



November 8, 1995

Mr. John Nelson
Chief, Marine Fisheries
New Hampshire Fish and Game Department
Region 3
37 Concord Road
Durham, NH 03824

Dear Mr. Nelson:

On July 19, 1995, management from Public Service of New Hampshire (PSNH) Schiller Generating Station and PSNH Environmental Staff met with Mr. Bruce Smith, New Hampshire Fish and Game Department (NHFGD) and Ms. Stephanie Larson of New Hampshire Department of Environmental Services (NHDES) to review the station's impingement monitoring procedures and observe a demonstration of the newly installed screenwash effluent discharge pipe on operating Unit #4. PSNH designed and constructed the discharge to facilitate the safe return of lobsters to the Piscataqua River under all normal tide conditions. The demonstration/meeting provided NHFGD, NHDES and PSNH an opportunity to observe the operation of the discharge pipe and exchange comments or recommendations to improve the facility's effectiveness. The demonstration was scheduled during low tide so observations would be made when conditions for returning lobsters safely to the river are less favorable.

Two different volumes of water were observed discharging from the screenwash pipe during the demonstration. During the first demonstration, water used to wash the traveling screens was passed through the screenwash effluent discharge pipe. The excess water diverted from the screenwash (in order to decrease screenwash nozzle pressures from 100 to 40 psi) was re-routed into the Unit 4 intake pit.

During the second demonstration, excess water from the screenwash pump was routed into the trough in the screenhouse floor, mixing with the screenwash effluent, and discharging into the river through the screenwash effluent discharge pipe. The following conclusions were made during both flow demonstrations: the vertical distance from the bottom of the discharge pipe to the surface of the river (approximately 8 ft) was not considered to be excessive, the river depth where lobsters would enter the river (estimated to be greater than 3 feet) was sufficient to safely receive lobsters, and although the point where the screenwash discharge entered the river was close to the foundation wall of the intake building for units 5 & 6, it was unlikely that lobsters would be injured. Everyone at the meeting agreed that passing the larger volume of water through the pipe provided smoother flows and minimized the likelihood of the pipe becoming plugged. PSNH will modify the facility so all effluent water from unit 3 and unit 4 screenwashes discharge through the screenwash effluent discharge pipe.

Data collected during the past 14 months since the impingement monitoring program began indicates the frequency of lobster impingement at Schiller Station is generally very low. There appears to be an increase in impingement frequency during the month of June; however, this is most likely due to seasonal in-river migrations associated with warming water temperatures, rather than station operating procedures. None the less, PSNH has recently been able to substantially minimize the number of lobsters impinged during these peak events by opening an existing cross-over connection between unit 3 (retired) and unit 4 intake structures. The success of this procedure is likely due to a reduction in the velocities at the entrance of the intake pipes, where lobsters enter the station. PSNH will utilize this cross-over connection whenever monitoring numbers indicate it to be necessary.

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The use of this cross-over connection during periods of peak impingement has effectively reduced the rate of impingement at all times throughout the year. Because the impingement rate is so low, PSNH no longer believes it is necessary to conduct an acute or delayed mortality study. Furthermore, PSNH has implemented a number of design improvements to minimize or eliminate any stresses or damage to impinged lobsters. These modifications have included the installation of a rubber mat on the back wall of the screen housing; the reduction of screenwash spray nozzle pressures from 100 psi to 40 psi; and, the construction of a screenwash effluent discharge pipe.

At present, PSNH believes the Impingement Monitoring Program assures that modifications implemented to date will continue to effectively minimize impingement. If the monitoring program demonstrates that the rate of impingement remains low, PSNH will suggest suspending or modifying the current monitoring program. Any changes would be made in consultation with NH Fish and Game Department.

A draft copy of Schiller Station's Impingement Monitoring Procedures and a summary of the impingement data collected through October 1995 is enclosed for your review.

Please submit any comments regarding these issues within 45 days of receiving this letter. Any questions should be submitted to either Mr. Richard F. Dumore at 634-2364 or Mr. Allan G. Palmer at 634-2439.

Sincerely,

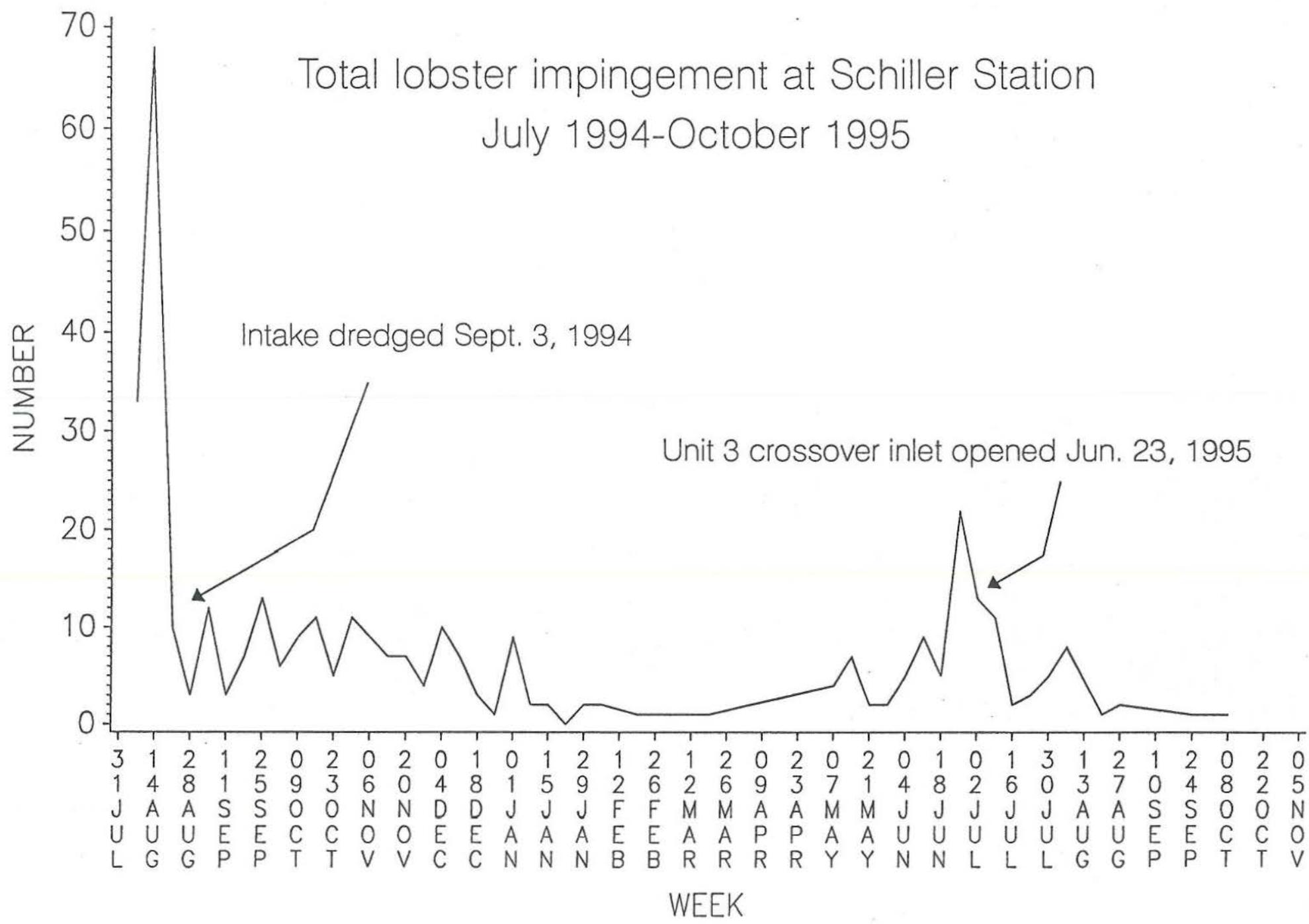


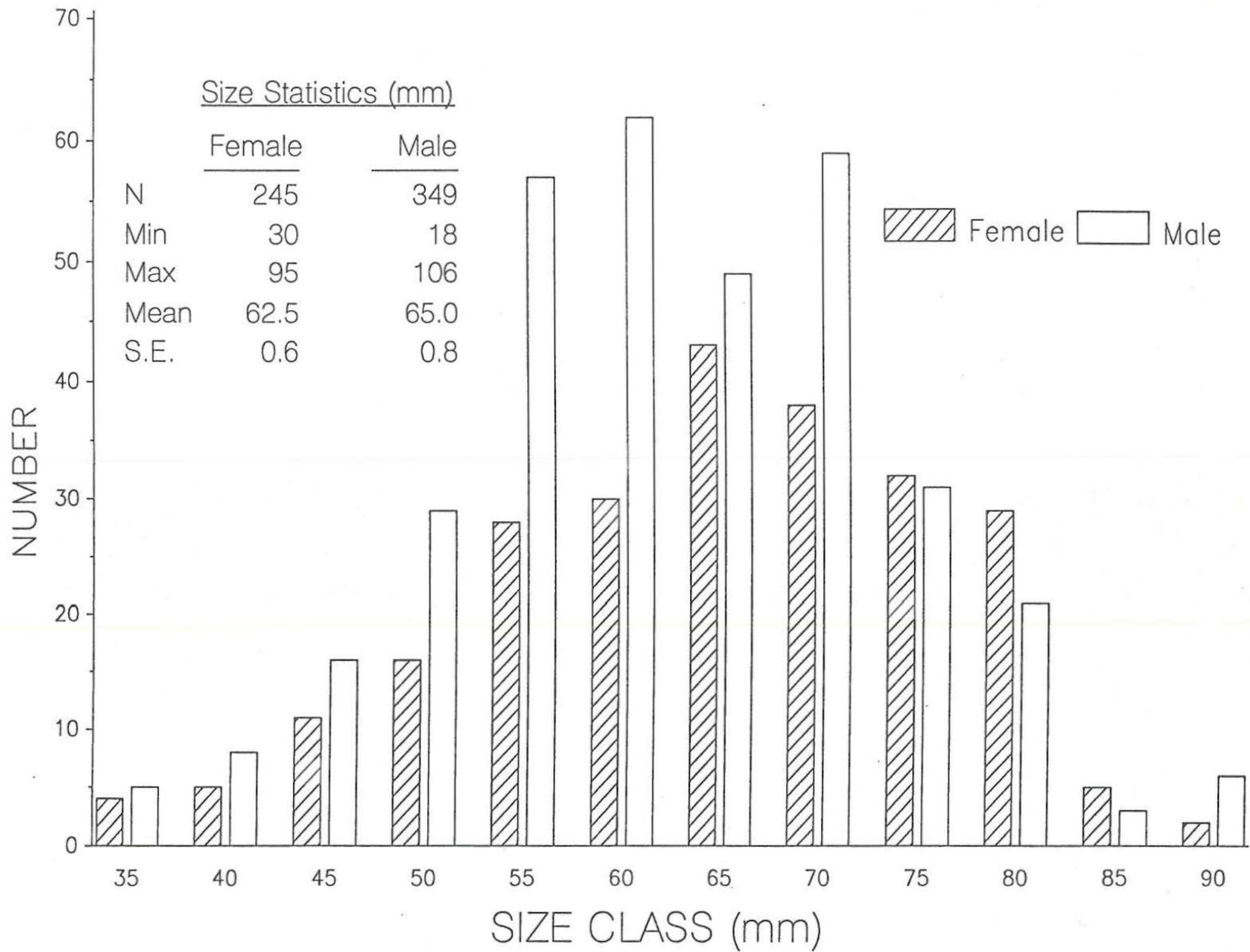
Richard F. Dumore
Associate Scientist

RFD:paw

c.c.: [Mr. Nicholas Prodany](#) (USEPA)
Mr. Bruce Smith (NHFGD)
Ms. Stephanie Larson (NHDES)
Mr. Michael Latour (PSNH)
Mr. Donald Gray (PSNH)
Mr. Gary St. Laurent (PSNH)
Mr. Allan Palmer (PSNH)
Mr. Donald Landers (NUEL)

Total lobster impingement at Schiller Station July 1994-October 1995





**Public Service of New Hampshire
Schiller Generating Station
Impingement Monitoring Procedures**

Purpose

This procedure has been established to provide protocols for the evaluation and documentation of American lobsters *Homarus americanus* impinged onto the cooling water intake screens at Public Service of New Hampshire's (PSNH) Schiller Generating Station. The Impingement Monitoring Program provides specific information regarding the continued effectiveness of modifications that PSNH has implemented at Schiller Station to minimize impingement. The Program also provides an early indication of any increase in the rate of lobster impingement so that PSNH can respond in a timely manner to minimize impacts on the local lobster population.

A. Monitoring Schedule

When operating, PSNH will conduct impingement monitoring of units 3 & 4 screenwashes throughout the year. Personnel washing the screens will visually observe the screens during all washes, looking for any unusual numbers of impinged lobsters.

Data collection and documentation on unit 4 will normally be required once per day (Monday through Friday) according to procedure A.1. below. If the

number of lobsters impinged on the screens is greater than 10, monitoring procedure A.2. below will be followed.

When the cross-over valve between unit 3 and unit 4 intakes is in service, data collection and documentation on unit 3 will be required once per week when the screens are washed.

A.1. Normal (Low Level) Impingement Monitoring Schedule

The normal monitoring frequency conducted on Schiller Station's Unit 4 Intake will be once per day, Monday through Friday. The 10 a.m. screenwash is the preferred wash; however, if this wash cannot be monitored, another screenwash conducted that day will be substituted to meet the requirements of the program. If 10 or more lobsters are found impinged on the screens during a wash, a more frequent monitoring schedule is indicated (see schedule A.2. below).

A.2. Increased (High Level) Impingement Monitoring Schedule

If during any screenwash of Unit 4, 10 or more lobsters are found impinged, operating personnel must begin to monitor and document every screenwash for a minimum of 48 hours, including weekends. This 48 hour period begins immediately with the first event of 10 or more impinged lobsters. If after this 48 hour period the frequency of impinged lobsters has clearly dropped to 5 or less, the normal monitoring schedule (A.1.) may resume. If the number of

lobsters remains high, the increased impingement monitoring schedule will continue until impinged lobster numbers drop to 5 or less.

B. Monitoring Procedures

Regardless of the frequency of monitoring, the following procedures will be followed when conducting impingement monitoring:

B.1. Before starting all screen washes, the operator will visually confirm that, in his best opinion, lobsters exiting the screenwash effluent pipe will drop into at least 2 feet of water. (Under most conditions this is not an issue; however, an unusual weather pattern could result in abnormally low tides. If there is not sufficient water, follow procedure B.6. below.)

B.2. Screenwash spray nozzle pressures will be maintained at 40 psi (or less) and the rubber mat will be in place along the inside of the screen housing's back wall to prevent damaging any lobsters.

B.3. All water from the discharge of the screenwash pump(s) will be routed into the screenwash effluent discharge pipe to facilitate flushing of the pipe.

B.4. The Impingement Sampling Screen must be properly installed in the screenwash discharge trough to facilitate collection and prevent impinged lobsters from escaping.

B.5. At least one person will observe the screens as they are washed, visually checking for lobsters. Any lobsters observed will be collected and returned to the river via the screenwash effluent discharge pipe.

B.6. The screenwash effluent discharge pipe must be in service and operating properly for all Unit 3 and 4 screenwashes. If not, the following steps will be taken:

- All impinged lobsters will be collected into 5 gallon buckets containing at least 3 gallons of river (salt) water.

Note: Fresh water (from the tap) must never be used - it will “drown” the lobsters!

- Lobsters will be promptly returned to the river, into at least 2 feet of depth. (A preferred location is off the northwest corner of Unit's 5 and 6 intake structure, where the Unit 4 screenwash effluent pipe normally discharges.)

C. Data Collection and Reporting Procedures

All lobsters recovered during a “monitored” screenwash will be evaluated. Data will be recorded on the Schiller Station Lobster Monitoring Log Sheets (see attachment).

C.1. General information recorded at the top of the monitoring log sheets must include the date and time of screenwash, unit monitored, number of circulators on, and name of person conducting the evaluation.

C.2. In addition, the following specific information pertaining to the lobsters must be collected: Lobsters must be identified as living or dead, their carapace length (CL) measured, sex and presence of eggs (if female), crusher claw-right or left, note any missing claws, molt condition (soft or hard-shelled),

and condition in general are also to be noted. Additional space has been provided if further comments are necessary.

C.3. In lieu of verbal notification of lobster impingement events at Schiller Station (as currently required in PSNH's Fish Distress Policy) NHFGD will be provided with a lobster impingement monitoring report(s) on a weekly basis.

