	329.6	241.1
15 JUN 77	70.5	201.6	124.3	117.0	88.2	374.5	203.1	168.5
30 JUN 77	159.0	86.7	60.8	101.8	112.0	133.4	111.6	109.3
12 JUL 77	91.0	168.1	130.8	127.2	143.5	129.4	139.2	132.7
27 JUL 77	59.9	39.1	139.5	33.5	23.8	73.7	131.9	71.6
9 AUG 77	123.6	204.8	253.0	183.1	215.5	255.8	271.7	215.4
23 AUG 77	95.2	142.3	141.2	62.4	31.0	55.0	189.1	102.3
8 SEP 77	85.1	102.1	103.9	72.0	74.7	153.7	99.3	98.7
21 SEP 77	14.4	56.6	63.5	17.7	11.4	147.5	40.8	50.3
4 OCT 77	62.8	83.0	49.3	58.7	39.9	49.2	55.1	56.9
18 OCT 77	15.7	13.9	16.5	14.5	24.7	16.3	20.3	17.4
1 NOV 77	8.0	11.4	6.3	9.5	7.3	9.4	11.8	9.1
15 NOV 77	3.4	3.5	3.8	2.9	6.2	2.8	2.3	3.6
29 NOV 77	1.1	2.3	0.9	2.8	3.3	1.9	2.2	2.1
MEAN	67.5	88.2	86.1	66.8	68.0	109.5	104.8	84.4

TABLE C.1-3 DENSITIES (No./liter) OF TOTAL ROTIFERS COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
DAY								
5 MAY 77	21.4	28.0	16.6	17.2	14.3	13.6	26.1	19.6
18 MAY 77	14.3	28.6	31.8	12.9	11.7	14.0	28.5	20.3
2 JUN 77	151.7	160.5	112.8	110.9	74.3	60.7	75.2	106.6
15 JUN 77	0.6	1.5	0.9	1.1	0.5	5.8	4.2	2.1
27 JUN 77	0.1	0.4	0.2	0.0	0.1	0.3	0.3	0.2
12 JUL 77	0.3	0.9	1.0	0.7	0.6	0.1	0.2	0.5
26 JUL 77	0.1	0.0	0.0	0.4	0.2	0.3	0.0	0.1
9 AUG 77	0.1	12.9	0.5	0.2	0.2	0.3	0.3	2.1
22 AUG 77	0.0	0.1	0.0	0.0	0.2	0.7	0.2	0.2
8 SEP 77	3.3	6.6	8.4	40.1	41.1	27.6	2.7	18.5
21 SEP 77	2.3	0.9	1.0	1.8	0.7	0.5	1.0	1.2
4 OCT 77	44.0	30.6	25.5	17.3	18.3	22.8	28.0	26.6
18 OCT 77	8.6	7.9	4.1	6.0	4.4	7.4	7.5	6.6
1 NOV 77	8.0	8.1	11.5	5.5	5.0	8.8	9.5	8.1
15 NOV 77	7.8	13.2	16.3	13.2	10.3	13.9	18.2	13.3
29 NOV 77	6.2	7.7	4.0	7.5	8.1	7.5	5.5	6.6
MEAN	16.8	19.2	14.7	14.7	11.9	11.5	13.0	14.5
NIGHT								
5 MAY 77	7.4	10.7	10.7	12.0	11.1	21.2	7.8	11.6
25 MAY 77	167.1	170.6	137.1	93.9	112.0	114.1	128.3	131.9
2 JUN 77	177.0	315.8	190.4	226.8	199.2	101.3	139.3	192.8
15 JUN 77	1.3	2.7	4.6	0.5	1.1	6.1	3.2	2.8
30 JUN 77	0.6	0.7	0.5	0.0	0.0	0.1	0.1	0.3
12 JUL 77	0.1	0.0	0.4	0.4	0.2	0.1	0.2	0.2
27 JUL 77	0.0	0.0	0.1	0.0	0.2	0.1	1.1	0.2
9 AUG 77	0.0	1.2	1.1	1.6	2.1	1.8	1.4	1.3
23 AUG 77	0.2	1.0	2.9	0.7	0.1	0.4	4.7	1.4
8 SEP 77	20.1	23.9	25.0	15.0	10.2	24.4	29.8	21.2
21 SEP 77	0.1	0.8	0.3	0.1	0.0	2.9	0.3	0.6
4 OCT 77	33.5	27.7	18.8	14.5	14.3	13.8	18.5	20.2
18 OCT 77	3.3	5.4	4.0	3.7	2.0	5.8	5.6	4.3
1 NOV 77	7.5	12.8	12.0	9.0	6.7	9.4	9.7	9.6
15 NOV 77	18.8	18.5	18.3	16.8	17.6	14.7	13.5	16.9
29 NOV 77	1.6	5.2	2.8	6.7	6.0	6.3	3.1	4.5
MEAN	27.4	37.3	26.8	25.1	23.9	20.2	22.9	26.2

TABLE C.1-4 DENSITIES (No./liter) OF TOTAL COPEPODS COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
				DAY				
5 MAY 77	9.7	13.0	10.5	7.0	11.3	10.6	18.3	11.5
18 MAY 77	11.9	11.8	17.6	7.0	10.0	9.9	17.2	12.2
2 JUN 77	805.1	184.6	227.3	192.5	142.2	170.5	285.9	286.9
15 JUN 77	85.5	196.6	119.5	137.3	124.1	385.7	69.9	159.8
27 JUN 77	116.1	227.1	137.4	92.0	87.9	228.5	151.1	148.6
12 JUL 77	74.9	64.1	77.3	75.4	62.2	170.0	79.9	86.3
26 JUL 77	57.9	169.7	56.2	26.8	30.7	78.1	58.1	68.2
9 AUG 77	95.7	209.7	62.8	109.7	57.8	165.5	220.1	131.6
22 AUG 77	41.7	28.3	83.1	82.6	60.9	121.7	44.7	66.1
8 SEP 77	52.7	75.8	58.0	265.3	231.3	169.1	69.6	131.7
21 SEP 77	41.5	23.6	38.1	29.4	13.2	24.8	22.0	27.5
4 OCT 77	139.2	103.7	54.8	113.0	80.7	125.8	141.7	108.4
18 OCT 77	19.4	11.4	13.5	9.9	9.3	12.2	33.1	15.5
1 NOV 77	7.0	14.7	11.9	12.0	12.8	6.6	13.7	11.2
15 NOV 77	2.3	4.8	3.2	7.0	8.0	2.1	3.5	4.7
29 NOV 77	2.0	3.2	2.0	2.9	3.4	3.0	2.5	2.7
MEAN	97.7	83.9	60.8	73.1	59.1	105.3	77.1	79.6
				NIGHT				
5 MAY 77	10.3	9.4	10.3	7.8	8.7	12.9	8.2	9.7
25 MAY 77	60.7	86.5	51.8	51.1	48.6	62.9	58.6	60.0
2 JUN 77	209.4	182.3	212.2	194.9	240.3	257.5	316.1	231.8
15 JUN 77	67.4	194.0	121.7	113.0	84.7	372.6	200.1	164.8
30 JUN 77	155.6	85.4	60.1	100.8	111.6	132.9	111.5	108.3
12 JUL 77	89.6	167.1	128.8	125.0	141.6	127.6	136.6	130.9
27 JUL 77	58.8	38.8	137.5	33.3	22.7	72.4	129.3	70.4
9 AUG 77	122.5	203.1	249.5	182.2	214.6	253.5	270.0	213.6
23 AUG 77	94.6	139.8	137.3	61.2	30.5	54.0	185.6	100.4
8 SEP 77	84.9	101.8	103.0	71.0	74.0	153.1	98.0	98.0
21 SEP 77	14.1	54.3	61.8	16.5	11.1	145.7	38.0	48.8
4 OCT 77	56.5	79.2	45.2	56.6	37.6	48.0	41.4	52.1
18 OCT 77	13.6	11.4	13.3	13.0	23.2	16.2	19.1	15.7
1 NOV 77	7.9	10.9	6.0	9.1	7.1	9.1	11.5	8.8
15 NOV 77	3.1	2.7	3.5	2.3	5.7	2.7	2.2	3.2
29 NOV 77	1.0	2.1	0.9	2.7	3.1	1.8	2.2	2.0
MEAN	65.6	85.5	83.9	65.0	66.6	108.3	101.8	82.4

TABLE C.1-5 DENSITIES (No./liter) OF TOTAL ADULT COPEPODS COLLECTED AT STANDARD RIVER STATION IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
DAY								
5 MAY 77	0.9	2.0	1.3	0.7	2.7	3.6	4.6	2.3
18 MAY 77	2.2	0.3	1.9	0.5	0.9	0.9	1.6	1.2
2 JUN 77	1.9	44.5	64.9	36.4	26.7	31.4	24.4	32.9
15 JUN 77	19.7	19.4	46.4	24.3	9.2	18.3	42.2	25.6
27 JUN 77	29.7	33.4	33.8	47.5	54.5	33.1	64.6	42.4
12 JUL 77	15.0	21.9	25.3	24.5	24.0	31.4	37.2	25.6
26 JUL 77	14.9	33.3	20.3	9.0	13.3	43.6	27.3	23.1
9 AUG 77	50.2	48.3	23.7	66.6	29.1	53.2	67.2	48.3
22 AUG 77	5.8	8.4	13.4	3.8	3.7	9.3	13.9	8.3
8 SEP 77	28.7	18.7	6.0	23.2	18.8	44.6	32.7	24.7
21 SEP 77	1.0	4.2	2.4	2.2	1.2	1.6	2.4	2.1
4 OCT 77	4.0	0.9	4.6	5.7	12.6	8.1	2.5	5.5
18 OCT 77	3.4	1.0	4.0	2.3	2.4	0.1	9.0	3.2
1 NOV 77	0.7	1.6	0.5	3.1	2.5	0.7	0.3	1.3
15 NOV 77	0.8	1.9	1.0	2.6	3.3	0.1	1.3	1.6
29 NOV 77	0.5	0.4	0.4	0.6	0.5	0.4	0.2	0.4
MEAN	11.2	15.0	15.6	15.8	12.8	17.5	20.7	15.5
NIGHT								
5 MAY 77	4.4	1.7	2.3	1.4	2.3	2.4	3.9	2.6
25 MAY 77	2.0	6.1	1.1	0.6	2.6	3.3	2.8	2.6
2 JUN 77	45.0	8.4	17.9	11.2	24.7	31.3	35.4	24.8
15 JUN 77	28.5	42.1	33.8	41.2	27.9	39.0	28.8	34.5
30 JUN 77	24.0	27.8	20.3	25.5	32.9	33.5	21.7	26.5
12 JUL 77	24.5	29.7	25.6	22.3	26.8	35.9	26.0	27.3
27 JUL 77	18.6	11.4	77.7	14.5	10.2	22.1	54.9	29.9
9 AUG 77	69.1	81.3	68.4	62.0	126.2	47.7	101.0	79.4
23 AUG 77	22.3	14.2	17.3	6.7	6.8	3.9	28.5	14.2
8 SEP 77	29.8	21.6	15.2	7.1	10.9	15.6	9.1	15.6
21 SEP 77	5.3	5.7	4.1	1.0	0.7	0.6	5.9	3.3
4 OCT 77	5.3	15.6	12.8	5.8	5.4	20.4	7.4	10.4
18 OCT 77	7.3	1.3	1.8	2.8	12.0	5.0	2.0	4.6
1 NOV 77	0.7	0.3	0.6	1.1	0.9	0.1	0.7	0.6
15 NOV 77	0.4	0.5	1.1	0.3	2.2	0.9	0.0	0.8
29 NOV 77	0.2	0.2	0.2	0.4	0.3	0.2	0.3	0.3
MEAN	18.0	16.7	18.8	12.7	18.3	16.4	20.5	17.3

TABLE C.1-6 DENSITIES (No./liter) OF TOTAL COPEPODIDS COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
DAY								
5 MAY 77	2.9	4.0	3.5	1.2	2.8	1.8	3.8	2.9
18 MAY 77	2.4	2.0	2.8	1.6	3.0	1.9	2.5	2.3
2 JUN 77	10.9	46.0	24.4	27.1	19.3	36.9	13.8	25.5
15 JUN 77	4.2	7.7	4.3	1.9	2.7	1.4	4.5	3.8
27 JUN 77	35.6	28.5	39.6	31.9	19.0	20.9	35.8	30.2
12 JUL 77	5.2	6.4	3.9	7.4	5.7	8.0	13.8	7.2
26 JUL 77	5.5	5.7	6.5	3.1	2.6	12.8	11.2	6.8
9 AUG 77	17.6	8.8	14.1	25.5	14.0	75.3	70.4	32.2
22 AUG 77	2.1	1.9	3.0	1.0	1.3	5.9	5.7	3.0
8 SEP 77	8.6	8.8	11.1	12.7	7.6	34.0	25.1	15.4
21 SEP 77	6.8	5.8	2.8	4.0	1.5	4.4	5.2	4.4
4 OCT 77	42.7	18.3	23.7	47.8	32.4	45.8	20.1	33.0
18 OCT 77	2.1	1.2	1.4	0.6	1.0	0.4	4.1	1.5
1 NOV 77	1.1	4.1	1.1	1.8	1.2	1.1	1.9	1.8
15 NOV 77	0.5	1.1	0.7	2.3	2.8	1.0	1.0	1.3
29 NOV 77	0.6	1.1	0.4	0.7	0.7	0.5	0.9	0.7
MEAN	9.3	9.5	9.0	10.7	7.3	15.8	13.7	10.7
NIGHT								
5 MAY 77	2.8	3.2	3.2	2.3	2.7	4.7	1.8	3.0
25 MAY 77	3.3	6.1	2.3	1.4	2.7	3.9	2.9	3.2
2 JUN 77	19.8	18.9	17.3	17.5	21.0	17.2	26.1	19.7
15 JUN 77	3.4	4.6	3.6	5.5	3.8	1.7	2.1	3.5
30 JUN 77	16.1	17.8	13.9	13.1	13.6	13.8	11.9	14.3
12 JUL 77	8.2	14.8	16.8	9.1	10.9	41.9	28.2	18.6
27 JUL 77	6.9	2.9	23.4	2.9	2.2	20.1	33.1	13.1
9 AUG 77	20.6	52.9	92.9	57.0	32.4	65.8	70.7	56.0
23 AUG 77	13.0	13.7	15.1	4.9	2.7	9.7	24.8	12.0
8 SEP 77	12.3	16.0	23.0	17.2	11.8	30.1	21.1	18.8
21 SEP 77	3.7	6.1	6.0	1.6	1.4	1.4	3.5	3.4
4 OCT 77	15.2	27.4	18.5	11.7	9.6	17.2	15.3	16.4
18 OCT 77	1.1	0.7	0.8	1.3	2.8	0.9	2.4	1.4
1 NOV 77	0.9	1.3	0.3	0.7	1.3	0.7	1.1	0.9
15 NOV 77	1.3	0.9	0.8	0.7	1.4	0.6	0.9	0.9
29 NOV 77	0.2	0.7	0.2	0.5	0.5	0.7	0.6	0.5
MEAN	8.0	11.8	14.9	9.2	7.5	14.4	15.4	11.6

TABLE C.1-7 DENSITIES (No./liter) OF TOTAL COPEPOD NAUPLII COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
DAY								
5 MAY 77	5.9	7.0	5.7	5.1	5.8	5.2	9.9	6.4
18 MAY 77	7.3	9.5	12.9	4.9	6.1	7.1	13.1	8.7
2 JUN 77	792.3	94.1	138.0	129.0	96.2	102.2	247.7	228.5
15 JUN 77	61.6	169.4	68.8	111.0	112.2	366.0	23.2	130.3
27 JUN 77	50.8	165.2	64.0	12.6	14.4	174.5	50.7	76.0
12 JUL 77	54.7	35.8	48.1	43.5	32.5	130.6	28.9	53.4
26 JUL 77	37.5	130.7	29.4	14.7	14.8	21.7	19.6	38.3
9 AUG 77	27.9	152.6	25.0	17.6	14.7	37.0	82.5	51.0
22 AUG 77	33.8	18.0	66.7	77.8	55.9	106.5	25.1	54.8
8 SEP 77	15.4	48.3	40.9	229.4	204.9	90.5	11.8	91.6
21 SEP 77	33.7	13.6	32.9	23.2	10.5	18.8	14.4	21.0
4 OCT 77	92.5	84.5	26.5	59.5	35.7	71.9	119.1	70.0
18 OCT 77	13.9	9.2	8.1	7.0	5.9	11.7	20.0	10.8
1 NOV 77	5.2	9.0	10.3	7.1	9.1	4.8	11.5	8.1
15 NOV 77	1.0	1.8	1.5	2.1	1.9	1.0	3.2	1.8
29 NOV 77	0.9	1.7	1.2	1.6	2.2	2.1	1.4	1.6
MEAN	77.2	59.4	36.3	46.6	38.9	72.0	42.6	53.3
NIGHT								
5 MAY 77	3.1	4.5	4.8	4.1	3.7	5.8	2.5	4.1
25 MAY 77	55.4	74.3	48.4	49.1	43.3	55.7	52.9	54.2
2 JUN 77	144.6	155.0	176.9	166.0	194.6	218.8	254.4	187.2
15 JUN 77	35.4	147.2	84.3	66.3	53.0	331.7	169.2	126.7
30 JUN 77	115.5	39.7	25.8	62.2	65.1	85.5	77.9	67.4
12 JUL 77	56.9	122.6	86.4	93.6	103.9	49.8	82.4	85.1
27 JUL 77	33.3	24.5	36.4	15.9	10.3	30.2	41.3	27.4
9 AUG 77	32.8	68.9	88.2	63.2	56.0	140.0	98.3	78.2
23 AUG 77	59.3	111.9	104.9	49.6	21.0	40.4	132.3	74.2
8 SEP 77	42.8	64.2	64.8	46.7	51.3	107.4	67.8	63.6
21 SEP 77	5.1	42.5	51.7	13.9	9.0	143.7	23.6	42.1
4 OCT 77	36.0	36.2	13.9	39.1	22.6	10.4	18.7	25.3
18 OCT 77	5.2	9.4	10.7	8.9	8.4	10.3	14.7	9.7
1 NOV 77	6.3	9.3	5.1	7.3	4.9	8.3	9.7	7.3
15 NOV 77	1.4	1.2	1.5	1.2	2.1	1.2	1.3	1.4
29 NOV 77	0.6	1.2	0.5	1.8	2.3	0.9	1.3	1.2
MEAN	39.6	57.0	50.3	43.1	40.7	77.5	65.8	53.4

TABLE C.1-8 DENSITIES (No./liter) OF ACARTIA TONSA COPEPODIDS AND ADULTS COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
				DAY				
5 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
2 JUN 77	0.0	0.1	0.3	0.1	0.1	0.0	0.1	0.1
15 JUN 77	2.3	1.9	4.3	3.3	0.6	2.0	8.9	3.3
27 JUN 77	3.7	2.3	2.9	2.5	2.0	6.8	12.1	4.6
12 JUL 77	9.5	9.1	14.9	19.4	18.6	27.5	28.9	18.3
26 JUL 77	9.9	32.8	16.4	3.7	6.9	39.3	24.4	19.1
9 AUG 77	46.2	47.6	22.7	64.8	27.4	51.1	65.5	46.5
22 AUG 77	3.2	4.6	12.5	3.0	3.1	9.1	13.0	6.9
8 SEP 77	27.9	18.3	5.7	22.9	18.7	44.0	32.7	24.3
21 SEP 77	0.2	0.1	0.2	0.1	0.0	0.2	0.7	0.2
4 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	6.4	7.3	5.0	7.5	4.8	11.3	11.6	7.7
				NIGHT				
5 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 MAY 77	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.0
2 JUN 77	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
15 JUN 77	2.3	6.6	3.3	1.8	2.0	0.8	5.3	3.2
30 JUN 77	0.6	0.7	2.2	0.3	1.2	2.4	2.7	1.4
12 JUL 77	15.0	20.0	18.9	14.7	17.8	28.4	20.6	19.3
27 JUL 77	11.6	7.0	71.7	10.3	6.6	20.9	49.2	25.3
9 AUG 77	65.2	78.9	65.3	59.7	122.1	46.7	99.5	76.8
23 AUG 77	20.5	13.4	17.1	5.1	2.4	3.0	27.9	12.8
8 SEP 77	29.2	20.2	14.6	6.2	9.0	14.4	8.2	14.5
21 SEP 77	0.3	1.0	3.2	0.3	0.2	0.4	5.7	1.6
4 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
18 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 NOV 77	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	9.1	9.2	12.3	6.2	10.1	7.3	13.7	9.7

TABLE C.1-9 DENSITIES (No./liter) OF EURYTEMORA AFFINIS COPEPODIDS AND ADULTS COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
DAY								
5 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 MAY 77	0.2	0.0	0.1	0.0	0.0	0.0	0.1	0.1
2 JUN 77	0.1	16.9	50.5	15.5	9.8	23.7	21.0	19.6
15 JUN 77	15.3	17.3	40.9	19.8	7.0	15.3	32.0	21.1
27 JUN 77	23.9	29.7	30.1	43.1	49.4	24.8	49.9	35.8
12 JUL 77	3.7	10.3	7.8	2.1	3.4	2.4	6.1	5.1
26 JUL 77	4.2	0.4	3.6	4.4	5.7	4.0	2.5	3.5
9 AUG 77	3.4	0.4	0.9	1.6	1.5	1.4	1.0	1.5
22 AUG 77	0.2	0.8	0.1	0.2	0.0	0.0	0.2	0.2
8 SEP 77	0.4	0.0	0.0	0.1	0.0	0.3	0.0	0.1
21 SEP 77	0.1	0.8	1.0	0.7	0.3	0.7	1.0	0.7
4 OCT 77	0.1	0.0	0.2	0.0	0.2	0.0	0.0	0.1
18 OCT 77	0.0	0.1	0.3	0.2	0.2	0.0	2.6	0.5
1 NOV 77	0.0	0.5	0.2	0.5	0.3	0.1	0.0	0.2
15 NOV 77	0.1	0.6	0.3	1.0	1.3	0.0	0.0	0.5
29 NOV 77	0.0	0.2	0.1	0.2	0.1	0.0	0.1	0.1
MEAN	3.2	4.9	8.5	5.6	5.0	4.5	7.3	5.6
NIGHT								
5 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 MAY 77	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0
2 JUN 77	28.4	3.8	12.3	7.2	5.2	27.6	29.5	16.3
15 JUN 77	11.6	22.6	20.4	7.3	5.7	4.1	10.9	11.8
30 JUN 77	19.9	20.9	12.5	16.2	18.7	20.0	12.4	17.2
12 JUL 77	4.1	4.9	3.8	2.7	2.5	6.1	3.5	3.9
27 JUL 77	2.6	1.3	4.9	1.7	0.9	0.6	2.5	2.1
9 AUG 77	2.3	1.7	0.5	0.5	0.1	0.2	0.2	0.8
23 AUG 77	0.6	0.6	0.1	0.2	0.3	0.3	0.0	0.3
8 SEP 77	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
21 SEP 77	3.9	4.4	0.6	0.5	0.3	0.0	0.1	1.4
4 OCT 77	0.5	0.1	0.1	0.0	0.3	0.3	0.8	0.3
18 OCT 77	0.1	0.0	0.4	0.3	6.3	0.1	0.1	1.0
1 NOV 77	0.0	0.0	0.0	0.0	0.1	0.0	0.3	0.1
15 NOV 77	0.0	0.0	0.0	0.0	0.4	0.1	0.0	0.1
29 NOV 77	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
MEAN	4.6	3.8	3.5	2.3	2.6	3.7	3.8	3.5

TABLE C.1-10 DENSITIES (No./liter) OF TOTAL CLADOCERANS COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
DAY								
5 MAY 77	0.2	0.1	0.1	0.1	0.0	0.0	0.2	0.1
18 MAY 77	0.3	0.7	0.4	0.5	0.3	0.3	0.3	0.4
2 JUN 77	4.2	15.5	10.0	9.9	6.8	4.6	5.2	8.0
15 JUN 77	4.2	7.7	4.2	3.5	1.9	0.7	0.8	3.3
27 JUN 77	0.6	1.2	0.1	0.0	0.5	0.0	0.1	0.4
12 JUL 77	0.7	0.5	0.4	0.5	0.3	0.3	0.8	0.5
26 JUL 77	0.7	0.5	0.7	0.9	0.7	0.9	0.1	0.6
9 AUG 77	2.7	0.4	1.6	0.9	0.9	2.6	1.1	1.5
22 AUG 77	0.3	1.0	0.2	0.3	0.2	0.0	0.0	0.3
8 SEP 77	1.1	0.2	0.3	0.3	0.1	0.0	0.2	0.3
21 SEP 77	0.3	1.2	0.5	0.6	0.6	0.1	0.4	0.5
4 OCT 77	8.4	1.9	12.0	2.6	3.6	3.4	5.7	5.4
18 OCT 77	1.5	1.7	2.5	0.5	0.7	0.2	7.5	2.1
1 NOV 77	0.4	1.4	0.1	0.1	0.1	0.0	0.3	0.3
15 NOV 77	0.0	0.1	0.1	0.3	0.4	0.3	0.2	0.2
29 NOV 77	0.3	0.2	0.1	0.0	0.1	0.1	0.0	0.1
MEAN	1.6	2.1	2.1	1.3	1.1	0.8	1.4	1.5
NIGHT								
5 MAY 77	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.1
25 MAY 77	3.0	2.9	2.2	0.7	1.0	1.8	1.5	1.9
2 JUN 77	6.7	15.2	7.3	10.0	6.3	3.6	11.6	8.7
15 JUN 77	3.1	5.5	1.6	3.5	3.0	1.0	1.5	2.7
30 JUN 77	3.3	1.3	0.6	0.8	0.4	0.4	0.0	1.0
12 JUL 77	0.1	0.5	0.4	0.4	0.3	0.2	0.2	0.3
27 JUL 77	0.6	0.1	0.9	0.1	0.1	0.1	0.0	0.3
9 AUG 77	0.5	0.7	1.5	0.3	0.4	0.4	0.1	0.6
23 AUG 77	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0
8 SEP 77	0.1	0.0	0.2	0.0	0.2	0.1	0.0	0.1
21 SEP 77	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
4 OCT 77	6.3	3.8	4.1	2.1	2.3	1.2	13.7	4.8
18 OCT 77	2.1	2.5	3.2	1.5	1.5	0.1	1.2	1.7
1 NOV 77	0.1	0.5	0.3	0.4	0.2	0.3	0.3	0.3
15 NOV 77	0.3	0.8	0.3	0.6	0.5	0.1	0.1	0.4
29 NOV 77	0.1	0.2	0.0	0.1	0.2	0.1	0.0	0.1
MEAN	1.7	2.1	1.4	1.3	1.0	0.6	1.9	1.4

TABLE C.1-11 DENSITIES (No./liter) OF BOSMINA LONGIROSTRIS COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
DAY								
5 MAY 77	0.1	0.1	0.1	0.1	0.0	0.0	0.2	0.1
18 MAY 77	0.3	0.7	0.4	0.4	0.3	0.3	0.3	0.4
2 JUN 77	3.2	10.6	7.7	6.9	4.9	3.6	4.2	5.9
15 JUN 77	0.1	2.4	0.8	0.5	1.1	0.4	0.2	0.8
27 JUN 77	0.3	0.1	0.1	0.0	0.0	0.0	0.1	0.1
12 JUL 77	0.0	0.1	0.0	0.2	0.0	0.0	0.1	0.1
26 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9 AUG 77	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
22 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8 SEP 77	0.1	0.2	0.2	0.3	0.0	0.0	0.1	0.1
21 SEP 77	0.1	0.8	0.3	0.4	0.5	0.1	0.2	0.3
4 OCT 77	7.2	1.0	7.3	0.5	1.6	2.0	2.3	3.1
18 OCT 77	1.3	1.6	2.2	0.5	0.6	0.2	6.1	1.8
1 NOV 77	0.3	1.2	0.1	0.1	0.1	0.0	0.2	0.3
15 NOV 77	0.0	0.1	0.1	0.2	0.2	0.3	0.1	0.1
29 NOV 77	0.2	0.2	0.1	0.0	0.1	0.1	0.0	0.1
MEAN	0.8	1.2	1.2	0.6	0.6	0.4	0.9	0.8
NIGHT								
5 MAY 77	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.1
25 MAY 77	2.6	2.4	1.5	0.6	0.8	1.6	1.5	1.6
2 JUN 77	4.9	7.1	4.8	5.8	3.1	2.6	5.7	4.9
15 JUN 77	1.3	1.5	0.2	1.4	1.1	0.0	0.0	0.8
30 JUN 77	0.0	0.4	0.3	0.1	0.2	0.0	0.0	0.1
12 JUL 77	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0
27 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9 AUG 77	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
23 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8 SEP 77	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0
21 SEP 77	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1
4 OCT 77	3.9	2.7	3.3	1.6	1.6	0.7	11.0	3.5
18 OCT 77	1.7	2.3	2.9	1.4	1.0	0.1	1.1	1.5
1 NOV 77	0.1	0.5	0.3	0.4	0.2	0.3	0.3	0.3
15 NOV 77	0.2	0.5	0.2	0.4	0.2	0.1	0.1	0.2
29 NOV 77	0.1	0.2	0.0	0.1	0.2	0.1	0.0	0.1
MEAN	0.9	1.1	0.9	0.8	0.5	0.3	1.2	0.8

TABLE C.1-12 DENSITIES (No./liter) OF DIAPHANOSOMA BRACHYURUM COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
				DAY				
5 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 JUN 77	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1
12 JUL 77	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.2
26 JUL 77	0.2	0.2	0.2	0.2	0.3	0.3	0.0	0.2
9 AUG 77	1.4	0.0	0.9	0.7	0.7	2.2	0.5	0.9
22 AUG 77	0.2	0.8	0.2	0.0	0.2	0.0	0.0	0.2
8 SEP 77	1.0	0.0	0.0	0.0	0.1	0.0	0.1	0.2
21 SEP 77	0.1	0.3	0.2	0.2	0.1	0.0	0.1	0.1
4 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1
				NIGHT				
5 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 MAY 77	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12 JUL 77	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.0
27 JUL 77	0.3	0.0	0.3	0.1	0.0	0.0	0.0	0.1
9 AUG 77	0.2	0.2	0.8	0.2	0.1	0.3	0.1	0.3
23 AUG 77	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0
8 SEP 77	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0
21 SEP 77	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0

TABLE C.1-13 DENSITIES (No./liter) OF CYCLOPS BICUSPIDATUS COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
				DAY				
5 MAY 77	0.1	0.2	0.2	0.0	0.3	0.3	0.2	0.2
18 MAY 77	0.1	0.1	0.3	0.1	0.4	0.0	0.3	0.2
2 JUN 77	0.2	3.3	0.6	1.4	1.0	0.8	0.0	1.0
15 JUN 77	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.0
27 JUN 77	0.0	0.4	0.0	0.1	0.0	0.0	0.0	0.1
12 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21 SEP 77	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
4 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 NOV 77	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
29 NOV 77	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
MEAN	0.0	0.2	0.1	0.1	0.1	0.1	0.0	0.1
				NIGHT				
5 MAY 77	0.4	0.0	0.2	0.2	0.1	0.0	0.1	0.1
25 MAY 77	0.4	1.4	0.2	0.3	0.9	0.3	0.3	0.5
2 JUN 77	0.3	0.5	0.7	0.6	0.2	0.3	0.5	0.4
15 JUN 77	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.1
30 JUN 77	0.2	0.1	0.0	0.2	0.4	0.5	0.1	0.2
12 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 NOV 77	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
15 NOV 77	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
29 NOV 77	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0
MEAN	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

TABLE C.1-14 DENSITIES (No./liter) OF HALICYCLOPS FOSTERI COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
DAY								
5 MAY 77	0.1	0.6	0.5	0.3	1.5	2.3	2.4	1.1
18 MAY 77	0.3	0.0	0.3	0.2	0.1	0.1	0.4	0.2
2 JUN 77	0.0	7.9	2.4	1.8	3.8	2.4	0.1	2.6
15 JUN 77	1.3	0.2	1.0	0.7	1.3	0.2	0.6	0.8
27 JUN 77	1.3	0.8	0.1	0.4	0.5	0.0	0.0	0.4
12 JUL 77	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0
26 JUL 77	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0
9 AUG 77	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
22 AUG 77	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.1
8 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21 SEP 77	0.5	3.2	1.0	1.2	0.7	0.5	0.3	1.1
4 OCT 77	3.9	0.9	3.9	5.7	12.1	9.1	2.4	5.3
18 OCT 77	3.2	0.9	3.7	1.9	1.9	0.1	6.4	2.6
1 NOV 77	0.7	1.0	0.3	2.3	1.9	0.5	0.2	1.0
15 NOV 77	0.4	1.2	0.3	1.3	1.6	0.1	1.2	0.9
29 NOV 77	0.3	0.2	0.2	0.3	0.3	0.2	0.0	0.2
NIGHT								
5 MAY 77	1.5	0.7	1.0	0.5	0.7	0.3	1.3	0.9
25 MAY 77	0.7	2.5	0.4	0.1	0.6	2.5	2.0	1.3
2 JUN 77	2.2	1.8	0.4	1.1	1.7	0.8	2.1	1.4
15 JUN 77	1.5	0.5	0.5	3.8	1.1	0.5	0.6	1.2
30 JUN 77	1.0	2.2	1.5	0.8	0.7	0.2	0.2	0.9
12 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9 AUG 77	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
23 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21 SEP 77	0.9	0.0	0.2	0.0	0.2	0.1	0.0	0.2
4 OCT 77	4.4	14.7	11.8	5.2	4.7	19.8	5.8	9.5
18 OCT 77	6.8	1.3	1.1	1.6	5.4	4.8	1.8	3.3
1 NOV 77	0.5	0.1	0.4	0.4	0.5	0.1	0.4	0.3
15 NOV 77	0.2	0.0	0.8	0.2	0.7	0.5	0.0	0.3
29 NOV 77	0.2	0.1	0.2	0.0	0.0	0.1	0.1	0.1
MEAN	1.2	1.5	1.1	0.9	1.0	1.9	0.9	1.2
MEAN	0.8	1.1	0.9	1.0	1.6	0.9	0.9	1.0

TABLE C.2-1 MEAN DENSITIES (No./1,000 m^3) OF TOTAL MACROZOOPLANKTON COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977[a]

DATE	STATION A	B	C	D	E	F	G	MEAN
DAY								
12 APR 77	2839.8	1227.4	2100.8	827.3	1800.3	1611.1	1942.9	1764.2
2 MAY 77	1548.2	1753.7	2762.6	4581.5	642.8	1236.3	344.0	1838.4
9 MAY 77	--	905.0	--	1434.6	2163.4	964.2	1023.6	1298.2
16 MAY 77	2962.2	1092.4	2663.7	4100.3	641.2	650.0	1317.8	1989.7
23 MAY 77	1119.9	1707.1	1953.3	1856.2	349.7	470.8	729.3	1135.1
2 JUN 77	9132.3	2183.6	4489.0	2885.3	4728.7	4706.2	1806.2	4275.9
13 JUN 77	4550.6	6405.6	7262.3	2556.0	5384.9	2903.5	3605.9	4667.0
23 JUN 77	178083.8	53769.0	78574.4	28267.5	75978.9	13451.1	64331.3	70350.9
7 JUL 77	25033.9	40524.2	30301.3	23608.3	30765.7	31243.3	31137.2	30503.6
18 JUL 77	59442.1	67271.9	109072.3	70970.8	9868.6	4.4	80093.3	62640.1
25 JUL 77	385617.3	44932.0	258295.6	35015.7	273151.7	34853.9	162526.6	170627.5
15 AUG 77	14525.4	29783.8	24333.5	30299.2	7598.2	7190.3	4679.2	16915.7
14 SEP 77	39305.0	19997.9	36621.9	177584.0	13401.2	40349.9	14466.5	50483.4
13 OCT 77	27328.9	3660.3	4777.6	3979.9	3979.5	1959.5	623.6	6615.6
14 NOV 77	195951.9	51470.9	258445.8	280657.6	57770.0	49702.1	29226.4	131889.3
5 DEC 77	12470.1	4882.1	10080.3	3055.0	11923.9	8507.3	31860.1	11825.6
MEAN	65384.3	22528.6	52505.5	38883.3	32190.6	13097.3	28000.0	35922.1
NIGHT								
26 APR 77	5603.6	7886.8	3112.5	2215.6	2755.7	2652.8	4610.7	4119.7
5 MAY 77	3646.9	3495.9	7655.4	4038.7	2302.8	2067.1	2726.9	3704.8
12 MAY 77	1897.8	1809.1	1402.5	2089.3	2148.9	2226.2	2705.4	2039.9
2 JUN 77	11886.4	8569.2	14947.8	10027.4	14352.8	11215.8	7250.2	11178.5
16 JUN 77	59063.3	35110.9	--	--	--	--	--	47087.1
23 JUN 77	96616.7	28609.7	78406.9	43921.5	11378.0	7828.3	10805.6	37388.0
30 JUN 77	54454.0	97851.6	116583.5	63452.9	246461.5	40778.8	103086.4	102571.1
7 JUL 77	50672.0	54230.8	77134.5	60620.5	91127.5	29446.6	161208.3	74920.0
14 JUL 77	56355.1	40502.2	21455.9	95187.7	96091.4	9197.6	46302.9	52448.8
21 JUL 77	140545.7	23596.9	178078.0	77380.6	244935.5	146850.1	66679.3	135564.0
28 JUL 77	84156.6	35784.0	44099.2	596892.2	54520.7	44325.5	42388.5	129881.0
25 AUG 77	28344.1	8498.0	14525.9	88905.3	59764.8	9378.2	15528.0	32134.9
15 SEP 77	23965.3	69582.3	14464.2	21246.9	26891.3	18553.1	21512.5	28030.8
20 OCT 77	20179.1	5015.4	9027.5	57686.0	14453.5	11233.3	27854.1	20778.4
16 NOV 77	29087.1	42436.9	38473.7	11513.5	25454.3	28494.0	107186.9	40378.1
6 DEC 77	33021.4	18315.2	29408.7	10867.6	12222.2	19117.9	30608.1	23102.5
MEAN	43718.4	30362.8	40728.8	80297.1	60324.1	22801.0	43296.8	45647.1

Note: Dashes (--) indicate data not available.
(a) Averaged over all three depths--surface, middepth, and bottom.

TABLE C.2-2 SURFACE DENSITIES (No./1,000 m3) OF GAMMARUS SPP. COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
				DAY				
12 APR 77	78.5	133.3	0.0	6.5	7.5	0.0	0.0	32.3
2 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9 MAY 77	--	0.0	--	0.0	0.0	6.5	0.0	1.3
16 MAY 77	93.3	40.4	0.0	32.3	5.7	0.0	0.0	24.5
23 MAY 77	0.0	0.0	0.0	44.0	0.0	0.0	0.0	8.3
2 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 JUN 77	0.0	0.0	0.0	6.6	0.0	0.0	0.0	0.9
23 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	7.3	1.0
7 JUL 77	0.0	0.0	0.0	0.0	0.0	6.2	0.0	0.9
18 JUL 77	0.0	0.0	0.0	17.5	0.0	0.0	0.0	2.5
25 JUL 77	0.0	0.0	0.0	0.0	0.0	6.7	0.0	1.0
15 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	28.4	4.1
14 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 NOV 77	59.3	18.6	77.1	551.5	19.2	6.5	22.2	107.8
5 DEC 77	28.2	49.5	0.0	38.5	81.6	87.7	136.3	60.3
MEAN	14.4	12.7	4.3	36.7	6.0	6.3	10.6	13.1
				NIGHT				
26 APR 77	0.0	146.5	34.2	37.0	85.3	58.3	180.0	77.3
5 MAY 77	179.9	232.0	102.5	3236.6	144.0	42.1	614.0	650.2
12 MAY 77	344.1	0.0	271.6	177.1	895.6	375.7	1345.4	487.1
2 JUN 77	3655.1	2243.2	5615.8	2227.3	3411.4	16.8	208.9	2482.6
16 JUN 77	1803.5	94.7	--	--	--	--	--	949.1
23 JUN 77	759.8	824.3	584.1	1930.0	91.6	5.9	246.5	634.6
30 JUN 77	0.0	0.0	19.5	1306.4	654.0	1601.0	141.5	531.8
7 JUL 77	1041.9	2450.1	219.3	321.8	0.0	14.1	0.0	578.2
14 JUL 77	118.0	682.5	2326.3	446.7	1206.2	0.0	--	796.6
21 JUL 77	280.7	761.2	0.0	269.2	1716.4	0.0	0.0	432.5
28 JUL 77	226.3	0.0	128.7	16804.4	586.9	372.9	1827.6	2849.5
25 AUG 77	9.1	27.4	9.0	27.3	87.5	0.0	0.0	22.9
15 SEP 77	138.0	118.3	42.9	109.0	54.3	0.0	0.0	66.1
20 OCT 77	66.7	0.0	378.5	3279.1	1538.3	2373.6	4826.0	1780.3
16 NOV 77	20028.1	6001.8	9349.8	3104.6	3309.8	2809.8	121592.8	23742.4
6 DEC 77	831.1	235.6	8383.7	10867.6	10424.7	6224.9	24791.4	8822.7
MEAN	1842.6	863.6	1831.1	2942.9	1613.7	926.3	11125.7	2913.1

Note: Dashes (--) indicate data not available.

TABLE C.2-3 MIDDEPTH DENSITIES (No./1,000 m^3) OF GAMMARUS SPP. COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
DAY								
12 APR 77	2304.6	1164.1	1627.0	665.2	2058.4	131.5	1877.5	1404.0
2 MAY 77	203.9	253.2	3868.2	3676.7	77.9	0.0	17.8	1156.3
9 MAY 77	--	528.0	--	2559.6	4413.0	54.1	154.1	1541.3
16 MAY 77	4571.3	1352.5	3142.3	4271.3	176.2	532.6	196.1	2034.6
23 MAY 77	21.7	107.3	13.1	1309.0	10.7	24.6	210.1	242.4
2 JUN 77	43.8	251.7	303.4	781.2	139.9	65.4	414.0	285.6
13 JUN 77	0.0	0.0	7.4	30.3	0.0	0.0	8.4	6.6
23 JUN 77	0.0	0.0	0.0	20.3	0.0	3.3	0.0	3.4
7 JUL 77	444.8	344.4	862.9	170.8	97.7	433.0	858.7	460.0
18 JUL 77	0.0	23.1	20.4	0.0	8.8	--	18.1	11.7
25 JUL 77	0.0	0.0	0.0	0.0	0.0	116.3	0.0	16.6
15 AUG 77	21.7	0.0	0.0	179.3	8.5	0.0	0.0	29.9
14 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	--	0.0
13 OCT 77	547.9	0.0	1994.5	1063.8	423.0	64.7	312.1	629.4
14 NOV 77	339139.2	4212.8	286676.8	379714.0	84134.3	40699.3	71792.0	172338.3
5 DEC 77	259.6	49.4	8198.1	795.5	9910.5	134.8	60766.2	11446.3
MEAN	20447.8	467.5	17104.5	20853.1	5352.4	2375.6	7661.0	10491.7
NIGHT								
26 APR 77	4021.2	3217.1	4352.3	2650.3	3045.7	4099.4	6289.6	3953.7
5 MAY 77	4257.1	2872.9	2644.4	2260.4	2481.1	3203.1	1793.4	2787.5
12 MAY 77	1463.0	886.6	742.5	1061.8	1941.5	2619.2	1993.1	1529.7
2 JUN 77	11647.2	7871.8	14936.7	4273.2	16360.7	3400.9	1015.2	8500.8
16 JUN 77	30405.1	14249.5	--	--	--	--	--	22327.3
23 JUN 77	2801.8	1370.8	2036.1	--	246.3	579.4	626.2	1276.8
30 JUN 77	3049.2	48.2	--	9323.9	15518.0	12434.3	6865.3	7873.2
7 JUL 77	3503.4	9870.9	8637.7	5595.7	1763.7	0.0	2905.8	4611.0
14 JUL 77	3375.4	3415.4	575.3	1936.3	2638.6	178.6	877.7	1856.8
21 JUL 77	3130.3	--	7075.0	1009.9	923.6	1184.3	3701.3	2937.4
28 JUL 77	1690.5	2135.0	7644.4	16148.3	3587.2	916.2	4885.6	5286.7
25 AUG 77	294.4	1016.1	861.5	2456.7	694.4	166.9	150.4	805.8
15 SEP 77	1625.3	2747.1	108.5	529.5	629.6	514.4	1343.9	1071.0
20 OCT 77	32732.6	14701.5	26406.9	27362.9	6074.8	16195.0	39574.6	23292.6
16 NOV 77	42612.2	56747.4	38812.9	13042.0	33369.8	36840.5	64751.5	40832.3
6 DEC 77	41373.2	20432.1	53550.8	--	12116.1	24878.9	36392.1	31457.2
MEAN	11748.9	9438.8	12027.5	6742.4	6759.3	7147.4	11544.4	9371.9

Note: Dashes (--) indicate data not available.

TABLE C.2-4 BOTTOM DENSITIES (No./1,000 m3) OF GAMMARUS SPP. COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
				DAY				
12 APR 77	4308.9	1668.8	2976.3	783.1	2281.6	4028.4	3118.6	2738.0
2 MAY 77	3681.5	3324.3	2303.2	6720.3	1351.8	2605.2	460.6	2921.0
9 MAY 77	--	1615.1	--	823.4	906.6	1539.3	699.1	1116.7
16 MAY 77	3089.4	1044.3	3677.0	2940.8	1348.3	1008.8	1206.4	2045.0
23 MAY 77	2279.7	3617.0	1379.9	--	355.4	671.9	974.7	1546.4
2 JUN 77	43657.1	5729.6	1387.6	1274.3	688.3	1622.9	82.2	7777.4
6 JUN 77	3615.0	2885.2	1701.9	4253.1	1083.6	2365.9	1501.8	2486.6
13 JUN 77	1747.3	5827.3	1438.1	4090.6	686.8	1254.7	1602.4	2378.2
23 JUN 77	2101.0	0.0	0.0	1643.1	1111.7	1639.2	6254.9	1821.4
27 JUN 77	10437.4	0.0	3462.2	2701.8	2836.1	260.3	983.2	2954.4
7 JUL 77	4893.5	24056.2	9630.0	1792.9	5127.6	3513.3	575.3	7084.1
11 JUL 77	58.9	1090.2	866.1	1879.2	0.0	799.6	252.2	706.6
18 JUL 77	5100.9	5730.2	3977.4	1079.9	1587.3	--	3114.6	3431.7
25 JUL 77	2150.1	93.4	0.0	1787.9	2706.6	315.3	1252.6	1186.6
15 AUG 77	1710.3	2855.4	1111.5	550.1	411.1	153.1	142.8	990.6
14 SEP 77	0.0	928.0	1549.7	0.0	176.7	--	152.7	401.0
13 OCT 77	75532.2	10969.6	11755.1	8146.4	9099.3	3245.2	1446.3	17170.6
14 NOV 77	242364.9	142473.2	471891.6	385488.8	85384.6	107473.4	15132.6	207172.8
5 DEC 77	36351.3	14070.3	21468.4	7990.8	24553.7	24024.6	33984.4	23191.9
MEAN	23320.0	11998.8	30032.0	24108.1	7457.7	9207.1	3833.6	15632.8
				NIGHT				
26 APR 77	11265.1	2913.3	3743.7	2810.1	4019.4	2596.7	5332.2	4668.6
5 MAY 77	4047.4	2419.2	1841.2	2972.5	2268.4	1126.6	2572.3	2463.9
12 MAY 77	1340.6	914.2	1072.0	1009.0	1341.8	2137.0	2579.9	1484.8
2 JUN 77	9001.9	6288.4	6060.8	2299.8	4644.7	15496.9	3389.1	6740.2
16 JUN 77	24298.4	19556.6	--	--	--	--	--	21927.5
23 JUN 77	11396.9	2127.4	--	2423.7	907.8	1460.4	3498.0	3635.7
30 JUN 77	13192.4	60230.7	7017.1	3894.2	8530.3	11598.5	6989.5	15921.8
7 JUL 77	8758.7	8499.3	7830.7	9468.2	2349.1	864.1	3271.3	5863.1
14 JUL 77	1268.6	2269.5	1728.2	6669.1	614.8	2466.0	577.0	2227.6
21 JUL 77	13739.2	--	0.0	781.9	7252.9	--	1691.9	4693.2
28 JUL 77	7785.3	2164.9	581.3	14243.7	2299.0	4388.8	2798.2	4894.5
25 AUG 77	529.7	1239.8	550.7	8079.8	546.6	631.0	227.1	1686.4
15 SEP 77	1871.9	2323.0	322.0	2609.1	650.9	76.9	1782.6	1376.6
20 OCT 77	25944.3	0.0	10.8	139074.2	32415.9	13052.9	35694.3	35170.3
16 NOV 77	23346.6	63756.4	60497.9	13931.6	33689.6	41208.4	128378.8	52115.6
6 DEC 77	54484.4	32478.3	20974.6	--	13455.0	24129.0	23912.3	28238.9
MEAN	13267.0	13812.1	8016.5	15019.1	7665.7	8659.5	14846.2	11658.9

Note: Dashes (--) indicate data not available.

TABLE C.2-5 SURFACE DENSITIES (No./1,000 m^3) OF *NEOMYSIS AMERICANA* COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
DAY								
12 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9 MAY 77	—	0.0	—	0.0	0.0	0.0	0.0	0.0
16 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23 JUN 77	0.0	34.8	3.1	0.0	10.0	2.8	36.6	12.5
7 JUL 77	0.0	30.3	10.0	4.4	11.9	43.6	122.1	31.3
18 JUL 77	10.5	0.0	11.9	611.1	0.0	4.4	0.0	91.1
25 JUL 77	32.7	0.0	31.4	0.0	0.0	33.5	0.0	13.9
15 AUG 77	721.5	41.7	22.2	76.3	13.6	0.0	0.0	125.0
14 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 NOV 77	9.9	0.0	0.0	0.0	0.0	0.0	0.0	1.4
5 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	43.0	9.0	5.1	36.6	3.0	6.9	16.7	17.1
NIGHT								
26 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 JUN 77	287.7	336.5	1435.6	4038.1	537.0	0.0	322.8	994.0
16 JUN 77	5410.4	378.7	--	--	--	--	--	2894.6
23 JUN 77	15448.9	17251.7	77294.6	17048.0	7211.1	360.9	4774.0	19912.7
30 JUN 77	8.1	0.0	2305.4	32303.9	1744.0	4367.6	461.9	5884.4
7 JUL 77	16007.4	26171.6	29390.3	3334.7	84748.2	0.0	117000.6	39521.8
14 JUL 77	3724.0	30714.2	16147.3	44222.1	104036.6	17.1	--	33143.6
21 JUL 77	34389.9	21770.0	116250.0	50603.8	338123.2	33146.8	78897.7	96168.8
28 JUL 77	8175.2	35.3	21744.4	578987.2	55459.4	15437.4	25904.2	100820.4
25 AUG 77	2730.6	2706.9	2981.4	2508.8	31151.2	3484.0	8478.6	7720.2
15 SEP 77	2632.5	4682.7	2705.2	1499.2	4726.0	3158.3	2137.5	3077.3
20 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	5550.9	6503.0	18016.9	48969.7	41849.1	3998.1	16998.4	20031.6

Note: Dashes (--) indicate data vot available.

TABLE C.2-6 MIDDEPTH DENSITIES (No./1,000 m3) OF NEOMYSIS AMERICANA COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
				DAY				
12 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9 MAY 77	—	0.0	—	0.0	0.0	0.0	0.0	0.0
16 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 JUN 77	36.9	0.0	905.9	2832.4	7125.4	539.0	528.4	1709.7
13 JUN 77	0.0	6.7	0.0	7.6	0.0	0.0	16.8	4.4
23 JUN 77	208958.8	1644.9	75357.1	1134.7	61509.3	6122.5	29563.4	54898.7
7 JUL 77	27356.6	80329.7	9903.6	14769.9	13771.3	43301.9	33096.5	32130.9
18 JUL 77	907.9	2143.2	2330.6	81075.7	114.5	—	416.2	14498.0
25 JUL 77	453730.8	128507.4	1741.1	10569.6	1847.8	7750.6	108048.8	101742.3
15 AUG 77	978.5	234.7	128.3	13222.6	340.0	114.3	8.4	2146.7
14 SEP 77	0.0	0.0	2792.9	1713.6	0.0	0.0	--	751.1
13 OCT 77	0.0	0.0	0.0	0.0	9.8	249.5	27.5	41.0
14 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	52998.0	15518.0	9962.6	7582.3	8796.0	6002.3	13049.7	15853.6
				NIGHT				
26 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 JUN 77	578.6	2383.2	7705.4	11637.6	5971.6	2586.1	4726.3	5084.1
16 JUN 77	48563.7	23674.3	—	—	—	—	—	36119.0
23 JUN 77	0.0	56476.1	71716.2	—	13792.4	14832.5	7983.9	27466.9
30 JUN 77	55953.0	3324.8	--	31209.1	22210.5	26127.1	269229.2	68009.0
7 JUL 77	57702.4	45986.8	56962.0	93091.8	98767.2	30843.2	268300.8	93093.5
14 JUL 77	25622.6	38202.3	3287.7	85197.6	29477.0	2779.0	32825.2	31055.9
21 JUL 77	98291.6	—	157283.8	98466.0	108517.6	242788.4	40576.9	124320.7
28 JUL 77	14014.6	34159.8	13392.4	236457.2	26545.5	16950.5	13365.5	50697.9
25 AUG 77	3722.3	6956.6	1622.8	45353.9	13974.6	3359.8	29026.1	14859.4
15 SEP 77	11805.2	7691.9	2207.0	3812.1	8979.9	2366.0	2303.9	5595.1
20 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 DEC 77	0.0	0.0	0.0	—	0.0	0.0	0.0	0.0
MEAN	19765.9	14590.4	22441.2	46555.8	21882.4	22842.2	44555.9	27123.5

Note: Dashes (—) indicate data not available.

TABLE C.2-7 BOTTOM DENSITIES (No./1,000 m^3) OF NEOMYSIS AMERICANA COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
DAY								
12 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9 MAY 77	—	0.0	—	0.0	0.0	0.0	0.0	0.0
16 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23 MAY 77	0.0	0.0	0.0	—	0.0	0.0	0.0	0.0
2 JUN 77	0.0	371.1	10624.8	2714.8	8137.9	16228.7	1677.9	5679.3
6 JUN 77	1900.0	207.3	5262.3	334.3	1848.0	1434.5	3991.5	2139.7
13 JUN 77	4394.0	4994.8	6381.6	3081.7	14880.9	4680.9	4425.0	6119.8
23 JUN 77	375027.6	160650.7	56003.9	12070.4	220119.9	48151.1	235898.0	158274.5
27 JUN 77	242379.3	132785.0	240476.6	135087.6	64946.3	9828.1	67839.7	127620.4
7 JUL 77	43845.3	0.0	69161.1	11860.7	71786.3	0.0	57526.9	36311.5
11 JUL 77	11955.8	38337.7	36665.8	88320.4	58392.6	65719.6	38840.9	48319.0
18 JUL 77	154726.6	188142.0	312891.2	127968.4	26118.0	—	222178.0	172004.0
25 JUL 77	679430.1	4874.3	756404.0	75806.9	801152.0	85771.4	361994.8	395062.0
15 AUG 77	13915.8	66031.0	56316.6	23655.1	13909.0	14393.8	7423.7	27949.3
14 SEP 77	4377.4	23819.3	12397.8	19278.7	530.1	—	0.0	7968.7
13 OCT 77	0.0	0.0	0.0	42.0	0.0	2061.7	42.5	306.6
14 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	80859.4	32642.8	86810.3	27290.1	67464.3	14604.1	52728.4	52265.7
NIGHT								
26 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 JUN 77	8640.3	3845.8	4266.0	4112.3	1884.2	6816.1	5479.0	5006.2
16 JUN 77	40637.0	34724.9	—	—	—	—	—	37680.9
23 JUN 77	250731.6	0.0	—	62813.1	7453.5	3717.3	13095.0	58300.1
30 JUN 77	70697.9	140173.2	211388.8	98746.8	660231.0	33098.2	12654.6	175284.4
7 JUL 77	55555.1	60494.9	118579.0	60951.4	64601.1	48604.3	68696.4	68211.7
14 JUL 77	121148.0	34723.1	28638.3	107075.7	129718.2	10955.5	50199.1	69922.6
21 JUL 77	221790.3	—	208736.0	65415.1	215773.6	—	36299.6	149602.9
28 JUL 77	96018.3	41133.3	63362.4	614609.6	31879.2	64578.1	34850.2	135204.5
25 AUG 77	5473.8	3667.1	3697.7	142884.8	99387.9	14197.4	4142.1	38921.5
15 SEP 77	6999.4	11283.0	5877.0	7501.1	18223.9	6764.6	7687.6	9190.9
20 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 DEC 77	0.0	0.0	0.0	—	0.0	0.0	0.0	0.0
MEAN	54855.7	22003.0	46038.9	83150.7	81876.8	13480.8	15539.6	45304.6

Note: Dashes (—) indicate data not available.

TABLE C.2-8 SURFACE DENSITIES (No./1,000 m^3) OF MONOCULODES EDWARDSI COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
				DAY				
12 APR 77	8.7	0.0	0.0	0.0	7.5	0.0	0.0	2.3
2 MAY 77	0.0	0.0	0.0	0.0	0.0	7.8	0.0	1.1
9 MAY 77	—	0.0	—	0.0	0.0	0.0	0.0	0.0
16 MAY 77	0.0	0.0	37.6	0.0	0.0	0.0	0.0	5.4
23 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23 JUN 77	0.0	4.0	0.0	0.0	0.0	0.0	3.7	1.1
7 JUL 77	0.0	4.3	3.3	0.0	0.0	3.1	40.7	7.3
18 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 JUL 77	0.0	0.0	0.0	6.7	0.0	0.0	0.0	1.0
15 AUG 77	0.0	10.4	0.0	0.0	0.0	0.0	0.0	1.5
14 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 NOV 77	19.8	0.0	8.6	0.0	0.0	0.0	0.0	4.1
5 DEC 77	0.0	0.0	0.0	0.0	9.1	0.0	7.2	2.3
MEAN	1.6	1.4	2.9	0.4	0.9	0.7	5.0	1.8
				NIGHT				
26 APR 77	0.0	20.9	8.5	9.3	104.3	14.6	144.0	43.1
5 MAY 77	8.6	65.2	48.6	123.5	33.9	0.0	67.2	49.6
12 MAY 77	14.0	0.0	58.2	75.1	132.7	19.8	184.7	69.2
2 JUN 77	0.0	0.0	0.0	0.0	221.1	0.0	0.0	31.6
16 JUN 77	158.0	0.0	—	—	—	—	—	79.0
23 JUN 77	557.2	412.2	973.5	241.2	68.7	0.0	0.0	321.8
30 JUN 77	0.0	8.0	29.3	1425.2	311.4	461.1	44.7	325.7
7 JUL 77	852.5	1225.1	548.3	102.4	254.5	7.0	0.0	427.1
14 JUL 77	0.0	546.0	957.9	1489.0	0.0	0.0	—	498.8
21 JUL 77	561.5	532.8	2421.9	269.2	8581.8	0.0	4123.6	2355.8
28 JUL 77	282.9	0.0	128.7	18332.0	586.9	372.9	1191.9	2985.0
25 AUG 77	0.0	164.6	18.0	18.2	175.0	17.0	0.0	56.1
15 SEP 77	21.2	19.7	25.8	54.5	36.2	0.0	36.4	27.7
20 OCT 77	0.0	0.0	46.2	301.5	304.2	182.6	428.1	180.4
16 NOV 77	0.0	40.6	487.4	466.9	670.1	135.5	1616.7	488.2
6 DEC 77	0.0	8.4	179.9	0.0	147.9	141.5	411.6	127.0
MEAN	153.5	190.2	395.5	1527.2	775.2	90.1	589.2	524.2

Note: Dashes (--) indicate data not available.

TABLE C.2-9 MIDDEPTH DENSITIES (No./1,000 m^3) OF MONOCULODES EDWARDSI COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
DAY								
12 APR 77	451.5	145.5	344.5	35.0	365.7	0.0	198.2	220.1
2 MAY 77	29.1	45.2	299.7	201.5	0.0	17.3	0.0	84.7
9 MAY 77	—	0.0	—	0.0	59.5	63.2	106.7	45.9
16 MAY 77	9.7	29.2	0.0	216.4	0.0	0.0	0.0	36.5
23 MAY 77	0.0	0.0	0.0	9.8	0.0	16.4	54.8	11.6
2 JUN 77	0.0	28.0	68.7	42.1	25.3	51.1	229.6	63.5
13 JUN 77	0.0	0.0	7.4	0.0	0.0	0.0	0.0	1.1
23 JUN 77	2052.6	8.4	1127.8	30.5	0.0	0.0	131.6	478.7
7 JUL 77	2001.7	1827.5	476.4	170.8	1236.8	4330.2	1144.9	1567.3
18 JUL 77	0.0	0.0	0.0	0.0	0.0	--	0.0	0.0
25 JUL 77	2150.4	0.0	0.0	0.0	0.0	0.0	0.0	307.2
15 AUG 77	0.0	0.0	0.0	89.6	0.0	9.5	0.0	14.2
14 SEP 77	0.0	36.4	77.6	0.0	0.0	0.0	--	19.0
13 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 NOV 77	2914.5	42.1	10014.9	0.0	1013.7	635.9	0.0	2088.7
5 DEC 77	0.0	0.0	233.3	93.0	357.1	0.0	288.0	138.8
MEAN	686.0	211.9	795.7	59.6	227.4	528.1	203.3	379.9
NIGHT								
26 APR 77	120.9	208.9	93.7	149.0	131.5	221.9	471.3	199.6
5 MAY 77	322.0	177.7	320.3	155.9	23.2	227.3	92.0	188.3
12 MAY 77	80.8	51.3	86.8	188.4	0.0	71.7	125.1	86.3
2 JUN 77	0.0	0.0	0.0	0.0	327.2	23.6	116.5	66.8
16 JUN 77	6967.8	1009.8	—	—	—	--	--	3988.8
23 JUN 77	1667.7	1644.9	904.9	—	344.8	1332.6	652.3	1091.2
30 JUN 77	2439.4	16.1	—	129.5	3603.7	9919.9	1480.8	2931.6
7 JUL 77	5152.0	4877.4	3735.2	3815.2	8230.6	235.4	11623.1	5381.3
14 JUL 77	6290.6	2909.4	65.8	10972.4	2035.5	546.9	526.6	3335.3
21 JUL 77	8138.8	--	13061.6	2524.8	4156.0	14212.0	8636.3	8454.9
28 JUL 77	1526.9	0.0	1540.7	26529.4	9757.3	5039.3	8933.6	7618.2
25 AUG 77	210.3	1016.1	80.1	755.9	520.8	125.2	0.0	386.9
15 SEP 77	85.5	549.4	36.2	211.8	538.8	102.9	480.0	286.4
20 OCT 77	731.0	344.6	240.1	591.2	1037.2	1034.6	1493.4	781.7
16 NOV 77	0.0	239.4	0.0	1420.4	2598.1	1264.9	1639.3	1023.2
6 DEC 77	0.0	74.8	158.9	—	127.1	68.2	761.3	198.4
MEAN	2108.4	874.7	1451.7	3649.5	2228.8	2295.1	2468.8	2131.2

Note: Dashes (--) indicate available.

TABLE C.2-10 BOTTOM DENSITIES (No./1,000 m3) OF MONOCULODES EDWARDSI COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
				DAY				
12 APR 77	574.5	175.0	686.0	143.2	209.2	515.3	184.7	355.4
2 MAY 77	209.8	86.5	275.8	481.4	0.0	54.8	0.0	158.3
9 MAY 77	--	49.2	--	68.6	44.8	189.9	141.8	98.9
16 MAY 77	9.7	0.0	32.0	0.0	9.4	43.5	45.7	20.0
23 MAY 77	9.9	0.0	0.0	--	0.0	0.0	24.2	5.7
2 JUN 77	746.3	217.2	198.2	92.3	242.9	0.0	0.0	213.8
6 JUN 77	886.7	77.7	1428.1	55.7	416.0	1862.7	395.2	731.7
13 JUN 77	488.2	943.5	431.4	311.8	286.2	1809.6	529.2	685.7
23 JUN 77	1050.5	975.6	6251.6	126.4	1667.6	3278.4	4467.8	2545.4
27 JUN 77	3479.1	5051.8	6924.3	8780.7	7941.0	2896.4	3277.3	5478.7
7 JUL 77	24271.5	3758.8	3793.6	1011.4	15749.0	17566.3	6903.2	10436.3
11 JUL 77	1354.6	2180.3	4330.6	5261.6	2526.6	533.1	1261.1	2492.6
18 JUL 77	14735.9	955.0	3977.4	1079.9	1154.4	--	6229.3	4688.7
25 JUL 77	12900.6	18.7	5535.7	13230.5	8119.8	7252.7	16283.5	9048.8
15 AUG 77	4431.3	2141.5	2223.0	1100.2	2809.2	2067.2	963.7	2248.0
14 SEP 77	0.0	309.3	0.0	0.0	441.7	--	305.5	150.9
13 OCT 77	5720.7	0.0	547.9	587.9	812.2	38.2	0.0	1101.0
14 NOV 77	3348.2	695.0	0.0	2931.5	1249.5	291.3	488.1	1286.2
5 DEC 77	380.6	390.8	288.8	123.6	764.3	1078.7	166.1	456.1
MEAN	3926.2	948.7	2051.4	1965.9	2339.1	2322.2	2193.0	2252.1
				NIGHT				
26 APR 77	99.8	218.9	129.5	174.0	34.6	234.3	135.1	146.6
5 MAY 77	190.5	57.9	96.4	184.8	39.5	109.5	147.7	118.0
12 MAY 77	48.7	20.9	0.0	33.9	85.5	32.4	83.7	43.6
2 JUN 77	0.0	0.0	0.0	0.0	65.7	835.9	254.2	165.1
16 JUN 77	5341.5	2861.9	--	--	--	--	--	4101.7
23 JUN 77	2433.7	3950.8	--	1009.9	2930.4	547.6	323.9	1866.0
30 JUN 77	15222.0	63411.7	12279.8	7232.2	17060.6	15841.9	7063.1	19730.2
7 JUL 77	3003.0	0.0	3915.3	2071.2	10101.3	5832.5	11575.2	5214.1
14 JUL 77	3171.4	6014.1	6418.9	21118.7	15984.2	9419.3	3750.5	9411.0
21 JUL 77	28132.7	--	15303.2	1303.1	35055.7	--	12305.0	18419.9
28 JUL 77	32698.1	3936.2	12498.1	39022.3	12567.8	19436.1	19333.0	19927.4
25 AUG 77	1765.7	977.9	708.1	3402.0	3279.6	766.2	1082.3	1711.7
15 SEP 77	162.8	3982.2	402.5	652.3	1301.7	691.8	1225.6	1202.7
20 OCT 77	818.4	0.0	0.0	1998.2	1738.4	496.8	207.5	751.3
16 NOV 77	1022.5	0.0	430.6	1339.6	1799.4	2095.3	1310.0	1142.5
6 DEC 77	167.1	587.8	1469.0	--	199.6	477.8	642.8	590.7
MEAN	5892.4	5734.7	3832.2	5681.6	6816.3	4058.4	3962.6	5165.0

Note: Dashes (--) indicate data not available.

TABLE C.2-11 SURFACE DENSITIES (No./1,000 m^3) OF CHAOBORUS PUNCTIPENNIS COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
DAY								
12 APR 77	52.4	66.6	8.5	19.6	22.4	0.0	9.8	25.6
2 MAY 77	0.0	0.0	7.4	0.0	0.0	0.0	0.0	1.1
9 MAY 77	—	7.5	—	0.0	8.0	26.1	0.0	8.3
16 MAY 77	4.9	24.3	0.0	10.8	5.7	0.0	7.5	7.6
23 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 JUN 77	107.2	0.0	0.0	0.0	3.3	0.0	0.0	15.8
13 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23 JUN 77	9.5	0.0	0.0	3.7	3.0	0.0	3.7	2.8
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 JUL 77	0.0	0.0	0.0	0.0	0.0	6.7	0.0	1.0
15 AUG 77	0.0	0.0	0.0	0.0	6.8	0.0	0.0	1.0
14 SEP 77	0.0	0.0	8.9	0.0	0.0	0.0	0.0	1.3
13 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 DEC 77	0.0	0.0	19.1	0.0	0.0	0.0	0.0	2.7
MEAN	16.2	5.2	2.4	2.0	2.9	1.7	1.3	4.5
NIGHT								
26 APR 77	10.3	62.8	76.9	92.5	104.3	21.9	295.1	94.8
5 MAY 77	205.6	253.7	64.8	321.2	948.4	330.1	585.2	387.0
12 MAY 77	112.4	345.2	135.8	69.8	298.5	178.0	138.5	182.6
2 JUN 77	0.0	0.0	84.4	0.0	71.1	0.0	25.3	25.8
16 JUN 77	39.5	0.0	—	—	—	—	—	19.8
23 JUN 77	50.7	132.5	584.1	884.6	137.4	5.9	44.8	262.9
30 JUN 77	0.0	0.0	0.0	0.0	15.6	76.8	0.0	13.2
7 JUL 77	47.4	222.7	0.0	58.5	0.0	0.0	0.0	46.9
14 JUL 77	33.7	0.0	0.0	0.0	0.0	0.0	—	5.6
21 JUL 77	561.5	228.4	1210.9	807.5	6865.5	0.0	274.9	1421.2
28 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	79.5	11.4
25 AUG 77	0.0	155.5	0.0	0.0	0.0	0.0	0.0	22.2
15 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	12.1	1.7
20 OCT 77	0.0	0.0	0.0	0.0	17.4	0.0	58.4	10.8
16 NOV 77	0.0	13.5	0.0	23.3	40.6	9.0	0.0	12.3
6 DEC 77	8.9	8.4	0.0	0.0	37.0	0.0	0.0	7.8
MEAN	66.9	88.9	143.8	150.5	569.1	41.4	108.1	165.8

Note: Dashes (—) indicate data not available.

TABLE C.2-12 MIDDEPTH DENSITIES (No./1,000 m3) OF CHAOBORUS PUNCTIPENNIS COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
				DAY				
12 APR 77	75.3	135.1	181.8	42.0	0.0	0.0	52.2	69.5
2 MAY 77	145.7	126.6	196.7	533.9	90.9	146.7	35.5	182.3
9 MAY 77	—	26.0	—	30.6	39.7	18.0	35.6	30.0
16 MAY 77	389.0	58.4	125.1	398.7	15.3	56.1	26.7	152.8
23 MAY 77	0.0	17.9	0.0	390.7	0.0	8.2	73.1	70.0
2 JUN 77	221.1	23.3	87.8	18.5	64.4	29.4	30.0	67.8
13 JUN 77	0.0	13.4	0.0	0.0	0.0	0.0	0.0	1.9
23 JUN 77	172.4	0.0	1153.5	19.9	564.7	115.4	268.0	327.7
7 JUL 77	370.7	688.7	227.8	0.0	0.0	0.0	0.0	169.5
18 JUL 77	10.7	38.5	20.4	0.0	0.0	—	9.0	13.1
25 JUL 77	2150.4	1040.8	17.3	0.0	69.9	38.8	0.0	473.9
15 AUG 77	195.7	58.7	39.5	448.2	8.5	9.5	0.0	108.6
14 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	—	0.0
13 OCT 77	0.0	11.3	11.8	0.0	0.0	0.0	0.0	3.3
14 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 DEC 77	0.0	8.2	33.3	0.0	0.0	0.0	0.0	5.9
MEAN	242.6	155.7	198.0	101.1	78.0	31.5	46.0	120.7
				NIGHT				
26 APR 77	197.8	309.2	322.8	74.5	202.4	57.9	253.8	202.6
5 MAY 77	116.3	236.9	131.4	491.0	108.2	269.9	248.3	228.9
12 MAY 77	185.9	139.2	241.1	274.0	188.4	87.6	179.8	185.1
2 JUN 77	0.0	848.6	355.6	454.6	654.4	602.2	1131.7	578.2
16 JUN 77	1689.2	224.4	—	—	—	—	—	956.8
23 JUN 77	0.0	779.6	904.9	—	0.0	0.0	626.2	385.1
30 JUN 77	457.4	618.4	—	388.5	0.0	139.7	134.6	289.8
7 JUL 77	0.0	580.6	233.5	0.0	294.0	0.0	0.0	158.3
14 JUL 77	0.0	379.5	32.9	322.7	376.9	156.2	351.1	231.3
21 JUL 77	1252.1	—	4353.9	0.0	923.6	2368.7	959.6	1643.0
28 JUL 77	272.7	355.8	59.3	2306.9	0.0	0.0	279.2	467.7
25 AUG 77	42.1	351.7	0.0	0.0	0.0	0.0	0.0	56.3
15 SEP 77	85.5	0.0	0.0	0.0	0.0	0.0	0.0	12.2
20 OCT 77	162.4	0.0	0.0	0.0	21.2	79.6	0.0	37.6
16 NOV 77	0.0	239.4	0.0	0.0	0.0	316.2	0.0	79.4
6 DEC 77	0.0	74.8	0.0	—	0.0	0.0	0.0	12.5
MEAN	278.8	342.5	474.0	331.7	184.6	271.9	277.6	306.4

note: Dashes (—) indicate data not available.

TABLE C.2-13 BOTTOM DENSITIES (No./1,000 m^3) OF CHAOBORUS PUNCTIPENNIS COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
DAY								
12 APR 77	253.5	151.7	190.0	58.9	129.5	74.9	195.6	150.6
2 MAY 77	136.4	230.6	234.5	394.7	239.3	320.8	85.3	234.5
9 MAY 77	—	65.6	—	78.4	145.5	60.0	81.1	86.1
16 MAY 77	87.4	51.2	95.9	324.4	56.2	26.1	155.4	113.8
23 MAY 77	227.0	153.7	584.7	—	150.8	78.5	209.4	234.0
2 JUN 77	0.0	144.8	753.3	73.9	121.5	892.6	82.2	295.5
6 JUN 77	155.9	345.5	215.2	241.4	77.4	32.1	9.9	153.9
13 JUN 77	205.6	527.2	89.9	18.3	57.2	0.0	29.4	132.5
23 JUN 77	0.0	1300.8	0.0	0.0	0.0	0.0	893.6	313.5
27 JUN 77	9277.7	1683.9	1154.1	2026.3	0.0	0.0	0.0	2020.3
7 JUL 77	195.7	0.0	583.6	91.9	0.0	0.0	0.0	124.5
11 JUL 77	117.8	0.0	1010.5	375.8	280.7	0.0	252.2	291.0
18 JUL 77	2833.8	2865.1	2651.6	0.0	0.0	—	7267.5	2603.0
25 JUL 77	0.0	205.4	2767.9	2145.5	0.0	315.3	0.0	776.3
15 AUG 77	1049.5	1784.6	185.3	366.7	0.0	459.4	71.4	559.6
14 SEP 77	0.0	0.0	0.0	0.0	0.0	--	0.0	0.0
13 OCT 77	0.0	0.0	0.0	42.0	391.0	0.0	31.9	66.4
14 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	166.1	23.7
MEAN	765.3	500.5	584.3	346.6	86.8	132.9	501.6	420.5
NIGHT								
26 APR 77	709.6	909.3	423.8	374.7	219.4	361.2	72.1	438.6
5 MAY 77	464.3	282.5	395.2	329.4	126.5	203.4	199.9	285.9
12 MAY 77	170.6	453.6	338.5	93.3	162.4	137.6	243.4	228.5
2 JUN 77	562.6	623.6	546.3	39.0	306.7	257.2	819.0	450.6
16 JUN 77	418.9	381.6	—	—	—	—	—	400.3
23 JUN 77	3799.0	0.0	—	202.0	191.1	0.0	194.3	731.1
30 JUN 77	338.3	4449.9	0.0	0.0	0.0	0.0	0.0	684.0
7 JUL 77	0.0	0.0	0.0	591.8	0.0	0.0	0.0	84.5
14 JUL 77	634.3	680.8	0.0	0.0	0.0	0.0	0.0	187.9
21 JUL 77	3925.5	—	612.1	521.2	1208.8	—	307.6	1315.0
28 JUL 77	1038.0	984.0	581.3	0.0	0.0	0.0	0.0	371.9
25 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20 OCT 77	81.8	0.0	0.0	0.0	204.5	180.7	0.0	66.7
16 NOV 77	85.2	245.2	0.0	53.6	100.0	174.6	0.0	94.1
6 DEC 77	167.1	0.0	163.2	—	0.0	0.0	257.1	97.9
MEAN	774.7	600.7	218.6	157.5	168.0	93.9	139.6	316.5

Note: Dashes (--) indicate data not available.

TABLE C.3-1 MEAN DENSITIES (No./1,000 m^3) OF TOTAL ICHTHYOPLANKTON EGGS COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977[a]

DATE	STATION A	B	C	D	E	F	G	MEAN
				DAY				
12 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 MAY 77	2.9	2.9	6.1	19.0	0.0	8.4	0.0	5.6
9 MAY 77	303.2	263.6	10.7	44.2	101.9	11.3	70.8	115.1
16 MAY 77	642.7	188.8	400.8	1507.5	50.1	26.9	80.7	413.9
23 MAY 77	502.5	71.7	247.1	261.8	151.5	182.3	452.3	267.0
2 JUN 77	7.9	15.8	4.9	12.2	37.0	21.1	9.4	15.5
6 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	6.1	0.9
13 JUN 77	25.2	17.3	0.0	11.7	174.4	1156.7	72.3	208.2
23 JUN 77	0.0	0.0	57.5	0.0	0.0	0.0	0.0	8.2
27 JUN 77	0.0	0.0	0.0	0.0	0.0	5.9	0.0	0.8
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11 JUL 77	0.0	688.3	162.1	0.0	0.0	2360.0	62.4	467.5
18 JUL 77	6.2	0.0	0.0	622.1	179.6	9.3	312.8	161.4
25 JUL 77	2.5	0.0	0.0	5.1	19.4	13.1	108.5	21.2
15 AUG 77	5.4	24.0	0.0	3.7	33.4	9767.3	2401.4	1747.9
14 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	78.9	67.0	46.8	130.9	39.3	713.8	188.2	180.7
				NIGHT				
26 APR 77	0.0	0.0	10.3	5.8	3.4	0.0	0.0	2.8
5 MAY 77	587.5	141.1	462.2	778.5	104.7	10.3	277.1	337.3
12 MAY 77	92.6	5.3	38.3	77.4	519.4	23.7	59.9	116.7
2 JUN 77	0.0	6.7	0.0	32.5	21.6	3.2	2.4	9.5
16 JUN 77	2.2	0.0	—	—	—	—	—	1.1
23 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 JUN 77	0.0	0.0	0.0	0.0	0.0	13.2	12.4	3.7
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 JUL 77	7691.8	199.0	1798.9	16266.4	743.7	393.7	4598.6	4527.4
21 JUL 77	0.0	0.0	0.0	0.0	13.4	3623.7	126.6	537.7
28 JUL 77	0.0	0.0	0.0	18.9	10.1	54.7	20.4	14.9
25 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	523.4	22.0	154.0	1145.3	94.4	274.3	339.8	363.1

Note: Dashes (—) indicate data not available.
(a. Averaged over all three depths—surface, middepth, and bottom.

TABLE C.3-2 MEAN DENSITIES (No./1,000 m^3) OF TOTAL ICHTHYOPLANKTON YOLK-SAC LARVAE COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977[a]

DATE	STATION A	B	C	D	E	F	G	MEAN
DAY								
12 APR 77	0.0	0.0	0.0	2.9	0.0	0.0	0.0	0.4
2 MAY 77	2.7	2.9	3.1	3.7	0.0	0.0	0.0	1.8
9 MAY 77	46.3	76.9	22.4	37.7	69.0	34.0	30.1	45.2
16 MAY 77	16.0	10.7	4.2	28.7	17.2	3.1	39.2	17.0
23 MAY 77	96.1	106.3	133.2	108.1	74.4	105.1	162.3	112.2
2 JUN 77	227.9	453.1	133.0	0.0	42.4	8.5	3.1	124.0
6 JUN 77	115.5	381.6	285.6	24.2	83.4	0.0	3.1	127.6
13 JUN 77	0.0	2.9	0.0	0.0	0.0	2.9	0.0	0.8
23 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.4
27 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11 JUL 77	0.0	329.5	469.7	0.0	0.0	86.3	6.1	127.4
18 JUL 77	6.2	2.5	0.0	0.0	0.0	0.0	0.0	1.2
25 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 AUG 77	0.0	0.0	0.0	0.0	0.0	111.9	0.0	16.0
14 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	26.9	71.9	55.3	10.8	15.1	18.5	13.0	30.2
NIGHT								
26 APR 77	0.0	0.0	0.0	0.0	6.8	0.0	2.8	1.4
5 MAY 77	9.1	10.4	2.8	12.0	10.6	5.3	5.7	8.0
12 MAY 77	33.6	0.0	45.1	20.9	50.1	10.7	44.8	29.3
2 JUN 77	151.4	84.6	76.8	169.9	14.5	80.5	121.0	99.8
16 JUN 77	2.2	0.0	—	—	—	—	—	1.1
23 JUN 77	0.0	0.0	0.0	2.4	0.0	0.0	0.0	0.3
30 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 JUL 77	192.6	128.7	359.3	76.3	177.6	110.9	51.5	156.7
21 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28 JUL 77	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.5
25 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	24.5	14.0	32.3	18.8	17.3	13.8	15.1	19.4

Note: Dashes (—) indicate data not available.
(a) Averaged over all three depths—surface, middepth, and bottom.

TABLE C.3-3 MEAN DENSITIES (No./1,000 m3) OF TOTAL ICHTHYOPLANKTON POST YOLK-SAC LARVAE COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977[a]

DATE	STATION A	B	C	D	E	F	G	MEAN
				DAY				
12 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23 MAY 77	7.1	13.7	29.8	15.9	35.3	45.2	19.2	23.7
2 JUN 77	341.3	482.8	431.8	0.0	20.5	0.0	59.8	190.9
6 JUN 77	892.5	254.6	502.5	292.5	639.7	0.0	45.8	375.4
13 JUN 77	0.0	0.0	0.0	0.0	0.0	23.0	0.0	3.3
23 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	7.5	1.1
27 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	65.3	39.5	50.7	16.2	36.6	3.6	7.0	31.3
				NIGHT				
26 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 JUN 77	317.1	436.6	404.7	837.7	21.9	427.2	313.8	394.2
16 JUN 77	0.0	0.0	—	—	—	—	—	0.0
23 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	19.8	27.3	27.0	55.8	1.5	28.5	20.9	25.8

Note: Dashes (—) indicate data not available.
(a) Averaged over all three depths—surface, middepth, and bottom.

TABLE C.3-4 SURFACE DENSITIES (No./1,000 m^3) OF STRIPED BASS EGGS COLLECTED AT THE STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
DAY								
12 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9 MAY 77	0.0	41.4	0.0	33.3	0.0	19.2	0.0	13.4
16 MAY 77	0.0	0.0	19.6	624.9	11.8	0.0	7.4	94.8
23 MAY 77	24.3	8.2	0.0	15.0	0.0	0.0	0.0	6.8
2 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	1.3	2.6	1.0	35.4	0.6	1.0	0.4	6.1
NIGHT								
26 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 MAY 77	16.2	46.2	0.0	106.5	7.1	0.0	34.7	30.1
12 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	13.4	1.9
2 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 JUN 77	0.0	0.0	—	—	—	—	—	0.0
23 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	1.0	2.9	0.0	7.1	0.5	0.0	3.2	2.1

Note: Dashes (—) indicate data not available.

TABLE C.3-5 MIDDEPTH DENSITIES (No./1,000 m3) OF STRIPED BASS EGGS COLLECTED AT THE STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
				DAY				
12 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 MAY 77	0.0	0.0	0.0	11.0	0.0	0.0	0.0	1.6
9 MAY 77	130.5	122.9	24.5	90.0	0.0	8.4	23.9	57.2
16 MAY 77	153.9	10.7	37.6	1635.9	30.0	37.3	109.2	287.8
23 MAY 77	358.9	185.2	296.8	226.2	243.3	262.1	189.9	251.8
2 JUN 77	0.0	9.1	0.0	0.0	0.0	0.0	0.0	1.3
6 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	33.9	17.3	18.9	103.3	14.4	16.2	17.0	31.6
				NIGHT				
26 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 MAY 77	8.8	109.7	27.9	737.5	37.4	14.8	41.5	139.7
12 MAY 77	16.5	16.0	15.5	0.0	44.7	0.0	30.0	17.5
2 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 JUN 77	0.0	0.0	—	—	—	—	—	0.0
23 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	1.6	7.9	2.9	49.2	5.5	1.0	4.8	10.3

Note: Dashes (—) indicate data not available.

TABLE C.3-6 BOTTOM DENSITIES (No./1,000 m^3) OF STRIPED BASS EGGS COLLECTED AT THE STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
DAY								
12 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 MAY 77	8.8	0.0	0.0	0.0	0.0	25.1	0.0	4.8
9 MAY 77	779.2	613.0	7.5	0.0	261.5	0.0	188.5	264.2
16 MAY 77	1774.1	555.7	1145.1	2156.7	108.5	43.3	125.6	844.1
23 MAY 77	1113.8	21.6	444.6	504.5	190.0	276.5	1134.2	526.5
2 JUN 77	0.0	20.2	0.0	0.0	0.0	0.0	0.0	2.9
6 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23 JUN 77	0.0	0.0	7.3	0.0	0.0	0.0	0.0	1.0
27 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	193.5	63.7	84.4	140.1	29.5	18.2	76.2	86.5
NIGHT								
26 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 MAY 77	1737.6	267.3	1358.6	1408.2	269.5	16.0	755.0	830.3
12 MAY 77	261.4	0.0	99.4	169.7	1513.4	71.1	136.4	321.6
2 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 JUN 77	0.0	0.0	—	—	—	—	—	0.0
23 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	124.9	16.7	97.2	105.2	118.9	5.8	59.4	75.4

Note: Dashes (—) indicate data not available.

TABLE C.3-7 SURFACE DENSITIES (No./1,000 m3) OF STRIPED BASS YOLK-SAC LARVAE COLLECTED AT THE STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
				DAY				
12 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9 MAY 77	0.0	0.0	6.6	13.3	65.5	0.0	8.7	13.4
16 MAY 77	0.0	0.0	0.0	52.1	0.0	0.0	0.0	7.4
23 MAY 77	0.0	0.0	0.0	0.0	7.4	0.0	0.0	1.1
2 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	0.0	0.0	0.3	3.4	3.8	0.0	0.5	1.2
				NIGHT				
26 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 MAY 77	0.0	7.7	0.0	0.0	0.0	0.0	0.0	1.1
12 MAY 77	77.2	0.0	42.8	0.0	6.7	0.0	40.2	23.8
2 JUN 77	74.2	38.7	105.1	101.5	0.0	0.0	100.8	60.0
16 JUN 77	0.0	0.0	—	—	—	—	—	0.0
23 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	9.5	2.9	9.9	6.8	0.4	0.0	9.4	5.6

Note: Dashes (—) indicate data not available.

TABLE C.3-8 MIDDEPTH DENSITIES (No./1,000 m^3) OF STRIPED BASS YOLK-SAC LARVAE COLLECTED AT THE STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
DAY								
12 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9 MAY 77	74.6	53.8	0.0	72.0	50.6	66.8	71.8	55.7
16 MAY 77	26.8	32.2	12.5	0.0	30.0	9.3	45.5	22.3
23 MAY 77	119.6	298.3	96.0	124.4	169.2	54.0	363.4	175.0
2 JUN 77	37.7	838.3	78.8	0.0	81.8	0.0	9.4	149.4
6 JUN 77	57.5	61.5	541.3	28.8	212.1	0.0	9.2	130.1
13 JUN 77	0.0	0.0	0.0	0.0	0.0	8.6	0.0	1.2
23 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	16.6	67.6	38.3	11.9	28.6	7.3	26.3	28.1
NIGHT								
26 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	8.3	1.2
12 MAY 77	8.3	0.0	54.2	0.0	0.0	8.2	22.5	13.3
2 JUN 77	68.2	85.3	0.0	257.7	32.8	162.4	104.9	101.6
16 JUN 77	0.0	0.0	—	—	—	—	—	0.0
23 JUN 77	0.0	0.0	0.0	7.2	0.0	0.0	0.0	1.0
30 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	4.8	5.3	3.6	17.7	2.2	11.4	9.0	7.7

Note: Dashes (—) indicate data not available.

TABLE C.3-9 BOTTOM DENSITIES (No./1,000 m3) OF STRIPED BASS YOLK-SAC LARVAE COLLECTED AT THE STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
				DAY				
12 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9 MAY 77	27.2	74.9	22.6	9.4	91.0	35.2	9.9	38.6
16 MAY 77	14.4	0.0	0.0	0.0	14.5	0.0	26.9	8.0
23 MAY 77	63.6	0.0	268.6	171.4	31.7	226.2	49.3	115.8
2 JUN 77	554.6	374.2	103.5	0.0	27.2	0.0	0.0	151.4
6 JUN 77	279.5	1075.7	235.7	34.2	0.0	0.0	0.0	232.2
13 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	7.5	1.1
27 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	49.4	80.3	33.2	11.3	8.7	13.8	4.9	28.8
				NIGHT				
26 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	8.8	1.3
12 MAY 77	0.0	0.0	38.2	0.0	67.6	15.8	35.9	22.5
2 JUN 77	226.5	39.9	52.1	93.9	0.0	28.9	80.2	74.5
16 JUN 77	0.0	0.0	—	—	—	—	—	0.0
23 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	14.2	2.5	6.0	6.3	4.5	3.0	8.3	6.4

Note: Dashes (--) indicate data not available.

TABLE C.3-10 SURFACE DENSITIES (No./1,000 m^3) OF STRIPED BASS POST YOLK-SAC LARVAE COLLECTED AT THE STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
DAY								
12 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NIGHT								
26 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 JUN 77	659.1	415.9	974.4	830.9	0.0	0.0	67.2	421.1
16 JUN 77	0.0	0.0	—	—	—	—	—	0.0
23 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	41.2	26.0	65.0	55.4	0.0	0.0	4.5	27.5

Note: Dashes (--) indicate data not available.

TABLE C.3-11 MIDDEPTH DENSITIES (No./1,000 m3) OF STRIPED BASS POST YOLK-SAC LARVAE COLLECTED AT THE STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
				DAY				
12 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23 MAY 77	0.0	41.2	52.4	0.0	95.2	77.1	41.3	43.9
2 JUN 77	150.7	1266.5	659.8	0.0	61.4	0.0	179.5	331.1
6 JUN 77	1656.0	237.4	905.1	680.7	1919.0	0.0	137.4	790.8
13 JUN 77	0.0	0.0	0.0	0.0	0.0	69.1	0.0	9.9
23 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	95.1	81.3	85.1	35.8	109.2	7.7	18.9	61.9
				NIGHT				
26 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 JUN 77	292.2	554.4	0.0	618.5	65.7	1175.5	480.7	455.3
16 JUN 77	0.0	0.0	—	—	—	—	—	0.0
23 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	18.3	34.7	0.0	41.2	4.4	78.4	32.0	29.8

Note: Dashes (—) indicate data not available.

TABLE C.3-12 BOTTOM DENSITIES (No./1,000 m^3) OF STRIPED BASS POST YOLK-SAC LARVAE COLLECTED AT THE STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

DATE	STATION A	B	C	D	E	F	G	MEAN
DAY								
12 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23 MAY 77	21.2	0.0	37.1	47.6	10.6	58.6	16.4	27.4
2 JUN 77	873.2	182.0	635.5	0.0	0.0	0.0	0.0	241.5
6 JUN 77	1021.5	526.4	602.4	196.8	0.0	0.0	0.0	335.3
13 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	22.5	3.2
27 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	100.8	37.3	67.1	12.9	0.6	3.1	2.0	32.0
NIGHT								
26 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 JUN 77	0.0	339.6	239.8	1063.7	0.0	106.0	393.6	306.1
16 JUN 77	0.0	0.0	—	—	—	—	—	0.0
23 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	0.0	21.2	16.0	70.9	0.0	7.1	26.2	20.0

Note: Dashes (—) indicate data not available.

TABLE C.3-13 MEAN DENSITIES (No./1,000 m^3) OF WHITE PERCH EGGS COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977[a]

DATE	STATION A	B	C	D	E	F	G	MEAN
				DAY				
12 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 MAY 77	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.4
23 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	3.1	1.0
2 JUN 77	3.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 DEC 77	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1
MEAN	0.2	0.0	0.0	0.0	0.0			
				NIGHT				
26 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 JUN 77	0.0	0.0	0.0	0.0	0.0	—	—	0.0
16 JUN 77	0.0	0.0	—	—	—	0.0	0.0	0.0
23 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	0.0	0.0	0.0	0.0	0.0			

Note: Dashes (—) indicate data not available.
(a) Averaged over all three depths—surface, middepth, and bottom.

TABLE C.3-14 MEAN DENSITIES (No./1,000 m3) OF WHITE PERCH YOLK-SAC LARVAE COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977[a]

DATE	STATION A	B	C	D	E	F	G	MEAN
				DAY				
12 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9 MAY 77	0.0	2.6	0.0	0.0	0.0	0.0	0.0	0.4
16 MAY 77	2.2	0.0	0.0	0.0	2.4	0.0	6.1	1.5
23 MAY 77	19.5	3.4	5.8	0.0	4.9	8.9	16.5	8.4
2 JUN 77	23.6	33.4	69.0	0.0	6.0	4.2	0.0	19.5
6 JUN 77	3.2	0.0	23.6	3.2	12.7	0.0	0.0	6.1
13 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	2.6	2.1	5.2	0.2	1.4	0.7	1.2	1.9
				NIGHT				
26 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 MAY 77	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.4
12 MAY 77	0.0	0.0	0.0	0.0	2.8	0.0	0.0	0.4
2 JUN 77	0.0	30.0	24.4	9.2	3.6	11.6	17.0	13.7
16 JUN 77	0.0	0.0	—	—	—	—	—	0.0
23 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	0.2	1.9	1.6	0.6	0.4	0.8	1.1	0.9

Note: Dashes (—) indicate data not available.
(a) Averaged over all three depths--surface, middepth, and bottom.

TABLE C.3-15 MEAN DENSITIES (No./1,000 m3) OF ALOSA SPP. YOLK-SAC LARVAE COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977[a]

DATE	STATION A	B	C	D	E	F	G	MEAN
DAY								
12 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 MAY 77	2.7	2.9	0.0	0.0	0.0	0.0	0.0	0.8
9 MAY 77	9.3	17.6	9.9	6.1	0.0	0.0	0.0	6.1
16 MAY 77	0.0	0.0	0.0	7.4	0.0	0.0	6.0	1.9
23 MAY 77	15.5	0.0	2.9	9.5	0.0	2.8	8.2	5.6
2 JUN 77	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.9
6 JUN 77	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.4
13 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 DEC 77	0.0	0.0	0.0	0.0	0.0	0.1	0.7	0.8
MEAN	1.6	1.2	0.8	1.2	0.0			
NIGHT								
26 APR 77	0.0	0.0	0.0	0.0	6.8	0.0	2.8	1.4
5 MAY 77	6.4	7.9	2.8	12.0	7.9	5.3	0.0	6.1
12 MAY 77	5.1	0.0	0.0	20.9	22.5	2.7	12.0	9.0
2 JUN 77	3.3	0.0	0.0	3.5	0.0	0.0	0.0	1.0
16 JUN 77	0.0	0.0	—	—	—	—	—	0.0
23 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	0.9	0.5	0.2	2.4	2.5	0.5	1.0	1.1

Note: Dashes (—) indicate data not available.
(a) Averaged over all three depths—surface, middepth, and bottom.

TABLE C.3-16 MEAN DENSITIES (No./1,000 m3) OF BAY ANCHOVY EGGS COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977[a]

DATE	STATION A	B	C	D	E	F	G	MEAN
DAY								
12 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23 MAY 77	0.0	0.0	0.0	3.2	0.0	0.0	0.0	0.5
2 JUN 77	3.9	6.1	4.9	12.2	9.4	21.1	3.1	8.7
6 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	3.1	0.4
13 JUN 77	25.2	17.3	0.0	11.7	174.4	1156.7	72.3	208.2
23 JUN 77	0.0	0.0	55.1	0.0	0.0	0.0	0.0	7.9
27 JUN 77	0.0	0.0	0.0	0.0	0.0	5.9	0.0	0.8
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11 JUL 77	0.0	688.3	162.1	0.0	0.0	2360.0	62.4	467.5
18 JUL 77	6.2	0.0	0.0	622.1	179.6	9.3	312.8	161.4
25 JUL 77	2.5	0.0	0.0	0.0	19.4	13.1	108.5	20.5
15 AUG 77	5.4	24.0	0.0	3.7	33.4	9767.3	2401.4	1747.9
14 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	2.3	38.7	11.7	34.4	21.9	701.8	156.0	138.1
NIGHT								
26 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 JUN 77	0.0	6.7	0.0	15.7	3.6	3.2	2.4	4.5
16 JUN 77	2.2	0.0	—	—	—	—	—	1.1
23 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 JUN 77	0.0	0.0	0.0	0.0	0.0	13.2	12.4	3.7
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 JUL 77	7691.8	199.0	1798.9	16266.4	743.7	393.7	4598.6	4527.4
21 JUL 77	0.0	0.0	0.0	0.0	13.4	3623.7	126.6	537.7
28 JUL 77	0.0	0.0	0.0	18.9	10.1	54.7	20.4	14.9
25 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	480.9	12.9	119.9	1086.7	51.4	272.6	317.4	332.9

Note: Dashes (—) indicate data not available.
(a) Averaged over all three depths—surface, middepth, and bottom.

TABLE C.3-17 MEAN DENSITIES (No./1,000 m3) OF BAY ANCHOVY YOLK-SAC LARVAE COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977[a]

DATE	STATION A	B	C	D	E	F	G	MEAN
				DAY				
12 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 JUL 77	0.0	0.0	0.0	0.0	0.0	86.3	6.1	127.4
11 JUL 77	0.0	329.5	469.7	0.0	0.0	0.0	0.0	1.2
18 JUL 77	6.2	2.5	0.0	0.0	0.0	0.0	0.0	0.0
25 JUL 77	0.0	0.0	0.0	0.0	0.0	111.9	0.0	16.0
15 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 DEC 77	0.0	0.0	0.0	0.0	0.0	10.4	0.3	7.6
MEAN	0.3	17.5	24.7	0.0	0.0			
				NIGHT				
26 APR 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12 MAY 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 JUN 77	0.0	0.0	—	—	—	—	—	0.0
23 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 JUN 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 JUL 77	192.6	128.7	356.9	76.3	177.6	110.9	51.5	156.4
21 JUL 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28 JUL 77	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.5
25 AUG 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 SEP 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20 OCT 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 NOV 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 DEC 77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEAN	12.3	8.0	23.8	5.1	11.8	7.4	3.4	10.3

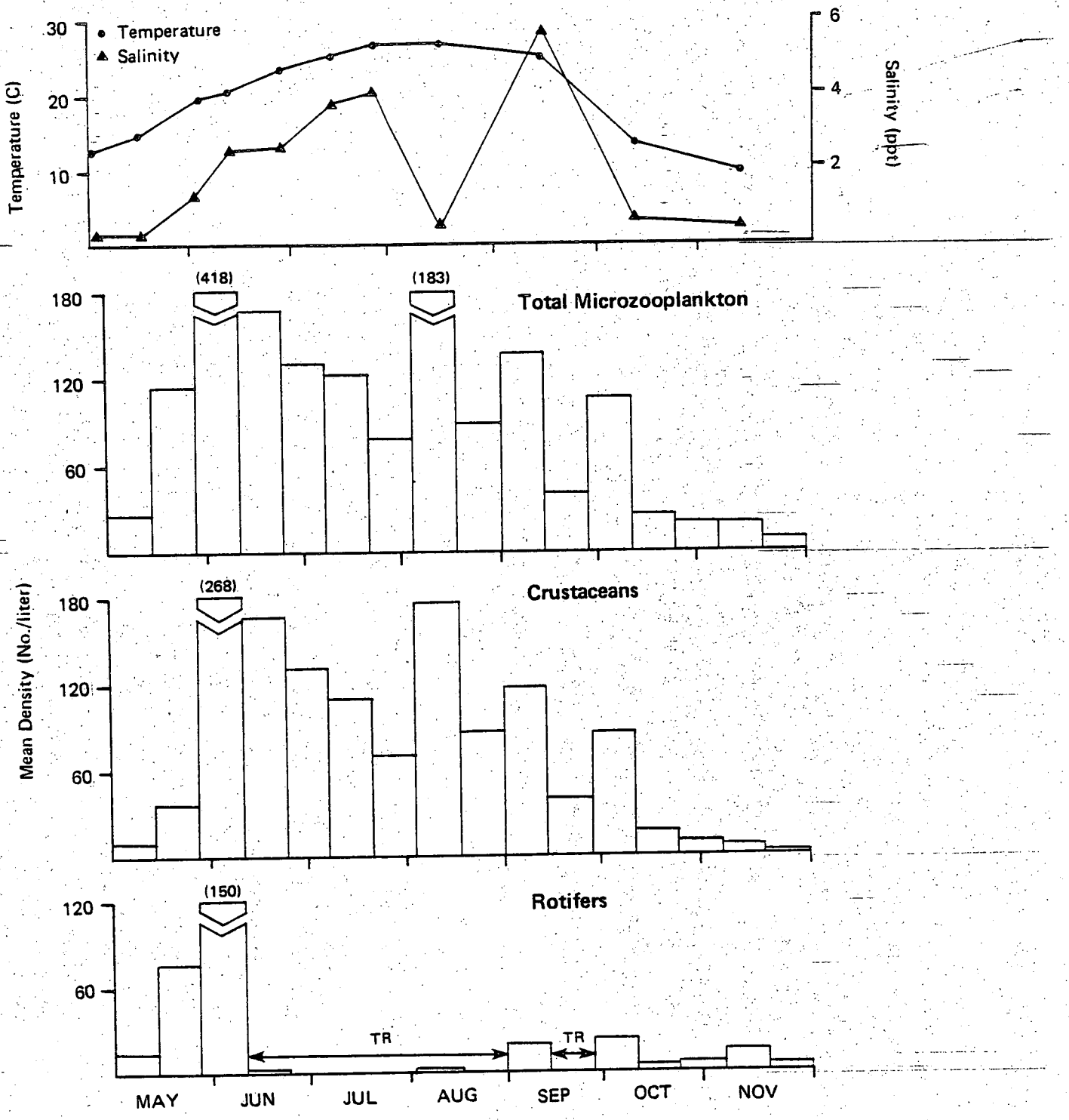
Note: Dashes (—) indicate data not available.
(a) Averaged over all three depths—surface, middepth, and bottom.

APPENDIX D

SEASONAL ABUNDANCE OF SELECTED TAXA COLLECTED AT STANDARD RIVER STATIONS, INDIAN POINT GENERATING STATION, 1977

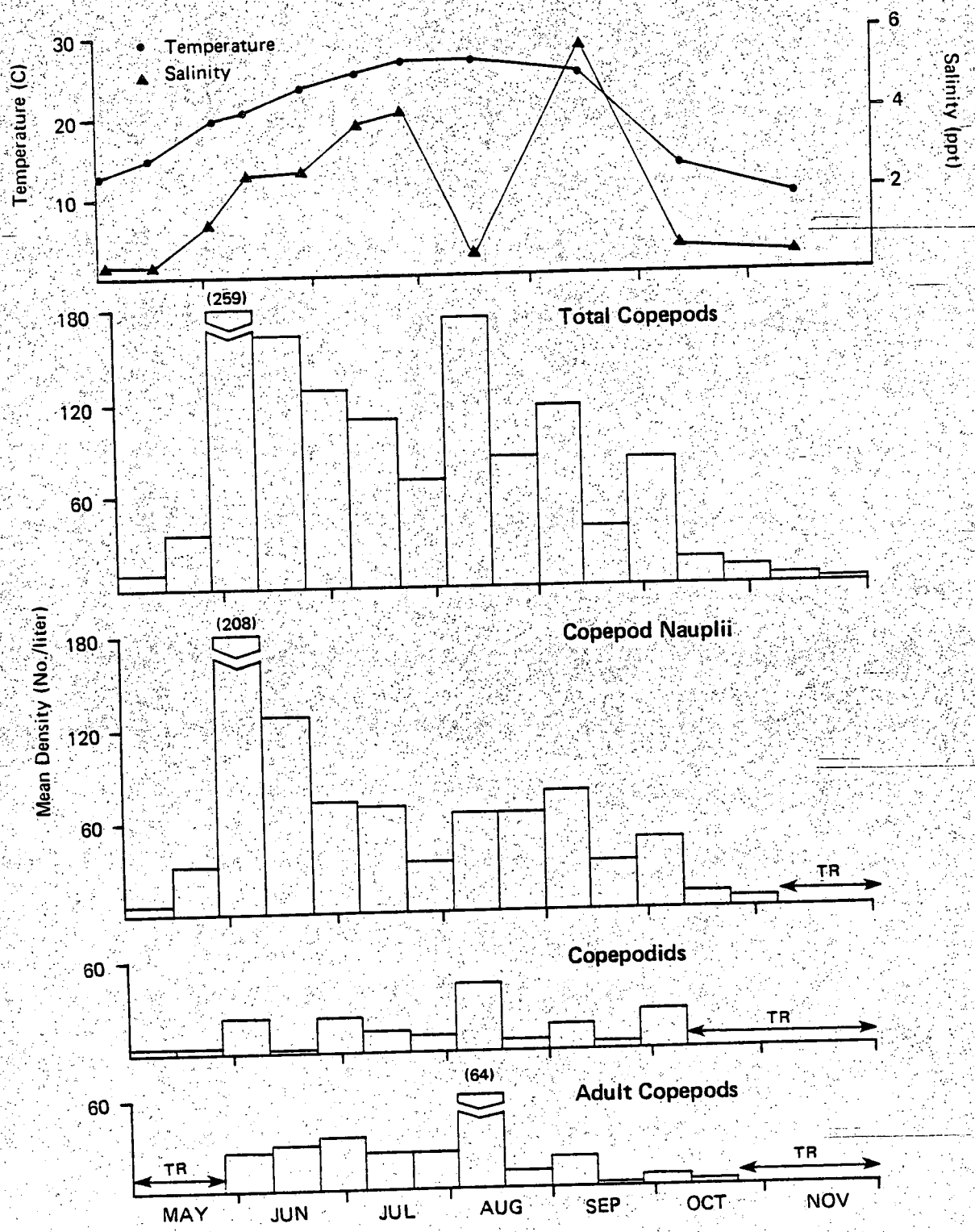
APPENDIX D FIGURES

Title	Number
D.1 MICROZOOPLANKTON SEASONAL ABUNDANCE	
Total Microzooplankton, Crustaceans and Rotifers	D.1-1
Copepod Nauplii, Copepodids and Copepod Adults	D.1-2
Acartia tonsa and *Eurytemora affinis*	D.1-3
Total Cladocerans, *Bosmina longirostris*, and *Diaphanosoma brachyurum*	D.1-4
D.2 MACROZOOPLANKTON SEASONAL ABUNDANCE	
Total Macrozooplankton	D.2-1
Gammarus spp., *Neomysis americana*, *Monoculodes edwardsi*, *Chaoborus punctipennis*	D.2-2
D.3 ICHTHYOPLANKTON SEASONAL ABUNDANCE	
Total Ichthyoplankton	D.3-1
Striped bass	D.3-2
White perch	D.3-3
Alosa spp.	D.3-4
Bay anchovy	D.3-5



TR indicates trace numbers collected.

Figure D.1-1. Mean densities (No./liter) of total microzooplankton, crustaceans, and rotifers collected at standard river stations in the vicinity of the Indian Point Generating Station, 1977. (See Appendix A for water quality data.)



TR indicates trace numbers collected.

Figure D.1-2. Mean densities (No./liter) of copepod nauplii, copepodids, and copepod adults collected at standard river stations in the vicinity of the Indian Point Generating Station, 1977. (See Appendix A for water quality data.)

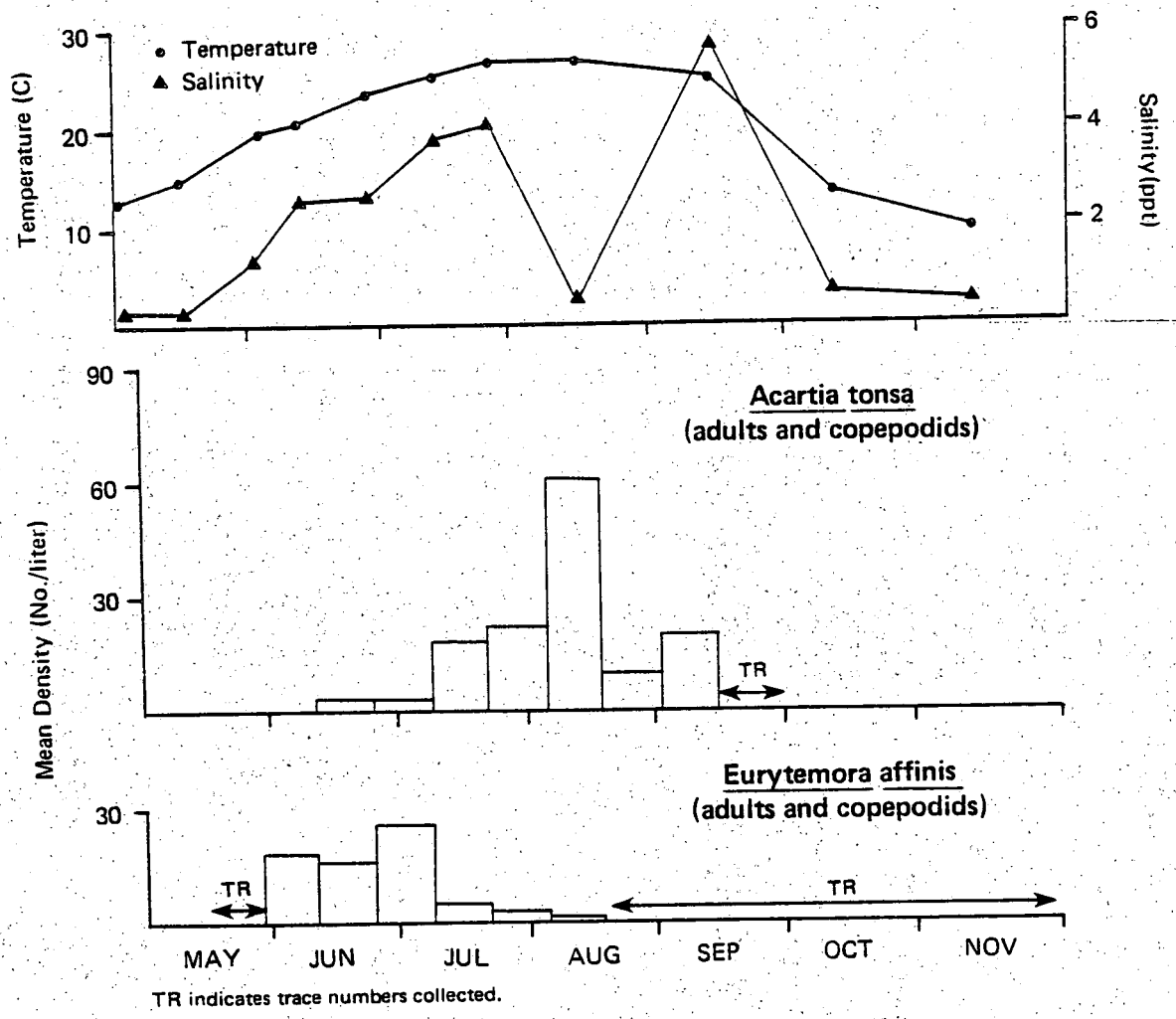
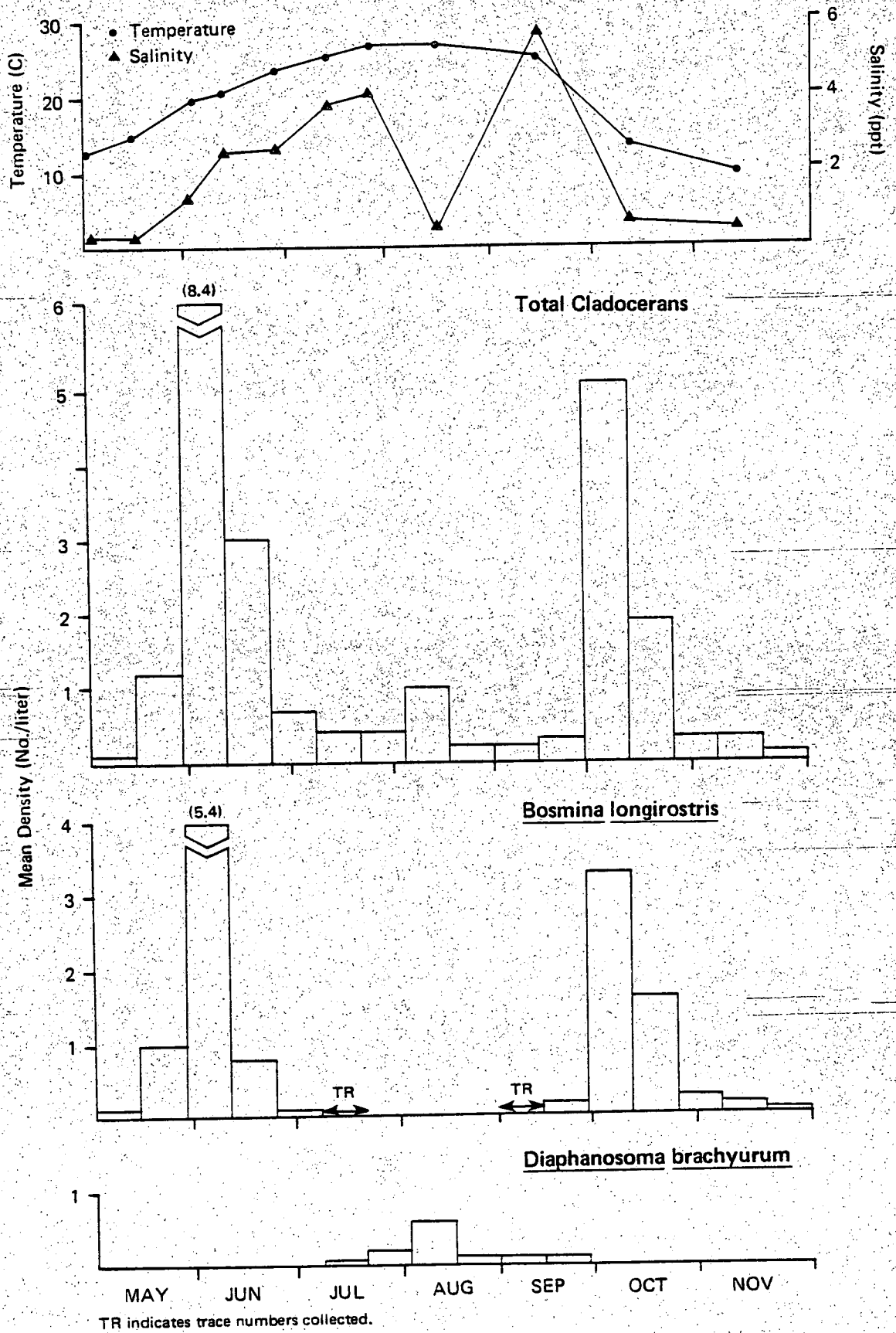
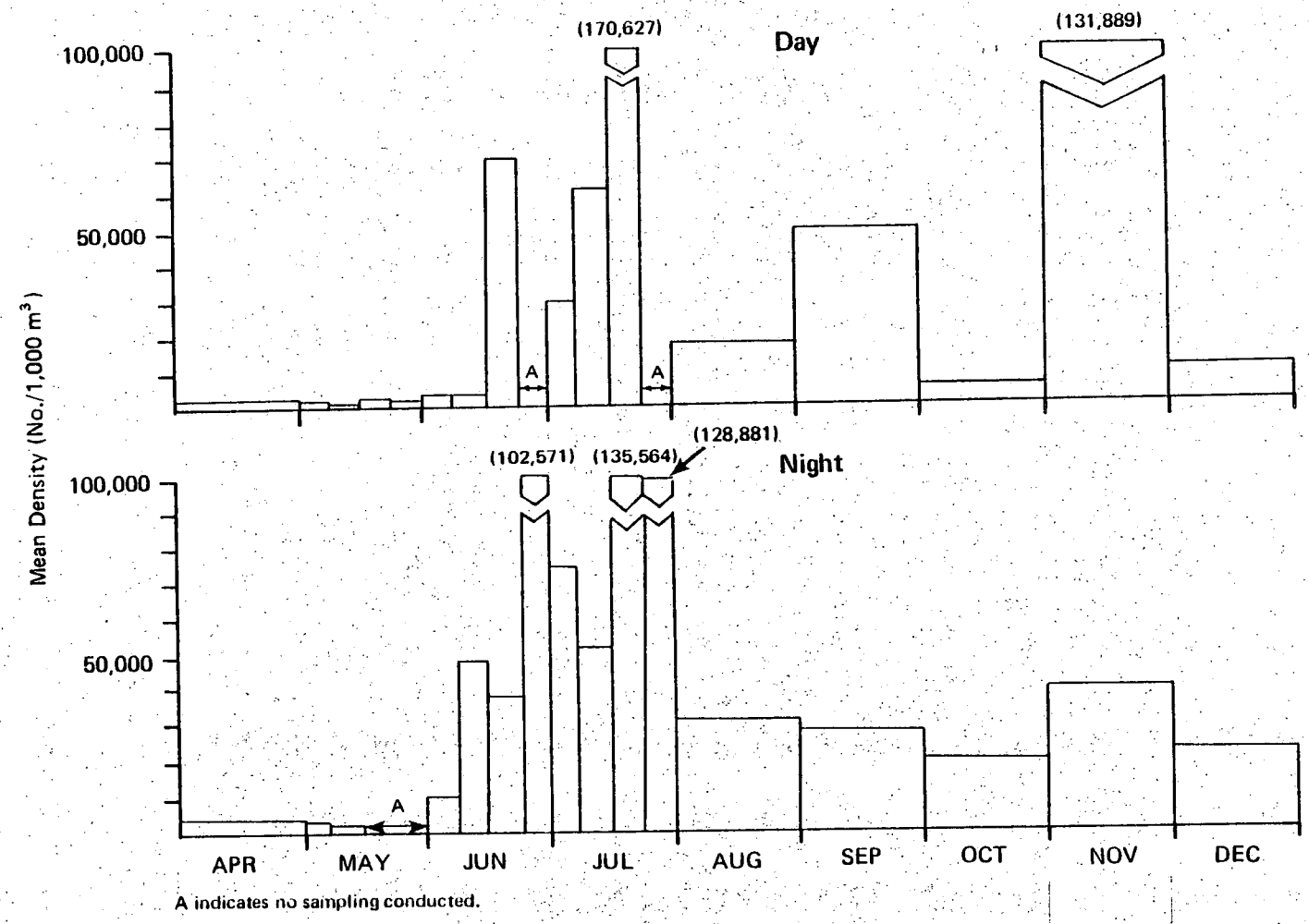


Figure D.1-3. Mean densities (No./liter) of Acartia tonsa and Eurytemora affinis collected at standard river stations in the vicinity of the Indian Point Generating Station, 1977. (See Appendix A for water quality data.)



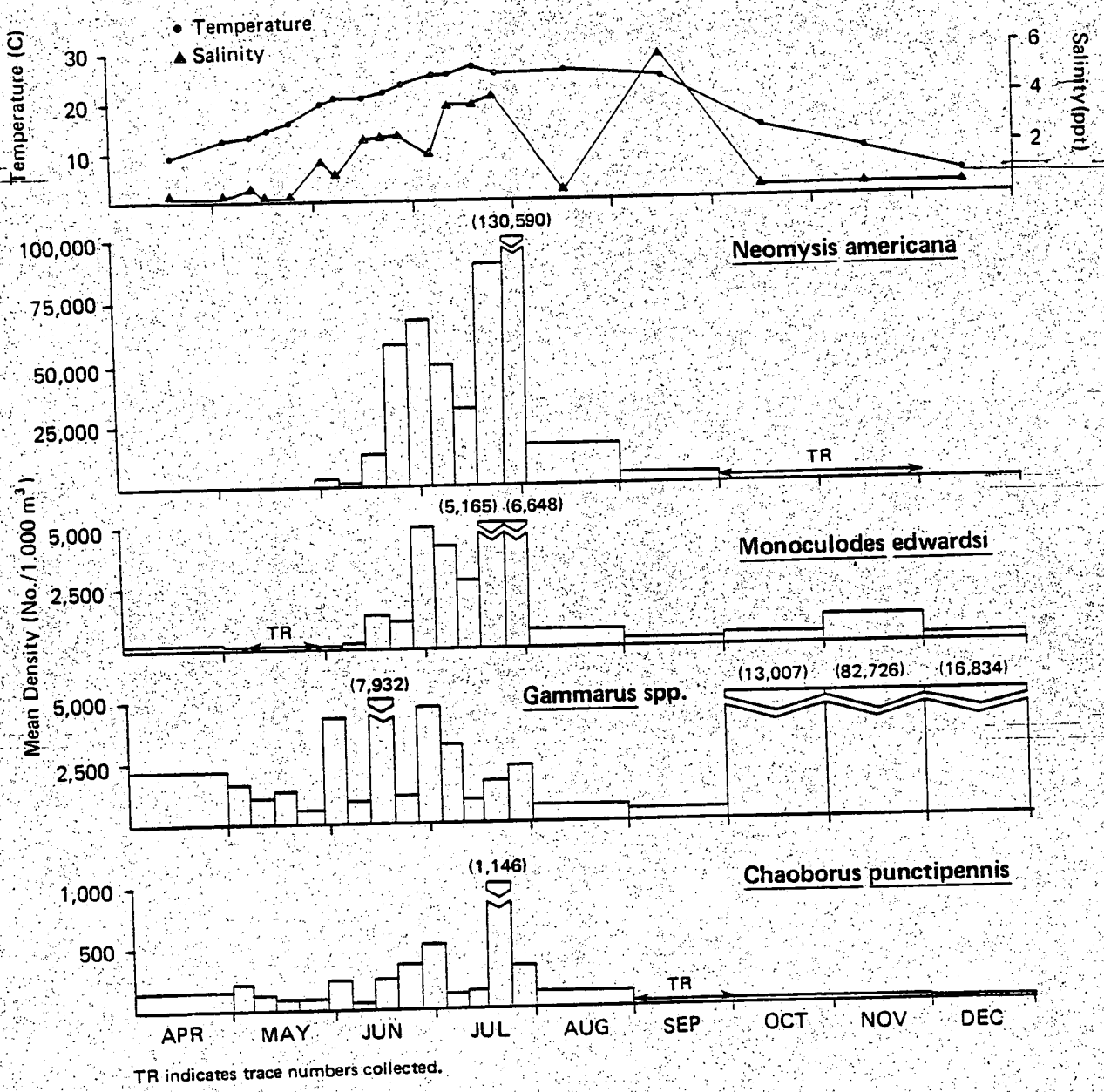
TR indicates trace numbers collected.

Figure D.1-4. Mean densities (No./liter) of total cladocerans, Bosmina longirostris, and Diaphanosoma brachyurum collected at standard river stations in the vicinity of the Indian Point Generating Station, 1977. (See Appendix A for water quality data.)



A indicates no sampling conducted.

Figure D.2-1. Day and night mean densities (No./1,000 m^3) of total macrozooplankton collected at standard river stations in the vicinity of the Indian Point Generating Station, 1977.



TR indicates trace numbers collected.

Figure D.2-2. Mean densities (No./1,000 m^3) of four major macrozooplankton taxa (Neomysis americana, Monoculodes edwardsi, Gammarus spp., and Chaoborus punctipennis) collected at standard river stations in the vicinity of the Indian Point Generating Station, 1977. (See Appendix A for water quality data.)

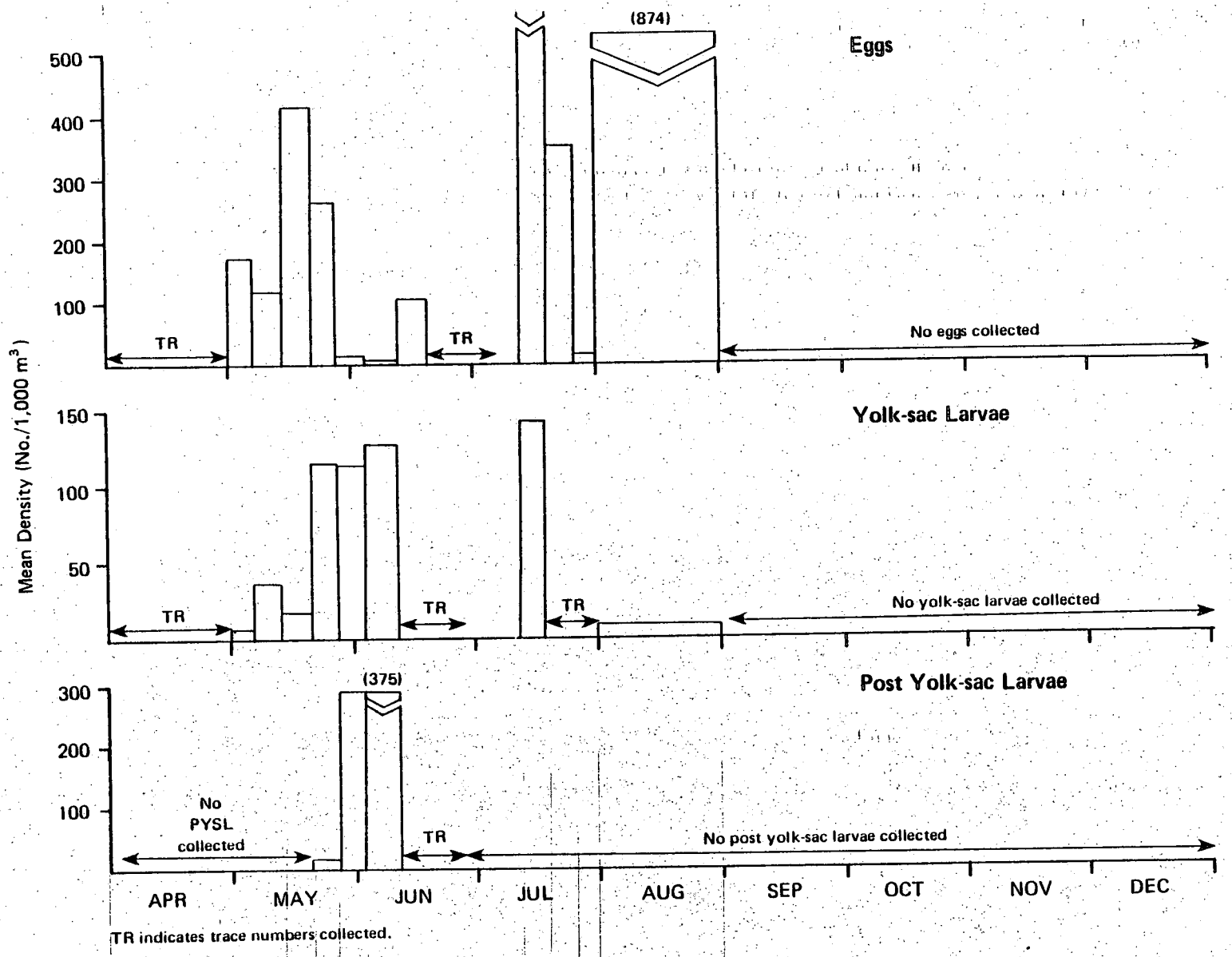
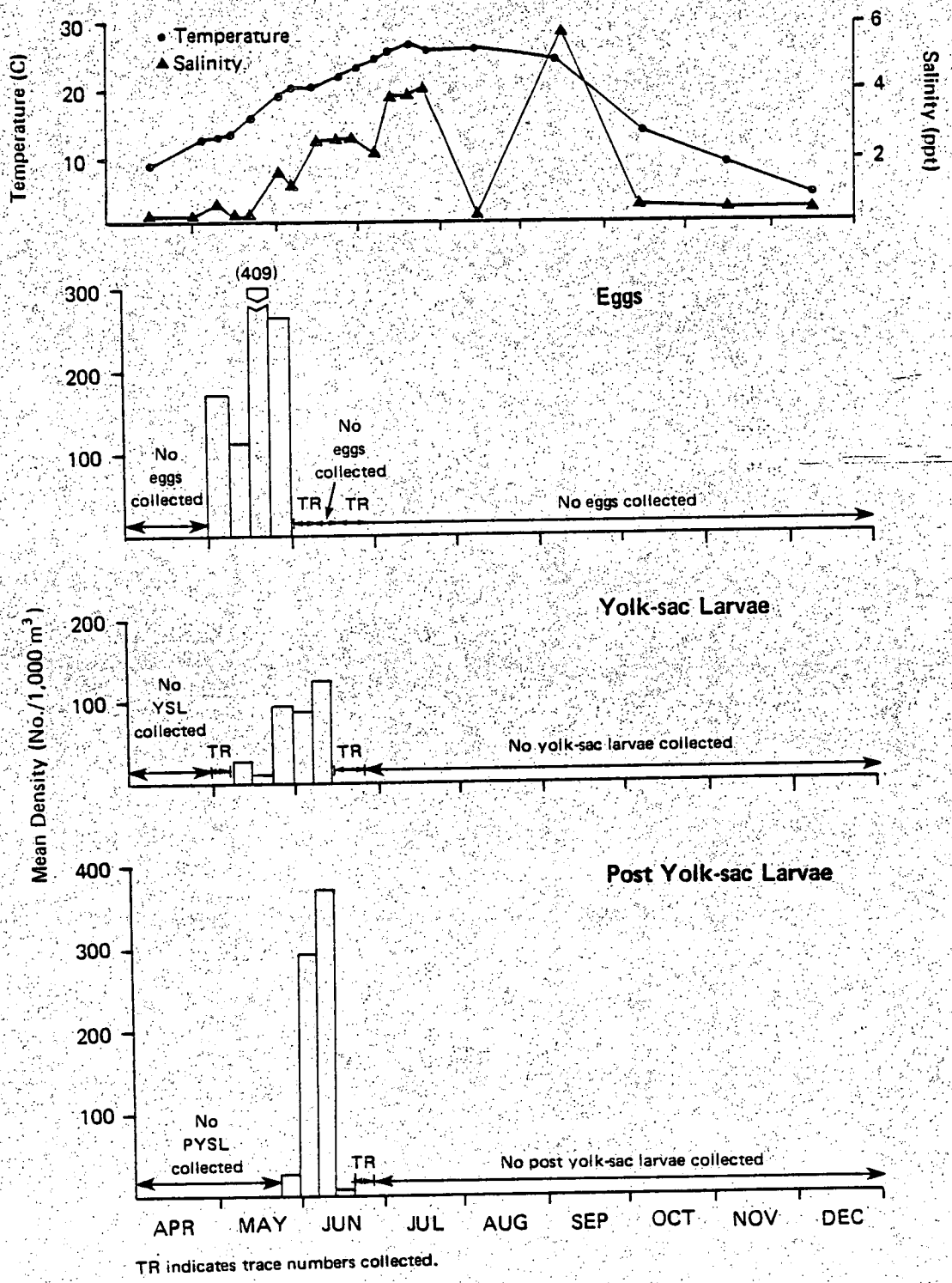


Figure D.3-1. Mean densities (No./1,000 m³) of total ichthyoplankton collected at standard river stations in the vicinity of the Indian Point Generating Station, 1977.



TR indicates trace numbers collected.

Figure D.3-2. Mean densities (No./1,000 m^3) of striped bass early developmental stages collected at standard river stations in the vicinity of the Indian Point Generating Station, 1977. (See Appendix A for water quality data.)

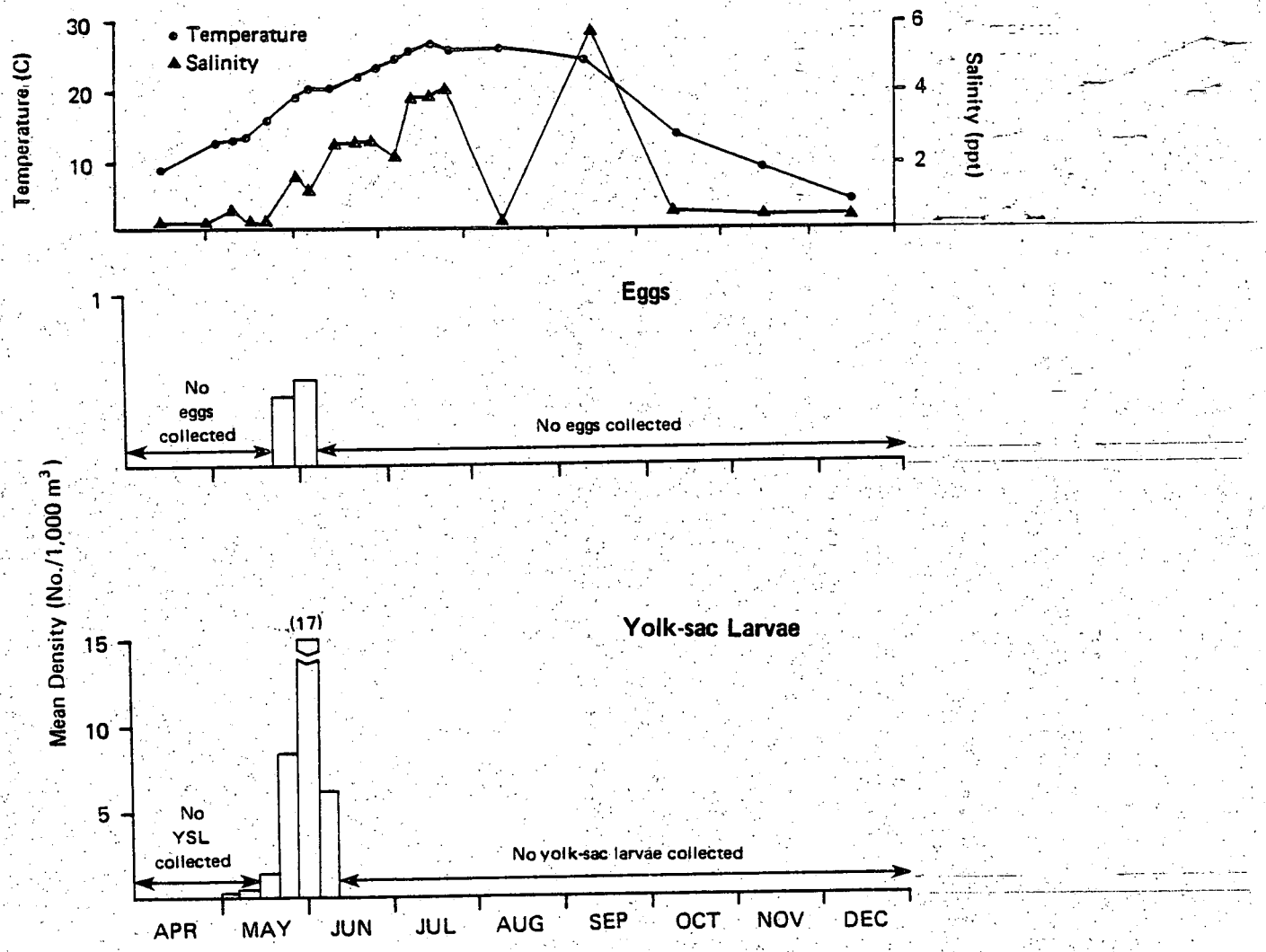


Figure D.3-3. Mean densities (No./1,000 m^3) of white perch early developmental stages collected at standard river stations in the vicinity of the Indian Point Generating Station, 1977. (See Appendix A for water quality data.)

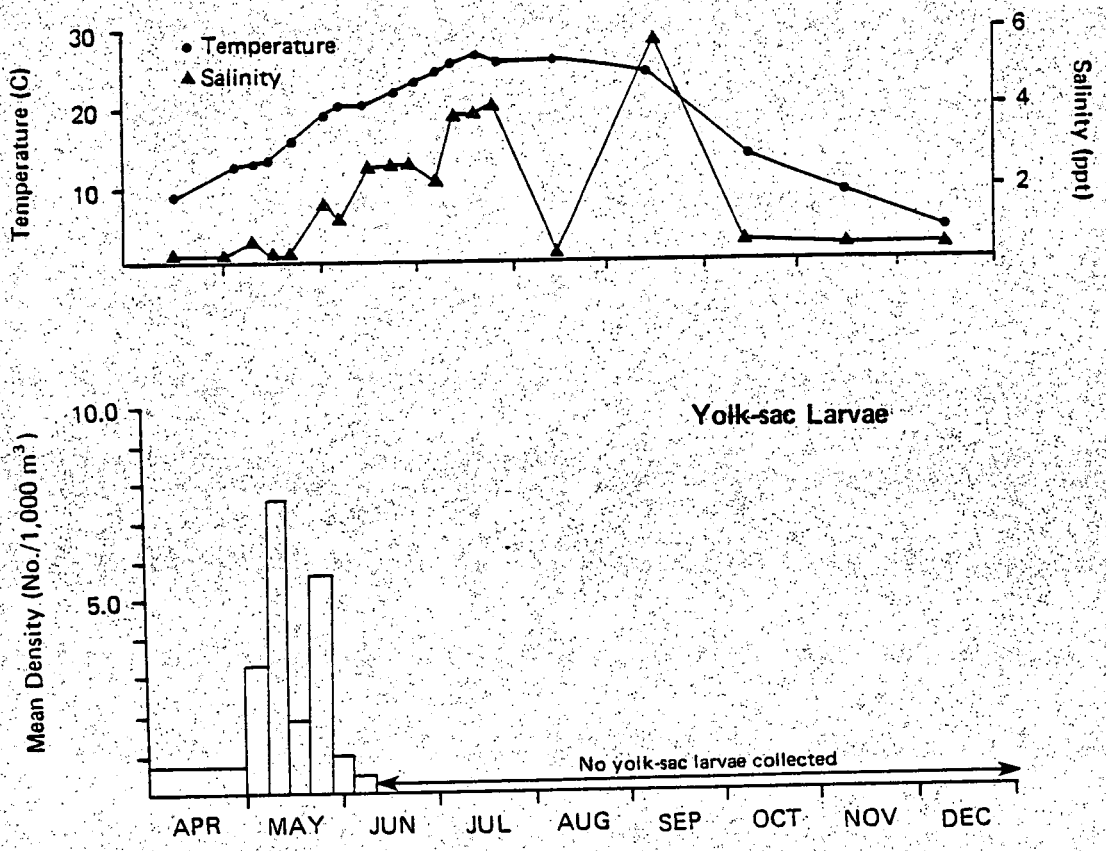


Figure D.3-4. Mean densities (No./1,000 m^3) of Alosa spp. early developmental stages collected at standard river stations in the vicinity of the Indian Point Generating Station, 1977. (See Appendix A for water quality data.)

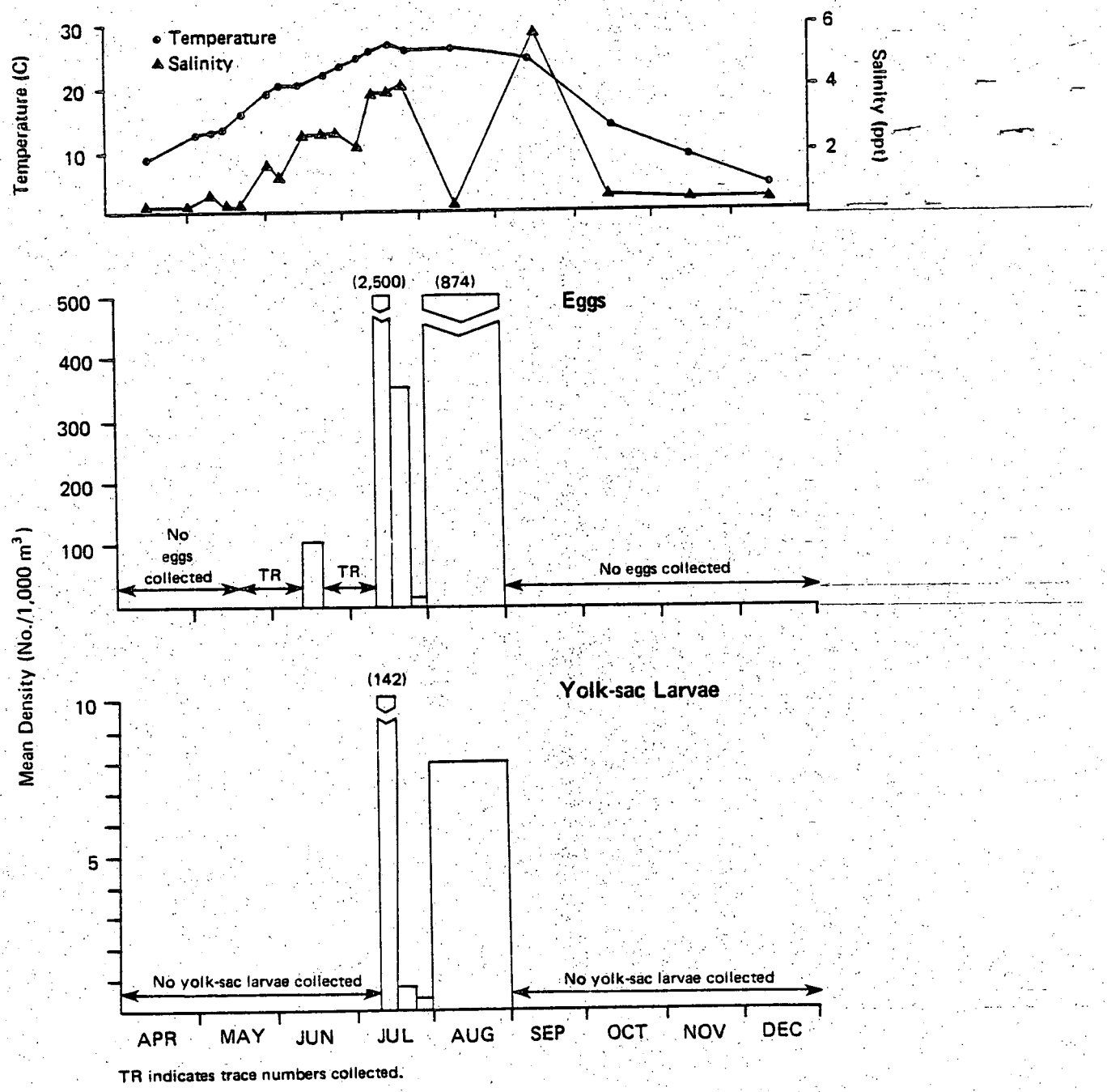


Figure D.3-5. Mean densities (No./1,000 m^3) of bay anchovy early developmental stages collected at standard river stations in the vicinity of the Indian Point Generating Station, 1977. (See Appendix A for water quality data.)

APPENDIX E

ENTRAINMENT ABUNDANCE OF STRIPED BASS EARLY DEVELOPMENTAL STAGES, INDIAN POINT GENERATING STATION, 1977

APPENDIX E TABLES

Title	Number
E.1 DENSITIES OF STRIPED BASS COLLECTED AT STATION I2 DURING THE ENTRAINMENT ABUNDANCE STUDY, INDIAN POINT GENERATING STATION, 1977	E.1-1
E.2 DENSITIES OF STRIPED BASS COLLECTED AT STATION I3 DURING THE ENTRAINMENT ABUNDANCE STUDY, INDIAN POINT GENERATING STATION, 1977	E.2-1
E.3 DENSITIES OF STRIPED BASS COLLECTED AT STATION D1 DURING THE ENTRAINMENT ABUNDANCE STUDY, INDIAN POINT GENERATING STATION, 1977	E.3-1
E.4 DENSITIES OF STRIPED BASS COLLECTED AT STATION D2 DURING THE ENTRAINMENT ABUNDANCE STUDY, INDIAN POINT GENERATING STATION, 1977	E.4-1

TABLE E.1-1 DENSITIES OF STRIPED BASS COLLECTED AT STATION I2 DURING THE ENTRAINMENT ABUNDANCE STUDY, INDIAN POINT GENERATING STATION, 1977

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
17 MAY	S	1630	15.8	--	11.80	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	22.70	88.2	0.0	0.0	0.0	0.0	0.0
	B		--	--	20.60	97.0	0.0	0.0	0.0	0.0	0.0
17 MAY	S	1830	15.0	--	13.20	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	20.10	348.5	49.8	0.0	0.0	0.0	49.8
	B		--	--	22.50	88.8	0.0	0.0	0.0	0.0	0.0
17 MAY	S	2030	14.5	--	8.60	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	19.00	105.1	0.0	0.0	0.0	0.0	0.0
	B		--	--	21.10	47.3	47.3	0.0	0.0	0.0	47.3
17 MAY	S	2230	15.1	--	4.40	2490.1	452.7	0.0	0.0	0.0	452.7
	M		--	--	18.10	2153.3	0.0	0.0	0.0	0.0	0.0
	B		--	--	18.20	3516.5	0.0	0.0	0.0	0.0	0.0
18 MAY	S	0030	--	--	(c)	(c)	(c)	(c)	(c)	(c)	(c)
	M		--	--	20.10	49.8	49.8	0.0	0.0	0.0	49.8
	B		--	--	20.40	490.7	0.0	0.0	0.0	0.0	0.0
18 MAY	S	0230	15.5	--	12.60	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	23.00	43.5	0.0	0.0	0.0	0.0	0.0
	B		--	--	20.30	49.2	0.0	0.0	0.0	0.0	0.0
18 MAY	S	0430	15.2	--	14.40	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	22.70	44.1	44.1	0.0	0.0	0.0	44.1
	B		--	--	21.50	93.0	46.5	0.0	0.0	0.0	46.5
18 MAY	S	0630	15.0	--	11.80	169.8	0.0	0.0	0.0	0.0	0.0
	M		--	--	22.10	724.4	45.3	0.0	0.0	0.0	45.3
	B		--	--	22.20	449.7	89.9	0.0	0.0	0.0	89.9
18 MAY	S	0830	14.9	--	12.40	80.8	0.0	0.0	0.0	0.0	0.0
	M		--	--	21.80	229.4	91.8	0.0	0.0	0.0	91.8
	B		--	--	22.10	181.1	135.8	0.0	0.0	0.0	135.8

TABLE E.1-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
18 MAY	S	1030	16.2	--	5.60	893.6	0.0	0.0	0.0	0.0	0.0
	M		--	--	28.60	525.1	0.0	0.0	0.0	0.0	0.0
	B		--	--	23.80	923.4	42.0	0.0	0.0	0.0	42.0
18 MAY	S	1230	--	--	--	--	--	--	--	--	--
	M		--	--	22.10	769.7	90.5	0.0	0.0	0.0	90.5
	B		--	--	25.30	671.2	79.0	0.0	0.0	0.0	79.0
18 MAY	S	1430	16.0	--	10.00	99.9	0.0	0.0	0.0	0.0	0.0
	M		--	--	23.90	0.0	209.6	0.0	0.0	0.0	209.6
	B		--	--	26.20	114.5	0.0	0.0	0.0	0.0	0.0
18 MAY	S	1700	--	--	--	--	--	--	--	--	--
	M		--	--	25.90	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	25.10	79.7	0.0	0.0	0.0	0.0	0.0
18 MAY	S	1830	16.0	--	10.60	188.6	0.0	0.0	0.0	0.0	0.0
	M		--	--	28.30	565.9	35.4	0.0	0.0	0.0	35.4
	B		--	--	24.80	928.6	40.4	0.0	0.0	0.0	40.4
18 MAY	S	2030	15.5	--	12.40	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	25.90	38.6	154.3	0.0	0.0	0.0	154.3
	B		--	--	23.00	87.1	87.1	0.0	0.0	0.0	87.1
18 MAY	S	2230	16.0	--	5.60	3038.2	0.0	0.0	0.0	0.0	0.0
	M		--	--	16.80	1780.9	59.4	0.0	0.0	0.0	59.4
	B		--	--	22.70	2822.3	220.5	0.0	0.0	0.0	220.5
19 MAY	S	0030	16.8	--	4.50	670.2	0.0	0.0	0.0	0.0	0.0
	M		--	--	19.10	470.2	52.2	0.0	0.0	0.0	52.2
	B		--	--	24.80	1292.0	40.4	0.0	0.0	0.0	40.4
19 MAY	S	0230	16.8	--	9.80	0.0	102.0	0.0	0.0	0.0	102.0
	M		--	--	18.00	55.7	55.7	0.0	0.0	0.0	55.7
	B		--	--	27.40	109.5	73.0	0.0	0.0	0.0	73.0

TABLE E.1-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
19 MAY	S	0430	16.3	--	14.10	0.0	141.5	0.0	0.0	0.0	141.5
	M		--	--	33.90	0.0	118.1	0.0	0.0	0.0	118.1
	B		--	--	32.70	61.2	153.1	0.0	0.0	0.0	153.1
19 MAY	S	0630	16.3	--	19.70	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	(c)	(c)	(c)	(c)	(c)	(c)	(c)
	B		--	--	35.00	114.1	0.0	0.0	0.0	0.0	0.0
19 MAY	S	0830	--	--	14.40	485.1	69.3	0.0	0.0	0.0	69.3
	M		--	--	22.10	1222.4	226.4	0.0	0.0	0.0	226.4
	B		--	--	23.30	1805.2	214.9	0.0	0.0	0.0	214.9
19 MAY	S	1030	--	--	(c)	(c)	(c)	(c)	(c)	(c)	(c)
	M		--	--	25.60	78.1	0.0	0.0	0.0	0.0	0.0
	B		--	--	20.90	382.6	47.8	0.0	0.0	0.0	47.8
19 MAY	S	1230	16.0	--	8.60	115.9	0.0	0.0	0.0	0.0	0.0
	M		--	--	25.90	810.3	0.0	0.0	0.0	0.0	0.0
	B		--	--	19.10	1619.4	104.5	0.0	0.0	0.0	104.5
19 MAY	S	1430	--	--	(c)	(c)	(c)	(c)	(c)	(c)	(c)
	M		--	--	34.20	468.4	58.5	0.0	0.0	0.0	58.5
	B		--	--	28.60	700.1	70.0	0.0	0.0	0.0	70.0
24 MAY	S	1500	--	--	3.20	926.1	0.0	0.0	0.0	0.0	0.0
	M		--	--	21.20	330.1	0.0	0.0	0.0	0.0	0.0
	B		--	--	14.10	919.6	0.0	0.0	0.0	0.0	0.0
24 MAY	S	1630	18.2	--	3.10	323.4	0.0	0.0	0.0	0.0	0.0
	M		--	--	12.70	157.9	0.0	0.0	0.0	0.0	0.0
	B		--	--	23.00	304.7	0.0	0.0	0.0	0.0	0.0
24 MAY	S	1830	19.0	--	4.40	452.7	0.0	0.0	0.0	0.0	0.0
	M		--	--	14.70	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	(c)	(c)	(c)	(c)	(c)	(c)	(c)

TABLE E.1-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
24 MAY	S	2030	19.0	--	2.10	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	13.30	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	25.30	0.0	0.0	0.0	0.0	0.0	0.0
24 MAY	S	2230	18.5	--	8.50	1405.1	0.0	0.0	0.0	0.0	0.0
	M		--	--	11.20	536.1	0.0	0.0	0.0	0.0	0.0
	B		--	--	20.90	3586.9	47.8	0.0	0.0	0.0	47.8
25 MAY	S	0030	18.3	--	2.70	754.6	0.0	0.0	0.0	0.0	0.0
	M		--	--	14.10	283.0	70.7	0.0	0.0	0.0	70.7
	B		--	--	20.90	334.8	239.1	0.0	0.0	0.0	239.1
25 MAY	S	0230	18.7	--	15.30	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	23.30	43.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	12.10	496.9	248.5	0.0	0.0	0.0	248.5
25 MAY	S	0430	--	--	(c)	(c)	(c)	(c)	(c)	(c)	(c)
	M		--	--	12.20	81.8	163.6	0.0	0.0	0.0	163.6
	B		--	--	22.20	359.8	0.0	0.0	0.0	0.0	0.0
25 MAY	S	0630	19.6	--	4.70	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	14.70	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	25.20	0.0	0.0	0.0	0.0	0.0	0.0
25 MAY	S	0835	19.4	--	3.80	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	17.70	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	27.70	0.0	0.0	0.0	0.0	0.0	0.0
25 MAY	S	1030	19.0	--	10.90	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	7.70	130.6	0.0	0.0	0.0	0.0	0.0
	B		--	--	15.30	326.5	65.3	0.0	0.0	0.0	65.3
25 MAY	S	1230	--	--	(c)	(c)	(c)	(c)	(c)	(c)	(c)
	M		--	--	13.00	308.7	77.2	0.0	0.0	0.0	77.2
	B		--	--	15.30	653.0	391.8	0.0	0.0	0.0	391.8

TABLE E.1-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
25 MAY	S	1430	17.5	--	8.00	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	14.40	69.3	0.0	0.0	0.0	0.0	0.0
	B		--	--	16.10	62.3	62.3	0.0	0.0	0.0	62.3
25 MAY	S	1630	19.5	--	10.30	194.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	12.40	485.1	0.0	0.0	0.0	0.0	0.0
	B		--	--	19.40	205.8	0.0	0.0	0.0	0.0	0.0
25 MAY	S	1830	19.5	--	6.90	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	8.50	234.2	0.0	0.0	0.0	0.0	0.0
	B		--	--	18.30	54.8	0.0	0.0	0.0	0.0	0.0
25 MAY	S	2030	19.8	--	7.10	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	12.40	0.0	80.8	0.0	0.0	0.0	80.8
	B		--	--	20.60	0.0	0.0	0.0	0.0	0.0	0.0
25 MAY	S	2230	19.8	--	8.20	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	8.00	125.8	0.0	0.0	0.0	0.0	0.0
	B		--	--	19.00	315.9	105.3	0.0	0.0	0.0	105.3
26 MAY	S	0030	18.8	--	12.10	331.3	0.0	0.0	0.0	0.0	0.0
	M		--	--	10.60	660.3	94.3	0.0	0.0	0.0	94.3
	B		--	--	15.90	1383.4	0.0	0.0	0.0	0.0	0.0
26 MAY	S	0230	18.2	--	7.90	126.7	0.0	0.0	0.0	0.0	0.0
	M		--	--	11.50	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	16.60	0.0	180.3	60.1	0.0	0.0	240.4
26 MAY	S	0430	18.9	--	9.40	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	14.70	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	15.30	326.5	0.0	0.0	0.0	0.0	0.0
26 MAY	S	0630	19.5	--	10.60	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	9.10	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	16.50	60.6	0.0	0.0	0.0	0.0	0.0

TABLE E.1-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
26 MAY	S	0830	19.5	--	10.30	97.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	10.70	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	20.20	0.0	0.0	0.0	0.0	0.0	0.0
26 MAY	S	1030	19.4	--	6.50	154.3	0.0	0.0	0.0	0.0	0.0
	M		--	--	8.10	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	16.30	0.0	0.0	0.0	0.0	0.0	0.0
26 MAY	S	1230	18.0	--	7.10	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	6.90	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	14.30	0.0	0.0	0.0	0.0	0.0	0.0
26 MAY	S	1430	17.4	--	8.50	234.2	117.1	0.0	0.0	0.0	117.1
	M		--	--	6.90	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	15.20	131.9	0.0	0.0	0.0	0.0	0.0
31 MAY	S	1500	19.5	--	5.90	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	5.30	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	3.80	0.0	0.0	0.0	0.0	0.0	0.0
31 MAY	S	1700	19.4	--	5.30	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	3.80	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	5.70	0.0	0.0	0.0	0.0	0.0	0.0
31 MAY	S	1900	18.5	--	4.40	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	3.80	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	8.80	0.0	0.0	0.0	0.0	0.0	0.0
31 MAY	S	2100	19.9	--	10.50	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	2.90	0.0	339.6	339.6	0.0	0.0	679.2
	B		--	--	6.00	0.0	0.0	0.0	0.0	0.0	0.0
31 MAY	S	2300	19.9	--	5.00	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	2.90	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	3.20	0.0	0.0	0.0	0.0	0.0	0.0

TABLE E.1-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
01 JUN	S	0100	19.4	--	7.40	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	3.20	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	5.40	0.0	0.0	0.0	0.0	0.0	0.0
01 JUN	S	0300	19.1	--	5.60	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	(c)	(c)	(c)	(c)	(c)	(c)	(c)
	B		--	--	8.10	0.0	0.0	0.0	0.0	0.0	0.0
07 JUN	S	1500	--	--	18.70	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	18.30	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	24.10	0.0	0.0	0.0	0.0	0.0	0.0
07 JUN	S	1700	--	--	17.40	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	15.60	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	18.80	0.0	0.0	0.0	0.0	0.0	0.0
07 JUN	S	1900	--	--	22.70	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	16.90	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	21.20	0.0	47.2	188.6	0.0	0.0	235.8
07 JUN	S	2100	--	--	27.50	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	16.80	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	24.00	0.0	0.0	0.0	0.0	0.0	0.0
07 JUN	S	2300	--	--	15.20	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	17.80	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	25.00	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	0100	--	--	17.50	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	16.10	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	2.80	0.0	0.0	0.0	0.0	0.0	0.0

TABLE E.1-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	FYSL	JUV	UID	TOTAL (b)
08 JUN	S	0300	--	--	23.60	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	17.70	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	22.60	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	0500	21.0	--	1.80	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	15.90	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	23.30	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	0700	20.0	--	15.80	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	18.30	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	23.00	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	0900	19.1	--	21.20	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	17.40	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	23.60	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	1100	19.1	--	12.10	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	13.80	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	24.90	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	1300	19.0	--	10.70	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	14.70	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	24.00	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	1500	18.9	--	21.50	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	12.70	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	21.90	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	1700	21.8	--	20.60	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	13.00	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	20.30	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	1900	21.8	--	20.60	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	13.00	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	20.30	0.0	0.0	0.0	0.0	0.0	0.0

TABLE E.1-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
08 JUN	S	2100	20.1	--	22.10	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	15.80	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	25.50	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	2300	20.0	--	13.50	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	14.60	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	23.90	0.0	0.0	0.0	0.0	0.0	0.0
09 JUN	S	0100	19.7	--	9.50	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	16.30	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	24.90	0.0	0.0	0.0	0.0	0.0	0.0
09 JUN	S	0300	19.5	--	19.30	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	16.90	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	23.60	0.0	0.0	0.0	0.0	0.0	0.0
09 JUN	S	0500	20.0	--	8.80	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	20.00	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	23.90	0.0	0.0	0.0	0.0	0.0	0.0
09 JUN	S	0700	20.9	--	25.00	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	18.00	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	26.20	0.0	0.0	0.0	0.0	0.0	0.0
09 JUN	S	0900	19.7	--	15.90	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	18.00	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	23.90	0.0	0.0	0.0	0.0	0.0	0.0
09 JUN	S	1100	19.1	--	13.30	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	17.20	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	24.60	0.0	0.0	0.0	0.0	0.0	0.0
09 JUN	S	1300	18.7	--	13.00	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	16.20	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	24.00	0.0	0.0	0.0	0.0	0.0	0.0

TABLE E.1-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
09 JUN	S	1500	18.9	--	24.40	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	19.10	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	23.90	0.0	0.0	0.0	0.0	0.0	0.0

(a) Includes all sampling dates when striped bass were collected at this station (17 May 77 through 7 June 77).
(b) Total density of striped bass life stages collected excluding eggs.
(c) Data excluded from analysis because of extremely high or low sample volume.

Note: Dashes (--) indicate data not available.
S = surface; M = middepth; B = bottom
YSL = yolk-sac larvae; PYSL = post yolk-sac larvae; JUV = juveniles; UID = unidentified life stages

TABLE E.2-1 DENSITIES OF STRIPED BASS COLLECTED AT STATION I3 DURING THE ENTRAINMENT ABUNDANCE STUDY, INDIAN POINT GENERATING STATION, 1977

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
03 MAY	S	1430	12.2	--	7.30	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	7.70	130.6	0.0	0.0	0.0	0.0	0.0
	B		--	--	8.00	503.0	0.0	0.0	0.0	0.0	0.0
03 MAY	S	1630	13.0	--	7.30	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	8.00	125.8	0.0	0.0	0.0	0.0	0.0
	B		--	--	10.30	0.0	0.0	0.0	0.0	0.0	0.0
03 MAY	S	1830	12.2	--	7.30	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	7.40	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	7.70	0.0	0.0	0.0	0.0	0.0	0.0
03 MAY	S	2030	13.0	--	7.30	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	12.40	80.8	0.0	0.0	0.0	0.0	0.0
	B		--	--	10.30	0.0	0.0	0.0	0.0	0.0	0.0
03 MAY	S	2230	13.0	--	7.30	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	3.20	308.7	0.0	0.0	0.0	0.0	0.0
	B		--	--	5.70	1218.9	0.0	0.0	0.0	0.0	0.0
04 MAY	S	0030	13.0	--	7.30	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	(c)	(c)	(c)	(c)	(c)	(c)	(c)
	B		--	--	5.90	169.8	0.0	0.0	0.0	0.0	0.0
04 MAY	S	0230	13.0	--	7.30	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	5.60	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	8.20	121.3	0.0	0.0	0.0	0.0	0.0
10 MAY	S	1430	13.0	--	7.30	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	8.00	251.5	0.0	0.0	0.0	0.0	0.0
	B		--	--	14.40	69.3	0.0	0.0	0.0	0.0	0.0
10 MAY	S	1630	14.0	--	7.30	136.4	0.0	0.0	0.0	0.0	0.0
	M		--	--	14.30	700.1	0.0	0.0	0.0	0.0	0.0
	B		--	--	9.50	524.0	104.8	0.0	0.0	0.0	104.8

TABLE E.2-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
10 MAY	S	1830	13.5	--	7.30	545.5	136.4	0.0	0.0	0.0	136.4
	M		--	--	8.50	1170.9	117.1	0.0	0.0	0.0	117.1
	B		--	--	19.10	2829.7	104.8	0.0	0.0	0.0	104.8
10 MAY	S	2030	13.0	--	7.30	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	10.30	1358.2	388.1	0.0	0.0	0.0	388.1
	B		--	--	14.00	1501.2	500.4	0.0	0.0	0.0	500.4
10 MAY	S	2230	13.0	--	7.30	136.4	136.4	0.0	0.0	0.0	136.4
	M		--	--	20.30	49.2	0.0	0.0	0.0	0.0	0.0
	B		--	--	12.70	236.9	79.0	0.0	0.0	0.0	79.0
11 MAY	S	0030	12.5	--	7.30	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	10.90	0.0	91.8	0.0	0.0	0.0	91.8
	B		--	--	13.70	146.0	0.0	0.0	0.0	0.0	0.0
11 MAY	S	0230	12.2	--	7.30	136.4	0.0	0.0	0.0	0.0	0.0
	M		--	--	9.90	405.4	0.0	0.0	0.0	0.0	0.0
	B		--	--	12.40	242.5	0.0	0.0	0.0	0.0	0.0
17 MAY	S	1630	15.8	--	6.00	167.3	0.0	0.0	0.0	0.0	0.0
	M		--	--	9.60	104.5	0.0	0.0	0.0	0.0	0.0
	B		--	--	11.60	0.0	0.0	0.0	0.0	0.0	0.0
17 MAY	S	1830	15.0	--	5.60	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	11.20	89.4	0.0	0.0	0.0	0.0	0.0
	B		--	--	10.80	185.0	0.0	0.0	0.0	0.0	0.0
17 MAY	S	2030	14.5	--	4.00	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	7.70	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	7.00	428.0	0.0	0.0	0.0	0.0	0.0
17 MAY	S	2230	15.1	--	11.20	268.1	0.0	0.0	0.0	0.0	0.0
	M		--	--	9.10	1862.1	0.0	0.0	0.0	0.0	0.0
	B		--	--	14.40	2979.8	0.0	0.0	0.0	0.0	0.0

TABLE E.2-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
18 MAY	S	0030	15.5	--	6.50	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	7.20	693.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	10.00	1406.5	301.4	0.0	0.0	0.0	301.4
18 MAY	S	0230	15.5	--	7.40	135.8	0.0	0.0	0.0	0.0	0.0
	M		--	--	7.20	0.0	139.7	0.0	0.0	0.0	139.7
	B		--	--	9.50	105.8	0.0	0.0	0.0	0.0	0.0
18 MAY	S	0430	15.2	--	9.70	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	13.80	0.0	144.5	0.0	0.0	0.0	144.5
	B		--	--	18.00	0.0	111.3	0.0	0.0	0.0	111.3
18 MAY	S	0630	15.0	--	7.30	410.8	0.0	0.0	0.0	0.0	0.0
	M		--	--	9.60	835.8	0.0	0.0	0.0	0.0	0.0
	B		--	--	12.10	989.0	0.0	0.0	0.0	0.0	0.0
18 MAY	S	0830	14.9	--	8.00	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	8.00	1383.4	125.8	0.0	0.0	0.0	125.8
	B		--	--	10.30	873.2	388.1	0.0	0.0	0.0	388.1
18 MAY	S	1030	16.2	--	6.20	323.4	0.0	0.0	0.0	0.0	0.0
	M		--	--	8.50	585.4	117.1	0.0	0.0	0.0	117.1
	B		--	--	12.10	1573.6	0.0	0.0	0.0	0.0	0.0
18 MAY	S	1230	16.0	--	6.60	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	11.20	178.7	0.0	0.0	0.0	0.0	0.0
	B		--	--	14.40	1455.3	277.2	0.0	0.0	0.0	277.2
18 MAY	S	1430	16.0	--	7.80	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	11.20	89.4	0.0	0.0	0.0	0.0	0.0
	B		--	--	13.30	0.0	0.0	0.0	0.0	0.0	0.0

TABLE E.2-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
18 MAY	S	1830	16.0	--	6.50	617.4	154.3	0.0	0.0	0.0	154.3
	M		--	--	11.30	264.6	0.0	0.0	0.0	0.0	0.0
	B		--	--	11.80	509.3	0.0	0.0	0.0	0.0	0.0
18 MAY	S	2030	--	--	(c)	(c)	(c)	(c)	(c)	(c)	(c)
	M		--	--	8.20	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	8.20	242.5	242.5	0.0	0.0	0.0	242.5
18 MAY	S	2230	16.0	--	10.90	1012.2	0.0	0.0	0.0	0.0	0.0
	M		--	--	11.10	1706.8	0.0	0.0	0.0	0.0	0.0
	B		--	--	14.00	2001.6	214.5	0.0	0.0	0.0	214.5
19 MAY	S	0030	16.8	--	8.00	251.5	0.0	0.0	0.0	0.0	0.0
	M		--	--	10.90	917.7	0.0	0.0	0.0	0.0	0.0
	B		--	--	9.40	4881.2	106.1	0.0	0.0	0.0	106.1
19 MAY	S	0230	--	--	(c)	(c)	(c)	(c)	(c)	(c)	(c)
	M		--	--	8.00	249.7	0.0	0.0	0.0	0.0	0.0
	B		--	--	10.80	553.6	0.0	0.0	0.0	0.0	0.0
19 MAY	S	0430	16.3	--	9.60	0.0	313.4	0.0	0.0	0.0	313.4
	M		--	--	10.30	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	14.70	67.9	135.8	0.0	0.0	0.0	135.8
19 MAY	S	0630	16.3	--	8.80	113.2	0.0	0.0	0.0	0.0	0.0
	M		--	--	12.10	82.8	82.8	0.0	0.0	0.0	82.8
	B		--	--	13.80	361.2	0.0	0.0	0.0	0.0	0.0
19 MAY	S	0830	--	--	6.20	1616.9	0.0	0.0	0.0	0.0	0.0
	M		--	--	11.80	1443.1	169.8	0.0	0.0	0.0	169.8
	B		--	--	12.70	1342.4	0.0	0.0	0.0	0.0	0.0
19 MAY	S	1030	16.0	--	9.40	318.3	0.0	0.0	0.0	0.0	0.0
	M		--	--	9.10	657.2	0.0	0.0	0.0	0.0	0.0
	B		--	--	9.40	530.6	212.2	0.0	0.0	0.0	212.2

TABLE E.2-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
19 MAY	S	1230	16.0	--	7.80	896.9	0.0	0.0	0.0	0.0	0.0
	M		--	--	12.10	1242.3	0.0	0.0	0.0	0.0	0.0
	B		--	--	14.30	2100.4	140.0	0.0	0.0	0.0	140.0
19 MAY	S	1430	16.2	--	8.10	370.4	0.0	0.0	0.0	0.0	0.0
	M		--	--	11.80	1273.3	84.9	0.0	0.0	0.0	84.9
	B		--	--	14.10	3749.3	283.0	0.0	0.0	0.0	283.0
24 MAY	S	1500	--	--	7.10	1403.1	0.0	0.0	0.0	0.0	0.0
	M		--	--	9.40	636.7	212.2	0.0	0.0	0.0	212.2
	B		--	--	13.50	442.9	0.0	0.0	0.0	0.0	0.0
24 MAY	S	1630	--	--	7.70	522.4	0.0	0.0	0.0	0.0	0.0
	M		--	--	6.00	1159.5	0.0	0.0	0.0	0.0	0.0
	B		--	--	8.80	1471.4	0.0	0.0	0.0	0.0	0.0
24 MAY	S	1830	--	--	7.20	138.6	0.0	0.0	0.0	0.0	0.0
	M		--	--	15.30	130.6	0.0	0.0	0.0	0.0	0.0
	B		--	--	10.90	2110.8	275.3	0.0	0.0	0.0	275.3
24 MAY	S	2030	--	--	14.10	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	15.00	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	(c)	(c)	(c)	(c)	(c)	(c)	(c)
24 MAY	S	2230	--	--	7.70	261.2	0.0	0.0	0.0	0.0	0.0
	M		--	--	13.70	1679.5	0.0	0.0	0.0	0.0	0.0
	B		--	--	16.50	2061.6	0.0	0.0	0.0	0.0	0.0
25 MAY	S	0030	--	--	11.20	178.7	0.0	0.0	0.0	0.0	0.0
	M		--	--	9.70	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	10.30	1358.2	291.1	0.0	0.0	0.0	291.1
25 MAY	S	0230	--	--	4.70	424.4	0.0	0.0	0.0	0.0	0.0
	M		--	--	5.60	178.7	0.0	0.0	0.0	0.0	0.0
	B		--	--	8.00	754.6	0.0	0.0	0.0	0.0	0.0

TABLE E.2-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
25 MAY	S	0430	--	--	6.70	444.8	0.0	0.0	0.0	0.0	0.0
	M		--	--	10.90	1101.3	0.0	0.0	0.0	0.0	0.0
	B		--	--	16.10	743.6	0.0	0.0	0.0	0.0	0.0
25 MAY	S	0630	--	--	10.60	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	10.00	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	16.80	1191.4	59.6	0.0	0.0	0.0	59.6
25 MAY	S	0835	--	--	6.50	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	10.70	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	14.40	0.0	0.0	0.0	0.0	0.0	0.0
25 MAY	S	1030	--	--	8.00	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	11.20	448.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	17.10	409.8	0.0	0.0	0.0	0.0	0.0
25 MAY	S	1230	--	--	(c)	(c)	(c)	(c)	(c)	(c)	(c)
	M		--	--	6.10	163.2	163.2	0.0	0.0	0.0	163.2
	B		--	--	11.50	173.2	779.6	0.0	0.0	0.0	779.6
25 MAY	S	1430	--	--	8.50	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	3.60	276.1	0.0	0.0	0.0	0.0	0.0
	B		--	--	4.90	202.1	0.0	0.0	0.0	0.0	0.0
25 MAY	S	1630	--	--	5.70	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	5.20	776.1	0.0	0.0	0.0	0.0	0.0
	B		--	--	10.60	660.3	94.3	0.0	0.0	0.0	94.3
25 MAY	S	1830	--	--	7.50	133.2	0.0	0.0	0.0	0.0	0.0
	M		--	--	6.50	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	9.60	417.9	0.0	0.0	0.0	0.0	0.0
25 MAY	S	2030	--	--	10.30	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	9.40	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	15.20	0.0	0.0	0.0	0.0	0.0	0.0

TABLE E.2-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
25 MAY	S	2230	--	--	6.80	295.3	147.6	0.0	0.0	0.0	147.6
	M		--	--	13.50	885.8	0.0	0.0	0.0	0.0	0.0
	B		--	--	12.10	662.6	0.0	0.0	0.0	0.0	0.0
26 MAY	S	0030	--	--	5.90	679.1	0.0	0.0	0.0	0.0	0.0
	M		--	--	5.90	1528.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	11.80	679.1	0.0	0.0	0.0	0.0	0.0
26 MAY	S	0230	--	--	(c)	(c)	(c)	(c)	(c)	(c)	(c)
	M		--	--	5.30	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	6.20	0.0	161.7	0.0	0.0	0.0	161.7
26 MAY	S	0430	--	--	7.40	541.1	0.0	0.0	0.0	0.0	0.0
	M		--	--	3.10	1381.9	0.0	0.0	0.0	0.0	0.0
	B		--	--	7.20	1656.4	0.0	0.0	0.0	0.0	0.0
26 MAY	S	0630	--	--	4.40	229.4	0.0	0.0	0.0	0.0	0.0
	M		--	--	5.40	738.2	369.1	184.5	0.0	0.0	553.6
	B		--	--	9.20	324.4	0.0	0.0	0.0	0.0	0.0
26 MAY	S	0830	--	--	7.60	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	9.70	103.5	0.0	0.0	0.0	0.0	0.0
	B		--	--	12.00	0.0	0.0	0.0	0.0	0.0	0.0
26 MAY	S	1030	--	--	8.00	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	9.50	209.6	0.0	0.0	0.0	0.0	0.0
	B		--	--	13.90	71.8	0.0	0.0	0.0	0.0	0.0
26 MAY	S	1230	--	--	9.00	223.4	0.0	0.0	0.0	0.0	0.0
	M		--	--	9.70	207.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	12.20	328.1	246.1	0.0	0.0	0.0	246.1
26 MAY	S	1430	--	--	11.40	87.7	87.7	0.0	0.0	0.0	87.7
	M		--	--	5.90	169.8	0.0	0.0	0.0	0.0	0.0
	B		--	--	6.80	295.3	0.0	0.0	0.0	0.0	0.0

TABLE E.2-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
31 MAY	S	1500	--	--	4.60	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	9.60	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	4.30	0.0	0.0	0.0	0.0	0.0	0.0
31 MAY	S	1700	--	--	5.90	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	8.40	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	4.90	0.0	0.0	0.0	0.0	0.0	0.0
31 MAY	S	1900	--	--	3.20	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	(c)	(c)	(c)	(c)	(c)	(c)	(c)
	B		--	--	3.10	0.0	0.0	0.0	0.0	0.0	0.0
31 MAY	S	2100	--	--	2.40	0.0	424.4	0.0	0.0	0.0	424.4
	M		--	--	3.20	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	4.40	0.0	0.0	0.0	0.0	0.0	0.0
31 MAY	S	2300	--	--	2.90	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	7.40	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	3.80	0.0	0.0	0.0	0.0	0.0	0.0
01 JUN	S	0100	--	--	--	--	--	--	--	--	--
	M		--	--	5.90	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	6.80	0.0	0.0	0.0	0.0	0.0	0.0
01 JUN	S	0300	--	--	6.20	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	8.20	0.0	121.3	0.0	0.0	0.0	121.3
	B		--	--	6.50	0.0	0.0	0.0	0.0	0.0	0.0

(a) Includes all sampling dates when striped bass were collected at this station (03 May 77 through 31 May 77).
(b) Total density of striped bass life stages collected excluding eggs.
(c) Data excluded from analysis because of extremely high or low sample volume.

Note: Dashes (--) indicate data not available.
S = surface; M = middepth; B = bottom
YSL = yolk-sac larvae; PYSL = post yolk-sac larvae; JUV = juveniles; UID = unidentified life stages

TABLE E.3-1 DENSITIES OF STRIPED BASS COLLECTED AT STATION D1 DURING THE ENTRAINMENT ABUNDANCE STUDY, INDIAN POINT GENERATING STATION, 1977

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
17 MAY	S	1830	24.7	--	47.70	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	(c)	(c)	(c)	(c)	(c)	(c)	(c)
	B		--	--	46.80	21.4	21.4	0.0	0.0	0.0	21.4
17 MAY	S	2030	24.9	--	45.10	177.4	0.0	0.0	0.0	0.0	0.0
	M		--	--	(c)	(c)	(c)	(c)	(c)	(c)	(c)
	B		--	--	42.60	93.9	0.0	0.0	0.0	0.0	0.0
17 MAY	S	2230	24.2	--	34.30	700.5	29.2	0.0	0.0	0.0	29.2
	M		--	--	(c)	(c)	(c)	(c)	(c)	(c)	(c)
	B		--	--	48.40	1322.6	0.0	0.0	0.0	0.0	0.0
18 MAY	S	0030	25.2	--	35.80	279.5	0.0	0.0	0.0	0.0	0.0
	M		--	--	(c)	(c)	(c)	(c)	(c)	(c)	(c)
	B		--	--	42.30	449.6	71.0	0.0	0.0	0.0	71.0
18 MAY	S	0230	24.9	--	57.50	17.4	69.6	0.0	0.0	0.0	69.6
	M		--	--	(c)	(c)	(c)	(c)	(c)	(c)	(c)
	B		--	--	40.00	25.0	50.1	0.0	0.0	0.0	50.1
24 MAY	S	1500	--	--	49.80	120.4	80.3	0.0	0.0	0.0	80.3
	M		--	--	50.30	158.9	0.0	0.0	0.0	0.0	0.0
	B		--	--	58.50	119.7	17.1	0.0	0.0	0.0	17.1
24 MAY	S	1630	--	--	71.30	112.2	70.1	0.0	0.0	0.0	70.1
	M		--	--	43.40	184.4	23.1	0.0	0.0	0.0	23.1
	B		--	--	50.20	59.8	59.8	0.0	0.0	0.0	59.8
24 MAY	S	1830	--	--	--	--	--	--	--	--	--
	M		--	--	46.90	319.7	42.6	0.0	0.0	0.0	42.6
	B		--	--	54.10	166.5	0.0	0.0	0.0	0.0	0.0
24 MAY	S	2030	--	--	44.10	0.0	22.7	0.0	0.0	0.0	22.7
	M		--	--	41.70	0.0	24.0	0.0	0.0	0.0	24.0
	B		--	--	43.80	0.0	22.9	0.0	0.0	0.0	22.9

TABLE E.3-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
24 MAY	S	2230	--	--	53.60	298.6	0.0	0.0	0.0	0.0	0.0
	M		--	--	47.80	167.2	0.0	0.0	0.0	0.0	0.0
	B		--	--	51.90	0.0	19.3	0.0	0.0	0.0	19.3
25 MAY	S	0030	--	--	47.50	252.8	21.1	0.0	0.0	0.0	21.1
	M		--	--	45.30	44.2	44.2	0.0	0.0	0.0	44.2
	B		--	--	50.10	39.9	59.8	0.0	0.0	0.0	59.8
25 MAY	S	0230	--	--	42.90	69.9	23.3	0.0	0.0	0.0	23.3
	M		--	--	42.90	0.0	46.6	23.3	0.0	0.0	69.9
	B		--	--	53.90	0.0	92.7	0.0	0.0	0.0	92.7
31 MAY	S	1500	--	--	51.30	0.0	58.5	156.0	0.0	0.0	214.5
	M		--	--	51.00	0.0	39.2	117.6	0.0	0.0	156.8
	B		--	--	21.10	0.0	94.8	379.1	0.0	0.0	473.9
31 MAY	S	1700	27.5	--	9.00	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	49.80	0.0	20.1	40.2	0.0	0.0	60.3
	B		--	--	44.60	0.0	0.0	0.0	0.0	0.0	0.0
31 MAY	S	1900	25.0	--	49.10	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	50.40	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	52.70	0.0	0.0	0.0	0.0	0.0	0.0
31 MAY	S	2100	--	--	46.40	0.0	43.1	129.3	0.0	0.0	172.4
	M		--	--	52.50	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	40.70	0.0	0.0	0.0	0.0	0.0	0.0
31 MAY	S	2300	26.2	--	38.10	0.0	26.3	210.2	0.0	0.0	236.5
	M		--	--	36.30	0.0	55.0	247.6	0.0	0.0	302.6
	B		--	--	23.10	0.0	0.0	0.0	0.0	0.0	0.0

TABLE E.3-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M)					
						EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
01 JUN	S	0100	--	--	39.40	0.0	50.8	533.4	0.0	0.0	584.2
	M		--	--	42.20	0.0	23.7	71.1	0.0	0.0	94.8
	B		--	--	43.60	0.0	22.9	274.9	0.0	0.0	297.8
01 JUN	S	0300	--	--	48.30	0.0	145.0	248.6	0.0	0.0	393.6
	M		--	--	46.20	0.0	21.7	195.0	0.0	0.0	216.7
	B		--	--	46.90	0.0	21.3	234.8	0.0	0.0	256.1

(a) Includes all sampling dates when striped bass were collected at this station (17 May 77 through 31 May 77).
(b) Total density of striped bass life stages collected excluding eggs.
(c) Data excluded from analysis because of extremely high or low sample volume.

Note: Dashes (--) indicate data not available.
S = surface; M = middepth; B = bottom
YSL = yolk-sac larvae; PYSL = post yolk-sac larvae; JUV = juveniles; UID = unidentified life stages

TABLE E.4-1 DENSITIES OF STRIPED BASS COLLECTED AT STATION D2 DURING THE ENTRAINMENT ABUNDANCE STUDY, INDIAN POINT GENERATING STATION, 1977

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
03 MAY	S	1430	22.0	--	150.80	46.4	0.0	0.0	0.0	0.0	0.0
03 MAY	S	1630	23.0	--	42.20	0.0	0.0	0.0	0.0	0.0	0.0
03 MAY	S	1830	24.0	--	33.60	0.0	0.0	0.0	0.0	0.0	0.0
03 MAY	S	2030	23.7	--	40.40	0.0	0.0	0.0	0.0	0.0	0.0
03 MAY	S	2230	21.0	--	51.90	115.7	0.0	0.0	0.0	0.0	0.0
04 MAY	S	0030	23.1	--	27.60	72.4	0.0	0.0	0.0	0.0	0.0
04 MAY	S	0230	24.5	--	46.50	0.0	0.0	0.0	0.0	0.0	0.0
10 MAY	S	1430	21.5	--	50.90	39.3	0.0	0.0	0.0	0.0	0.0
10 MAY	S	1630	22.2	--	42.30	307.3	70.9	0.0	0.0	0.0	70.9
10 MAY	S	1830	21.7	--	43.00	674.6	116.3	0.0	0.0	0.0	116.3
10 MAY	S	2030	21.7	--	55.10	345.1	0.0	0.0	0.0	0.0	0.0
10 MAY	S	2230	22.0	--	51.40	77.8	0.0	0.0	0.0	0.0	0.0
11 MAY	S	0030	21.6	--	52.70	0.0	19.0	0.0	0.0	0.0	19.0
11 MAY	S	0230	21.0	--	48.70	0.0	0.0	0.0	0.0	0.0	0.0
17 MAY	S	1600	--	--	(c)	(c)	(c)	(c)	(c)	(c)	(c)
17 MAY	S	1830	24.7	--	111.10	0.0	0.0	0.0	0.0	0.0	0.0
17 MAY	S	2030	24.9	--	80.20	0.0	0.0	0.0	0.0	0.0	0.0
17 MAY	S	2230	24.2	--	63.80	203.6	15.7	0.0	0.0	0.0	15.7
18 MAY	S	0230	24.9	--	88.50	0.0	0.0	0.0	0.0	0.0	0.0

TABLE E.4-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M)					
						EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
24 MAY	S	1500	27.0	--	77.30	90.6	0.0	0.0	0.0	0.0	0.0
24 MAY	S	1630	27.0	--	71.30	42.1	0.0	0.0	0.0	0.0	0.0
24 MAY	S	1830	27.0	--	103.30	9.7	48.4	0.0	0.0	0.0	48.4
24 MAY	S	2030	--	--	94.10	0.0	0.0	0.0	0.0	0.0	0.0
24 MAY	S	2230	27.5	--	114.70	17.4	0.0	0.0	0.0	0.0	0.0
25 MAY	S	0030	27.0	--	93.70	0.0	0.0	0.0	0.0	0.0	0.0
25 MAY	S	0230	27.0	--	63.00	0.0	0.0	0.0	0.0	0.0	0.0
31 MAY	S	1500	29.9	--	91.70	0.0	0.0	0.0	0.0	0.0	0.0
31 MAY	S	1700	29.5	--	95.70	0.0	0.0	0.0	0.0	0.0	0.0
31 MAY	S	1900	27.5	--	75.70	0.0	0.0	0.0	0.0	0.0	0.0
31 MAY	S	2100	28.2	--	53.30	0.0	0.0	0.0	0.0	0.0	0.0
31 MAY	S	2300	28.8	--	60.70	0.0	0.0	0.0	0.0	0.0	0.0
01 JUN	S	0100	29.0	--	13.10	0.0	0.0	0.0	0.0	0.0	0.0
01 JUN	S	0300	29.0	--	76.60	0.0	52.2	169.7	0.0	0.0	221.9

(a) Includes all sampling dates when striped bass were collected at this station (3 May 77 through 31 May 77).
(b) Total density of striped bass life stages collected excluding eggs.
(c) Data excluded from analysis because of extremely high or low sample volume.

Note: Dashes (--) indicate data not available.
S = surface; M = middepth; B = bottom
YSL = yolk-sac larvae; PYSL = post yolk-sac larvae; JUV = juveniles; UID = unidentified life stages

APPENDIX F

SEASONAL ENTRAINMENT ABUNDANCE OF STRIPED BASS EARLY DEVELOPMENTAL STAGES, INDIAN POINT GENERATING STATION, 1977

APPENDIX F FIGURES

	Title	Number
F.1	STRIPED BASS ENTRAINMENT ABUNDANCE (STATIONS COMBINED)	F.1-2
F.2	STRIPED BASS ENTRAINMENT ABUNDANCE AT EACH STATION	F.2-1

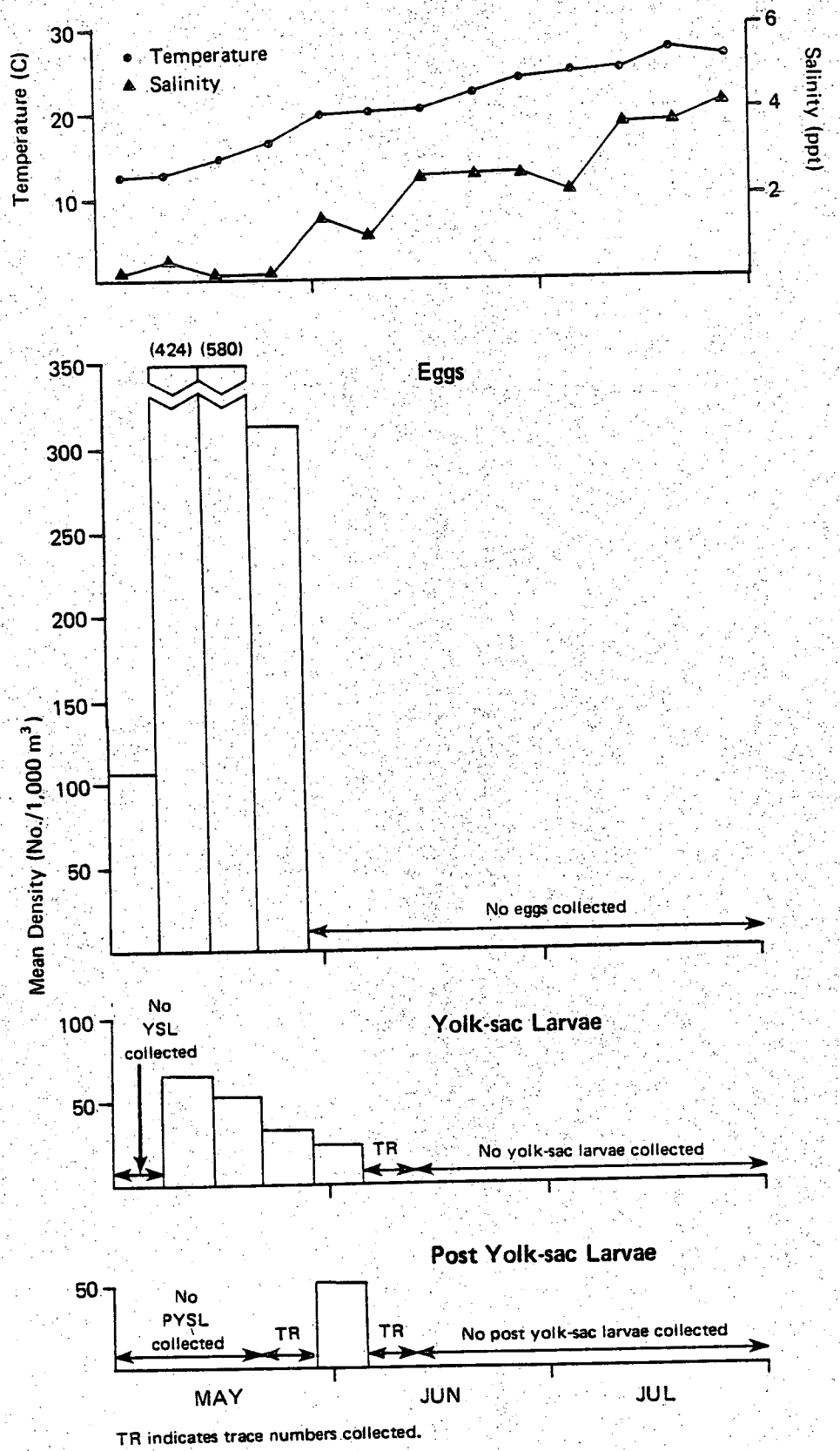


Figure F.1-2. Mean densities (No./1,000 m^3) of striped bass early developmental stages collected during the entrainment abundance study (all stations, depths, and collection periods combined), Indian Point Generating Station, 1977. (See Appendix A for water quality data.)

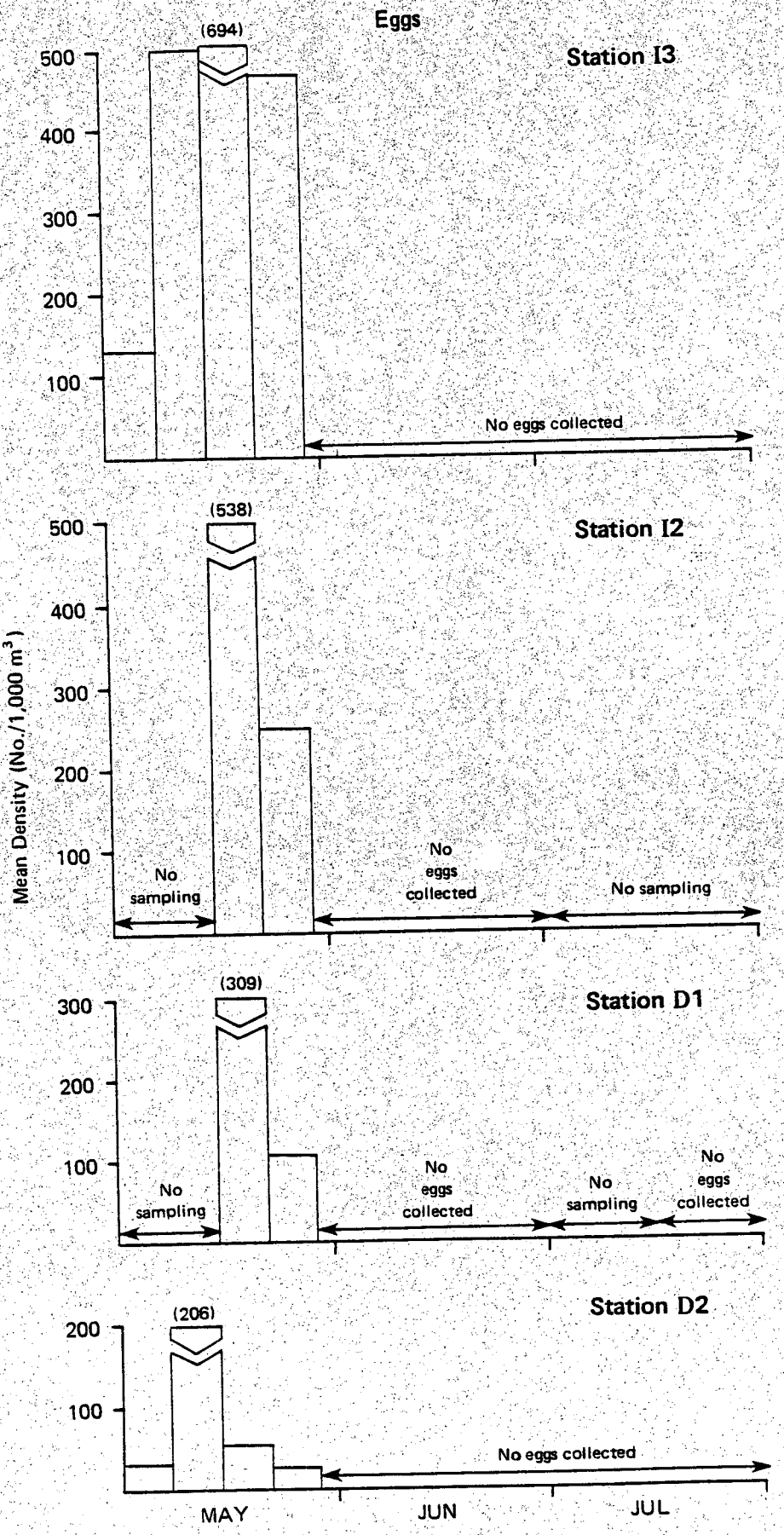


Figure F.2-1. Mean densities (No./1,000 m^3) of striped bass eggs collected at each station during the entrainment abundance study (all depths and collection periods combined), Indian Point Generating Station, 1977.

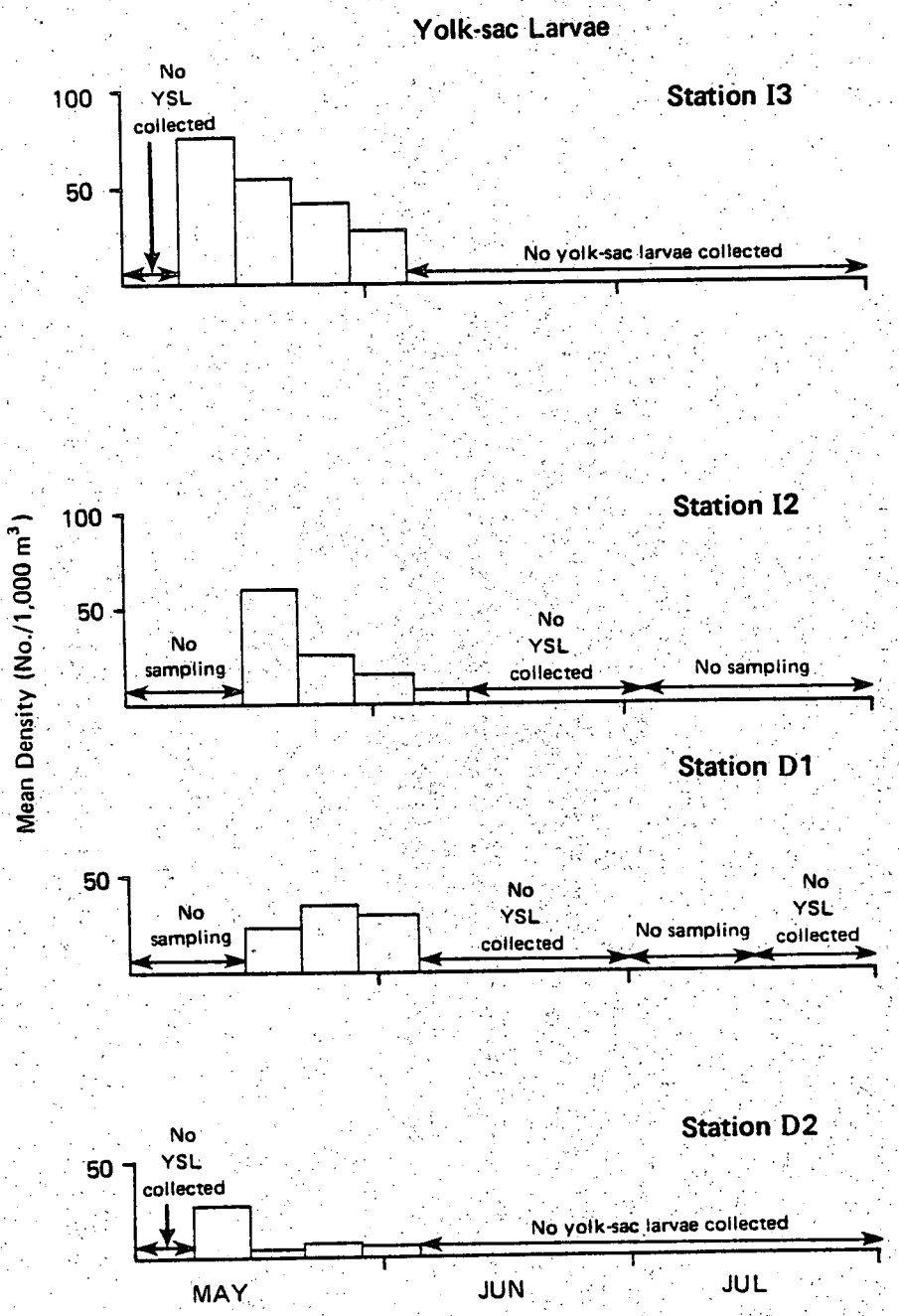


Figure F.2-1. (Cont.) Mean densities (No./1,000 m^3) of striped bass yolk-sac larvae collected at each station during the entrainment abundance study (all depths and collection periods combined), Indian Point Generating Station, 1977.

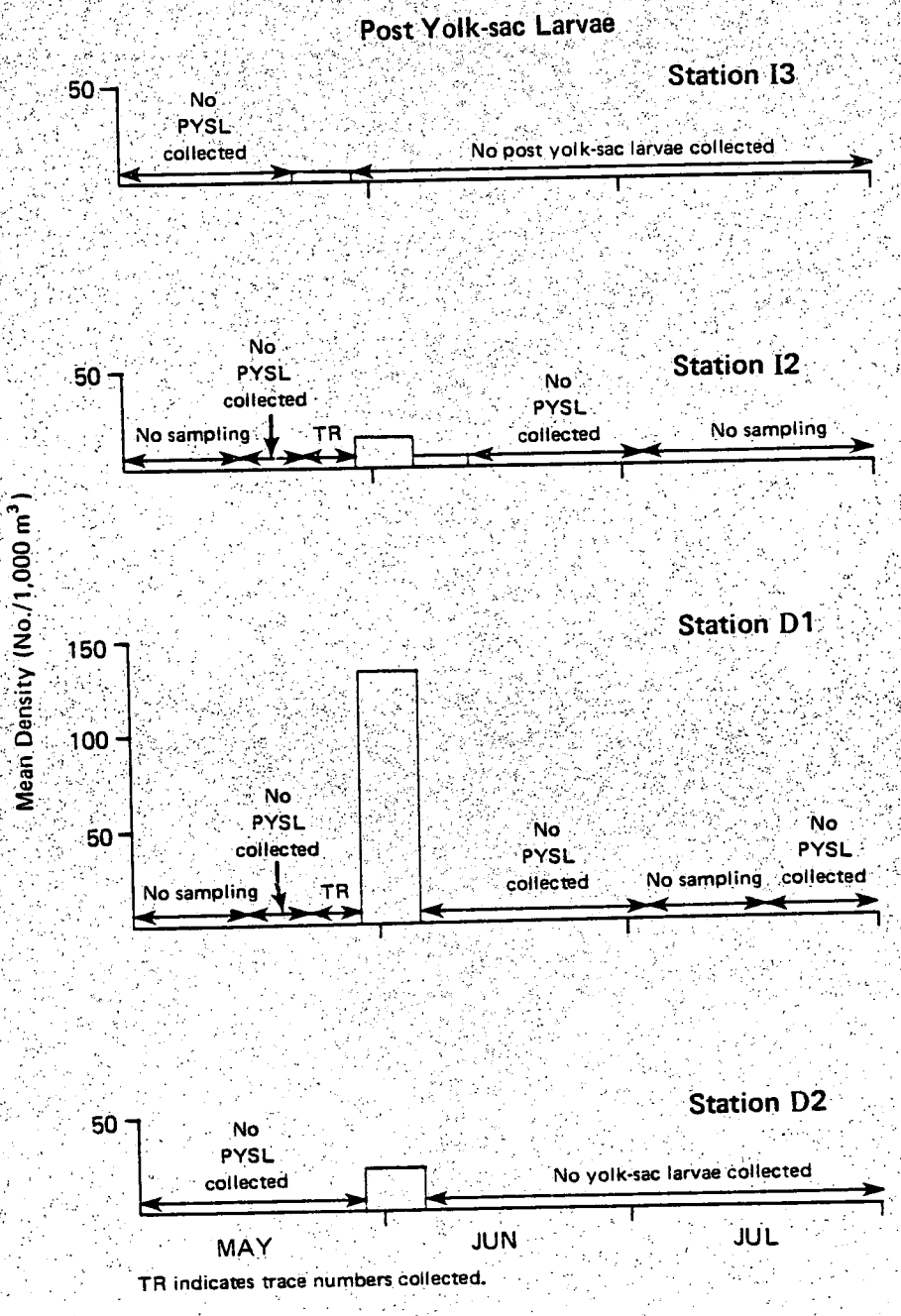


Figure F.2-1. (Cont.) Mean densities (No./1,000 m^3) of striped bass post yolk-sac larvae collected at each station during the entrainment abundance study (all depths and collection periods combined), Indian Point Generating Station, 1977.

APPENDIX G

ENTRAINMENT ABUNDANCE OF SELECTED MACROZOOPLANKTON TAXA, INDIAN POINT GENERATING STATION, 1977

APPENDIX G TABLES

	Title	Number
G.1	DENSITIES OF GAMMARUS SPP., NEOMYSIS AMERICANA, MONOCULODES EDWARDSI, AND CHAOBORUS PUNCTIPENNIS COLLECTED AT STATION I2 DURING THE ENTRAINMENT ABUNDANCE STUDY, INDIAN POINT GENERATING STATION, 1977	G.1-1
G.2	DENSITIES OF GAMMARUS SPP., NEOMYSIS AMERICANA, MONOCULODES EDWARDSI, AND CHAOBORUS PUNCTIPENNIS COLLECTED AT STATION I3 DURING THE ENTRAINMENT ABUNDANCE STUDY, INDIAN POINT GENERATING STATION, 1977	G.2-1
G.3	DENSITIES OF GAMMARUS SPP., NEOMYSIS AMERICANA, MONOCULODES EDWARDSI, AND CHAOBORUS PUNCTIPENNIS COLLECTED AT STATION D1 DURING THE ENTRAINMENT ABUNDANCE STUDY, INDIAN POINT GENERATING STATION, 1977	G.3-1
G.4	DENSITIES OF GAMMARUS SPP., NEOMYSIS AMERICANA, MONOCULODES EDWARDSI, AND CHAOBORUS PUNCTIPENNIS COLLECTED AT STATION D2 DURING THE ENTRAINMENT ABUNDANCE STUDY, INDIAN POINT GENERATING STATION, 1977	G.4-1

TABLE G.1-1 DENSITIES OF GAMMARUS SPP., NEOMYSIS AMERICANA, MONOCULODES EDWARDSI, AND CHAOBORUS PUNCTIPENNIS COLLECTED AT STATION I2 DURING THE ENTRAINMENT ABUNDANCE STUDY, INDIAN POINT GENERATING STATION, 1977

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
17 MAY	S	1630	--	--	11.80	254.7	0.0	0.0	169.8
	M		--	--	22.70	264.6	0.0	0.0	0.0
	B		--	--	20.60	630.6	0.0	0.0	339.6
17 MAY	S	1830	--	--	13.20	151.9	0.0	0.0	151.9
	M		--	--	20.10	248.9	0.0	0.0	49.8
	B		--	--	22.50	266.3	0.0	0.0	221.9
17 MAY	S	2030	--	--	--	--	--	--	--
	M		--	--	19.00	578.2	0.0	0.0	2785.9
	B		--	--	21.10	2175.4	0.0	0.0	1655.2
17 MAY	S	2230	--	--	4.40	1584.6	0.0	226.4	2263.7
	M		--	--	18.10	386.5	0.0	0.0	0.0
	B		--	--	18.20	1208.8	0.0	0.0	494.5
18 MAY	S	0030	--	--	(a)	(a)	(a)	(a)	(a)
	M		--	--	20.10	1145.1	0.0	49.8	796.6
	B		--	--	20.40	2649.7	0.0	0.0	2011.8
18 MAY	S	0230	--	--	12.60	354.1	0.0	79.2	158.3
	M		--	--	23.00	1523.7	0.0	43.5	304.7
	B		--	--	20.30	4527.4	0.0	49.2	885.8
24 MAY	S	1500	--	--	3.20	0.0	0.0	0.0	308.7
	M		--	--	21.20	47.2	0.0	0.0	0.0
	B		--	--	14.10	283.0	0.0	0.0	70.7
24 MAY	S	1630	--	--	3.10	0.0	0.0	0.0	0.0
	M		--	--	12.70	394.8	0.0	0.0	79.0
	B		--	--	23.00	0.0	0.0	0.0	0.0
24 MAY	S	1830	--	--	4.40	0.0	0.0	0.0	0.0
	M		--	--	14.70	0.0	0.0	0.0	0.0
	B		--	--	(a)	(a)	(a)	(a)	(a)

TABLE G.1-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
24 MAY	S	2030	--	--	2.10	485.1	0.0	0.0	1455.3
	M		--	--	13.30	75.5	0.0	0.0	830.0
	B		--	--	25.30	1460.9	0.0	0.0	7186.0
24 MAY	S	2230	--	--	8.50	351.3	0.0	0.0	0.0
	M		--	--	11.20	3842.4	0.0	0.0	625.5
	B		--	--	20.90	3060.8	0.0	95.7	430.4
25 MAY	S	0030	--	--	2.70	3772.9	0.0	0.0	0.0
	M		--	--	14.10	1131.9	0.0	0.0	424.4
	B		--	--	20.90	2534.7	0.0	47.8	765.2
25 MAY	S	0230	--	--	15.30	2024.3	0.0	0.0	0.0
	M		--	--	23.30	14699.9	0.0	0.0	300.9
	B		--	--	12.10	63108.2	0.0	82.8	165.6
31 MAY	S	1500	--	--	5.90	0.0	169.8	0.0	0.0
	M		--	--	--	--	--	--	--
	B		--	--	3.80	3918.0	1567.2	0.0	0.0
31 MAY	S	1700	--	--	5.30	0.0	0.0	0.0	0.0
	M		--	--	3.80	261.2	0.0	0.0	0.0
	B		--	--	5.70	174.1	0.0	0.0	0.0
31 MAY	S	1900	--	--	4.40	0.0	452.7	0.0	0.0
	M		--	--	3.80	0.0	0.0	0.0	522.4
	B		--	--	8.80	226.4	113.2	0.0	0.0
31 MAY	S	2100	--	--	10.50	6982.5	191.3	0.0	95.7
	M		--	--	2.90	16298.8	0.0	0.0	0.0
	B		--	--	6.00	21201.7	1490.7	496.9	828.2
31 MAY	S	2300	--	--	5.00	2396.9	5992.2	199.7	599.2
	M		--	--	2.90	2376.9	2037.4	0.0	[illegible]
	B		--	--	[illegible].20	5556.4	3086.9	308.7	[illegible]

TABLE G.1-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
01 JUN	S	0100	--	--	7.40	407.5	1358.2	0.0	271.6
	M		--	--	3.20	1234.8	6482.5	0.0	308.7
	B		--	--	5.40	2202.5	4588.6	0.0	1101.3
01 JUN	S	0300	--	--	5.60	536.1	0.0	0.0	0.0
	M		--	--	3.80	1828.4	2612.0	0.0	261.2
	B		--	--	8.10	2839.9	1111.3	123.5	123.5
07 JUN	S	1500	--	--	18.70	106.9	0.0	0.0	0.0
	M		--	--	18.30	109.5	0.0	0.0	0.0
	B		--	--	24.10	0.0	41.4	0.0	0.0
07 JUN	S	1700	--	--	17.40	57.6	0.0	0.0	0.0
	M		--	--	15.60	192.2	128.1	0.0	0.0
	B		--	--	18.80	159.2	53.1	0.0	0.0
07 JUN	S	1900	--	--	22.70	0.0	44.1	0.0	0.0
	M		--	--	16.90	236.2	2125.9	118.1	236.2
	B		--	--	21.20	754.6	6885.5	0.0	141.5
07 JUN	S	2100	--	--	27.50	544.7	399.5	0.0	1380.0
	M		--	--	16.80	5540.2	4467.9	476.6	4765.7
	B		--	--	24.00	8832.7	3791.4	416.6	4958.0
07 JUN	S	2300	--	--	15.20	3560.4	1120.9	197.8	65.9
	M		--	--	17.80	3760.4	1796.0	168.4	392.9
	B		--	--	25.00	6871.1	1597.9	119.8	559.3
08 JUN	S	0100	--	--	17.50	799.0	513.6	0.0	0.0
	M		--	--	16.10	2492.2	1495.3	186.9	186.9
	B		--	--	2.80	35743.0	17871.5	357.4	1429.7
08 JUN	S	0300	--	--	23.60	1400.7	764.0	127.3	42.4
	M		--	--	17.70	2207.1	735.7	0.0	0.0
	B		--	--	22.60	2748.4	1551.5	88.7	44.3

TABLE G.1-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
14 JUN	S	1500	--	--	13.00	231.5	0.0	0.0	0.0
	M		--	--	13.30	150.9	0.0	0.0	0.0
	B		--	--	25.30	118.5	79.0	0.0	0.0
14 JUN	S	1700	--	--	17.10	175.6	58.5	0.0	0.0
	M		--	--	16.50	181.9	0.0	0.0	0.0
	B		--	--	9.90	1216.3	405.4	405.4	0.0
14 JUN	S	1900	--	--	24.10	207.0	82.8	0.0	0.0
	M		--	--	16.80	357.4	536.1	0.0	59.6
	B		--	--	22.60	928.5	530.6	0.0	0.0
14 JUN	S	2100	--	--	26.00	6467.8	5120.3	346.5	38.5
	M		--	--	14.90	8136.0	11699.6	403.4	134.5
	B		--	--	24.00	13540.7	10874.2	708.3	333.3
14 JUN	S	2300	--	--	16.20	864.3	1728.7	0.0	0.0
	M		--	--	10.60	3678.6	11035.7	1037.5	0.0
	B		--	--	18.80	4456.7	4191.4	424.4	0.0
15 JUN	S	0100	--	--	27.10	701.3	1218.0	627.4	73.8
	M		--	--	17.20	1857.4	3830.9	1218.9	58.0
	B		--	--	32.20	3535.1	3721.2	1550.5	155.0
15 JUN	S	0300	--	--	18.40	217.3	597.6	0.0	0.0
	M		--	--	17.00	6344.7	3231.1	881.2	117.5
	B		--	--	25.30	7778.3	4264.2	1145.0	0.0
21 JUN	S	1500	--	--	11.80	0.0	84.9	0.0	169.8
	M		--	--	11.30	88.2	529.2	0.0	88.2
	B		--	--	19.10	1253.8	18179.4	209.0	0.0
21 JUN	S	1700	--	--	19.10	52.2	313.4	0.0	0.0
	M		--	--	7.40	0.0	3259.8	135.8	0.0
	B		--	--	13.00	43.5	696.5	0.0	43.5

TABLE G.1-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
21 JUN	S	1900	--	--	7.40	0.0	0.0	814.9	0.0
	M		--	--	--	--	--	--	--
	B		--	--	20.30	0.0	5216.4	196.8	393.7
21 JUN	S	2100	--	--	15.50	646.8	1228.9	0.0	388.1
	M		--	--	13.00	231.5	771.7	77.2	77.2
	B		--	--	18.00	1057.6	2170.9	835.0	890.6
21 JUN	S	2300	--	--	11.80	2376.9	4074.7	848.9	424.4
	M		--	--	10.30	6500.1	11059.9	2037.4	776.1
	B		--	--	21.50	5302.7	16931.4	1674.5	465.1
22 JUN	S	0100	--	--	15.00	6791.2	37418.0	2530.0	799.0
	M		--	--	6.80	15944.5	45619.0	2657.4	0.0
	B		--	--	19.70	5777.6	21792.6	3750.3	2736.7
22 JUN	S	0300	--	--	18.00	222.7	2838.9	0.0	0.0
	M		--	--	8.80	3395.6	63157.9	1584.6	226.4
	B		--	--	19.40	1029.0	6842.6	463.0	102.9
28 JUN	S	1500	--	--	16.50	181.9	0.0	60.6	0.0
	M		--	--	11.50	87.1	261.2	0.0	0.0
	B		--	--	23.60	0.0	0.0	339.6	0.0
28 JUN	S	1700	--	--	19.10	52.2	52.2	0.0	52.2
	M		--	--	10.00	99.9	0.0	99.9	0.0
	B		--	--	23.00	0.0	130.6	0.0	0.0
28 JUN	S	1900	--	--	16.10	1246.1	52335.6	996.9	249.2
	M		--	--	6.20	5174.2	561403.5	0.0	2587.1
	B		--	--	33.90	2362.1	118107.3	472.4	1417.3
28 JUN	S	2100	--	--	19.70	1621.8	94468.2	3243.5	0.0
	M		--	--	7.40	13582.3	172767.4	8692.7	543.3
	B		--	--	19.40	14817.1	149817.4	6585.4	0.0

TABLE G.1-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
28 JUN	S	2300	--	--	20.60	970.2	48702.4	970.2	0.0
	M		--	--	7.70	2481.4	24683.3	2350.8	914.2
	B		--	--	23.00	4179.2	78359.7	6965.3	0.0
29 JUN	S	0100	--	--	18.70	909.1	5935.6	855.6	1657.7
	M		--	--	8.20	8003.9	28377.4	4972.1	6306.1
	B		--	--	25.00	10546.3	31479.1	5592.7	5592.7
29 JUN	S	0300	--	--	17.10	585.4	3512.7	1170.9	468.4
	M		--	--	8.80	13582.3	24787.8	6678.0	905.5
	B		--	--	25.00	7310.5	4673.9	4234.5	639.2
16 AUG	S	1430	--	--	--	--	--	--	--
	M		--	--	33.60	0.0	25020.1	0.0	119.1
	B		--	--	32.40	0.0	29634.2	0.0	247.0
16 AUG	S	1630	--	--	12.70	394.8	8291.5	0.0	79.0
	M		--	--	33.60	0.0	11139.9	536.1	238.3
	B		--	--	35.30	141.5	15280.1	3452.2	679.1
16 AUG	S	1830	--	--	13.30	75.5	150.9	75.5	0.0
	M		--	--	24.10	0.0	1325.1	165.6	0.0
	B		--	--	26.90	222.7	2004.0	371.1	148.4
16 AUG	S	2030	--	--	11.20	0.0	68537.2	0.0	2144.6
	M		--	--	30.30	0.0	25450.4	0.0	0.0
	B		--	--	27.60	868.8	41992.3	434.4	434.4
16 AUG	S	2230	--	--	15.20	4211.6	9278.6	6251.6	0.0
	M		--	--	30.90	129.4	33244.4	2845.8	258.7
	B		--	--	32.40	740.9	24571.7	4074.7	0.0
17 AUG	S	0030	--	--	14.70	1629.9	101867.6	4074.7	1629.9
	M		--	--	33.00	2273.8	37745.6	1303.7	0.0
	B		--	--	34.80	575.5	21409.5	1956.8	690.6

TABLE G.1-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
17 AUG	S	0230	--	--	(a)	(a)	(a)	(a)	(a)
	M		--	--	30.00	2064.0	13249.4	865.5	199.7
	B		--	--	31.50	1523.3	25514.5	6727.7	253.9
12 SEP	S	1345	--	--	14.70	67.9	0.0	0.0	0.0
	M		--	--	32.40	0.0	0.0	0.0	0.0
	B		--	--	20.60	0.0	0.0	0.0	0.0
12 SEP	S	1530	--	--	20.30	0.0	0.0	0.0	0.0
	M		--	--	--	--	--	--	--
	B		--	--	20.60	0.0	0.0	0.0	0.0
12 SEP	S	1730	--	--	13.30	0.0	0.0	0.0	0.0
	M		--	--	26.80	0.0	0.0	0.0	0.0
	B		--	--	29.70	0.0	0.0	0.0	0.0
12 SEP	S	1930	--	--	17.10	58.5	58.5	58.5	0.0
	M		--	--	25.90	733.1	617.4	154.3	192.9
	B		--	--	27.70	397.4	1517.2	108.4	216.7
12 SEP	S	2130	--	--	(a)	(a)	(a)	(a)	(a)
	M		--	--	17.70	0.0	3622.0	452.7	0.0
	B		--	--	25.00	0.0	5752.5	639.2	639.2
12 SEP	S	2330	--	--	25.00	39.9	2476.8	0.0	39.9
	M		--	--	31.50	0.0	7521.1	95.2	0.0
	B		--	--	30.90	258.7	4656.8	258.7	0.0
13 SEP	S	0130	--	--	27.10	0.0	2362.1	0.0	0.0
	M		--	--	32.70	0.0	2936.7	0.0	0.0
	B		--	--	31.20	1025.1	2050.2	0.0	0.0
25 OCT	S	1130	--	--	19.10	209.0	0.0	0.0	0.0
	M		--	--	--	--	--	--	--
	B		--	--	28.60	595.1	0.0	0.0	0.0

TABLE G.1-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
25 OCT	S	1330	--	--	10.70	186.1	0.0	0.0	0.0
	M		--	--	19.70	101.4	0.0	0.0	0.0
	B		--	--	28.90	589.0	0.0	0.0	0.0
25 OCT	S	1530	--	--	6.70	149.6	0.0	0.0	149.6
	M		--	--	29.40	67.9	0.0	0.0	0.0
	B		--	--	11.80	1016.1	0.0	0.0	0.0
25 OCT	S	1730	--	--	(a)	(a)	(a)	(a)	(a)
	M		--	--	30.60	555.0	0.0	0.0	0.0
	B		--	--	11.80	1439.5	0.0	84.7	84.7
25 OCT	S	1930	--	--	2.50	9188.1	0.0	0.0	0.0
	M		--	--	31.40	4368.0	0.0	159.4	0.0
	B		--	--	(a)	(a)	(a)	(a)	(a)
25 OCT	S	2130	--	--	4.10	25466.9	0.0	242.5	485.1
	M		--	--	28.30	26032.8	0.0	283.0	0.0
	B		--	--	24.40	59075.0	0.0	654.6	0.0
25 OCT	S	2330	--	--	13.80	52306.5	0.0	289.0	0.0
	M		--	--	30.30	37582.2	0.0	791.2	131.9
	B		--	--	11.80	158517.1	0.0	84.7	0.0
15 NOV	S	1100	--	--	11.50	1393.1	0.0	0.0	0.0
	M		--	--	17.70	20260.3	0.0	226.4	0.0
	B		--	--	26.50	831.0	0.0	75.5	0.0
15 NOV	S	1300	--	--	13.50	9153.3	0.0	73.8	0.0
	M		--	--	19.70	57775.6	0.0	405.4	202.7
	B		--	--	26.50	75239.2	0.0	604.3	0.0
15 NOV	S	1500	--	--	20.00	1947.5	0.0	0.0	0.0
	M		--	--	18.00	11077.4	0.0	0.0	0.0
	B		--	--	23.60	20458.4	0.0	764.0	84.9

TABLE G.1-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
15 NOV	S	1700	--	--	18.60	24901.0	0.0	431.2	0.0
	M		--	--	22.40	16888.6	0.0	446.8	0.0
	B		--	--	25.30	37588.3	0.0	789.7	0.0
15 NOV	S	1900	--	--	22.10	34227.5	0.0	724.4	181.1
	M		--	--	20.90	28790.7	0.0	1434.8	0.0
	B		--	--	25.00	55288.1	0.0	639.2	0.0
15 NOV	S	2100	--	--	18.80	7905.3	0.0	212.2	0.0
	M		--	--	21.50	15256.9	0.0	651.2	139.5
	B		--	--	27.70	14593.8	0.0	578.0	72.2
15 NOV	S	2300	--	--	15.60	26908.4	0.0	512.5	128.1
	M		--	--	21.20	35087.7	0.0	943.2	0.0
	B		--	--	(a)	(a)	(a)	(a)	(a)
06 DEC	S	1300	--	--	--	--	--	--	--
	M		--	--	17.10	1229.4	0.0	0.0	0.0
	B		--	--	8.50	5737.4	0.0	0.0	0.0
06 DEC	S	1500	--	--	2.70	1509.1	0.0	0.0	0.0
	M		--	--	16.80	1012.7	0.0	0.0	0.0
	B		--	--	12.10	993.8	0.0	0.0	0.0
06 DEC	S	1700	--	--	4.90	3498.5	0.0	0.0	0.0
	M		--	--	12.70	2053.1	0.0	0.0	0.0
	B		--	--	28.60	5495.9	0.0	0.0	0.0
06 DEC	S	1900	--	--	9.70	4424.6	0.0	0.0	0.0
	M		--	--	19.70	9325.2	0.0	101.4	0.0
	B		--	--	35.00	12869.0	0.0	313.9	0.0
06 DEC	S	2100	--	--	8.40	7863.5	0.0	119.1	0.0
	M		--	--	16.80	5242.3	0.0	0.0	0.0
	B		--	--	26.50	9092.6	0.0	37.7	0.0

TABLE G.1-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
06 DEC	S	2300	--	--	6.20	5497.6	0.0	0.0	0.0
	M		--	--	13.30	12978.7	0.0	0.0	0.0
	B		--	--	32.70	9330.2	0.0	61.2	0.0

(a) Data excluded from analysis because of extremely high or low sample volume.

TABLE G.2-1 DENSITIES OF GAMMARUS SPP., NEOMYSIS AMERICANA, MONOCULODES EDWARDSI, AND CHAOBORUS PUNCTIPENNIS COLLECTED AT STATION I3 DURING THE ENTRAINMENT ABUNDANCE STUDY, INDIAN POINT GENERATING STATION, 1977

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
03 MAY	S	1430	--	--	7.30	0.0	0.0	0.0	0.0
	M		--	--	7.70	0.0	0.0	0.0	0.0
	B		--	--	8.00	3395.6	0.0	0.0	0.0
03 MAY	S	1630	--	--	7.30	409.1	0.0	0.0	136.4
	M		--	--	8.00	125.8	0.0	0.0	0.0
	B		--	--	10.30	2910.5	0.0	0.0	679.1
03 MAY	S	1830	--	--	7.30	0.0	0.0	0.0	0.0
	M		--	--	7.40	0.0	0.0	0.0	271.6
	B		--	--	7.70	1697.8	0.0	0.0	130.6
03 MAY	S	2030	--	--	7.30	136.4	0.0	0.0	136.4
	M		--	--	12.40	323.4	0.0	80.8	1051.0
	B		--	--	10.30	3104.5	0.0	97.0	291.1
03 MAY	S	2230	--	--	7.30	0.0	0.0	0.0	0.0
	M		--	--	3.20	5865.1	0.0	308.7	5556.4
	B		--	--	5.70	6617.0	0.0	174.1	1741.3
04 MAY	S	0030	--	--	7.30	0.0	0.0	0.0	136.4
	M		--	--	4.60	0.0	0.0	219.1	657.2
	B		--	--	5.90	12224.1	0.0	0.0	1867.6
04 MAY	S	0230	--	--	7.30	272.7	0.0	0.0	0.0
	M		--	--	5.60	178.7	0.0	178.7	0.0
	B		--	--	8.20	3274.3	0.0	0.0	242.5
10 MAY	S	1430	--	--	7.30	0.0	0.0	0.0	0.0
	M		--	--	8.00	0.0	0.0	0.0	0.0
	B		--	--	14.40	0.0	0.0	0.0	69.3
10 MAY	S	1630	--	--	7.30	0.0	0.0	0.0	0.0
	M		--	--	14.30	0.0	0.0	0.0	0.0
	B		--	--	9.50	314.4	0.0	0.0	209.6

TABLE G.2-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
10 MAY	S	1830	--	--	7.30	0.0	0.0	0.0	136.4
	M		--	--	8.50	117.1	0.0	0.0	585.4
	B		--	--	19.10	366.8	0.0	0.0	209.6
10 MAY	S	2030	--	--	7.30	409.1	0.0	0.0	136.4
	M		--	--	10.30	97.0	0.0	0.0	194.0
	B		--	--	14.00	1358.2	0.0	0.0	714.9
10 MAY	S	2230	--	--	7.30	136.4	0.0	0.0	136.4
	M		--	--	20.30	49.2	0.0	0.0	147.6
	B		--	--	12.70	947.6	0.0	157.9	79.0
11 MAY	S	0030	--	--	7.30	0.0	0.0	409.1	0.0
	M		--	--	10.90	458.9	0.0	183.5	0.0
	B		--	--	13.70	73.0	0.0	73.0	511.2
11 MAY	S	0230	--	--	7.30	136.4	0.0	0.0	136.4
	M		--	--	9.90	304.1	0.0	0.0	506.8
	B		--	--	12.40	889.3	0.0	0.0	242.5
17 MAY	S	1630	--	--	6.00	334.5	0.0	0.0	0.0
	M		--	--	9.60	313.4	0.0	0.0	5537.4
	B		--	--	11.60	1378.9	0.0	0.0	689.5
17 MAY	S	1830	--	--	5.60	355.6	0.0	0.0	0.0
	M		--	--	11.20	268.1	0.0	0.0	89.4
	B		--	--	10.80	370.1	0.0	0.0	925.2
17 MAY	S	2030	--	--	4.00	0.0	0.0	0.0	0.0
	M		--	--	7.70	30952.1	0.0	0.0	10186.8
	B		--	--	7.00	11413.7	0.0	0.0	4280.1
17 MAY	S	2230	--	--	11.20	357.4	0.0	0.0	0.0
	M		--	--	9.10	1533.5	0.0	109.5	766.7
	B		--	--	14.40	1524.5	0.0	0.0	900.9

TABLE G.2-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
18 MAY	S	0030	--	--	6.50	463.0	0.0	0.0	308.7
	M		--	--	7.20	554.4	0.0	0.0	831.6
	B		--	--	10.00	1506.9	0.0	0.0	1406.5
18 MAY	S	0230	--	--	--	--	--	--	--
	M		--	--	7.20	0.0	0.0	0.0	0.0
	B		--	--	9.50	1904.1	0.0	105.8	211.6
24 MAY	S	1300	--	--	7.10	140.3	0.0	0.0	0.0
	M		--	--	9.40	318.3	0.0	0.0	0.0
	B		--	--	13.50	1181.1	0.0	0.0	0.0
24 MAY	S	1630	--	--	7.70	0.0	0.0	0.0	0.0
	M		--	--	6.00	165.6	0.0	0.0	0.0
	B		--	--	8.80	113.2	0.0	0.0	0.0
24 MAY	S	1830	--	--	7.20	0.0	0.0	0.0	0.0
	M		--	--	15.30	0.0	0.0	0.0	0.0
	B		--	--	10.90	1193.0	0.0	0.0	642.4
24 MAY	S	2030	--	--	14.10	424.4	0.0	0.0	141.5
	M		--	--	13.00	199.7	0.0	0.0	133.2
	B		--	--	(a)	(a)	(a)	(a)	(a)
24 MAY	S	2230	--	--	7.70	130.6	0.0	0.0	0.0
	M		--	--	13.70	1022.3	0.0	0.0	219.1
	B		--	--	16.50	4668.9	0.0	0.0	909.5
25 MAY	S	0030	--	--	11.20	268.1	0.0	0.0	0.0
	M		--	--	9.70	308.7	0.0	102.9	0.0
	B		--	--	10.30	6985.2	0.0	0.0	485.1
25 MAY	S	0230	--	--	4.70	424.4	0.0	0.0	0.0
	M		--	--	5.60	714.9	0.0	0.0	0.0
	B		--	--	8.00	7294.2	0.0	0.0	251.5

TABLE G.2-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS FUNCTIPENNIS
31 MAY	S	1500	--	--	4.60	219.1	0.0	0.0	0.0
	M		--	--	9.60	0.0	313.4	0.0	0.0
	B		--	--	4.30	234.2	3746.9	0.0	702.5
31 MAY	S	1700	--	--	5.90	339.6	848.9	0.0	0.0
	M		--	--	8.40	119.1	0.0	0.0	0.0
	B		--	--	4.90	411.6	0.0	205.8	0.0
31 MAY	S	1900	--	--	3.20	0.0	0.0	0.0	308.7
	M		--	--	(a)	(a)	(a)	(a)	(a)
	B		--	--	3.10	6791.2	0.0	0.0	6144.4
31 MAY	S	2100	--	--	2.40	10186.8	848.9	424.4	424.4
	M		--	--	3.20	25621.2	1234.8	308.7	1852.1
	B		--	--	4.40	11771.4	452.7	452.7	1131.9
31 MAY	S	2300	--	--	2.90	2716.5	6791.2	1018.7	339.6
	M		--	--	7.40	1901.5	7741.9	135.8	135.8
	B		--	--	3.80	4179.2	7836.0	261.2	0.0
01 JUN	S	0100	--	--	4.70	424.4	5305.6	0.0	0.0
	M		--	--	5.90	2376.9	15789.5	0.0	509.3
	B		--	--	6.80	2509.8	14025.2	0.0	295.3
01 JUN	S	0300	--	--	6.20	323.4	323.4	0.0	161.7
	M		--	--	8.20	1212.7	1576.5	0.0	242.5
	B		--	--	6.50	3549.9	4476.0	0.0	0.0
07 JUN	S	1500	--	--	(a)	(a)	(a)	(a)	(a)
	M		--	--	(a)	(a)	(a)	(a)	(a)
	B		--	--	(a)	(a)	(a)	(a)	(a)
07 JUN	S	1700	--	--	(a)	(a)	(a)	(a)	(a)
	M		--	--	(a)	(a)	(a)	(a)	(a)
	B		--	--	(a)	(a)	(a)	(a)	(a)

TABLE G.2-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
07 JUN	S	1900	--	--	5.60	178.7	3216.9	0.0	0.0
	M		--	--	8.00	754.6	251.5	0.0	0.0
	B		--	--	11.00	362.2	5432.9	0.0	90.5
07 JUN	S	2100	--	--	6.20	161.7	485.1	0.0	0.0
	M		--	--	8.40	2740.3	12271.8	0.0	2621.2
	B		--	--	15.40	4553.5	9367.1	0.0	2341.8
07 JUN	S	2300	--	--	9.10	876.3	985.8	0.0	109.5
	M		--	--	11.20	5093.4	2948.8	625.5	178.7
	B		--	--	15.80	5077.5	1332.8	126.9	126.9
08 JUN	S	0100	--	--	8.00	2138.0	1257.6	125.8	251.5
	M		--	--	11.00	2282.0	1186.6	0.0	182.6
	B		--	--	12.40	2021.2	161.7	80.8	161.7
08 JUN	S	0300	--	--	--	--	--	--	--
	M		--	--	7.10	0.0	0.0	0.0	0.0
	B		--	--	9.40	9444.0	212.2	424.4	0.0
14 JUN	S	1500	--	--	6.20	161.7	0.0	0.0	0.0
	M		--	--	22.40	0.0	44.7	0.0	0.0
	B		--	--	10.60	1792.1	19336.0	377.3	283.0
14 JUN	S	1700	--	--	8.20	0.0	0.0	0.0	0.0
	M		--	--	10.30	194.0	0.0	97.0	0.0
	B		--	--	14.10	1202.6	70.7	70.7	0.0
14 JUN	S	1900	--	--	4.70	0.0	0.0	0.0	0.0
	M		--	--	6.80	590.5	0.0	0.0	0.0
	B		--	--	10.00	3695.2	599.2	299.6	0.0
14 JUN	S	2100	--	--	7.10	1131.9	2122.2	141.5	0.0
	M		--	--	13.40	12910.7	16418.2	970.2	223.9
	B		--	--	15.00	4261.1	9254.6	399.5	332.9

TABLE G.2-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
14 JUN	S	2300	--	--	6.80	3838.5	30412.6	1181.1	0.0
	M		--	--	10.90	9360.8	18538.1	1560.1	0.0
	B		--	--	10.70	6326.0	5953.9	1023.3	93.0
15 JUN	S	0100	--	--	6.30	157.9	1737.3	157.9	0.0
	M		--	--	12.70	2921.8	9397.1	2053.1	315.9
	B		--	--	11.20	5540.2	4735.9	1161.6	357.4
15 JUN	S	0300	--	--	7.40	6112.1	6383.7	1494.1	0.0
	M		--	--	10.70	4558.5	3442.1	1674.5	93.0
	B		--	--	13.30	1735.5	5206.6	1131.9	75.5
21 JUN	S	1500	--	--	8.20	0.0	0.0	242.5	0.0
	M		--	--	9.90	304.1	16927.3	0.0	2229.9
	B		--	--	13.30	377.3	7319.4	75.5	528.2
21 JUN	S	1700	--	--	12.70	79.0	394.8	0.0	157.9
	M		--	--	12.40	161.7	4123.2	242.5	161.7
	B		--	--	25.50	470.0	7323.8	274.2	3603.2
21 JUN	S	1900	--	--	4.40	452.7	6112.1	0.0	0.0
	M		--	--	7.10	141.5	2263.7	141.5	0.0
	B		--	--	9.30	646.8	29212.8	323.4	5174.2
21 JUN	S	2100	--	--	9.00	332.9	332.9	554.8	221.9
	M		--	--	9.60	1776.2	1985.1	835.8	209.0
	B		--	--	11.20	1866.7	266.7	888.9	88.9
21 JUN	S	2300	--	--	5.20	194.0	3104.5	0.0	388.1
	M		--	--	8.10	1111.3	4568.6	617.4	493.9
	B		--	--	8.20	1334.0	848.9	606.4	363.8
22 JUN	S	0100	--	--	4.10	7276.3	19403.3	1455.3	242.5
	M		--	--	4.40	4980.2	28296.5	3622.0	679.1
	B		--	--	8.20	3638.1	13339.8	3395.6	0.0

TABLE G.2-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
22 JUN	S	0300	--	--	6.30	2211.1	16425.2	2842.8	0.0
	M		--	--	7.40	950.8	26349.7	1765.7	271.6
	B		--	--	10.60	1226.2	64610.4	1037.5	0.0
28 JUN	S	1500	--	--	8.00	125.8	0.0	125.8	0.0
	M		--	--	14.10	141.5	778.2	565.9	0.0
	B		--	--	12.70	631.7	2369.0	1105.5	0.0
28 JUN	S	1700	--	--	5.90	169.8	0.0	0.0	0.0
	M		--	--	8.50	0.0	117.1	0.0	0.0
	B		--	--	12.80	156.1	1170.9	156.1	0.0
28 JUN	S	1900	--	--	10.60	377.3	55461.2	943.2	188.6
	M		--	--	14.00	5718.9	251630.8	8006.4	1143.8
	B		--	--	15.30	4962.8	57202.6	3395.6	261.2
28 JUN	S	2100	--	--	10.50	5739.0	86085.3	2678.2	382.6
	M		--	--	12.50	9587.5	82772.4	3515.4	0.0
	B		--	--	15.60	4869.1	56123.3	3844.1	256.3
28 JUN	S	2300	--	--	7.70	1296.0	80353.6	1814.4	259.2
	M		--	--	11.20	4289.2	288356.7	3842.4	0.0
	B		--	--	10.40	6945.5	231517.2	9453.6	0.0
29 JUN	S	0100	--	--	7.50	2130.6	79363.5	5725.9	1597.9
	M		--	--	--	--	--	--	--
	B		--	--	13.50	3764.7	9005.7	2436.0	1993.1
29 JUN	S	0300	--	--	10.70	2232.7	21303.8	3721.2	279.1
	M		--	--	12.80	2497.9	31223.8	1561.2	780.6
	B		--	--	11.60	3266.6	9198.2	3352.6	687.7
05 JUL	S	1500	--	--	9.40	212.2	18781.8	106.1	212.2
	M		--	--	7.60	1974.2	51855.1	1711.0	658.1
	B		--	--	10.80	2675.9	17716.1	2491.3	0.0

TABLE G.2-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
05 JUL	S	1700	--	--	11.20	0.0	35385.6	268.1	0.0
	M		--	--	14.00	714.9	61335.0	3431.3	0.0
	B		--	--	14.00	4003.2	170422.7	9150.2	0.0
05 JUL	S	1900	--	--	10.20	196.8	20275.1	98.4	0.0
	M		--	--	10.00	0.0	33856.0	499.4	99.9
	B		--	--	13.30	3923.8	92359.9	6036.6	0.0
05 JUL	S	2100	--	--	10.30	2612.0	8416.4	4450.1	0.0
	M		--	--	13.00	6069.0	7682.3	3764.3	230.5
	B		--	--	14.20	8047.7	5435.8	4376.8	141.2
05 JUL	S	2300	--	--	10.60	1697.8	71967.6	3584.2	377.3
	M		--	--	11.80	3395.6	88030.6	6112.1	339.6
	B		--	--	12.70	6633.2	46037.8	6238.4	157.9
06 JUL	S	0100	--	--	10.30	485.1	5918.0	1649.3	2522.4
	M		--	--	(a)	(a)	(a)	(a)	(a)
	B		--	--	9.70	47332.4	76555.0	6585.4	0.0
06 JUL	S	0300	--	--	7.80	6663.0	54585.6	7688.1	0.0
	M		--	--	7.50	19707.7	94810.1	7989.6	0.0
	B		--	--	8.00	15468.8	34962.0	7042.7	377.3
12 JUL	S	1500	--	--	8.00	251.5	0.0	251.5	0.0
	M		--	--	14.30	70.0	0.0	70.0	0.0
	B		--	--	16.70	298.9	12494.3	5320.5	1913.0
12 JUL	S	1700	--	--	10.60	0.0	188.6	94.3	0.0
	M		--	--	7.40	0.0	407.5	135.8	0.0
	B		--	--	12.50	79.9	319.6	79.9	319.6
12 JUL	S	1900	--	--	8.80	0.0	3622.0	0.0	679.1
	M		--	--	8.50	0.0	9484.2	0.0	702.5
	B		--	--	11.50	174.1	2612.0	522.4	0.0

TABLE G.2-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
12 JUL	S	2100	--	--	11.30	352.8	7320.4	1675.7	88.2
	M		--	--	17.20	2562.7	63135.8	8387.0	233.0
	B		--	--	20.00	8888.4	29062.2	14880.7	499.4
12 JUL	S	2300	--	--	(a)	(a)	(a)	(a)	(a)
	M		--	--	18.40	271.6	14994.9	1684.2	380.3
	B		--	--	15.70	1274.1	24973.2	4332.1	1019.3
13 JUL	S	0100	--	--	9.90	202.7	7703.4	3142.2	405.4
	M		--	--	13.50	369.1	17716.1	6717.4	221.5
	B		--	--	14.30	1680.3	14982.6	10361.8	70.0
13 JUL	S	0300	--	--	7.70	130.6	10839.8	4571.0	522.4
	M		--	--	8.80	452.7	9168.1	3848.3	0.0
	B		--	--	9.00	3005.9	9908.4	8349.8	111.3
19 JUL	S	1500	--	--	6.60	0.0	3622.0	0.0	0.0
	M		--	--	8.10	0.0	87420.9	987.8	0.0
	B		--	--	7.50	1065.3	55394.7	1597.9	266.3
19 JUL	S	1700	--	--	8.50	0.0	3044.3	117.1	117.1
	M		--	--	8.80	0.0	10299.9	113.2	0.0
	B		--	--	12.10	662.6	198766.0	15901.3	0.0
19 JUL	S	1900	--	--	6.90	144.5	1878.4	433.5	433.5
	M		--	--	9.10	109.5	6243.5	2081.2	5805.4
	B		--	--	12.50	4314.4	26685.3	4314.4	1438.1
19 JUL	S	2100	--	--	6.90	2889.9	3178.8	0.0	0.0
	M		--	--	11.50	5136.9	15323.7	2524.9	261.2
	B		--	--	15.60	6727.1	7175.6	1986.1	256.3
19 JUL	S	2300	--	--	7.30	0.0	156635.1	1643.0	7119.8
	M		--	--	10.50	10330.2	99858.9	14156.2	3826.0
	B		--	--	12.10	21201.7	132510.7	6625.5	1987.7

TABLE G.2-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
20 JUL	S	0100	--	--	7.20	3326.3	204012.3	4435.1	4435.1
	M		--	--	(A)	(A)	(A)	(A)	(A)
	B		--	--	8.80	6338.4	100962.1	5885.7	7243.9
20 JUL	S	0300	--	--	6.50	2160.8	96311.2	11421.5	2160.8
	M		--	--	8.50	4215.2	118962.6	2810.1	2810.1
	B		--	--	12.40	1455.3	38483.3	4365.8	1131.9
26 JUL	S	1500	--	--	10.90	275.3	91.8	0.0	0.0
	M		--	--	23.30	0.0	300.9	0.0	0.0
	B		--	--	15.30	65.3	979.5	261.2	65.3
26 JUL	S	1700	--	--	6.20	0.0	5012.5	0.0	0.0
	M		--	--	--	--	--	--	--
	B		--	--	12.80	2185.7	65569.9	1873.4	9991.6
26 JUL	S	1900	--	--	6.80	147.6	7381.7	885.8	147.6
	M		--	--	8.50	1405.1	121304.4	6088.6	1873.4
	B		--	--	10.60	0.0	151669.5	5282.0	1509.1
26 JUL	S	2100	--	--	9.40	2334.5	39898.1	1485.6	848.9
	M		--	--	11.30	5644.6	143937.6	5644.6	0.0
	B		--	--	12.70	3474.6	79283.0	5369.8	789.7
26 JUL	S	2300	--	--	8.50	936.7	55266.1	5386.1	234.2
	M		--	--	11.00	362.2	65919.6	5795.1	362.2
	B		--	--	13.40	4179.2	126569.5	14328.6	0.0
27 JUL	S	0100	--	--	8.80	452.7	45274.5	3622.0	4527.4
	M		--	--	10.00	4594.0	38949.4	13182.9	3195.8
	B		--	--	13.50	1771.6	11146.4	5388.6	738.2
27 JUL	S	0300	--	--	9.10	1095.4	51919.6	4162.3	1314.4
	M		--	--	11.50	3830.9	31692.1	3482.7	1393.1
	B		--	--	12.70	4106.3	16504.1	4027.3	710.7

TABLE G.2-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
16 AUG	S	1430	--	--	7.40	135.8	10186.8	135.8	0.0
	M		--	--	--	--	--	--	--
	B		--	--	9.90	1419.1	51085.8	2432.7	0.0
16 AUG	S	1630	--	--	9.40	0.0	2122.2	106.1	0.0
	M		--	--	12.10	0.0	5631.7	414.1	0.0
	B		--	--	13.00	3472.8	22920.2	10495.4	540.2
16 AUG	S	1830	--	--	9.40	106.1	2865.0	0.0	0.0
	M		--	--	9.50	0.0	10967.1	843.6	0.0
	B		--	--	11.20	714.9	893.6	12688.8	178.7
16 AUG	S	2030	--	--	7.10	565.9	59422.8	565.9	0.0
	M		--	--	12.40	485.1	30883.7	646.8	0.0
	B		--	--	14.00	5575.9	13582.3	1286.7	143.0
16 AUG	S	2230	--	--	6.80	4133.8	142319.3	11220.2	590.5
	M		--	--	5.90	15449.9	22241.1	18166.4	169.8
	B		--	--	8.00	7923.0	22008.4	10061.0	0.0
17 AUG	S	0030	--	--	7.70	1697.8	23116.1	9403.2	261.2
	M		--	--	13.00	2623.9	29171.2	7871.6	308.7
	B		--	--	13.30	4074.7	30183.0	8300.3	150.9
17 AUG	S	0230	--	--	8.10	1234.8	6914.6	2346.0	0.0
	M		--	--	8.20	2546.7	15643.9	3880.7	0.0
	B		--	--	11.20	1519.1	18854.4	5361.5	0.0
12 SEP	S	1345	--	--	5.00	0.0	0.0	0.0	0.0
	M		--	--	6.70	0.0	0.0	0.0	0.0
	B		--	--	7.90	0.0	0.0	0.0	0.0
12 SEP	S	1530	--	--	5.90	0.0	1358.2	0.0	0.0
	M		--	--	6.70	0.0	0.0	0.0	0.0
	B		--	--	6.20	323.4	1293.6	0.0	0.0

TABLE G.2-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
12 SEP	S	1730	--	--	6.50	0.0	0.0	0.0	0.0
	M		--	--	9.60	104.5	0.0	0.0	0.0
	B		--	--	12.40	80.8	161.7	161.7	0.0
12 SEP	S	1930	--	--	3.20	0.0	308.7	0.0	0.0
	M		--	--	8.10	0.0	247.0	0.0	0.0
	B		--	--	7.20	277.2	1386.0	277.2	138.6
12 SEP	S	2130	--	--	7.80	0.0	0.0	0.0	0.0
	M		--	--	9.10	0.0	7010.2	1752.6	0.0
	B		--	--	10.00	3195.8	1597.9	0.0	0.0
12 SEP	S	2330	--	--	3.20	0.0	2469.5	0.0	0.0
	M		--	--	9.10	0.0	3067.0	0.0	0.0
	B		--	--	10.30	679.1	5530.0	97.0	0.0
13 SEP	S	0130	--	--	8.40	0.0	1191.4	0.0	0.0
	M		--	--	10.60	0.0	7545.7	0.0	0.0
	B		--	--	9.20	3482.7	6965.3	0.0	0.0

(a) Data excluded from analysis because of extremely high or low sample volume.

TABLE G.3-1 DENSITIES OF GAMMARUS SPP., NEOMYSIS AMERICANA, MONOCULODES EDWARDSI, AND CHAOBORUS PUNCTIPENNIS COLLECTED AT STATION D1 DURING THE ENTRAINMENT ABUNDANCE STUDY, INDIAN POINT GENERATING STATION, 1977

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
17 MAY	S	1830	--	--	34.80	1151.0	0.0	0.0	920.8
	M		--	--	43.10	1251.6	0.0	23.2	903.9
	B		--	--	41.20	1746.3	0.0	24.3	679.1
17 MAY	S	2030	--	--	38.60	1866.3	0.0	0.0	1114.6
	M		--	--	41.80	4663.0	0.0	23.9	2176.0
	B		--	--	42.70	4051.3	0.0	0.0	1615.8
17 MAY	S	2230	--	--	35.90	6763.3	0.0	111.3	1447.3
	M		--	--	43.00	5837.6	0.0	23.3	2302.5
	B		--	--	48.60	5803.4	0.0	41.2	1996.2
18 MAY	S	0030	--	--	34.80	2043.1	0.0	0.0	1669.0
	M		--	--	36.80	4590.8	0.0	0.0	2526.3
	B		--	--	35.90	3506.9	0.0	0.0	2004.0
18 MAY	S	0230	--	--	35.80	3437.5	0.0	83.8	419.2
	M		--	--	39.50	5017.4	0.0	50.7	456.1
	B		--	--	--	--	--	--	--
24 MAY	S	1500	--	--	54.30	294.5	0.0	0.0	312.9
	M		--	--	7.80	2572.4	0.0	0.0	1929.3
	B		--	--	7.60	4211.6	0.0	0.0	1974.2
24 MAY	S	1630	--	--	7.50	2254.9	0.0	0.0	928.5
	M		--	--	7.20	2633.3	0.0	0.0	1247.4
	B		--	--	6.60	2893.1	0.0	0.0	1065.9
24 MAY	S	1830	--	--	7.40	4058.5	0.0	0.0	2029.2
	M		--	--	7.70	4813.7	0.0	0.0	2992.3
	B		--	--	8.60	6279.5	0.0	0.0	1976.9
24 MAY	S	2030	--	--	7.50	15507.4	0.0	133.7	16576.9
	M		--	--	7.20	22499.2	0.0	0.0	11870.7
	B		--	--	7.20	36321.6	0.0	0.0	13220.5

TABLE G.3-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
24 MAY	S	2230	--	--	7.60	24971.4	0.0	0.0	3699.5
	M		--	--	7.60	40536.5	0.0	131.6	4080.0
	B		--	--	7.90	39277.3	0.0	0.0	4561.2
25 MAY	S	0030	--	--	--	--	--	--	--
	M		--	--	7.50	21071.4	0.0	0.0	939.5
	B		--	--	7.50	22057.9	0.0	0.0	3743.2
25 MAY	S	0230	--	--	7.50	61653.2	0.0	0.0	799.0
	M		--	--	--	--	--	--	--
	B		--	--	--	--	--	--	--
31 MAY	S	1500	--	--	55.40	433.5	1246.3	0.0	54.2
	M		--	--	54.20	701.3	2989.6	18.5	203.0
	B		--	--	51.20	741.6	1424.6	19.5	253.7
31 MAY	S	1700	--	--	50.10	319.6	99.9	0.0	20.0
	M		--	--	46.20	389.3	86.5	0.0	324.4
	B		--	--	48.90	838.7	40.9	0.0	102.3
31 MAY	S	1900	--	--	47.40	1075.6	84.4	0.0	674.9
	M		--	--	50.10	1078.6	39.9	0.0	459.4
	B		--	--	53.00	1943.0	75.5	0.0	264.1
31 MAY	S	2100	--	--	44.20	18019.2	905.5	316.9	996.0
	M		--	--	45.40	14111.5	88.2	264.6	441.0
	B		--	--	--	--	--	--	--
31 MAY	S	2300	--	--	32.40	2994.3	10773.3	463.0	123.5
	M		--	--	29.40	3837.0	9100.2	441.4	169.8
	B		--	--	37.40	2941.1	9304.4	213.9	213.9
01 JUN	S	0100	--	--	39.50	2382.0	10110.7	25.3	1115.0
	M		--	--	44.60	3541.3	8046.3	358.6	739.6
	B		--	--	45.40	2778.2	4564.2	0.0	330.7

TABLE G.3-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
01 JUN	S	0300	--	--	46.20	2011.4	3590.2	86.5	346.0
	M		--	--	45.10	2507.9	2130.6	155.4	443.9
	B		--	--	46.50	902.6	967.1	0.0	300.9
07 JUN	S	1500	--	--	45.50	2022.0	725.3	153.8	197.8
	M		--	--	51.20	2029.5	702.5	19.5	253.7
	B		--	--	51.80	1755.7	482.3	57.9	231.5
07 JUN	S	1700	--	--	50.10	938.8	918.8	39.9	99.9
	M		--	--	62.40	1281.4	672.7	32.0	80.1
	B		--	--	57.30	1588.7	488.8	34.9	17.5
07 JUN	S	1900	--	--	48.20	684.1	82.9	3855.8	82.9
	M		--	--	60.40	2153.3	10402.1	33.1	99.4
	B		--	--	64.20	2289.7	6059.1	62.3	155.8
07 JUN	S	2100	--	--	52.40	2689.8	4578.3	152.6	1240.0
	M		--	--	57.40	5990.2	4423.0	139.3	2263.7
	B		--	--	63.90	6885.1	2738.4	140.8	985.8
07 JUN	S	2300	--	--	81.00	2652.8	1678.1	271.4	394.8
	M		--	--	84.50	4708.9	1348.8	236.6	284.0
	B		--	--	92.80	2069.7	301.8	75.5	32.3
08 JUN	S	0100	--	--	38.50	2570.1	960.5	51.9	181.7
	M		--	--	--	--	--	--	--
	B		--	--	--	--	--	--	--
08 JUN	S	0300	--	--	43.90	3646.3	1025.5	341.8	68.4
	M		--	--	45.60	8762.8	1971.6	1051.5	43.8
	B		--	--	72.20	4157.9	609.8	124.7	41.6
14 JUN	S	1500	--	--	44.40	382.8	337.8	90.1	22.5
	M		--	--	53.30	844.2	1050.6	300.2	0.0
	B		--	--	55.70	1078.0	1024.1	71.9	53.9

TABLE G.3-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
14 JUN	S	1700	--	--	69.20	1502.7	158.9	173.4	0.0
	M		--	--	78.00	1127.6	346.0	230.6	0.0
	B		--	--	80.70	842.7	198.3	86.7	0.0
14 JUN	S	1900	--	--	32.70	1223.6	397.7	214.1	0.0
	M		--	--	46.20	3136.1	908.4	259.5	194.7
	B		--	--	54.50	2826.6	954.4	458.9	18.4
14 JUN	S	2100	--	--	56.50	36785.5	31692.1	1697.8	848.9
	M		--	--	--	--	--	--	--
	B		--	--	83.90	8864.3	5147.0	285.9	95.3
14 JUN	S	2300	--	--	55.50	10459.1	16301.7	1226.2	0.0
	M		--	--	63.30	8417.9	17593.9	426.4	79.0
	B		--	--	70.70	5376.3	4103.0	424.4	0.0
15 JUN	S	0100	--	--	47.40	3058.1	4363.8	970.2	21.1
	M		--	--	62.30	4238.5	6486.1	1541.3	96.3
	B		--	--	69.90	3860.2	5118.4	1544.1	171.6
15 JUN	S	0300	--	--	53.00	2716.5	8149.4	905.5	37.7
	M		--	--	60.80	4341.1	6511.6	1032.4	65.8
	B		--	--	59.50	6085.2	2958.5	907.7	0.0
21 JUN	S	1500	--	--	--	--	--	--	--
	M		--	--	59.50	941.4	19297.7	537.9	1210.3
	B		--	--	78.90	1115.0	9984.0	304.1	101.4
21 JUN	S	1700	--	--	45.50	197.8	571.4	44.0	87.9
	M		--	--	52.70	170.7	550.1	113.8	75.9
	B		--	--	57.10	507.6	560.1	87.5	17.5
21 JUN	S	1900	--	--	68.00	823.2	21402.5	352.8	235.2
	M		--	--	74.40	537.9	31629.4	537.9	430.3
	B		--	--	66.60	2524.2	31131.2	2524.2	2644.4

TABLE G.3-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
21 JUN	S	2100	--	--	46.50	1934.2	1246.5	408.3	279.4
	M		--	--	--	--	--	--	--
	B		--	--	51.60	3583.5	814.0	755.9	155.0
21 JUN	S	2300	--	--	75.70	2589.6	7848.2	792.7	52.8
	M		--	--	75.10	3568.7	9534.3	479.4	53.3
	B		--	--	63.60	2562.4	2751.1	754.6	78.6
22 JUN	S	0100	--	--	54.80	6718.1	63384.3	4965.6	292.1
	M		--	--	60.70	5934.0	38637.1	4483.5	923.1
	B		--	--	75.50	5295.3	38337.7	1694.5	211.8
22 JUN	S	0300	--	--	44.80	1876.5	36100.4	1161.6	0.0
	M		--	--	46.10	4339.4	47907.1	1041.5	347.2
	B		--	--	62.30	1541.3	19779.5	1220.2	64.2
28 JUN	S	1500	--	--	80.50	322.8	819.4	310.4	0.0
	M		--	--	74.40	524.5	995.1	484.1	13.4
	B		--	--	71.70	306.8	1255.0	767.0	13.9
28 JUN	S	1700	--	--	79.80	250.6	75.2	0.0	0.0
	M		--	--	54.90	564.4	455.2	309.5	0.0
	B		--	--	53.60	391.8	261.2	186.6	0.0
28 JUN	S	1900	--	--	77.70	1440.6	77378.2	2057.9	411.6
	M		--	--	83.30	3071.6	0.0	3455.6	767.9
	B		--	--	--	--	--	--	--
28 JUN	S	2100	--	--	43.60	6607.6	166659.0	8810.2	2202.5
	M		--	--	50.40	8896.0	118190.2	0.0	635.4
	B		--	--	--	--	--	--	--
28 JUN	S	2300	--	--	46.20	1384.2	122500.6	6228.8	692.1
	M		--	--	46.50	8940.3	147170.7	6189.4	687.7
	B		--	--	56.00	5432.9	107800.9	4575.1	285.9

TABLE G.3-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
29 JUN	S	0100	--	--	37.30	1717.9	15568.7	3489.5	2308.5
	M		--	--	39.80	5131.1	18109.8	3823.2	2615.9
	B		--	--	39.80	2414.6	12928.4	4426.8	2012.2
29 JUN	S	0300	--	--	61.30	2871.8	8680.7	2904.4	195.8
	M		--	--	60.70	7005.5	11274.7	3494.5	461.5
	B		--	--	84.40	3460.8	5973.4	2607.4	189.6
12 JUL	S	1500	--	--	--	--	--	--	--
	M		--	--	6.80	147.6	738.2	147.6	0.0
	B		--	--	7.50	932.1	6658.0	0.0	0.0
12 JUL	S	1700	--	--	(a)	(a)	(a)	(a)	(a)
	M		--	--	6.90	3178.8	289.0	578.0	0.0
	B		--	--	6.50	308.7	926.1	0.0	0.0
12 JUL	S	1900	--	--	(a)	(a)	(a)	(a)	(a)
	M		--	--	7.10	2688.2	283.0	283.0	0.0
	D		--	--	6.20	480.5	1441.5	0.0	0.0
12 JUL	S	2100	--	--	(a)	(a)	(a)	(a)	(a)
	M		--	--	4.70	23640.2	85964.2	3008.7	0.0
	B		--	--	7.40	10050.9	36129.0	3531.4	1086.6
12 JUL	S	2300	--	--	(a)	(a)	(a)	(a)	(a)
	M		--	--	7.40	11001.7	26893.0	4482.2	1222.4
	B		--	--	7.40	4346.3	22954.2	3938.9	1222.4
13 JUL	S	0100	--	--	(a)	(a)	(a)	(a)	(a)
	M		--	--	6.50	771.7	3241.2	4784.7	771.7
	B		--	--	7.20	1247.4	6791.2	3742.1	138.6
13 JUL	S	0300	--	--	4.10	727.6	7761.3	3395.6	0.0
	M		--	--	5.70	1044.8	12015.2	6268.8	1218.9
	B		--	--	4.40	1584.6	5206.6	5659.3	452.7

TABLE G.3-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
19 JUL	S	1500	--	--	2.70	754.6	5659.3	0.0	377.3
	M		--	--	8.20	485.1	8367.7	121.3	242.5
	B		--	--	5.90	0.0	31069.6	169.8	2886.2
19 JUL	S	1700	--	--	(a)	(a)	(a)	(a)	(a)
	M		--	--	11.50	261.2	2089.6	0.0	0.0
	B		--	--	9.10	219.1	14787.2	328.6	219.1
19 JUL	S	1900	--	--	(a)	(a)	(a)	(a)	(a)
	M		--	--	8.40	714.9	13463.2	357.4	834.0
	B		--	--	9.00	779.3	24492.7	1781.3	1002.0
19 JUL	S	2100	--	--	(a)	(a)	(a)	(a)	(a)
	M		--	--	23.20	1206.6	1896.0	818.7	215.5
	B		--	--	10.50	4208.6	4495.6	2104.3	382.6
19 JUL	S	2300	--	--	7.20	1524.5	13305.2	970.2	2078.9
	M		--	--	7.20	6375.4	90364.2	2494.7	10533.2
	B		--	--	7.10	3678.6	60554.6	3395.6	6508.2
20 JUL	S	0100	--	--	(a)	(a)	(a)	(a)	(a)
	M		--	--	4.40	5885.7	16525.2	1811.0	7243.9
	B		--	--	5.60	6076.3	49146.6	3216.9	8399.6
20 JUL	S	0300	--	--	(a)	(a)	(a)	(a)	(a)
	M		--	--	4.90	1234.8	151463.7	5350.6	10701.2
	B		--	--	5.00	2796.4	53730.2	2197.1	2596.6
26 JUL	S	1500	--	--	13.30	0.0	0.0	75.0	0.0
	M		--	--	16.40	365.1	1217.1	0.0	0.0
	B		--	--	12.10	165.6	6045.8	82.8	0.0
26 JUL	S	1700	--	--	13.70	0.0	292.1	0.0	146.0
	M		--	--	15.80	444.3	1459.8	190.4	126.9
	B		--	--	13.80	289.0	9319.8	72.2	1011.5

TABLE G.3-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
26 JUL	S	1900	--	--	13.10	76.5	305.9	305.9	0.0
	M		--	--	25.00	640.7	2042.2	320.3	80.1
	B		--	--	16.20	1420.0	20435.3	1666.9	555.6
26 JUL	S	2100	--	--	14.70	4346.3	160814.9	14668.9	1086.6
	M		--	--	15.50	5174.2	292861.2	15522.7	5174.2
	B		--	--	20.60	5432.9	124957.6	4268.7	776.1
26 JUL	S	2300	--	--	14.00	143.0	39174.3	3860.2	714.9
	M		--	--	24.40	2291.0	70530.0	4745.6	981.9
	B		--	--	14.40	1663.1	48785.6	8315.7	1108.8
27 JUL	S	0100	--	--	15.10	663.2	25334.3	6101.4	2254.9
	M		--	--	15.00	2263.7	39415.4	13449.2	3861.6
	B		--	--	11.80	1612.9	14431.2	6791.2	1528.0
27 JUL	S	0300	--	--	17.40	0.0	0.0	0.0	0.0
	M		--	--	16.20	2222.6	48155.6	5679.9	1481.7
	B		--	--	16.50	1334.0	22677.7	4608.3	242.5
16 AUG	S	1430	--	--	47.00	340.6	136249.2	1362.5	340.6
	M		--	--	51.80	0.0	90137.4	1543.4	0.0
	B		--	--	54.10	886.8	49067.9	443.4	0.0
16 AUG	S	1630	--	--	51.20	1249.0	25603.5	13348.2	0.0
	M		--	--	86.40	740.4	17955.5	8885.2	185.1
	B		--	--	80.10	799.0	17876.8	5293.1	0.0
16 AUG	S	1830	--	--	50.90	628.1	14210.4	1491.7	235.5
	M		--	--	47.10	594.2	12818.3	764.0	84.9
	B		--	--	72.20	1053.3	8925.5	776.1	332.6
16 AUG	S	2030	--	--	--	--	--	--	--
	M		--	--	46.80	2394.9	15566.7	1026.4	256.6
	B		--	--	--	--	--	--	--

TABLE G.3-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
16 AUG	S	2230	--	--	35.60	2581.8	31767.0	13806.8	561.3
	M		--	--	43.00	5116.6	29211.3	9209.9	372.1
	B		--	--	--	--	--	--	--
17 AUG	S	0030	--	--	43.70	2561.0	24420.8	4024.4	91.5
	M		--	--	43.70	1554.9	32012.3	7317.1	274.4
	B		--	--	43.00	744.2	34793.1	6698.1	0.0
17 AUG	S	0230	--	--	39.20	1429.7	10314.4	5412.5	255.3
	M		--	--	42.70	1217.7	17703.9	6650.7	93.7
	B		--	--	40.50	1185.4	18373.2	4346.4	98.8
12 SEP	S	1345	--	--	58.30	0.0	0.0	0.0	0.0
	M		--	--	72.20	0.0	0.0	0.0	0.0
	B		--	--	--	--	--	--	--
12 SEP	S	1530	--	--	68.30	0.0	0.0	0.0	0.0
	M		--	--	77.20	0.0	0.0	414.7	0.0
	B		--	--	69.50	0.0	460.4	0.0	0.0
12 SEP	S	1730	--	--	76.40	78.5	26.2	13.1	0.0
	M		--	--	76.00	52.6	0.0	0.0	0.0
	B		--	--	70.20	256.3	28.5	28.5	0.0
12 SEP	S	1930	--	--	49.30	121.6	466.3	60.8	243.3
	M		--	--	61.60	552.4	909.8	97.5	130.0
	B		--	--	62.30	321.1	690.4	0.0	80.3
12 SEP	S	2130	--	--	59.20	405.4	2567.8	202.7	0.0
	M		--	--	70.50	453.7	3856.4	0.0	0.0
	B		--	--	70.20	569.5	2050.2	113.9	0.0
12 SEP	S	2330	--	--	49.50	202.1	2021.2	40.4	0.0
	M		--	--	53.70	297.7	2232.7	297.7	0.0
	B		--	--	53.00	452.7	4678.4	301.8	0.0

TABLE G.3-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
13 SEP	S	0130	--	--	86.70	369.0	737.9	0.0	0.0
	M		--	--	73.90	0.0	3300.9	0.0	0.0
	B		--	--	74.80	0.0	427.8	0.0	0.0
25 OCT	S	1130	--	--	40.90	2833.7	0.0	48.9	24.4
	M		--	--	42.00	2907.1	0.0	95.3	0.0
	B		--	--	38.90	9826.6	0.0	51.4	154.3
25 OCT	S	1330	--	--	44.50	2855.9	0.0	292.3	0.0
	M		--	--	42.80	2217.0	0.0	140.0	23.3
	B		--	--	42.70	6416.5	0.0	281.0	0.0
25 OCT	S	1530	--	--	47.90	2758.3	0.0	209.0	0.0
	M		--	--	43.90	2142.2	0.0	227.9	0.0
	B		--	--	30.60	6595.3	0.0	293.8	0.0
25 OCT	S	1730	--	--	50.90	2433.8	0.0	78.5	0.0
	M		--	--	46.70	4327.5	0.0	128.5	21.4
	B		--	--	48.40	7100.8	0.0	165.1	0.0
25 OCT	S	1930	--	--	45.20	21855.6	0.0	88.5	0.0
	M		--	--	44.20	24878.3	0.0	0.0	0.0
	B		--	--	42.00	23828.7	0.0	190.6	190.6
25 OCT	S	2130	--	--	34.50	55490.3	0.0	1625.2	0.0
	M		--	--	35.20	55466.0	0.0	1818.6	227.3
	B		--	--	35.90	51657.4	0.0	668.0	0.0
25 OCT	S	2330	--	--	27.70	52306.5	0.0	578.0	289.0
	M		--	--	--	--	--	--	--
	B		--	--	25.00	56566.5	0.0	639.2	0.0
15 NOV	S	1100	--	--	22.70	2204.9	0.0	44.1	0.0
	M		--	--	19.00	19448.4	0.0	105.1	0.0
	B		--	--	23.10	15745.1	0.0	86.5	0.0

TABLE G.3-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
15 NOV	S	1300	--	--	22.80	16035.9	0.0	438.1	262.9
	M		--	--	19.00	51564.5	0.0	2260.2	0.0
	B		--	--	21.40	45149.6	0.0	749.4	0.0
15 NOV	S	1500	--	--	21.80	10783.3	0.0	275.3	0.0
	M		--	--	23.00	22376.0	0.0	261.2	0.0
	B		--	--	21.90	38832.7	0.0	364.6	0.0
15 NOV	S	1700	--	--	25.50	20412.8	0.0	510.3	0.0
	M		--	--	24.90	43881.4	0.0	482.2	0.0
	B		--	--	22.10	40747.0	0.0	724.4	0.0
15 NOV	S	1900	--	--	28.30	14431.2	0.0	141.5	0.0
	M		--	--	26.90	68579.7	0.0	0.0	0.0
	B		--	--	26.70	68737.2	0.0	900.5	0.0
15 NOV	S	2100	--	--	27.70	14810.5	0.0	578.0	72.2
	M		--	--	26.40	63434.9	0.0	607.0	303.5
	B		--	--	24.10	36109.2	0.0	579.7	0.0
15 NOV	S	2300	--	--	33.10	21067.7	0.0	120.7	60.4
	M		--	--	32.10	39251.7	0.0	623.0	124.6
	B		--	--	28.90	52666.2	0.0	831.6	0.0
06 DEC	S	1300	--	--	43.40	851.8	0.0	23.0	0.0
	M		--	--	39.50	1799.2	0.0	25.3	0.0
	B		--	--	37.00	188.9	0.0	27.0	0.0
06 DEC	S	1500	--	--	38.00	789.7	0.0	0.0	0.0
	M		--	--	50.10	399.5	0.0	0.0	0.0
	B		--	--	35.30	8460.7	0.0	0.0	0.0
06 DEC	S	1700	--	--	27.50	8824.9	0.0	108.9	36.3
	M		--	--	12.80	48709.1	0.0	312.2	0.0
	B		--	--	--	--	--	--	--

TABLE G.3-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
06 DEC	S	1900	--	--	25.80	13373.0	0.0	193.8	38.8
	M		--	--	34.50	23798.1	0.0	232.2	0.0
	B		--	--	31.50	27545.5	0.0	253.9	0.0
06 DEC	S	2100	--	--	31.80	16349.1	0.0	503.0	0.0
	M		--	--	29.40	18336.2	0.0	135.8	0.0
	B		--	--	27.40	23513.5	0.0	146.0	0.0
06 DEC	S	2300	--	--	47.40	4344.7	0.0	0.0	0.0
	M		--	--	40.50	12051.2	0.0	0.0	0.0
	B		--	--	37.10	24146.4	0.0	215.6	0.0

(a) Data excluded from analysis because of extremely high or low sample volume.

TABLE G.4-1 DENSITIES OF GAMMARUS SPP., NEOMYSIS AMERICANA, MONOCULODES EDWARDSI, AND CHAOBORUS PUNCTIPENNIS COLLECTED AT STATION D2 DURING THE ENTRAINMENT ABUNDANCE STUDY, INDIAN POINT GENERATING STATION, 1977

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
03 MAY	S	1430	--	--	64.10	4215.2	0.0	405.9	0.0
03 MAY	S	1630	--	--	65.10	1152.3	0.0	0.0	138.3
03 MAY	S	1830	--	--	37.80	1136.3	0.0	26.4	185.0
03 MAY	S	2230	--	--	51.20	7688.9	0.0	117.1	2185.7
04 MAY	S	0030	--	--	43.60	5093.4	0.0	160.6	2202.5
04 MAY	S	0230	--	--	69.20	2976.6	0.0	202.3	187.8
10 MAY	S	1430	--	--	49.80	140.6	0.0	20.1	40.2
10 MAY	S	1630	--	--	46.50	343.9	0.0	0.0	279.4
10 MAY	S	1830	--	--	46.20	389.3	0.0	0.0	778.6
10 MAY	S	2030	--	--	65.70	1431.3	0.0	76.1	487.3
10 MAY	S	2230	--	--	73.60	801.4	0.0	149.4	461.8
11 MAY	S	0030	--	--	66.40	617.4	0.0	210.8	271.0
11 MAY	S	0230	--	--	69.20	924.8	0.0	101.1	173.4
17 MAY	S	1630	--	--	178.50	3003.4	0.0	78.4	207.3
17 MAY	S	1830	--	--	125.50	502.2	0.0	8.0	279.0
17 MAY	S	2030	--	--	104.30	2339.1	0.0	28.8	690.2
17 MAY	S	2230	--	--	108.70	2438.6	0.0	36.8	174.8
24 MAY	S	1500	--	--	108.70	414.1	0.0	0.0	64.4
24 MAY	S	1630	--	--	72.40	234.7	0.0	0.0	41.4
24 MAY	S	1830	--	--	41.50	2119.2	0.0	0.0	578.0
24 MAY	S	2030	--	--	100.60	5982.3	0.0	19.9	1530.3

TABLE G.4-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
24 MAY	S	2230	--	--	171.70	3136.8	0.0	5.8	285.4
25 MAY	S	0030	--	--	156.50	1993.6	0.0	0.0	153.4
25 MAY	S	0230	--	--	153.60	3540.7	0.0	0.0	65.1
31 MAY	S	1500	--	--	94.20	541.3	2398.9	10.6	106.1
31 MAY	S	1700	--	--	93.90	521.7	74.5	31.9	127.8
31 MAY	S	1900	--	--	73.90	1163.0	67.6	0.0	419.2
31 MAY	S	2300	--	--	88.20	1858.7	9792.3	317.3	362.7
01 JUN	S	0100	--	--	72.60	2920.3	23280.1	220.4	661.2
01 JUN	S	0300	--	--	79.20	2007.8	2235.1	101.0	315.7
07 JUN	S	1500	--	--	81.30	1980.8	2030.0	209.1	73.8
07 JUN	S	1700	--	--	78.60	0.0	0.0	0.0	0.0
07 JUN	S	1900	--	--	74.20	1131.9	10025.1	323.4	53.9
07 JUN	S	2100	--	--	71.70	8593.6	9486.4	390.6	1618.3
07 JUN	S	2300	--	--	37.20	10977.8	3766.9	484.3	322.9
08 JUN	S	0100	--	--	57.30	7126.5	1886.4	314.4	139.7
08 JUN	S	0300	--	--	254.70	1001.0	192.4	35.3	15.7
14 JUN	S	1500	--	--	74.20	161.6	188.6	13.5	0.0
14 JUN	S	1700	--	--	80.60	669.7	136.4	62.0	12.4
14 JUN	S	1900	--	--	76.30	1034.9	353.7	26.2	26.2
14 JUN	S	2300	--	--	71.60	9236.6	14225.1	1718.8	0.0
15 JUN	S	0100	--	--	110.80	2482.2	4765.7	866.5	0.0

TABLE G.4-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
15 JUN	S	0300	--	--	113.50	2256.1	2388.3	625.7	0.0
21 JUN	S	1700	--	--	65.70	243.4	23124.1	0.0	365.1
21 JUN	S	1900	--	--	(a)	(a)	(a)	(a)	(a)
21 JUN	S	2100	--	--	66.40	1657.1	451.9	316.4	45.2
21 JUN	S	2300	--	--	200.00	1964.8	11568.6	1279.8	215.0
22 JUN	S	0100	--	--	(a)	(a)	(a	(a)	(a)
22 JUN	S	0300	--	--	73.70	2824.0	2715.4	28457.2	217.2
28 JUN	S	1500	--	--	112.80	363.5	1347.6	496.5	17.7
28 JUN	S	1700	--	--	78.10	179.3	1395.6	128.0	12.8
28 JUN	S	1900	--	--	63.60	1508.5	113133.8	502.8	1508.5
28 JUN	S	2100	--	--	48.00	5666.3	93993.1	3999.7	333.3
28 JUN	S	2300	--	--	63.40	5049.2	91895.4	4544.3	504.9
29 JUN	S	0300	--	--	94.70	2955.4	16888.2	2448.8	168.9
05 JUL	S	1500	--	--	36.30	1324.0	38617.6	2206.7	0.0
05 JUL	S	1700	--	--	53.90	296.9	62048.3	2375.1	296.9
05 JUL	S	1900	--	--	61.30	2089.6	66344.5	3395.6	0.0
05 JUL	S	2100	--	--	54.00	3700.9	29903.4	1924.5	1498.9
05 JUL	S	2300	--	--	86.90	2760.6	35209.6	1587.4	0.0
06 JUL	S	0300	--	--	53.30	4877.6	23712.8	5402.9	225.1
12 JUL	S	1500	--	--	80.80	49.5	10291.9	692.7	99.0
12 JUL	S	1700	--	--	83.00	36.1	264.9	120.4	0.0

TABLE G.4-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	NONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
12 JUL	S	1900	--	--	80.70	347.0	4583.3	223.1	223.1
12 JUL	S	2100	--	--	37.40	5133.5	44490.2	2994.5	0.0
13 JUL	S	0100	--	--	74.80	1122.9	9090.5	6042.5	320.8
13 JUL	S	0300	--	--	82.90	772.0	11242.2	3088.0	772.0
19 JUL	S	1700	--	--	109.60	146.0	42499.6	1314.4	146.0
19 JUL	S	1900	--	--	83.30	431.9	13390.4	1103.9	671.9
19 JUL	S	2100	--	--	321.30	883.9	2278.2	323.7	186.7
19 JUL	S	2300	--	--	61.30	7836.0	105002.0	2089.6	2089.6
20 JUL	S	0100	--	--	77.50	2478.9	47512.4	4131.5	2272.3
20 JUL	S	0300	--	--	80.40	1393.1	37214.6	2388.1	1393.1
26 JUL	S	1500	--	--	69.80	171.9	86.0	57.3	28.7
26 JUL	S	1700	--	--	62.70	637.7	5547.7	287.0	1084.0
26 JUL	S	1900	--	--	51.50	620.9	32442.4	1086.6	310.5
26 JUL	S	2100	--	--	53.70	3572.3	129199.7	8930.9	800.1
26 JUL	S	2300	--	--	72.40	1546.0	64267.7	4858.7	0.0
27 JUL	S	0100	--	--	66.00	2789.2	29590.1	8610.2	2425.4
27 JUL	S	0300	--	--	65.40	2814.4	33282.9	4282.7	734.2
16 AUG	S	1430	--	--	69.00	232.0	27721.4	811.9	0.0
16 AUG	S	1630	--	--	72.30	774.6	22462.0	5864.5	221.3
16 AUG	S	1830	--	--	62.30	642.5	22487.3	1285.0	385.5
16 AUG	S	2030	--	--	86.30	2364.2	17290.8	370.8	0.0

TABLE G.4-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
16 AUG	S	2230	--	--	63.60	3395.6	23769.1	14714.2	377.3
17 AUG	S	0030	--	--	45.90	1741.3	20983.0	3656.8	174.1
17 AUG	S	0230	--	--	56.50	2405.2	12804.2	2122.2	212.2
12 SEP	S	1345	--	--	69.60	0.0	229.7	0.0	0.0
12 SEP	S	1530	--	--	81.70	0.0	0.0	0.0	0.0
12 SEP	S	1730	--	--	89.70	33.5	22.3	0.0	0.0
12 SEP	S	1930	--	--	78.90	278.7	544.8	63.4	38.0
12 SEP	S	2130	--	--	62.70	255.1	2805.7	255.1	0.0
12 SEP	S	2330	--	--	61.30	130.6	5224.0	261.2	0.0
13 SEP	S	0130	--	--	94.70	169.0	1520.9	0.0	0.0
25 OCT	S	1130	--	--	25.20	832.1	0.0	0.0	0.0
25 OCT	S	1330	--	--	26.90	445.3	0.0	74.2	0.0
25 OCT	S	1530	--	--	56.00	482.5	0.0	0.0	17.9
25 OCT	S	1730	--	--	31.10	418.4	0.0	32.2	0.0
25 OCT	S	1930	--	--	27.10	5604.0	0.0	221.2	73.7
25 OCT	S	2130	--	--	28.60	7106.2	0.0	175.0	175.0
25 OCT	S	2330	--	--	21.40	7493.7	0.0	562.0	0.0
15 NOV	S	1100	--	--	16.80	536.1	0.0	0.0	0.0
15 NOV	S	1300	--	--	14.40	695.8	0.0	69.6	0.0
15 NOV	S	1500	--	--	15.60	1601.7	0.0	64.1	0.0
15 NOV	S	1700	--	--	19.70	10440.2	0.0	354.8	0.0

TABLE G.4-1 (CONT.)

DATE	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) GAMMARUS SPP.	NEOMYSIS AMERICANA	MONOCULODES EDWARDSI	CHAOBORUS PUNCTIPENNIS
15 NOV	S	1900	--	--	17.50	19631.6	0.0	684.8	0.0
15 NOV	S	2100	--	--	16.80	14535.5	0.0	714.9	0.0
15 NOV	S	2300	--	--	17.40	10801.5	0.0	402.2	0.0
06 DEC	S	1300	--	--	21.80	321.2	0.0	0.0	0.0
06 DEC	S	1500	--	--	15.80	253.9	0.0	0.0	0.0
06 DEC	S	1700	--	--	15.80	2284.9	0.0	0.0	0.0
06 DEC	S	1900	--	--	20.50	6693.5	0.0	48.9	0.0
06 DEC	S	2100	--	--	23.10	6574.9	0.0	173.0	0.0
06 DEC	S	2300	--	--	18.10	7950.6	0.0	110.4	0.0

(a) Data excluded from analysis because of extemely high or low sample volume.

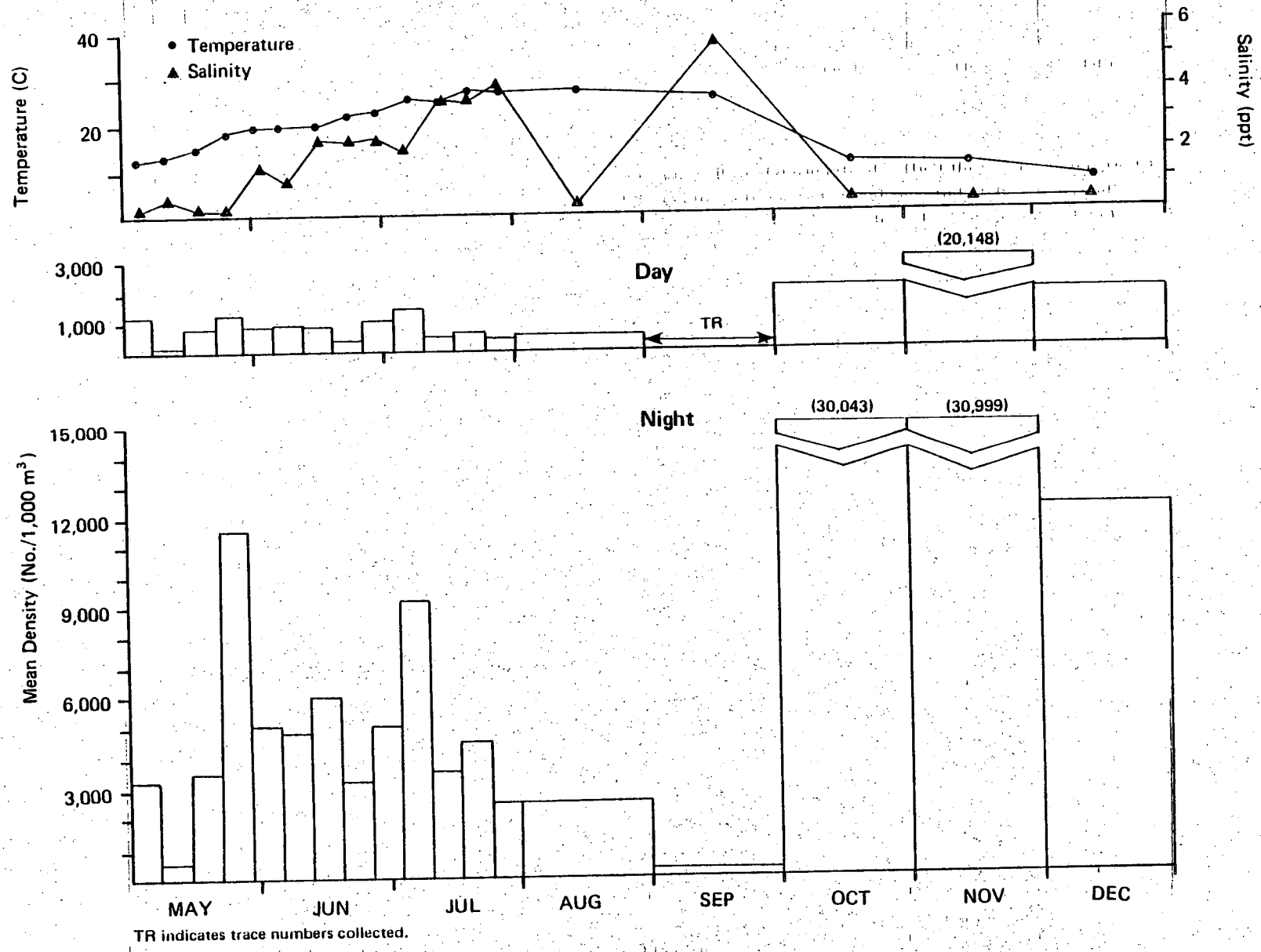
Note: Dashes (--) indicate data not available.
S = surface

APPENDIX H

SEASONAL ENTRAINMENT ABUNDANCE OF SELECTED MACROZOOPLANKTON TAXA, INDIAN POINT GENERATING STATION, 1977

APPENDIX H FIGURES

Title	Number
H.1 SEASONAL ENTRAINMENT ABUNDANCE OF GAMMARUS SPP.	
Day and Night Abundance	H.1-1
Abundance at Each Station	H.1-2
H.2 SEASONAL ENTRAINMENT ABUNDANCE OF NEOMYSIS AMERICANA	
Day and Night Abundance	H.2-1
Abundance at Each Station	H.2-2
H.3 SEASONAL ENTRAINMENT ABUNDANCE OF MONOCULODES EDWARDSI	
Day and Night Abundance	H.3-1
Abundance at Each Station	H.3-2
H.4 SEASONAL ENTRAINMENT ABUNDANCE OF CHAOBORUS PUNCTIPENNIS	
Day and Night Abundance	H.4-1
Abundance at Each Station	H.4-2



TR indicates trace numbers collected.

Figure H.1-1. Mean densities (No./1,000 m^3) of Gammarus spp. collected during the day (first three collection periods) and the night (last four collection periods) during the entrainment abundance study (all stations and depths combined), Indian Point Generating Station, 1977. (See Appendix A for water quality data.)

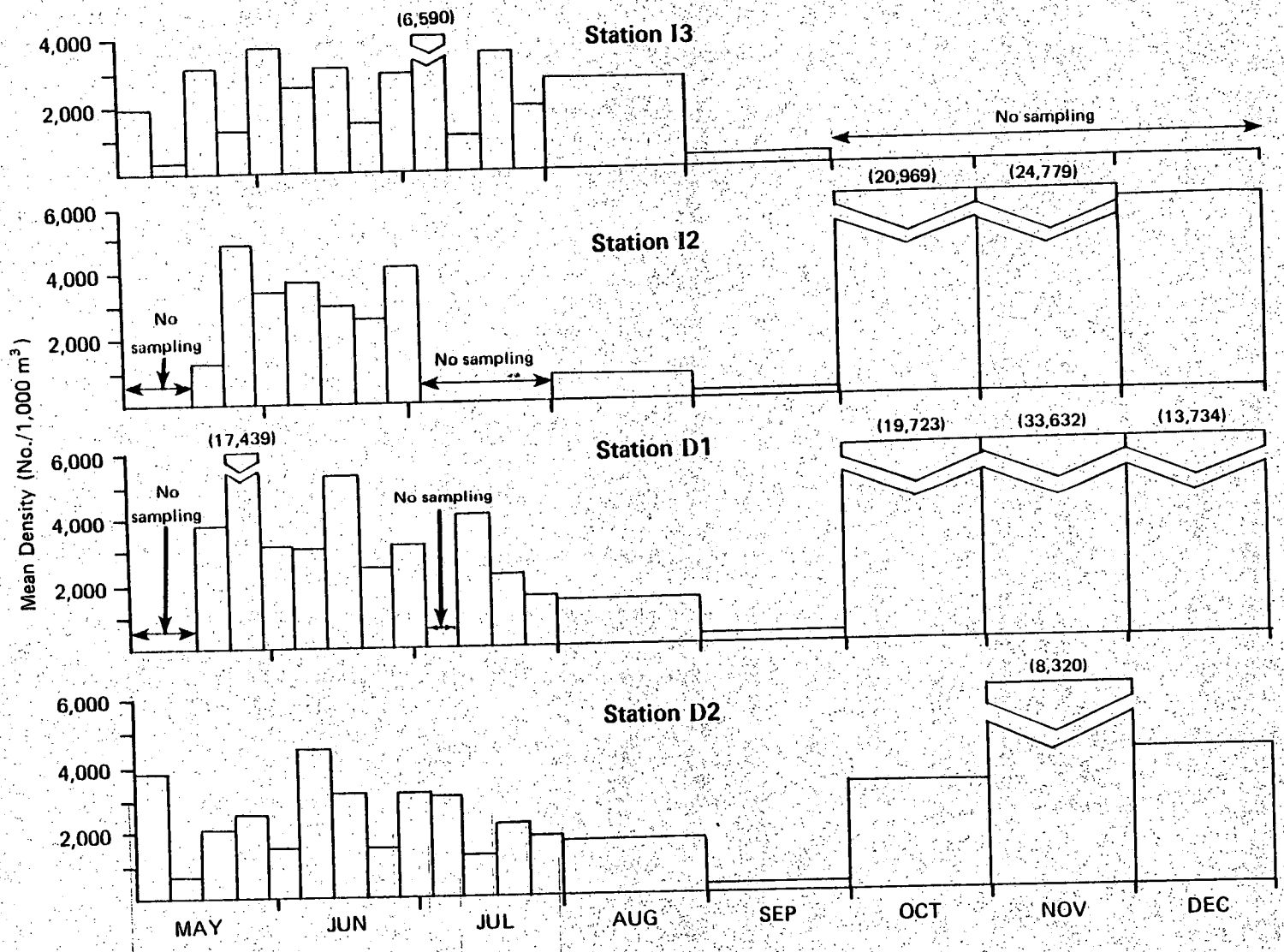


Figure H.1-2. Mean densities (No./1,000 m^3) of Gammarus spp. collected at each station during the entrainment abundance study (all depths and collection periods combined), Indian Point Generating Station, 1977.

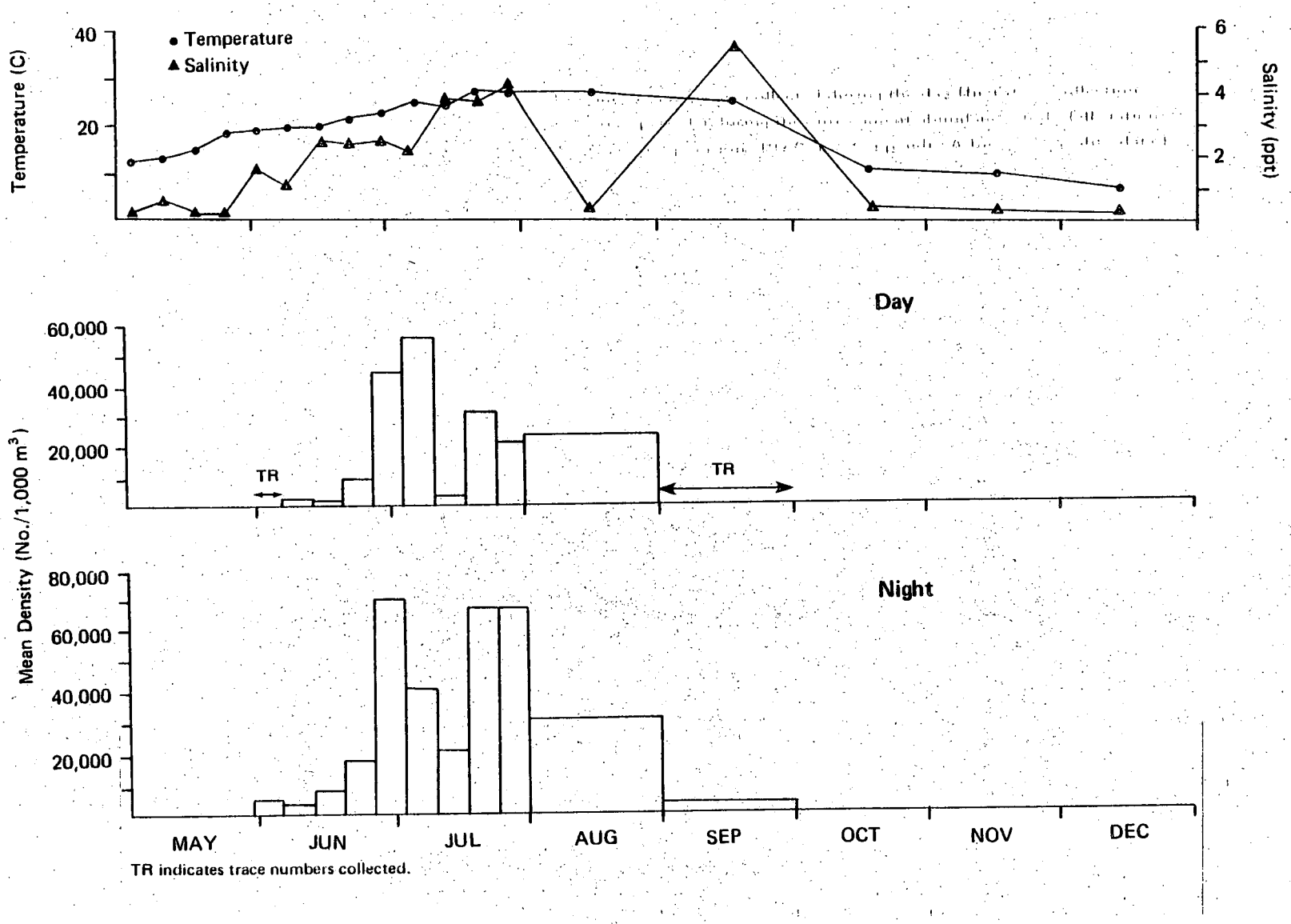


Figure H.2-1. Mean densities (No./1,000 m^3) of Neomysis americana collected during the day (first three collection periods) and the night (last four collection periods) during the entrainment abundance study (all stations and depths combined), Indian Point Generating Station, 1977. (See Appendix A for water quality data.)

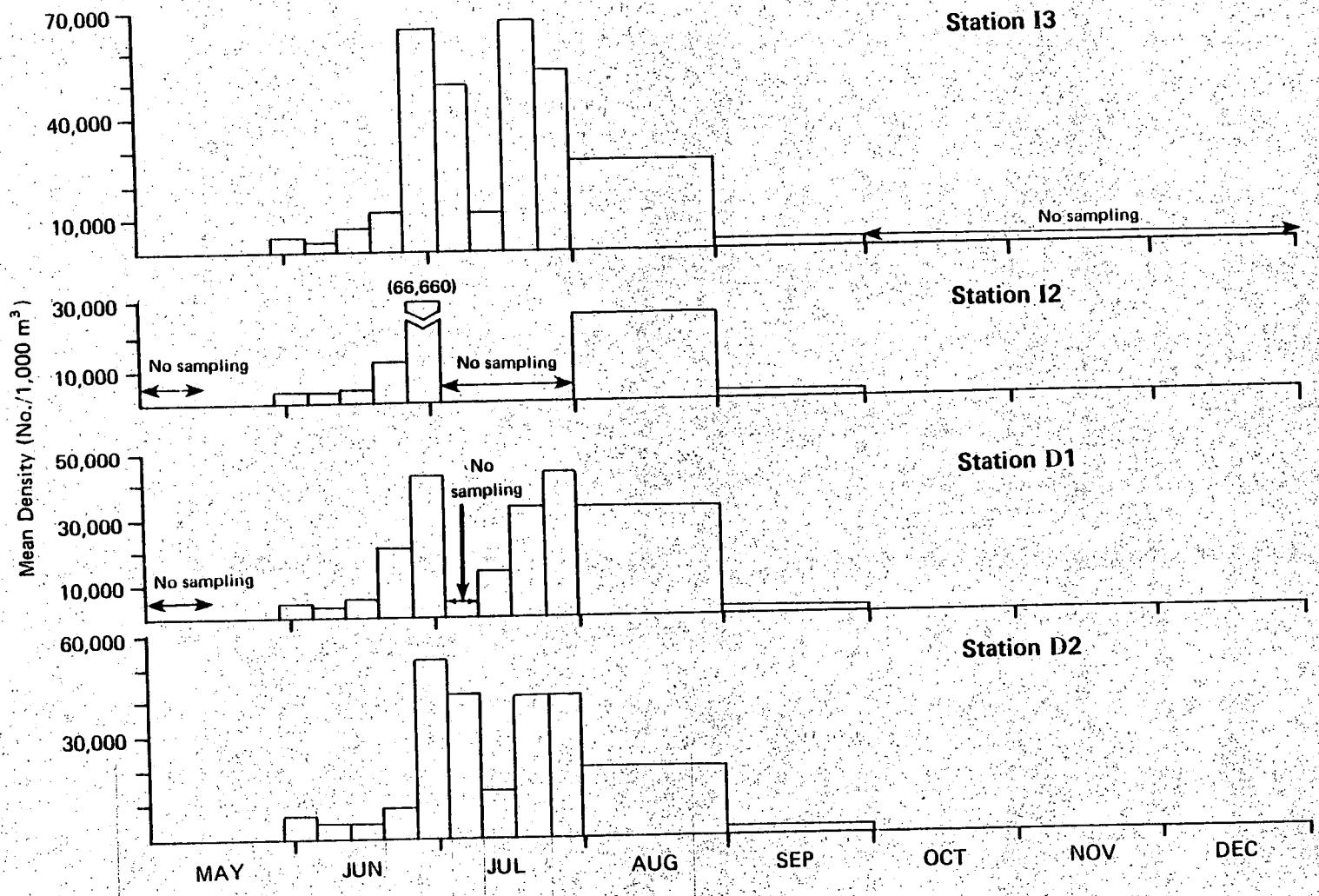


Figure H.2-2. Mean densities (No./1,000 m^3) of Neomysis americana collected at each station during the entrainment abundance study (all depths and collection periods combined), Indian Point Generating Station, 1977.

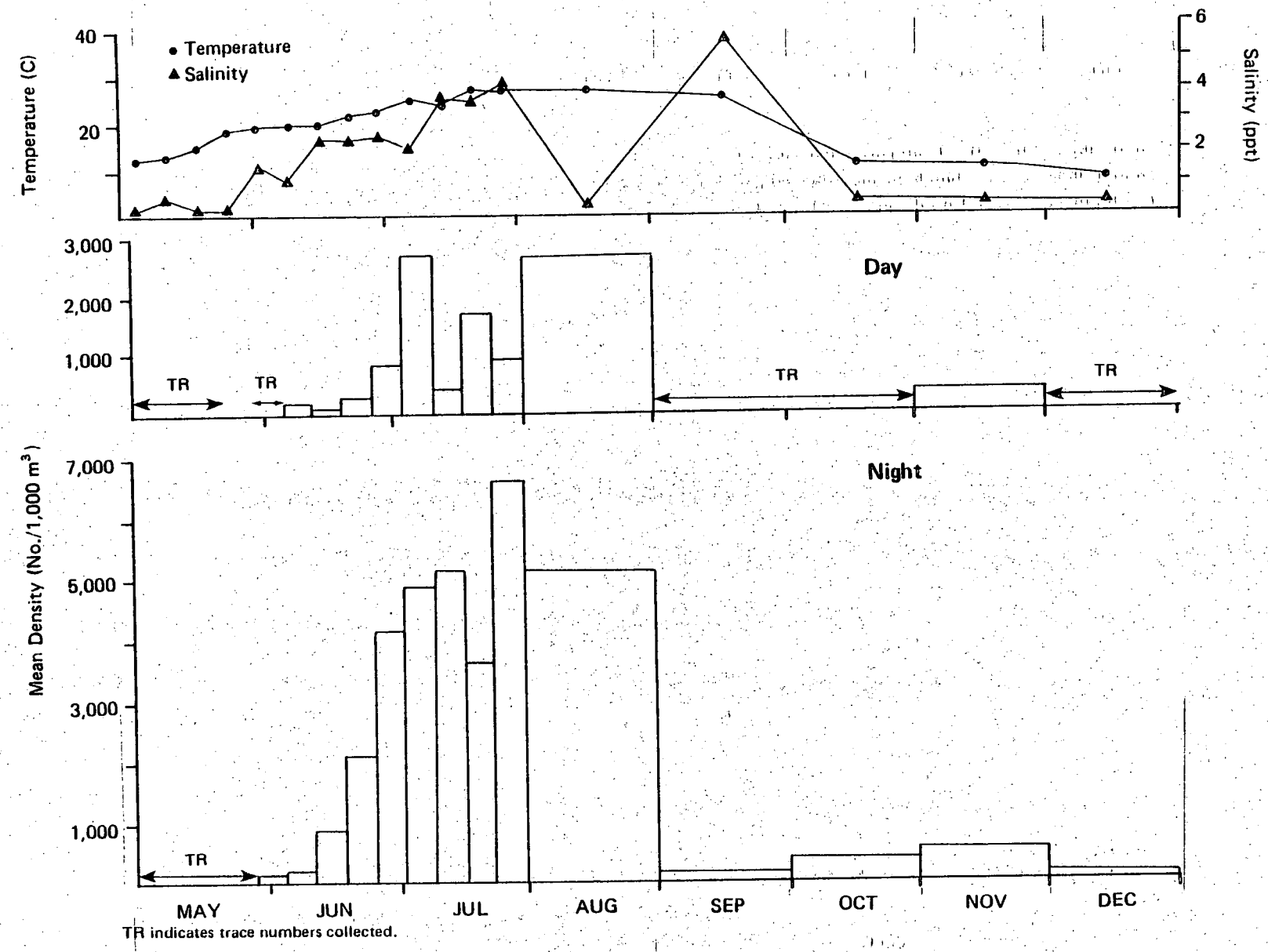
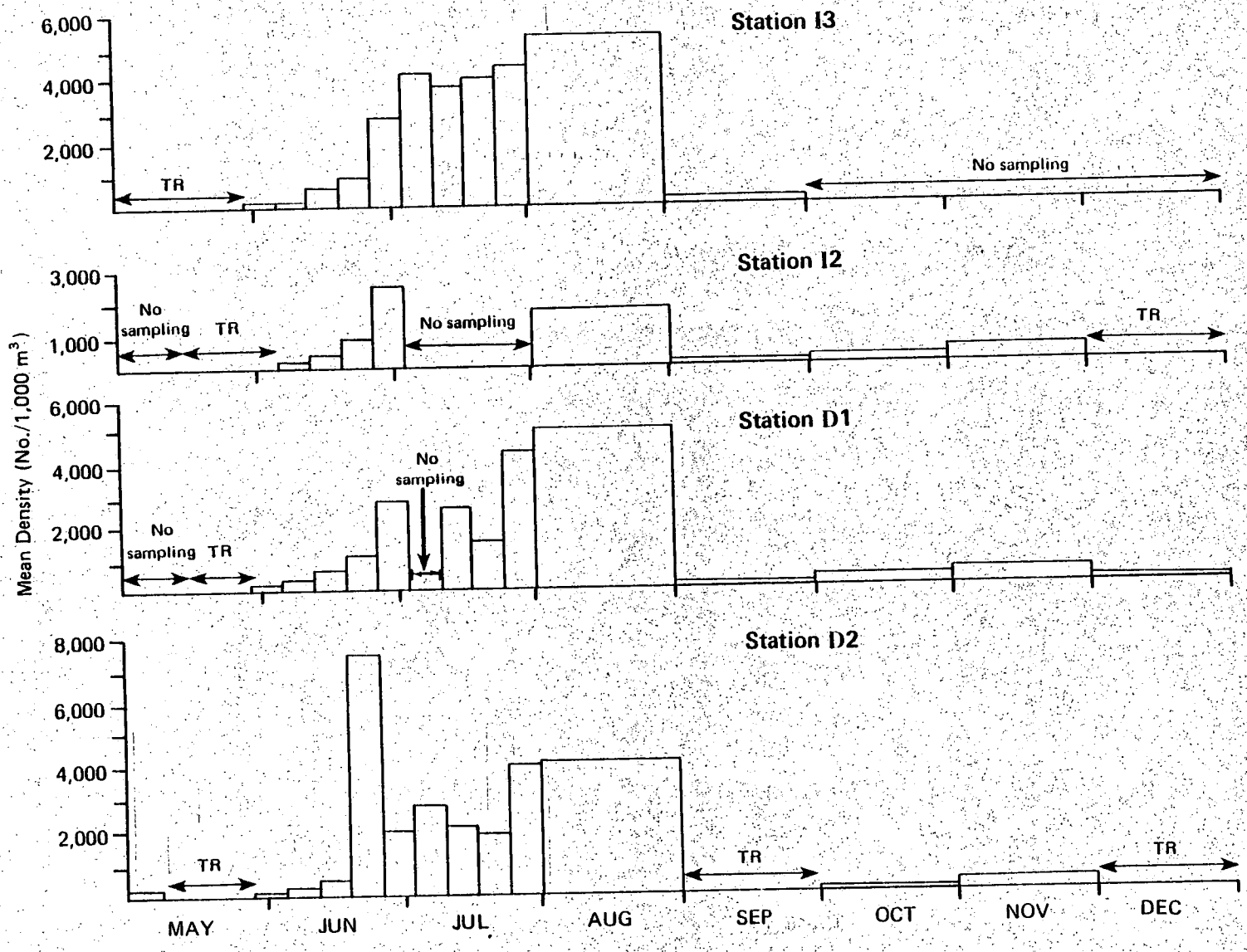


Figure H.3-1. Mean densities (No./1,000 m^3) of Monoculodes edwardsi collected during the day (first three collection periods) and the night (last four collection periods) during the entrainment abundance study (all stations and depths combined), Indian Point Generating Station, 1977. (See Appendix A for water quality data.)



TR indicates trace numbers collected.

Figure H.3-2. Mean densities (No./1,000 m^3) of Monoculodes edwardsi collected at each station during the entrainment abundance study (all depths and collection periods combined), Indian Point Generating Station, 1977.

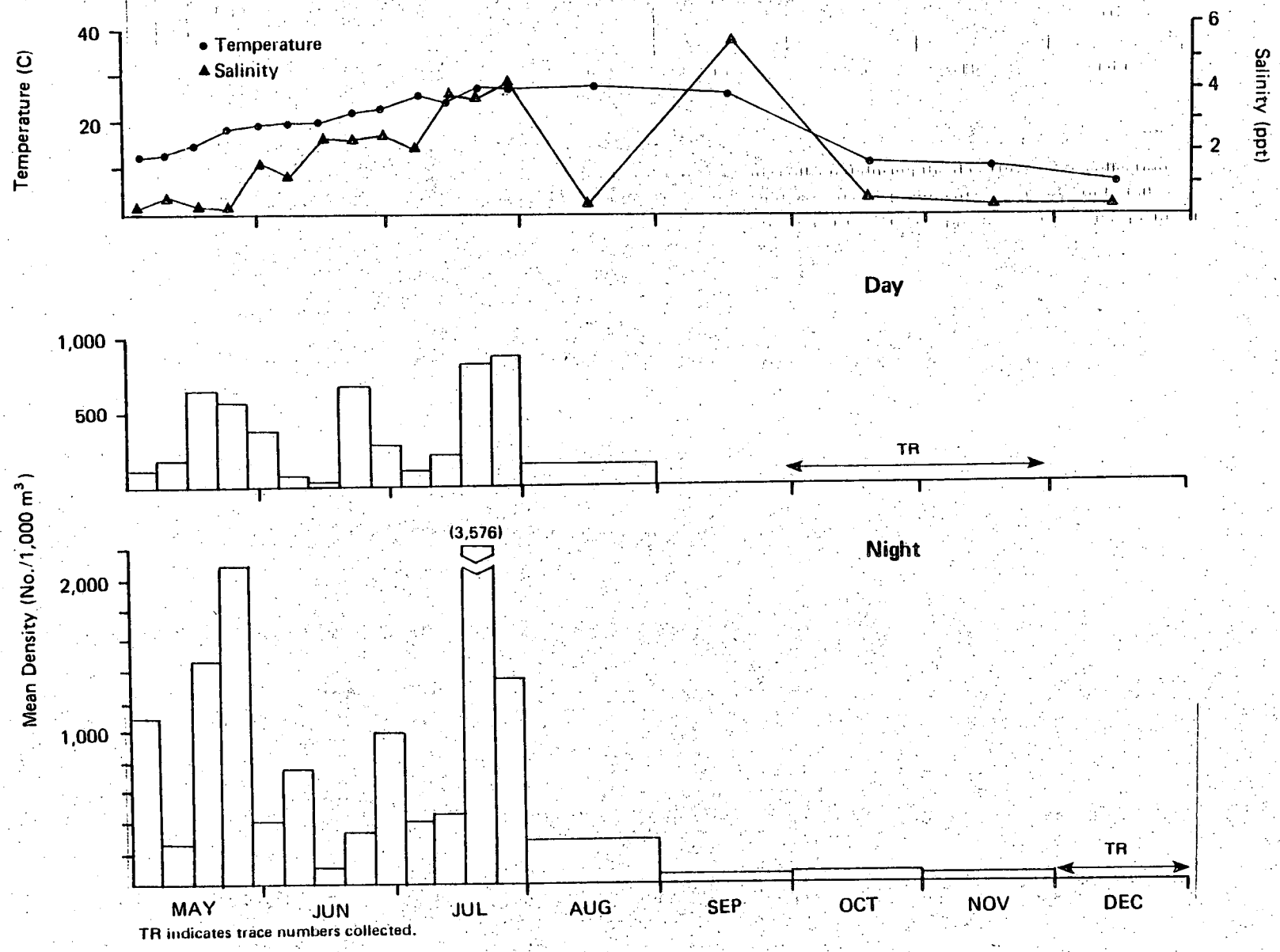
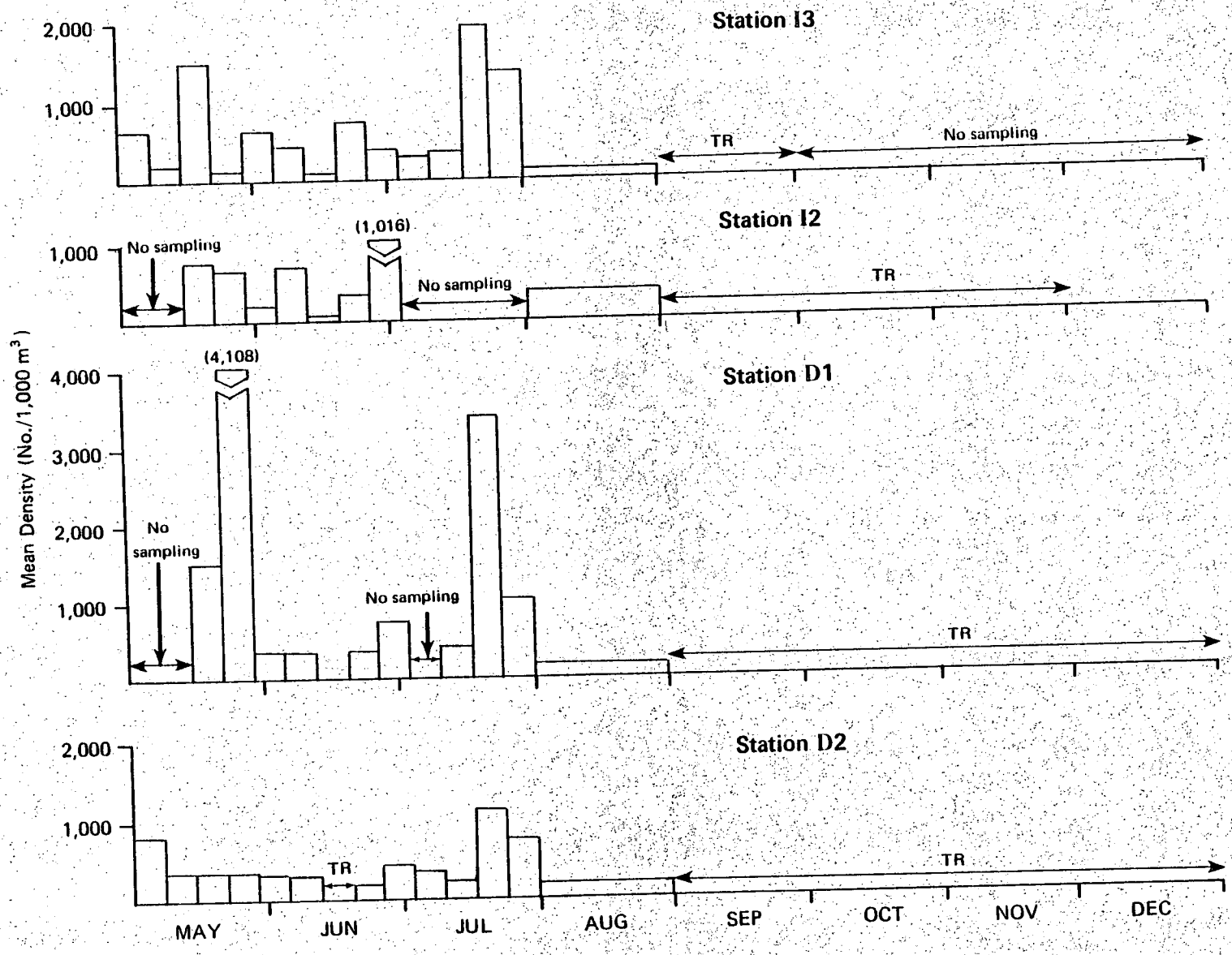


Figure H.4-1. Mean densities (No./1,000 m^3) of Chaoborus punctipennis collected during the day (first three collection periods) and during the night (last four collection periods) during the entrainment abundance study (all stations and depths combined), Indian Point Generating Station, 1977. (See Appendix A for water quality data.)



TR indicates trace numbers collected.

Figure H.4-2. Mean densities (No./1,000 m^3) of Chaoborus punctipennis collected at each station during the entrainment abundance study (all depths and collection periods combined), Indian Point Generating Station, 1977.

APPENDIX I

ABUNDANCE OF STRIPED BASS EARLY DEVELOPMENTAL STAGES COLLECTED AT RIVER TRANSECT STATIONS, INDIAN POINT GENERATING STATION, 1977

APPENDIX I TABLES

	Title	Number
I.1	ABUNDANCES OF STRIPED BASS EARLY DEVELOPMENTAL STAGES COLLECTED AT STATION RD DURING THE RIVER TRANSECT STUDY, INDIAN POINT GENERATING STATION, 1977	I.1-1
I.2	ABUNDANCES OF STRIPED BASS EARLY DEVELOPMENTAL STAGES COLLECTED AT STATION RC DURING THE RIVER TRANSECT STUDY, INDIAN POINT GENERATING STATION, 1977	I.2-1
I.3	ABUNDANCES OF STRIPED BASS EARLY DEVELOPMENTAL STAGES COLLECTED AT STATION RW DURING THE RIVER TRANSECT STUDY, INDIAN POINT GENERATING STATION, 1977	I.3-1

TABLE I.1-1 ABUNDANCES OF STRIPED BASS EARLY DEVELOPMENTAL STAGES COLLECTED AT STATION RD DURING THE RIVER TRANSECT STUDY, INDIAN POINT GENERATING STATION, 1977

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
03 MAY	S	1430	14.1	380.	112.90	8.9	0.0	0.0	0.0	0.0	0.0
	M		--	--	95.70	10.5	0.0	0.0	0.0	0.0	0.0
	B		13.0	320.	100.60	457.2	0.0	0.0	0.0	0.0	0.0
03 MAY	S	1630	13.6	350.	124.60	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	111.50	0.0	0.0	0.0	0.0	0.0	0.0
	B		12.8	300.	119.20	0.0	0.0	0.0	0.0	0.0	0.0
03 MAY	S	1830	12.1	300.	112.50	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	100.20	0.0	0.0	0.0	0.0	0.0	0.0
	B		12.3	250.	100.70	0.0	0.0	0.0	0.0	0.0	0.0
03 MAY	S	2030	13.6	320.	108.10	9.3	0.0	0.0	0.0	0.0	0.0
	M		--	--	98.60	40.6	0.0	0.0	0.0	0.0	0.0
	B		12.0	300.	97.00	30.9	0.0	0.0	0.0	0.0	0.0
03 MAY	S	2235	14.0	320.	62.70	31.9	0.0	0.0	0.0	0.0	0.0
	M		--	--	116.30	94.6	8.6	0.0	0.0	0.0	8.6
	B		14.3	300.	111.10	269.9	0.0	0.0	0.0	0.0	0.0
04 MAY	S	0030	13.6	500.	126.80	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	121.20	24.8	0.0	0.0	0.0	0.0	0.0
	B		12.5	300.	114.70	17.4	0.0	0.0	0.0	0.0	0.0
04 MAY	S	0230	12.5	300.	98.00	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	94.90	0.0	10.5	0.0	0.0	0.0	10.5
	B		12.5	320.	92.10	10.9	0.0	0.0	0.0	0.0	0.0
10 MAY	S	1430	16.0	220.	65.10	76.8	30.7	0.0	0.0	0.0	30.7
	M		--	--	66.30	226.2	15.1	0.0	0.0	0.0	15.1
	B		11.9	200.	111.00	90.1	27.0	0.0	0.0	0.0	27.0
10 MAY	S	1630	13.8	350.	97.70	10.2	0.0	0.0	0.0	0.0	0.0
	M		--	--	84.90	153.1	47.1	0.0	0.0	0.0	47.1
	B		12.2	300.	95.80	406.9	10.4	0.0	0.0	0.0	10.4

TABLE I.1-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	FYSL	JUV	UID	TOTAL (b)
10 MAY	S	1830	--	--	(c)	(c)	(c)	(c)	(c)	(c)	(c)
	M		--	--	84.30	1234.1	367.8	0.0	0.0	0.0	367.8
	B		12.1	320.	97.60	1250.0	123.0	0.0	0.0	0.0	123.0
10 MAY	S	2030	12.5	300.	124.40	0.0	32.2	0.0	0.0	0.0	32.2
	M		--	--	96.00	62.5	83.3	0.0	0.0	0.0	83.3
	B		12.4	320.	99.70	2979.8	170.6	0.0	0.0	0.0	170.6
10 MAY	S	2230	12.5	280.	94.30	0.0	31.8	0.0	0.0	0.0	31.8
	M		--	--	86.30	11.6	208.6	0.0	0.0	0.0	208.6
	B		12.5	300.	94.40	105.9	105.9	0.0	0.0	0.0	105.9
11 MAY	S	0030	11.0	180.	116.30	17.2	154.8	0.0	0.0	0.0	154.8
	M		--	--	96.80	10.3	20.7	0.0	0.0	0.0	20.7
	B		12.1	280.	91.80	98.0	21.8	0.0	0.0	0.0	21.8
11 MAY	S	0230	11.6	300.	73.70	27.1	95.0	0.0	0.0	0.0	95.0
	M		--	--	(c)	(c)	(c)	(c)	(c)	(c)	(c)
	B		11.6	280.	76.40	274.9	26.2	0.0	0.0	0.0	26.2
17 MAY	S	1500	16.0	280.	107.60	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	94.90	0.0	73.8	0.0	0.0	0.0	73.8
	B		14.2	260.	102.60	1004.0	9.7	0.0	0.0	0.0	9.7
17 MAY	S	1630	16.0	280.	114.00	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	115.40	0.0	69.3	0.0	0.0	0.0	69.3
	B		14.3	280.	122.10	49.1	40.9	0.0	0.0	0.0	40.9
17 MAY	S	1830	14.8	280.	136.00	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	(c)	(c)	(c)	(c)	(c)	(c)	(c)
	B		14.4	280.	134.50	74.4	37.2	0.0	0.0	0.0	37.2

TABLE I.1-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
17 MAY	S	2030	14.2	250.	78.30	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	71.80	320.4	0.0	0.0	0.0	0.0	0.0
	B		14.3	300.	102.00	666.7	19.6	0.0	0.0	0.0	19.6
17 MAY	S	2230	14.0	250.	108.60	460.6	18.4	0.0	0.0	0.0	18.4
	M		--	--	101.60	3365.6	246.0	0.0	0.0	0.0	246.0
	B		14.2	300.	104.40	3804.1	584.5	0.0	0.0	0.0	584.5
18 MAY	S	0030	15.2	300.	102.00	392.0	9.8	0.0	0.0	0.0	9.8
	M		--	--	118.40	498.3	59.1	0.0	0.0	0.0	59.1
	B		15.1	300.	91.50	1540.6	305.9	0.0	0.0	0.0	305.9
18 MAY	S	0230	15.0	300.	105.30	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	98.60	111.6	91.3	0.0	0.0	0.0	91.3
	B		15.0	320.	105.20	1340.3	209.1	0.0	0.0	0.0	209.1
18 MAY	S	0432	15.4	400.	180.70	0.0	11.1	0.0	0.0	0.0	11.1
	M		--	--	151.00	6.6	53.0	0.0	0.0	0.0	53.0
	B		15.0	480.	175.90	68.2	11.4	5.7	0.0	0.0	17.1
18 MAY	S	0631	14.6	300.	114.10	8.8	0.0	0.0	0.0	0.0	0.0
	M		--	--	104.20	19.2	76.8	0.0	0.0	0.0	76.8
	B		14.4	320.	112.70	159.7	53.2	0.0	0.0	0.0	53.2
18 MAY	S	0832	17.8	350.	140.10	21.4	0.0	0.0	0.0	0.0	0.0
	M		--	--	122.60	97.9	57.1	0.0	0.0	0.0	57.1
	B		14.1	300.	153.20	372.1	26.1	0.0	0.0	0.0	26.1
18 MAY	S	1031	15.9	340.	144.40	138.5	20.8	0.0	0.0	0.0	20.8
	M		--	--	122.00	377.0	32.8	0.0	0.0	0.0	32.8
	B		14.2	300.	128.80	644.4	31.1	0.0	0.0	0.0	31.1

TABLE I.1-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
18 MAY	S	1231	15.7	350.	113.60	396.0	26.4	0.0	0.0	0.0	26.4
	M		--	--	103.00	1223.7	58.3	0.0	0.0	0.0	58.3
	B		14.9	350.	117.50	1888.6	42.5	0.0	0.0	0.0	42.5
18 MAY	S	1431	15.6	280.	152.90	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	136.80	14.6	153.5	7.3	0.0	0.0	160.8
	B		14.8	300.	151.00	53.0	158.9	0.0	0.0	0.0	158.9
18 MAY	S	1700	16.0	250.	115.70	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	105.10	0.0	218.9	0.0	0.0	0.0	218.9
	B		15.1	360.	111.00	36.0	0.0	0.0	0.0	0.0	0.0
18 MAY	S	1830	15.4	280.	117.00	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	109.90	54.6	63.7	0.0	0.0	0.0	63.7
	B		14.8	250.	109.20	228.9	18.3	0.0	0.0	0.0	18.3
18 MAY	S	2030	14.4	280.	107.00	0.0	18.7	0.0	0.0	0.0	18.7
	M		--	--	89.50	0.0	44.7	0.0	0.0	0.0	44.7
	B		14.4	280.	108.20	37.0	0.0	0.0	0.0	0.0	0.0
18 MAY	S	2230	14.8	300.	78.70	63.5	0.0	0.0	0.0	0.0	0.0
	M		--	--	72.90	2374.6	233.3	0.0	0.0	0.0	233.3
	B		14.6	300.	76.70	2217.1	273.9	0.0	0.0	0.0	273.9
19 MAY	S	0030	15.8	330.	83.10	108.3	60.2	0.0	0.0	0.0	60.2
	M		--	--	68.50	1139.2	292.1	0.0	0.0	0.0	292.1
	B		15.8	320.	81.40	1805.5	380.7	0.0	0.0	0.0	380.7
19 MAY	S	0230	15.8	320.	89.60	33.5	11.2	0.0	0.0	0.0	11.2
	M		--	--	87.40	80.1	125.9	0.0	0.0	0.0	125.9
	B		16.0	300.	98.50	406.2	50.8	0.0	0.0	0.0	50.8
19 MAY	S	0432	15.8	360.	120.70	0.0	24.9	0.0	0.0	0.0	24.9
	M		--	--	110.90	0.0	279.5	0.0	0.0	0.0	279.5
	B		15.5	380.	117.60	255.1	85.0	0.0	0.0	0.0	85.0

TABLE I.1-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
19 MAY	S	0638	15.3	370.	106.20	9.4	0.0	0.0	0.0	0.0	0.0
	M		--	--	99.60	30.1	70.3	0.0	0.0	0.0	70.3
	B		15.1	380.	99.70	381.0	70.2	0.0	0.0	0.0	70.2
19 MAY	S	0832	15.1	370.	99.50	0.0	10.0	0.0	0.0	0.0	10.0
	M		--	--	101.60	443.1	226.5	19.7	0.0	0.0	246.2
	B		14.7	350.	104.70	1604.2	95.5	0.0	0.0	0.0	95.5
19 MAY	S	1031	14.6	320.	140.40	655.3	71.2	0.0	0.0	0.0	71.2
	M		--	--	121.90	164.0	90.2	0.0	0.0	0.0	90.2
	B		14.4	310.	133.40	15.0	15.0	0.0	0.0	0.0	15.0
19 MAY	S	1230	15.8	320.	129.20	116.1	0.0	0.0	0.0	0.0	0.0
	M		--	--	118.40	1080.9	126.7	0.0	0.0	0.0	126.7
	B		15.2	300.	122.80	2735.1	89.5	0.0	0.0	0.0	89.5
19 MAY	S	1431	15.9	340.	98.90	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	85.90	628.7	407.5	0.0	0.0	0.0	407.5
	B		15.5	320.	101.60	1613.9	157.5	0.0	0.0	0.0	157.5
24 MAY	S	1500	18.9	300.	86.40	57.9	0.0	0.0	0.0	0.0	0.0
	M		--	--	75.90	724.4	605.8	13.2	0.0	0.0	619.0
	B		16.1	240.	80.20	523.5	274.2	0.0	0.0	0.0	274.2
24 MAY	S	1630	18.5	280.	94.70	337.9	0.0	0.0	0.0	0.0	0.0
	M		--	--	82.70	1136.0	84.6	24.2	0.0	0.0	108.8
	B		17.6	260.	89.60	714.3	100.5	33.5	0.0	0.0	134.0
24 MAY	S	1830	18.5	300.	110.70	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	104.50	19.1	57.4	19.1	0.0	0.0	76.5
	B		17.8	260.	130.80	153.0	91.8	7.6	0.0	0.0	99.4
24 MAY	S	2030	18.8	260.	123.90	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	109.40	0.0	484.6	27.4	0.0	0.0	512.0
	B		18.2	380.	124.30	16.1	329.8	16.1	0.0	0.0	345.9

TABLE I.1-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
24 MAY	S	2230	18.1	320.	148.20	0.0	13.5	13.5	0.0	0.0	27.0
	M		--	--	131.20	0.0	38.1	15.2	0.0	0.0	53.3
	B		17.9	330.	143.60	55.7	41.8	13.9	0.0	0.0	55.7
25 MAY	S	0030	17.5	380.	100.00	0.0	100.0	60.0	0.0	0.0	160.0
	M		--	--	92.60	0.0	140.5	21.6	0.0	0.0	162.1
	B		--	300.	109.40	100.5	18.3	9.1	0.0	0.0	27.4
25 MAY	S	0230	19.6	300.	186.10	43.0	21.5	10.7	0.0	0.0	32.2
	M		--	--	163.00	110.4	116.6	12.3	0.0	0.0	128.9
	B		--	--	--	--	--	--	--	--	--
25 MAY	S	0431	20.2	350.	92.30	43.3	54.1	75.8	0.0	0.0	129.9
	M		--	--	76.60	613.3	52.2	26.1	0.0	0.0	78.3
	B		18.5	320.	101.10	2076.5	29.7	19.8	0.0	0.0	49.5
25 MAY	S	0631	19.0	380.	115.70	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	105.20	294.6	47.5	76.0	0.0	0.0	123.5
	B		18.2	--	113.10	2883.6	35.4	44.2	0.0	0.0	79.6
25 MAY	S	0836	19.1	330.	152.10	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	119.70	0.0	33.4	58.5	0.0	0.0	91.9
	B		18.6	320.	125.00	8.0	0.0	0.0	0.0	0.0	0.0
25 MAY	S	1030	18.2	400.	134.70	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	123.50	170.1	477.9	16.2	0.0	0.0	494.1
	B		17.9	420.	125.30	199.5	151.6	8.0	0.0	0.0	159.6
25 MAY	S	1231	17.9	330.	126.10	7.9	7.9	7.9	0.0	0.0	15.8
	M		--	--	114.40	262.2	69.9	148.6	0.0	0.0	218.5
	B		17.2	340.	118.80	690.4	294.7	25.3	0.0	0.0	320.0
25 MAY	S	1447	--	300.	89.70	11.1	0.0	0.0	0.0	0.0	0.0
	M		--	--	72.80	13.7	0.0	0.0	0.0	0.0	0.0
	B		16.9	310.	92.20	325.5	108.5	0.0	0.0	0.0	108.5

TABLE I.1-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
25 MAY	S	1630	20.1	280.	93.60	160.3	21.4	0.0	0.0	0.0	21.4
	M		--	--	80.60	706.8	210.8	0.0	0.0	0.0	210.8
	B		17.4	280.	85.00	1153.6	294.3	0.0	0.0	0.0	294.3
25 MAY	S	1830	19.2	320.	71.20	14.1	0.0	0.0	0.0	0.0	0.0
	M		--	--	63.20	585.1	63.3	15.8	0.0	0.0	79.1
	B		18.5	320.	65.60	655.7	122.0	30.5	0.0	0.0	152.5
25 MAY	S	2030	19.5	320.	126.00	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	121.20	0.0	16.5	8.3	0.0	0.0	24.8
	B		18.8	340.	132.70	7.5	22.6	7.5	0.0	0.0	30.1
25 MAY	S	2230	19.4	400.	175.00	5.7	22.9	28.6	0.0	0.0	51.5
	M		--	--	166.20	6.0	42.1	6.0	0.0	0.0	48.1
	B		--	--	(c)	(c)	(c)	(c)	(c)	(c)	(c)
26 MAY	S	0027	--	--	157.10	0.0	44.6	19.1	0.0	0.0	63.7
	M		--	--	164.20	42.6	30.4	6.1	0.0	0.0	36.5
	B		--	--	182.70	10.9	32.8	0.0	0.0	0.0	32.8
26 MAY	S	0228	--	--	123.40	8.1	24.3	16.2	0.0	0.0	40.5
	M		--	--	115.50	17.3	60.6	69.3	0.0	0.0	129.9
	B		--	--	126.90	102.4	39.4	15.8	0.0	0.0	55.2
26 MAY	S	0431	18.4	450.	108.50	119.8	27.6	0.0	0.0	0.0	27.6
	M		--	--	94.50	222.2	63.5	31.7	0.0	0.0	95.2
	B		18.2	400.	89.80	0.0	11.1	11.1	0.0	0.0	22.2
26 MAY	S	0631	19.3	400.	117.10	42.7	0.0	0.0	0.0	0.0	0.0
	M		--	--	102.00	451.0	68.6	58.8	0.0	0.0	127.4
	B		19.0	400.	124.70	785.9	72.2	80.2	0.0	0.0	152.4
26 MAY	S	0831	19.0	440.	72.10	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	67.30	0.0	14.9	0.0	0.0	0.0	14.9
	B		18.8	360.	73.00	383.7	0.0	0.0	0.0	0.0	0.0

TABLE I.1-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
26 MAY	S	1031	--	--	103.70	9.6	0.0	0.0	0.0	0.0	0.0
	M		--	--	98.10	122.3	61.2	40.8	0.0	0.0	102.0
	B		18.6	370.	95.20	420.2	42.0	115.6	0.0	0.0	157.6
26 MAY	S	1231	18.1	340.	101.90	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	96.00	72.9	20.8	125.0	0.0	0.0	145.8
	B		17.9	340.	98.00	30.6	142.9	71.5	0.0	0.0	214.4
26 MAY	S	1431	17.4	240.	116.40	0.0	8.6	8.6	0.0	0.0	17.2
	M		--	--	104.50	134.0	57.4	47.9	0.0	0.0	105.3
	B		17.1	200.	106.00	226.5	179.3	66.1	0.0	0.0	245.4
31 MAY	S	1500	20.3	2120.	117.20	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	95.90	0.0	0.0	0.0	0.0	0.0	0.0
	B		19.6	3760.	99.30	0.0	30.2	151.1	0.0	0.0	181.3
31 MAY	S	1700	19.3	1780.	138.00	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	117.30	0.0	0.0	0.0	0.0	0.0	0.0
	B		19.2	1740.	81.10	0.0	12.3	320.6	0.0	0.0	332.9
31 MAY	S	1900	18.8	1160.	124.80	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	106.40	0.0	9.4	798.9	0.0	0.0	808.3
	B		18.9	1180.	121.90	0.0	0.0	0.0	0.0	0.0	0.0
31 MAY	S	2100	21.0	2100.	112.80	0.0	70.9	301.4	0.0	0.0	372.3
	M		--	--	87.20	0.0	11.5	137.6	0.0	0.0	149.1
	B		19.6	2100.	75.00	0.0	13.3	173.4	0.0	0.0	186.7
31 MAY	S	2300	19.2	1200.	107.20	0.0	9.3	65.3	0.0	0.0	74.6
	M		--	--	91.40	0.0	10.9	43.8	0.0	0.0	54.7
	B		19.8	3820.	83.90	11.9	71.5	190.6	0.0	0.0	262.1
01 JUN	S	0100	18.9	2200.	102.60	0.0	19.5	0.0	0.0	0.0	19.5
	M		--	--	100.70	0.0	59.6	109.3	0.0	0.0	168.9
	B		19.9	4900.	108.30	0.0	18.5	110.8	0.0	0.0	129.3

TABLE I.1-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
01 JUN	S	0300	19.5	3550.	100.10	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	83.00	0.0	12.0	614.4	0.0	0.0	626.4
	B		19.9	4700.	83.80	0.0	0.0	0.0	0.0	0.0	0.0
07 JUN	S	1500	1.0	1720.	78.60	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	70.20	0.0	0.0	0.0	0.0	0.0	0.0
	B		20.1	2300.	78.50	0.0	25.5	12.7	0.0	0.0	38.2
07 JUN	S	1700	21.2	2480.	91.60	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	75.90	0.0	65.8	737.4	0.0	0.0	803.2
	B		20.6	2580.	100.60	0.0	9.9	357.7	0.0	0.0	367.6
07 JUN	S	1900	20.9	2400.	117.70	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	97.70	0.0	10.2	0.0	0.0	0.0	10.2
	B		20.7	3200.	102.20	0.0	0.0	0.0	0.0	0.0	0.0
07 JUN	S	2100	19.6	2000.	113.40	0.0	8.8	0.0	0.0	0.0	8.8
	M		--	--	106.70	0.0	0.0	0.0	0.0	0.0	0.0
	B		20.2	3550.	101.40	0.0	0.0	0.0	0.0	0.0	0.0
07 JUN	S	2300	20.0	2300.	115.20	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	97.50	0.0	0.0	0.0	0.0	0.0	0.0
	B		20.0	2200.	120.50	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	0100	19.5	1900.	106.10	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	49.90	0.0	0.0	0.0	0.0	0.0	0.0
	B		19.6	1950.	107.00	0.0	37.4	0.0	0.0	0.0	37.4
08 JUN	S	0300	19.5	1580.	86.90	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	81.10	0.0	0.0	0.0	0.0	0.0	0.0
	B		19.4	1480.	93.00	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	0521	21.0	2500.	113.40	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	97.70	0.0	0.0	0.0	0.0	0.0	0.0
	B		20.5	2600.	104.70	0.0	0.0	0.0	0.0	0.0	0.0

TABLE I.1-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
08 JUN	S	0701	19.6	1800.	86.20	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	91.50	0.0	0.0	0.0	0.0	0.0	0.0
	B		19.6	4550.	104.10	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	0901	19.1	1900.	98.30	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	67.60	0.0	0.0	0.0	0.0	0.0	0.0
	B		20.0	4200.	66.80	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	1101	20.0	2200.	102.50	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	106.00	0.0	0.0	0.0	0.0	0.0	0.0
	B		20.0	2700.	87.90	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	1300	19.4	1480.	136.50	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	119.30	0.0	0.0	0.0	0.0	0.0	0.0
	B		19.4	1420.	109.60	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	1500	19.2	1100.	140.80	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	119.80	0.0	0.0	0.0	0.0	0.0	0.0
	B		19.4	1100.	138.60	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	1700	21.4	2200.	104.50	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	101.40	0.0	0.0	0.0	0.0	0.0	0.0
	B		20.4	2250.	127.80	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	1900	21.4	2250.	76.30	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	95.60	0.0	0.0	0.0	0.0	0.0	0.0
	B		20.8	2550.	102.70	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	2100	19.5	1400.	123.50	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	116.30	0.0	0.0	0.0	0.0	0.0	0.0
	B		20.2	4000.	109.10	0.0	18.3	284.0	0.0	0.0	302.3
08 JUN	S	2300	19.7	2050.	167.00	0.0	12.0	347.4	0.0	0.0	359.4
	M		--	--	81.90	0.0	0.0	0.0	0.0	0.0	0.0
	B		19.8	3280.	143.50	0.0	0.0	0.0	0.0	0.0	0.0

TABLE I.1-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
09 JUN	S	0100	19.5	1900.	91.70	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	78.00	0.0	0.0	0.0	0.0	0.0	0.0
	B		19.5	1900.	89.70	0.0	0.0	0.0	0.0	0.0	0.0
09 JUN	S	0300	20.5	1600.	61.50	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	54.00	0.0	18.5	426.1	0.0	0.0	444.6
	B		19.5	1700.	57.50	0.0	34.8	1200.2	0.0	0.0	1235.0
09 JUN	S	0502	21.0	2560.	117.40	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	93.50	0.0	0.0	0.0	0.0	0.0	0.0
	B		20.2	2540.	121.50	0.0	0.0	0.0	0.0	0.0	0.0
09 JUN	S	0700	20.7	2940.	114.70	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	102.30	0.0	9.8	0.0	0.0	0.0	9.8
	B		19.6	5180.	113.30	0.0	8.8	706.3	0.0	0.0	715.1
09 JUN	S	0900	20.9	2980.	116.40	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	94.20	0.0	0.0	0.0	0.0	0.0	0.0
	B		19.8	5180.	109.70	0.0	9.1	656.5	0.0	0.0	665.6
09 JUN	S	1102	19.4	2200.	101.20	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	97.50	0.0	0.0	0.0	0.0	0.0	0.0
	B		19.4	4420.	86.70	0.0	0.0	0.0	0.0	0.0	0.0
09 JUN	S	1300	19.3	1960.	107.80	0.0	18.6	102.1	0.0	0.0	120.7
	M		--	--	100.10	0.0	0.0	0.0	0.0	0.0	0.0
	B		19.6	2640.	106.00	0.0	18.9	717.2	0.0	0.0	736.1
09 JUN	S	1500	19.5	2340.	88.30	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	96.70	0.0	0.0	0.0	0.0	0.0	0.0
	B		19.8	2340.	113.70	0.0	0.0	0.0	0.0	0.0	0.0

(a) Includes all sampling dates when striped bass were collected at this station.
(b) Total density of striped bass life stages collected, excluding eggs.
(c) Data excluded from analysis because of extremely high or low sample volume.

Note: Dashes (--) indicate data not available.
S = surface; M = middepth; B = bottom
YSL = yolk-sac larvae; PYSL = post yolk-sac larvae; JUV = juveniles; UID = unidentified life stages

TABLE I.2-1 ABUNDANCES OF STRIPED BASS EARLY DEVELOPMENTAL STAGES COLLECTED AT STATION RC DURING THE RIVER TRANSECT STUDY, INDIAN POINT GENERATING STATION, 1977

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
03 MAY	S	1430	--	--	141.90	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	135.40	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	142.80	0.0	0.0	0.0	0.0	0.0	0.0
03 MAY	S	1630	--	--	115.40	8.7	0.0	0.0	0.0	0.0	0.0
	M		--	--	104.10	38.4	0.0	0.0	0.0	0.0	0.0
	B		--	--	108.20	37.0	0.0	0.0	0.0	0.0	0.0
03 MAY	S	1903	--	--	145.60	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	117.90	118.8	0.0	0.0	0.0	0.0	0.0
	B		--	--	128.10	23.4	0.0	0.0	0.0	0.0	0.0
10 MAY	S	1435	--	--	142.70	14.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	123.80	88.9	64.6	0.0	0.0	0.0	64.6
	B		--	--	141.20	595.0	28.3	0.0	0.0	0.0	28.3
10 MAY	S	1630	--	--	150.40	0.0	13.3	0.0	0.0	0.0	13.3
	M		--	--	145.40	0.0	75.6	0.0	0.0	0.0	75.6
	B		--	--	163.20	79.6	12.3	0.0	0.0	0.0	12.3
10 MAY	S	1831	--	--	141.30	0.0	21.2	0.0	0.0	0.0	21.2
	M		--	--	134.70	0.0	133.7	0.0	0.0	0.0	133.7
	B		--	--	135.00	163.0	103.7	0.0	0.0	0.0	103.7
10 MAY	S	2030	--	--	154.80	0.0	484.5	0.0	0.0	0.0	484.5
	M		--	--	129.50	7.7	308.9	0.0	0.0	0.0	308.9
	B		--	--	154.60	19.4	58.2	0.0	0.0	0.0	58.2
10 MAY	S	2231	--	--	139.30	0.0	179.5	0.0	0.0	0.0	179.5
	M		--	--	117.70	68.0	280.3	0.0	0.0	0.0	280.3
	B		--	--	137.60	428.8	43.6	0.0	0.0	0.0	43.6

TABLE I.2-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
11 MAY	S	0030	--	--	146.60	20.5	0.0	0.0	0.0	0.0	0.0
	M		--	--	122.60	220.3	89.8	0.0	0.0	0.0	89.8
	B		--	--	125.80	842.5	166.9	0.0	0.0	0.0	166.9
11 MAY	S	0231	--	--	149.30	0.0	13.4	0.0	0.0	0.0	13.4
	M		--	--	123.10	0.0	24.4	0.0	0.0	0.0	24.4
	B		--	--	126.50	0.0	0.0	0.0	0.0	0.0	0.0
17 MAY	S	1504	--	--	124.40	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	112.60	35.5	71.1	0.0	0.0	0.0	71.1
	B		--	--	119.90	833.9	25.0	0.0	0.0	0.0	25.0
17 MAY	S	1633	--	--	153.00	19.6	0.0	0.0	0.0	0.0	0.0
	M		--	--	70.50	1219.2	0.0	0.0	0.0	0.0	0.0
	B		--	--	140.30	85.6	49.9	0.0	0.0	0.0	49.9
17 MAY	S	1922	--	--	146.60	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	140.40	142.4	42.7	0.0	0.0	0.0	42.7
	B		--	--	155.10	154.7	0.0	0.0	0.0	0.0	0.0
17 MAY	S	2032	--	--	129.80	7.7	7.7	0.0	0.0	0.0	7.7
	M		--	--	64.10	78.1	78.1	0.0	0.0	0.0	78.1
	B		--	--	74.00	391.8	108.1	0.0	0.0	0.0	108.1
17 MAY	S	2230	--	--	147.90	0.0	33.8	6.8	0.0	0.0	40.6
	M		--	--	153.40	13.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	143.80	222.5	34.8	0.0	0.0	0.0	34.8
18 MAY	S	0030	--	--	143.80	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	179.20	22.3	16.7	0.0	0.0	0.0	16.7
	B		--	--	130.50	76.6	23.0	0.0	0.0	0.0	23.0

TABLE I.2-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	FYSL	JUV	UID	TOTAL (b)
18 MAY	S	0235	--	--	155.40	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	94.20	53.1	212.3	0.0	0.0	0.0	212.3
	B		--	--	148.90	47.0	26.9	0.0	0.0	0.0	26.9
18 MAY	S	0430	--	--	110.40	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	101.90	0.0	19.6	0.0	0.0	0.0	19.6
	B		--	--	100.40	726.8	10.0	29.9	0.0	0.0	39.9
18 MAY	S	0630	--	--	142.00	21.1	0.0	0.0	0.0	0.0	0.0
	M		--	--	126.20	95.1	55.4	0.0	0.0	0.0	55.4
	B		--	--	119.90	642.2	25.0	0.0	0.0	0.0	25.0
18 MAY	S	0833	--	--	134.60	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	122.10	614.0	90.1	0.0	0.0	0.0	90.1
	B		--	--	126.20	31.7	15.8	7.9	0.0	0.0	23.7
18 MAY	S	1030	--	--	140.10	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	128.00	15.6	0.0	0.0	0.0	0.0	0.0
	B		--	--	119.80	442.5	75.1	0.0	0.0	0.0	75.1
18 MAY	S	1230	--	--	98.00	0.0	10.2	0.0	0.0	0.0	10.2
	M		--	--	141.00	7.1	49.7	0.0	0.0	0.0	49.7
	B		--	--	132.20	7.6	7.6	0.0	0.0	0.0	7.6
18 MAY	S	1430	--	--	158.70	6.3	0.0	0.0	0.0	0.0	0.0
	M		--	--	139.70	200.4	71.6	0.0	0.0	0.0	71.6
	B		--	--	132.40	90.6	166.1	7.6	0.0	0.0	173.7
18 MAY	S	1630	--	--	141.20	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	124.10	32.2	32.2	8.1	0.0	0.0	40.3
	B		--	--	125.00	2488.5	88.0	0.0	0.0	0.0	88.0
18 MAY	S	1830	--	--	156.00	6.4	0.0	0.0	0.0	0.0	0.0
	M		--	--	146.20	205.2	41.0	0.0	0.0	0.0	41.0
	B		--	--	138.10	847.3	108.6	0.0	0.0	0.0	108.6

TABLE I.2-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
18 MAY	S	2030	--	--	165.90	0.0	18.1	0.0	0.0	0.0	18.1
	M		--	--	146.10	0.0	54.8	20.5	0.0	0.0	75.3
	B		--	--	163.30	0.0	0.0	0.0	0.0	0.0	0.0
19 MAY	S	0030	--	--	124.50	0.0	120.4	0.0	0.0	0.0	120.4
	M		--	--	105.40	9.5	142.2	0.0	0.0	0.0	142.2
	B		--	--	119.40	243.0	75.4	0.0	0.0	0.0	75.4
19 MAY	S	0242	--	--	124.60	0.0	32.1	0.0	0.0	0.0	32.1
	M		--	--	96.30	93.5	207.7	0.0	0.0	0.0	207.7
	B		--	--	115.00	43.5	17.4	0.0	0.0	0.0	17.4
19 MAY	S	0430	--	--	115.20	790.0	34.7	0.0	0.0	0.0	34.7
	M		--	--	99.70	30.1	210.6	0.0	0.0	0.0	210.6
	B		--	--	105.20	0.0	19.0	0.0	0.0	0.0	19.0
19 MAY	S	0630	--	--	139.90	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	121.60	222.0	82.2	0.0	0.0	0.0	82.2
	B		--	--	116.40	1331.4	309.2	0.0	0.0	0.0	309.2
19 MAY	S	0830	--	--	143.80	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	127.00	488.4	189.0	0.0	0.0	0.0	189.0
	B		--	--	131.40	68.5	296.8	30.4	0.0	0.0	327.2
19 MAY	S	1030	--	--	141.90	7.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	122.70	187.4	260.8	0.0	0.0	0.0	260.8
	B		--	--	133.00	338.3	75.2	0.0	0.0	0.0	75.2
19 MAY	S	1230	--	--	148.70	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	139.70	0.0	93.0	0.0	0.0	0.0	93.0
	B		--	--	145.90	27.4	54.8	0.0	0.0	0.0	54.8

TABLE I.2-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
19 MAY	S	1450	--	--	140.80	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	120.90	41.4	165.5	0.0	0.0	0.0	165.5
	B		--	--	130.10	23.1	15.4	0.0	0.0	0.0	15.4
24 MAY	S	1500	--	--	176.90	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	156.90	6.4	57.4	89.2	0.0	0.0	146.6
	B		--	--	154.40	32.4	90.7	51.8	0.0	0.0	142.5
24 MAY	S	1630	--	--	--	--	--	--	--	--	--
	M		--	--	148.70	20.2	107.6	80.7	0.0	0.0	188.3
	B		--	--	154.60	6.5	58.2	0.0	0.0	0.0	58.2
24 MAY	S	1833	--	--	142.80	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	--	--	--	--	--	--	--
	B		--	--	174.00	63.2	51.7	57.5	0.0	0.0	109.2
24 MAY	S	2030	--	--	182.60	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	153.10	6.5	104.5	52.2	0.0	0.0	156.7
	B		--	--	172.80	283.6	0.0	0.0	0.0	0.0	0.0
24 MAY	S	2230	--	--	163.60	0.0	18.3	122.3	0.0	0.0	140.6
	M		--	--	133.00	15.0	90.3	22.6	0.0	0.0	112.9
	B		--	--	156.10	2068.8	32.0	0.0	0.0	0.0	32.0
24 MAY	S	1647	--	--	54.70	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	134.50	52.1	148.7	81.8	0.0	0.0	230.5
	B		--	--	--	--	--	--	--	--	--
25 MAY	S	0030	--	--	176.40	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	144.90	13.8	144.9	124.2	0.0	0.0	269.1
	B		--	--	174.10	252.7	63.2	5.7	0.0	0.0	68.9

TABLE I.2-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
25 MAY	S	0230	--	--	166.30	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	138.30	0.0	72.3	43.4	0.0	0.0	115.7
	B		--	--	153.60	39.1	39.1	0.0	0.0	0.0	39.1
25 MAY	S	0430	--	--	144.70	0.0	62.2	89.8	0.0	0.0	152.0
	M		--	--	126.00	0.0	63.5	47.6	0.0	0.0	111.1
	B		--	--	121.10	677.2	16.5	8.3	0.0	0.0	24.8
25 MAY	S	0630	--	--	147.60	6.8	0.0	0.0	0.0	0.0	0.0
	M		--	--	122.50	114.3	106.1	57.1	0.0	0.0	163.2
	B		--	--	126.30	7.9	23.8	15.8	0.0	0.0	39.6
25 MAY	S	0830	--	--	153.70	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	129.30	15.5	0.0	0.0	0.0	0.0	0.0
	B		--	--	145.90	418.1	41.1	27.4	0.0	0.0	68.5
25 MAY	S	1030	--	--	151.10	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	135.40	0.0	14.8	7.4	0.0	0.0	22.2
	B		--	--	137.00	394.2	7.3	29.2	0.0	0.0	36.5
25 MAY	S	1230	--	--	150.60	6.6	0.0	0.0	0.0	0.0	0.0
	M		--	--	127.90	70.4	15.6	46.9	0.0	0.0	62.5
	B		--	--	136.80	292.5	277.9	0.0	0.0	0.0	277.9
25 MAY	S	1430	--	--	153.80	6.5	0.0	0.0	0.0	0.0	0.0
	M		--	--	128.80	38.8	54.4	93.2	0.0	0.0	147.6
	B		--	--	142.80	7.0	21.0	0.0	0.0	0.0	21.0
25 MAY	S	1635	--	--	174.40	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	148.40	0.0	33.7	208.9	0.0	0.0	242.6
	B		--	--	152.40	0.0	32.8	45.9	0.0	0.0	78.7
25 MAY	S	1830	--	--	165.90	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	(C)	(C)	(C)	(C)	(C)	(C)	(C)
	B		--	--	161.20	0.0	136.5	49.6	0.0	0.0	186.1

TABLE I.2-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
25 MAY	S	2030	--	--	172.20	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	145.80	20.6	89.2	82.3	0.0	0.0	171.5
	B		--	--	163.40	36.7	0.0	0.0	0.0	0.0	0.0
25 MAY	S	2230	--	--	180.80	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	154.60	0.0	122.9	58.2	0.0	0.0	181.1
	B		--	--	175.80	22.7	0.0	0.0	0.0	0.0	0.0
26 MAY	S	0447	--	--	148.70	6.7	6.7	6.7	0.0	0.0	13.4
	M		--	--	130.00	7.7	176.9	76.9	0.0	0.0	253.8
	B		--	--	130.50	283.5	61.3	0.0	0.0	0.0	61.3
26 MAY	S	0630	--	--	139.90	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	119.90	0.0	16.7	58.4	0.0	0.0	75.1
	B		--	--	126.40	31.6	189.8	31.6	0.0	0.0	221.4
26 MAY	S	0830	--	--	141.50	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	115.60	0.0	155.7	86.5	0.0	0.0	242.2
	B		--	--	126.20	39.6	23.8	71.3	0.0	0.0	95.1
26 MAY	S	1030	--	--	141.60	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	113.30	0.0	70.6	26.5	0.0	0.0	97.1
	B		--	--	114.20	52.5	140.1	35.0	0.0	0.0	175.1
26 MAY	S	1230	--	--	142.10	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	112.50	168.9	35.6	62.2	0.0	0.0	97.8
	B		--	--	123.30	162.2	543.3	40.5	0.0	0.0	583.8
26 MAY	S	1430	--	--	140.50	0.0	7.1	0.0	0.0	0.0	7.1
	M		--	--	119.10	16.8	8.4	42.0	0.0	0.0	50.4
	B		--	--	125.40	127.5	789.2	15.9	0.0	0.0	805.1

TABLE I.2-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
31 MAY	S	1459	--	--	161.80	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	141.70	0.0	35.3	924.8	0.0	0.0	960.1
	B		--	--	137.40	0.0	43.7	371.2	0.0	0.0	414.9
31 MAY	S	1659	--	--	153.50	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	115.20	0.0	95.5	95.5	0.0	0.0	191.0
	B		--	--	99.10	0.0	1393.1	545.1	0.0	0.0	1938.2
31 MAY	S	1900	--	--	118.10	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	84.20	0.0	118.7	949.6	0.0	0.0	1068.3
	B		--	--	100.20	10.0	718.4	269.4	0.0	0.0	987.8
31 MAY	S	2100	--	--	120.30	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	100.90	0.0	29.7	49.5	0.0	0.0	79.2
	B		--	--	49.80	0.0	301.0	361.2	0.0	0.0	662.2
31 MAY	S	2301	--	--	116.60	0.0	8.6	145.8	0.0	0.0	154.4
	M		--	--	103.50	0.0	9.7	260.9	0.0	0.0	270.6
	B		--	--	108.30	0.0	9.2	147.7	0.0	0.0	156.9
01 JUN	S	0102	--	--	155.20	0.0	6.4	0.0	0.0	0.0	6.4
	M		--	--	108.70	0.0	9.2	303.6	0.0	0.0	312.8
	B		--	--	120.50	0.0	0.0	0.0	0.0	0.0	0.0
01 JUN	S	0300	--	--	151.40	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	125.50	0.0	15.9	286.8	0.0	0.0	302.7
	B		--	--	118.70	0.0	8.4	16.8	0.0	0.0	25.2
07 JUN	S	1522	--	--	137.50	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	126.70	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	143.30	0.0	14.0	0.0	0.0	0.0	14.0
07 JUN	S	1700	--	--	148.20	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	128.60	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	137.90	0.0	0.0	0.0	0.0	0.0	0.0

TABLE I.2-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
07 JUN	S	1903	--	--	124.80	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	113.70	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	140.90	0.0	0.0	0.0	0.0	0.0	0.0
07 JUN	S	2100	--	--	171.70	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	143.40	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	148.70	0.0	0.0	0.0	0.0	0.0	0.0
07 JUN	S	2301	--	--	142.10	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	121.10	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	139.00	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	0100	--	--	153.40	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	129.10	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	146.50	0.0	20.5	0.0	0.0	0.0	20.5
08 JUN	S	0300	--	--	154.10	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	128.50	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	150.30	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	0505	--	--	162.60	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	138.00	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	134.30	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	0700	--	--	143.60	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	129.70	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	126.90	0.0	7.9	346.6	0.0	0.0	354.5
08 JUN	S	0900	--	--	168.30	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	147.80	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	134.40	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	1100	--	--	157.00	6.4	0.0	0.0	0.0	0.0	0.0
	M		--	--	142.90	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	126.40	7.9	0.0	0.0	0.0	0.0	0.0

TABLE I.2-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
08 JUN	S	1500	--	--	148.50	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	129.20	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	130.80	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	1700	--	--	138.00	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	124.60	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	121.70	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	1900	--	--	144.80	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	133.40	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	127.10	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	2300	--	--	156.90	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	141.10	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	122.20	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	1318	--	--	173.90	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	169.00	0.0	11.8	0.0	0.0	0.0	11.8
	B		--	--	179.90	0.0	16.7	1106.0	0.0	0.0	1122.7
09 JUN	S	0100	--	--	150.00	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	137.30	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	119.90	0.0	0.0	0.0	0.0	0.0	0.0
09 JUN	S	0300	--	--	135.30	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	118.60	0.0	8.4	986.2	0.0	0.0	994.6
	B		--	--	109.60	0.0	0.0	0.0	0.0	0.0	0.0
09 JUN	S	0500	--	--	161.70	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	172.30	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	179.60	0.0	0.0	0.0	0.0	0.0	0.0

TABLE I.2-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
09 JUN	S	0700	--	--	175.80	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	175.80	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	166.40	0.0	0.0	0.0	0.0	0.0	0.0
09 JUN	S	0900	--	--	175.00	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	152.70	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	127.90	0.0	15.6	0.0	0.0	0.0	15.6
09 JUN	S	1100	--	--	55.40	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	157.30	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	127.50	0.0	0.0	0.0	0.0	0.0	0.0
09 JUN	S	1300	--	--	176.90	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	168.60	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	150.60	0.0	6.6	0.0	0.0	0.0	6.6
09 JUN	S	1500	--	--	168.50	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	169.90	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	(c)	(c)	(c)	(c)	(c)	(c)	(c)

(a) Includes all sampling dates when striped bass were collected at this station.
(b) Total density of striped bass life stages collected, excluding eggs.
(c) Data excluded from analysis because of extremely high or low sample volume.

Note: Dashes (--) indicate data not available.
S = surface; M = middepth; B = bottom
YSL = yolk-sac larvae; PYSL = post yolk-sac larvae; JUV = juvenile; UID = inidentified life stage

TABLE 1.3-1 ABUNDANCES OF STRIPED BASS EARLY DEVELOPMENTAL STAGES COLLECTED AT STATION RW DURING THE RIVER TRANSECT STUDY, INDIAN POINT GENERATING STATION, 1977

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
03 MAY	S	1431	--	--	140.70	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	125.10	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	129.00	0.0	0.0	0.0	0.0	0.0	0.0
03 MAY	S	1631	--	--	132.60	22.6	0.0	0.0	0.0	0.0	0.0
	M		--	--	114.30	35.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	102.70	9.7	0.0	0.0	0.0	0.0	0.0
03 MAY	S	1831	--	--	151.60	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	127.20	7.9	0.0	0.0	0.0	0.0	0.0
	B		--	--	127.50	15.7	0.0	0.0	0.0	0.0	0.0
03 MAY	S	2031	--	--	138.90	7.2	0.0	0.0	0.0	0.0	0.0
	M		--	--	119.20	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	118.30	152.2	0.0	0.0	0.0	0.0	0.0
03 MAY	S	2234	--	--	136.00	7.4	0.0	0.0	0.0	0.0	0.0
	M		--	--	61.40	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	163.70	24.4	6.1	0.0	0.0	0.0	6.1
04 MAY	S	0031	--	--	133.70	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	116.20	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	111.40	9.0	0.0	0.0	0.0	0.0	0.0
04 MAY	S	0232	--	--	115.30	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	99.40	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	111.10	0.0	0.0	0.0	0.0	0.0	0.0
10 MAY	S	1437	--	--	146.70	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	123.10	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	137.50	167.3	65.5	0.0	0.0	0.0	65.5
10 MAY	S	1632	--	--	124.80	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	99.90	0.0	10.0	0.0	0.0	0.0	10.0
	B		--	--	102.30	928.6	166.2	0.0	0.0	0.0	166.2

TABLE I.3-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
10 MAY	S	1831	--	--	115.40	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	107.70	55.7	74.3	0.0	0.0	0.0	74.3
	B		--	--	90.90	450.8	362.8	0.0	0.0	0.0	362.8
10 MAY	S	2030	--	--	145.80	0.0	89.1	0.0	0.0	0.0	89.1
	M		--	--	119.60	16.7	125.5	0.0	0.0	0.0	125.5
	B		--	--	131.80	83.5	91.1	0.0	0.0	0.0	91.1
10 MAY	S	2231	--	--	149.50	40.1	6.7	0.0	0.0	0.0	6.7
	M		--	--	129.20	23.2	7.7	0.0	0.0	0.0	7.7
	B		--	--	125.90	500.4	47.7	0.0	0.0	0.0	47.7
11 MAY	S	0031	--	--	156.30	6.4	32.0	0.0	0.0	0.0	32.0
	M		--	--	133.10	22.5	37.6	0.0	0.0	0.0	37.6
	B		--	--	133.20	960.7	127.6	0.0	0.0	0.0	127.6
11 MAY	S	0230	--	--	132.20	0.0	37.8	0.0	0.0	0.0	37.8
	M		--	--	111.00	0.0	81.1	0.0	0.0	0.0	81.1
	B		--	--	115.30	251.5	346.9	0.0	0.0	0.0	346.9
17 MAY	S	1501	16.3	--	131.20	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	143.90	20.9	0.0	0.0	0.0	0.0	0.0
	B		15.6	200.	125.90	127.1	7.9	0.0	0.0	0.0	7.9
17 MAY	S	1632	15.4	240.	127.30	23.6	0.0	0.0	0.0	0.0	0.0
	M		--	--	114.70	87.2	0.0	0.0	0.0	0.0	0.0
	B		15.2	190.	114.10	394.5	52.6	0.0	0.0	0.0	52.6
17 MAY	S	1830	14.6	200.	144.40	6.9	0.0	0.0	0.0	0.0	0.0
	M		--	--	126.50	15.8	0.0	0.0	0.0	0.0	0.0
	B		14.7	140.	125.30	566.5	71.8	0.0	0.0	0.0	71.8
17 MAY	S	2032	16.3	170.	125.60	0.0	8.0	0.0	0.0	0.0	8.0
	M		--	--	111.80	0.0	17.9	0.0	0.0	0.0	17.9
	B		14.2	190.	118.20	2935.0	355.2	0.0	0.0	0.0	355.2

TABLE I.3-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
17 MAY	S	2230	14.5	460.	143.80	0.0	34.8	0.0	0.0	0.0	34.8
	M		--	--	128.40	0.0	0.0	0.0	0.0	0.0	0.0
	B		14.5	90.	131.50	83.7	7.6	0.0	0.0	0.0	7.6
18 MAY	S	0032	14.6	120.	139.10	0.0	35.9	0.0	0.0	0.0	35.9
	M		--	--	128.80	7.8	15.5	0.0	0.0	0.0	15.5
	B		14.6	120.	124.70	144.4	24.1	0.0	0.0	0.0	24.1
18 MAY	S	0231	15.4	60.	158.40	0.0	18.9	0.0	0.0	0.0	18.9
	M		--	--	141.00	0.0	21.3	0.0	0.0	0.0	21.3
	B		14.8	40.	159.00	0.0	12.6	0.0	0.0	0.0	12.6
18 MAY	S	0430	14.8	100.	101.80	9.8	19.6	0.0	0.0	0.0	19.6
	M		--	--	121.40	16.5	16.5	0.0	0.0	0.0	16.5
	B		14.9	0.	44.10	0.0	45.3	0.0	0.0	0.0	45.3
18 MAY	S	0631	14.2	100.	129.00	31.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	113.80	35.1	0.0	0.0	0.0	0.0	0.0
	B		14.5	100.	116.40	610.0	223.4	0.0	0.0	0.0	223.4
18 MAY	S	0831	14.8	100.	140.00	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	123.10	0.0	0.0	0.0	0.0	0.0	0.0
	B		14.8	100.	128.60	85.6	264.4	0.0	0.0	0.0	264.4
18 MAY	S	1030	16.1	0.	142.50	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	122.20	0.0	0.0	0.0	0.0	0.0	0.0
	B		14.8	100.	118.80	311.4	42.1	8.4	0.0	0.0	50.5
18 MAY	S	1230	15.6	100.	122.00	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	101.90	88.4	9.8	9.8	0.0	0.0	19.6
	B		15.1	100.	93.10	386.7	53.7	0.0	0.0	0.0	53.7

TABLE I.3-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
18 MAY	S	1430	16.0	150.	153.70	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	133.40	7.5	0.0	0.0	0.0	0.0	0.0
	B		15.3	100.	142.30	14.1	7.0	0.0	0.0	0.0	7.0
18 MAY	S	1701	15.9	90.	148.80	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	128.20	109.2	31.2	0.0	0.0	0.0	31.2
	B		15.5	80.	122.50	253.1	98.0	0.0	0.0	0.0	98.0
18 MAY	S	1830	15.4	60.	156.00	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	132.70	233.6	7.5	0.0	0.0	0.0	7.5
	B		14.7	100.	125.90	516.2	143.0	0.0	0.0	0.0	143.0
18 MAY	S	2031	14.4	100.	147.10	0.0	6.8	0.0	0.0	0.0	6.8
	M		--	--	129.50	0.0	69.5	0.0	0.0	0.0	69.5
	B		14.6	100.	130.50	183.9	122.6	0.0	0.0	0.0	122.6
18 MAY	S	2230	--	--	(c)	(c)	(c)	(c)	(c)	(c)	(c)
	M		--	--	113.00	88.5	35.4	0.0	0.0	0.0	35.4
	B		15.2	100.	109.60	1377.2	73.0	0.0	0.0	0.0	73.0
19 MAY	S	0032	16.0	100.	113.40	0.0	61.7	0.0	0.0	0.0	61.7
	M		--	--	103.30	29.0	19.4	0.0	0.0	0.0	19.4
	B		15.5	100.	100.00	479.9	70.0	0.0	0.0	0.0	70.0
19 MAY	S	0231	15.6	60.	129.80	0.0	69.3	0.0	0.0	0.0	69.3
	M		--	--	114.30	0.0	17.5	0.0	0.0	0.0	17.5
	B		15.3	50.	129.20	54.2	23.2	0.0	0.0	0.0	23.2
19 MAY	S	0430	15.3	100.	116.30	0.0	43.0	0.0	0.0	0.0	43.0
	M		--	--	106.10	66.0	94.3	0.0	0.0	0.0	94.3
	B		15.9	100.	100.20	748.4	69.8	0.0	0.0	0.0	69.8
19 MAY	S	0630	15.4	100.	141.50	14.1	0.0	0.0	0.0	0.0	0.0
	M		--	--	114.60	322.8	43.6	0.0	0.0	0.0	43.6
	B		15.4	0.	104.10	1210.5	76.9	0.0	0.0	0.0	76.9

TABLE I.3-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
19 MAY	S	0830	15.4	200.	129.70	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	121.80	32.8	82.1	0.0	0.0	0.0	82.1
	B		15.3	50.	130.60	206.8	206.8	7.7	0.0	0.0	214.5
19 MAY	S	1031	15.4	100.	135.20	0.0	22.2	0.0	0.0	0.0	22.2
	M		--	--	128.40	0.0	46.7	0.0	0.0	0.0	46.7
	B		15.3	100.	118.30	1005.9	752.3	42.3	0.0	0.0	794.6
19 MAY	S	1230	16.1	100.	158.30	0.0	12.6	0.0	0.0	0.0	12.6
	M		--	--	150.60	0.0	33.2	0.0	0.0	0.0	33.2
	B		15.2	50.	128.80	217.4	163.1	0.0	0.0	0.0	163.1
19 MAY	S	1430	16.4	100.	134.60	0.0	7.4	0.0	0.0	0.0	7.4
	M		--	--	119.10	0.0	33.6	0.0	0.0	0.0	33.6
	B		15.6	100.	108.60	119.7	138.1	9.2	0.0	0.0	147.3
24 MAY	S	1500	19.7	40.	127.40	0.0	7.9	0.0	0.0	0.0	7.9
	M		--	--	116.60	0.0	17.2	8.6	0.0	0.0	25.8
	B		17.6	40.	115.40	355.4	372.7	34.7	0.0	0.0	407.4
24 MAY	S	1629	19.9	200.	157.10	0.0	6.4	0.0	0.0	0.0	6.4
	M		--	--	125.20	71.9	8.0	8.0	0.0	0.0	16.0
	B		18.5	100.	105.80	425.2	406.3	0.0	0.0	0.0	406.3
24 MAY	S	1830	20.3	170.	138.80	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	115.40	0.0	0.0	0.0	0.0	0.0	0.0
	B		19.4	170.	127.90	0.0	164.2	23.5	0.0	0.0	187.7
24 MAY	S	2030	20.0	190.	145.20	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	132.80	0.0	7.5	22.6	0.0	0.0	30.1
	B		19.5	120.	80.40	111.9	37.3	0.0	0.0	0.0	37.3
24 MAY	S	2229	18.3	100.	137.80	7.3	232.2	166.9	0.0	0.0	399.1
	M		--	--	129.50	46.3	115.8	46.3	0.0	0.0	162.1
	B		18.5	100.	124.90	328.3	176.1	8.0	0.0	0.0	184.1

TABLE I.3-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
25 MAY	S	0030	17.6	170.	127.70	0.0	180.1	70.5	0.0	0.0	250.6
	M		--	--	113.50	0.0	0.0	0.0	0.0	0.0	0.0
	B		17.4	190.	116.10	249.9	284.4	25.9	0.0	0.0	310.3
25 MAY	S	0232	18.4	40.	148.90	0.0	20.1	47.0	0.0	0.0	67.1
	M		--	--	127.80	0.0	70.4	101.7	0.0	0.0	172.1
	B		17.6	160.	116.70	60.0	119.9	60.0	0.0	0.0	179.9
25 MAY	S	0431	--	100.	138.10	0.0	86.9	7.2	0.0	0.0	94.1
	M		--	--	107.50	9.3	9.3	9.3	0.0	0.0	18.6
	B		18.1	100.	97.60	1998.4	20.5	10.2	0.0	0.0	30.7
25 MAY	S	0631	19.3	150.	141.90	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	121.20	0.0	8.3	0.0	0.0	0.0	8.3
	B		18.8	100.	132.80	75.3	22.6	15.1	0.0	0.0	37.7
25 MAY	S	0835	19.8	200.	123.70	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	118.30	8.5	0.0	0.0	0.0	0.0	0.0
	B		18.8	100.	115.70	423.6	34.6	60.5	0.0	0.0	95.1
25 MAY	S	1031	18.6	200.	158.60	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	128.70	101.0	0.0	0.0	0.0	0.0	0.0
	B		18.2	100.	117.70	824.2	671.2	42.5	0.0	0.0	713.7
25 MAY	S	1231	19.8	50.	127.20	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	115.30	8.7	8.7	0.0	0.0	0.0	8.7
	B		18.1	100.	115.90	630.0	940.7	34.5	0.0	0.0	975.2
25 MAY	S	1430	20.7	100.	133.60	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	114.40	0.0	17.5	0.0	0.0	0.0	17.5
	B		17.6	100.	104.20	575.8	1017.3	0.0	0.0	0.0	1017.3
25 MAY	S	1639	20.0	100.	146.20	6.8	0.0	0.0	0.0	0.0	0.0
	M		--	--	114.20	8.8	17.5	87.6	0.0	0.0	105.1
	B		18.0	130.	107.30	55.9	410.1	0.0	0.0	0.0	410.1

TABLE I.3-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
25 MAY	S	1829	19.4	100.	128.60	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	117.30	0.0	25.6	34.1	0.0	0.0	59.7
	B		19.3	100.	106.60	9.4	206.4	18.8	0.0	0.0	225.2
25 MAY	S	2029	20.7	230.	151.50	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	139.20	0.0	28.7	79.0	0.0	0.0	107.7
	B		19.8	170.	151.60	0.0	0.0	0.0	0.0	0.0	0.0
25 MAY	S	2230	19.2	200.	139.60	0.0	50.2	107.5	0.0	0.0	157.7
	M		--	--	86.70	0.0	173.1	161.5	0.0	0.0	334.6
	B		19.0	210.	134.60	0.0	156.0	44.6	0.0	0.0	200.6
26 MAY	S	0033	17.8	220.	114.90	0.0	95.7	95.7	0.0	0.0	191.4
	M		--	--	104.50	28.7	143.5	133.9	0.0	0.0	277.4
	B		17.9	220.	112.90	203.8	141.8	70.9	0.0	0.0	212.7
26 MAY	S	0232	18.0	120.	143.30	0.0	62.8	27.9	0.0	0.0	90.7
	M		--	--	120.50	0.0	290.3	33.2	0.0	0.0	323.5
	B		17.9	170.	136.90	438.4	168.0	7.3	0.0	0.0	175.3
26 MAY	S	0431	18.7	140.	32.10	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	118.30	0.0	194.5	109.9	0.0	0.0	304.4
	B		18.6	150.	124.00	32.2	80.6	8.1	0.0	0.0	88.7
26 MAY	S	0630	19.1	200.	142.10	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	124.60	0.0	32.1	56.2	0.0	0.0	88.3
	B		18.8	100.	121.80	459.6	238.0	0.0	0.0	0.0	238.0
26 MAY	S	0831	19.6	150.	152.00	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	128.90	0.0	7.8	0.0	0.0	0.0	7.8
	B		19.3	50.	132.80	105.4	143.0	37.6	0.0	0.0	180.6
26 MAY	S	1030	19.2	180.	161.70	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	132.70	37.7	7.5	30.1	0.0	0.0	37.6
	B		18.8	150.	144.10	20.8	117.9	0.0	0.0	0.0	117.9

TABLE I.3-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
26 MAY	S	1230	18.6	240.	156.20	6.4	0.0	0.0	0.0	0.0	0.0
	M		--	--	131.10	144.9	15.3	30.5	0.0	0.0	45.8
	B		18.3	200.	125.00	399.9	951.9	32.0	0.0	0.0	983.9
26 MAY	S	1430	18.9	200.	136.00	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	124.00	8.1	0.0	0.0	0.0	0.0	0.0
	B		18.0	150.	137.40	298.3	2750.3	80.0	0.0	0.0	2830.3
31 MAY	S	1501	20.8	2640.	135.00	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	108.30	0.0	0.0	0.0	0.0	0.0	0.0
	B		20.3	3320.	100.10	0.0	299.7	209.8	0.0	0.0	509.5
31 MAY	S	1701	19.9	2240.	158.70	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	142.00	0.0	0.0	0.0	0.0	0.0	0.0
	B		19.9	2900.	111.10	0.0	504.2	99.0	0.0	0.0	603.2
31 MAY	S	1900	19.3	1400.	167.80	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	146.30	0.0	0.0	0.0	0.0	0.0	0.0
	B		19.6	2250.	139.40	0.0	0.0	0.0	0.0	0.0	0.0
31 MAY	S	2115	19.8	1600.	167.90	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	144.00	0.0	0.0	0.0	0.0	0.0	0.0
	B		19.8	1600.	137.90	0.0	43.5	188.6	0.0	0.0	232.1
31 MAY	S	2301	20.1	3540.	188.60	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	139.80	0.0	7.2	0.0	0.0	0.0	7.2
	B		20.1	4120.	125.70	0.0	71.6	151.1	0.0	0.0	222.7
01 JUN	S	0100	20.0	4100.	136.10	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	113.30	0.0	0.0	0.0	0.0	0.0	0.0
	B		20.0	4400.	117.40	0.0	0.0	0.0	0.0	0.0	0.0

TABLE I.3-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
01 JUN	S	0300	19.9	3300.	175.40	0.0	5.1	46.1	0.0	0.0	51.2
	M		--	--	142.10	0.0	0.0	0.0	0.0	0.0	0.0
	B		20.0	4000.	125.30	8.0	55.9	167.6	0.0	0.0	223.5
07 JUN	S	1503	22.2	1650.	123.10	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	110.00	0.0	0.0	0.0	0.0	0.0	0.0
	B		21.2	2100.	119.30	0.0	0.0	0.0	0.0	0.0	0.0
07 JUN	S	1701	20.6	2750.	98.70	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	88.50	0.0	0.0	0.0	0.0	0.0	0.0
	B		20.6	3230.	84.30	0.0	0.0	0.0	0.0	0.0	0.0
07 JUN	S	1905	20.5	3400.	134.20	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	126.50	0.0	0.0	0.0	0.0	0.0	0.0
	B		20.4	3650.	139.00	0.0	0.0	0.0	0.0	0.0	0.0
07 JUN	S	2100	20.8	2850.	154.10	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	134.60	0.0	0.0	0.0	0.0	0.0	0.0
	B		20.8	3150.	137.30	0.0	0.0	0.0	0.0	0.0	0.0
07 JUN	S	2301	20.0	1990.	144.40	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	126.70	0.0	7.9	0.0	0.0	0.0	7.9
	B		20.4	2100.	123.00	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	0102	--	--	149.90	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	134.60	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	136.10	0.0	7.3	462.7	0.0	0.0	470.0
08 JUN	S	0301	--	--	132.40	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	107.90	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	120.00	0.0	16.7	0.0	0.0	0.0	16.7
08 JUN	S	0502	--	--	160.20	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	136.30	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	123.40	0.0	0.0	0.0	0.0	0.0	0.0

TABLE I.3-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
08 JUN	S	0734	--	--	141.60	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	125.60	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	175.80	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	0900	--	--	125.10	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	124.90	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	123.30	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	1101	--	--	173.10	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	161.70	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	169.20	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	1501	--	--	156.80	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	147.40	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	169.90	0.0	17.7	706.1	0.0	0.0	723.8
08 JUN	S	1702	--	--	110.40	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	113.40	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	126.40	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	1902	--	--	141.20	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	122.80	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	125.50	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	2102	--	--	129.30	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	119.30	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	128.80	0.0	0.0	0.0	0.0	0.0	0.0
08 JUN	S	2316	--	--	170.30	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	157.40	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	143.50	0.0	0.0	0.0	0.0	0.0	0.0
09 JUN	S	0101	--	--	151.50	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	128.00	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	118.70	0.0	0.0	0.0	0.0	0.0	0.0

TABLE I.3-1 (CONT.)

DATE(a)	DEPTH	TIME	TEMPERATURE (C)	CONDUCTIVITY (UMHO)	SAMPLE VOLUME (CU.M)	DENSITY (NO./1,000 CU.M) EGGS	YSL	PYSL	JUV	UID	TOTAL (b)
09 JUN	S	1105	--	--	164.90	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	151.10	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	112.60	0.0	0.0	0.0	0.0	0.0	0.0
09 JUN	S	1300	--	--	198.00	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	176.50	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	131.30	0.0	0.0	0.0	0.0	0.0	0.0
09 JUN	S	1501	--	--	164.00	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	158.90	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	138.80	0.0	0.0	0.0	0.0	0.0	0.0
14 JUN	S	1502	--	--	178.40	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	168.80	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	136.20	0.0	0.0	0.0	0.0	0.0	0.0
14 JUN	S	1701	--	--	143.20	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	143.40	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	122.20	0.0	0.0	0.0	0.0	0.0	0.0
14 JUN	S	1900	--	--	123.30	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	119.20	0.0	16.8	0.0	0.0	0.0	16.8
	B		--	--	92.60	0.0	399.6	0.0	0.0	0.0	399.6
14 JUN	S	2100	--	--	161.20	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	153.20	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	141.60	0.0	0.0	0.0	0.0	0.0	0.0
14 JUN	S	2300	--	--	151.80	0.0	0.0	0.0	0.0	0.0	0.0
	M		--	--	141.00	0.0	0.0	0.0	0.0	0.0	0.0
	B		--	--	100.70	0.0	0.0	0.0	0.0	0.0	0.0

(a) Includes all sampling dates when striped bass were collected at this station.
(b) Total density of striped bass life stages collected, excluding eggs.
(c) Data excluded from analysis because of high or low sample volume.

Note: Dashes (--) indicate data not available.
S = surface; M = middepth; B = bottom
YSL = yolk-sac larvae; PYSL = post yolk-sac larvae; JUV = juveniles; UID = unidentified life stage.

APPENDIX J

SEASONAL ABUNDANCE OF STRIPED BASS EARLY DEVELOPMENTAL STAGES AT RIVER TRANSECT STATIONS, INDIAN POINT GENERATING STATION, 1977

APPENDIX J FIGURES

	Title	Number
J.1	ABUNDANCE OF STRIPED BASS EARLY DEVELOPMENTAL STAGES	J.1-1
J.2	ABUNDANCE COMPARISON OF STRIPED BASS EARLY DEVELOPMENTAL STAGES COLLECTED AT RIVER TRANSECT STATIONS AND PLANT ENTRAINMENT STATIONS	
	Striped Bass Eggs	J.2-1
	Striped Bass Yolk-sac larvae	J.2-2
	Striped Bass Post Yolk-sac larvae	J.2-3

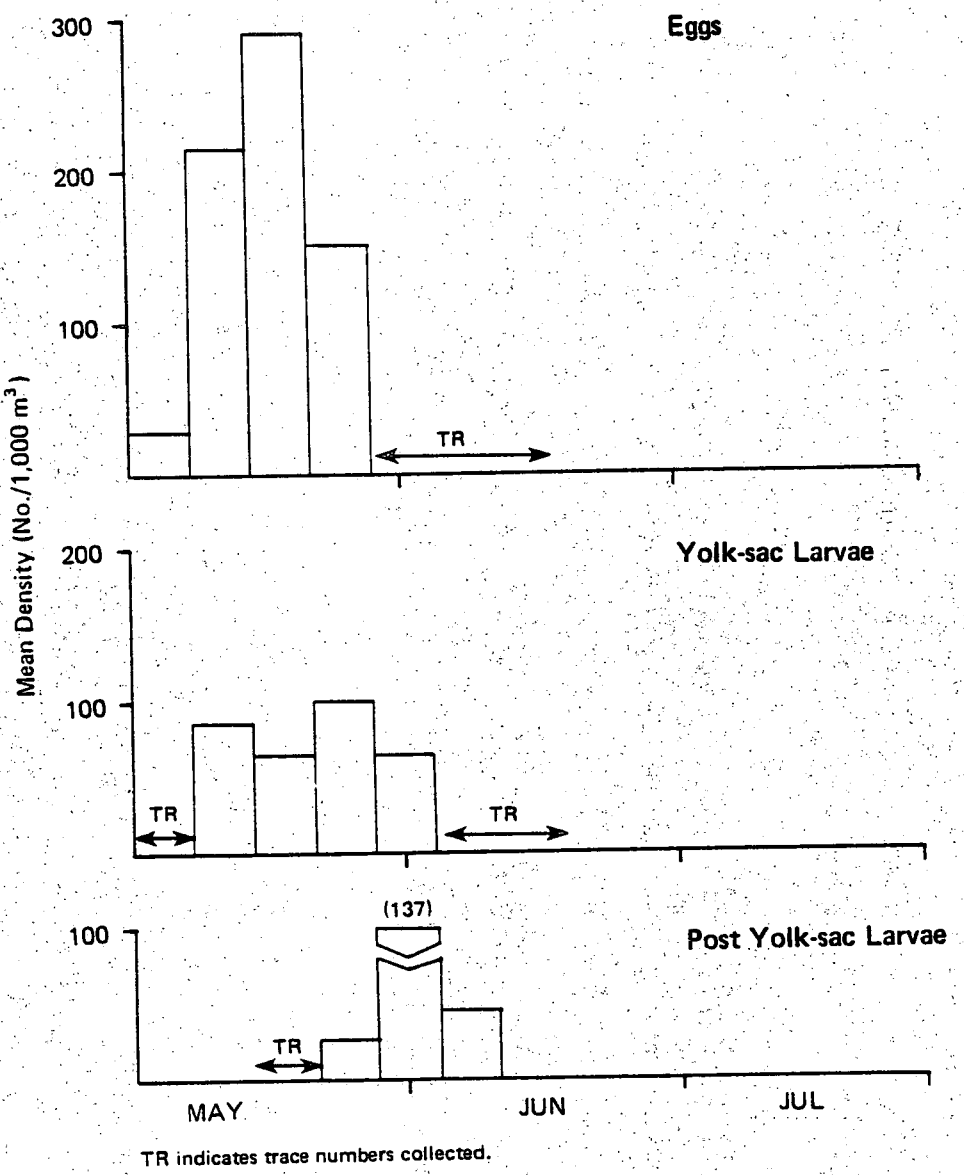


Figure J.1-1. Mean densities (averaged over all sampling depths, collection periods, and stations) of striped bass early developmental stages collected at the river transect stations, Indian Point Generating Station, 1977.

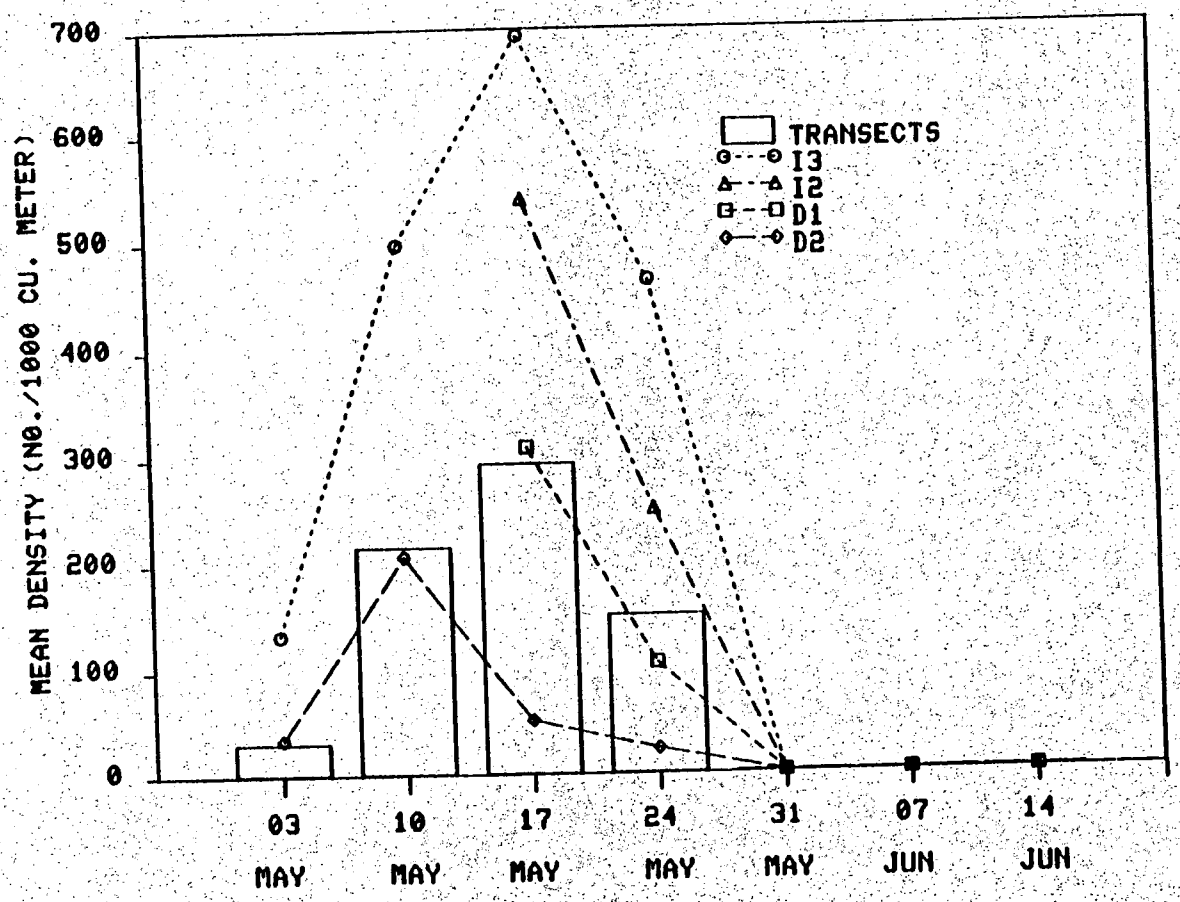


Figure J.2-1. Comparison of mean densities of striped bass eggs collected at intake Stations I2 and I3, discharge Stations D1 and D2, and at the river transect station, Indian Point Generating Station, 1977.

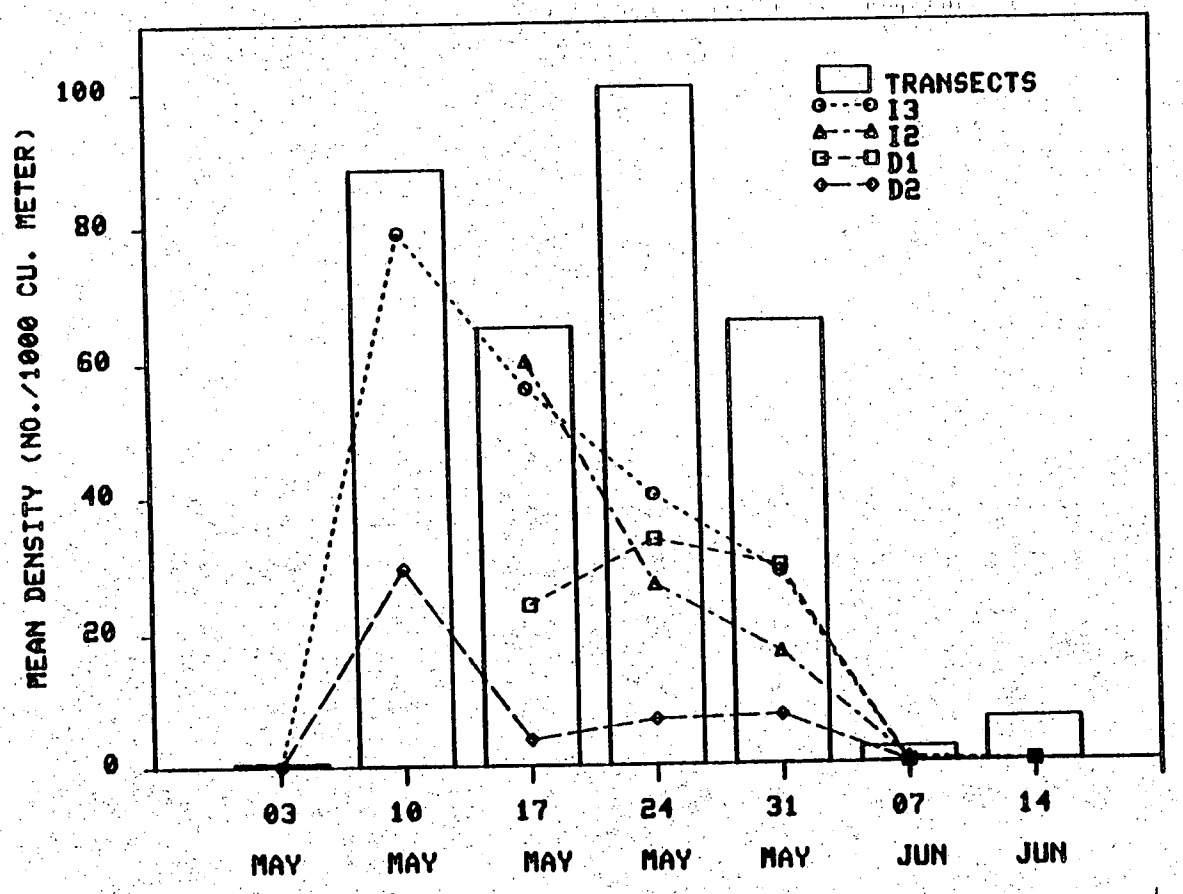


Figure J.2-2. Comparison of mean densities of striped bass yolk-sac larvae collected at intake Stations I2 and I3, discharge Stations D1 and D2, and at the river transect station, Indian Point Generating Station, 1977.

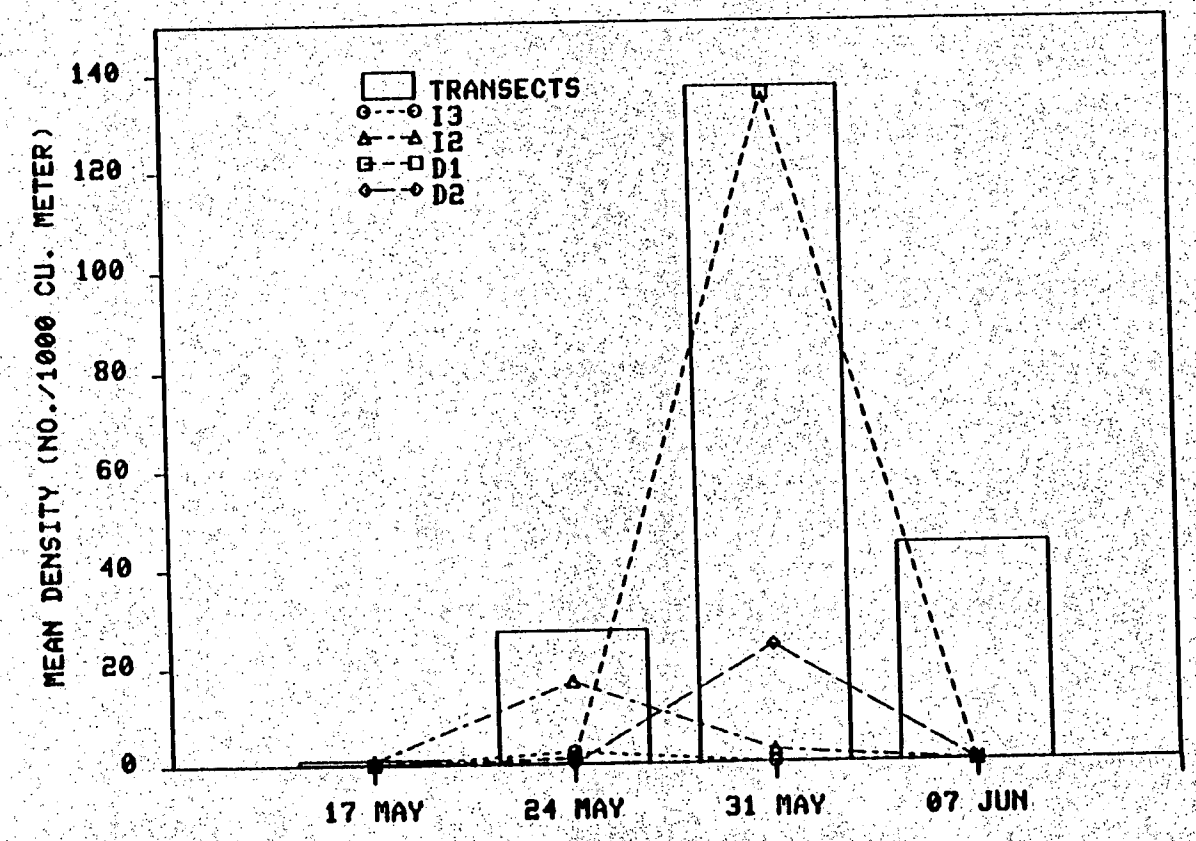


Figure J.2-3. Comparison of mean densities of striped bass post yolk-sac larvae collected at intake Stations I2 and I3, discharge Stations D1 and D2, and at the river transect station, Indian Point Generating Station, 1977.

APPENDIX K

LENGTH FREQUENCY DISTRIBUTIONS FOR STRIPED BASS COLLECTED DURING ENTRAINMENT AND NEAR FIELD STUDIES, INDIAN POINT GENERATING STATION, 1977

APPENDIX K TABLES

Title	Number
K.1 LENGTH FREQUENCY DISTRIBUTION FOR STRIPED BASS COLLECTED AT STANDARD RIVER STATIONS	K.1-1
K.2 LENGTH FREQUENCY DISTRIBUTION FOR STRIPED BASS COLLECTED AT PLANT ENTRAINMENT STATIONS	
Station I3	K.2-1
Station I2	K.2-2
Station D1	K.2-3
Station D2	K.2-4
K.3 LENGTH FREQUENCY DISTRIBUTION FOR STRIPED BASS COLLECTED AT RIVER TRANSECT STATIONS	K.3-1

TABLE K.1-1 LENGTH FREQUENCY OF STRIPED BASS COLLECTED AT STANDARD RIVER STATIONS IN THE VICINITY OF THE INDIAN POINT GENERATING STATION, 1977

Sampling Date[a]	Number of Fish	Mean Length (mm)	Standard Deviation (mm)	Length Intervals (mm)									Range (mm)		
				0.0-2.9	3.0-5.9	6.0-8.9	9.0-11.9	12.0-14.9	15.0-17.9	18.0-20.9	21.0-23.9	+24.0	Min	Med	Max
9 MAY	72	4.3	0.7	0	72	0	0	0	0	0	0	0	3.0	4.5	5.5
16 MAY	25	4.9	1.2	4	16	5	0	0	0	0	0	0	2.4	5.2	6.2
23 MAY	234	5.3	0.9	0	169	65	0	0	0	0	0	0	3.3	5.3	7.5
2 JUN	630	6.2	1.0	0	269	350	11	0	0	0	0	0	3.4	6.0	10.5
6 JUN	283	6.4	1.2	0	121	149	12	1	0	0	0	0	3.7	6.1	12.0
13 JUN	9	5.9	0.8	0	6	3	0	0	0	0	0	0	4.9	5.8	7.7
23 JUN	4	9.7	3.7	0	1	0	1	2	0	0	0	0	3.7	11.0	13.2

(a) Includes all sampling dates when striped bass yolk-sac larvae, post yolk-sac larvae, or juveniles were collected.

Note: Min = shortest length; Med = median length; Max = greatest length.

TABLE K.2-1 LENGTH FREQUENCY OF STRIPED BASS COLLECTED AT STATION I3 DURING ENTRAINMENT ABUNDANCE SAMPLING AT THE INDIAN POINT GENERATING STATION, 1977

Sampling Date[a]	Number of Fish	Mean Length (mm)	Standard Deviation (mm)	Length Intervals (mm)									Range (mm)		
				0.0-2.9	3.0-5.9	6.0-8.9	9.0-11.9	12.0-14.9	15.0-17.9	18.0-20.9	21.0-23.9	+24.0	Min	Med	Max
10 MAY	13	3.8	0.5	0	13	0	0	0	0	0	0	0	3.2	3.6	4.9
17 MAY	39	3.8	0.6	0	38	1	0	0	0	0	0	0	3.0	3.8	6.5
24 MAY	27	5.3	0.9	0	20	7	0	0	0	0	0	0	3.1	5.3	7.0

(a) Includes all sampling dates when striped bass yolk-sac larvae, post yolk-sac larvae, or juveniles were collected.

Note: Min = shortest length; Med = median length; Max = greatest length.

TABLE K.2-2 LENGTH FREQUENCY OF STRIPED BASS COLLECTED AT STATION I2 DURING ENTRAINMENT ABUNDANCE SAMPLING AT THE INDIAN POINT GENERATING STATION, 1977

Sampling Date[a]	Number of Fish	Mean Length (mm)	Standard Deviation (mm)	Length Intervals (mm)									Range (mm)		
				0.0-2.9	3.0-5.9	6.0-8.9	9.0-11.9	12.0-14.9	15.0-17.9	18.0-20.9	21.0-23.9	+24.0	Min	Med	Max
17 MAY	70	4.2	0.7	0	66	4	0	0	0	0	0	0	3.1	4.1	6.1
24 MAY	27	5.0	1.1	0	21	6	0	0	0	0	0	0	3.1	4.8	6.8
31 MAY	2	6.1	0.4	0	1	1	0	0	0	0	0	0	5.7	6.1	6.4
7 JUN	5	5.7	0.7	0	3	2	0	0	0	0	0	0	4.8	5.6	6.8

(a) Includes all sampling dates when striped bass yolk-sac larvae, post yolk-sac larvae, or juveniles were collected.

Note: Min = shortest length; Med = median length; Max = greatest length.

TABLE K.2-3 LENGTH FREQUENCY OF STRIPED BASS COLLECTED AT STATION D1 DURING ENTRAINMENT ABUNDANCE SAMPLING AT THE INDIAN POINT GENERATING STATION, 1977

Sampling Date[a]	Number of Fish	Mean Length (mm)	Standard Deviation (mm)	Length Intervals (mm)									Range (mm)		
				0.0-2.9	3.0-5.9	6.0-8.9	9.0-11.9	12.0-14.9	15.0-17.9	18.0-20.9	21.0-23.9	+24.0	Min	Med	Max
17 MAY	10	3.6	0.5	0	10	0	0	0	0	0	0	0	3.0	3.5	4.5
24 MAY	31	5.3	1.0	1	20	10	0	0	0	0	0	0	2.8	5.5	6.8
31 MAY	131	6.8	1.3	0	30	94	7	0	0	0	0	0	3.0	7.0	9.8

(a) Includes all sampling dates when striped bass yolk-sac larvae, post yolk-sac larvae, or juveniles were collected.

Note: Min = shortest length; Med = median length; Max = greatest length.

TABLE K.2-4 LENGTH FREQUENCY OF STRIPED BASS COLLECTED AT STATION D2 DURING ENTRAINMENT ABUNDANCE SAMPLING AT THE INDIAN POINT GENERATING STATION, 1977

Sampling Date[a]	Number of Fish	Mean Length (mm)	Standard Deviation (mm)	Length Intervals (mm)									Range (mm)		
				0.0-2.9	3.0-5.9	6.0-8.9	9.0-11.9	12.0-14.9	15.0-17.9	18.0-20.9	21.0-23.9	+24.0	Min	Med	Max
10 MAY	9	3.5	0.3	0	9	0	0	0	0	0	0	0	3.0	3.5	4.1
17 MAY	1	3.6	0.0	0	1	0	0	0	0	0	0	0	3.6	3.6	3.6
24 MAY	4	6.2	0.3	0	1	3	0	0	0	0	0	0	5.9	6.2	6.6
31 MAY	17	7.3	1.0	0	1	15	1	0	0	0	0	0	5.8	7.5	9.0

(a) Includes all sampling dates when striped bass yolk-sac larvae, post yolk-sac larvae, or juveniles were collected.

Note: Min = shortest length; Med = median length; Max = greatest length.

TABLE K.3-1 LENGTH FREQUENCY OF STRIPED BASS COLLECTED DURING THE RIVER TRANSECT STUDY (ALL STATIONS COMBINED), INDIAN POINT GENERATING STATION, 1977

Sampling Date[a]	Number of Fish	Mean Length (mm)	Standard Deviation (mm)	Length Intervals (mm) 0.0-2.9	3.0-5.9	6.0-8.9	9.0-11.9	12.0-14.9	15.0-17.9	18.0-20.9	21.0-23.9	+24.0	Range (mm) Min	Med	Max
3 MAY	1	3.4	0.0	0	1	0	0	0	0	0	0	0	3.4	3.4	3.4
10 MAY	460	4.3	0.7	5	455	0	0	0	0	0	0	0	2.5	4.2	5.9
17 MAY	1,229	4.2	0.8	21	1,151	56	1	0	0	0	0	0	2.5	4.1	9.3
24 MAY	2,193	5.5	0.9	3	1,453	737	0	0	0	0	0	0	2.9	5.6	7.8
31 MAY	715	6.3	1.0	0	279	427	9	0	0	0	0	0	3.0	6.1	11.5
7 JUN	427	6.9	1.5	0	115	270	40	2	0	0	0	0	3.0	6.7	12.8

(a) Includes all sampling dates when striped bass yolk-sac larvae, post yolk-sac larvae, or juveniles were collected.

Note: Min = shortest length; Med = median length; Max = greatest length.

3-7

3