

**ATLANTIC SALMON SMOLT
REPORT ON FISH SAMPLING EFFORTS
AT MOORE DAM, SPRING 2004**

Final Report

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Acronyms, Abbreviations, and Definitions

°C	degree Celsius
cfs	cubic foot per second
CPUE	catch per unit of effort
CRASC	Connecticut River Atlantic Salmon Commission
d	day
el	elevation
FERC	Federal Energy Regulatory Commission
FMF	Fifteen Mile Falls
ft	foot
g	gram
gal	gallon
h	hour
hec	hectare
hp	horsepower
km	kilometer
l	liter
m	meter
m ³	cubic meter
mg/l	milligram per liter
mi	mile
min	minute
mm	millimeter
MS 222	tricane methanesulfonate
msl	mean sea level
NH	New Hampshire
NHFGD	New Hampshire Fish and Game Department
ppm	parts per million
rkm	river kilometer
rm	river mile
rpm	revolutions per minute
Sample event	Brief period of time when water conveyed from the Moore Dam inclined plane sampler to the collection tank was shut-off and fish were retrieved from the collection tank for processing.
Sample period	Time between sample events when the Moore Dam inclined plane sampler was operational.
smolts/h	smolts per hour
TL	total length
VT	Vermont
VTDFW	Vermont Department of Fish and Wildlife
USFWS	United States Fish and Wildlife Service
USGenNE	USGen New England, Inc.

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1.0 INTRODUCTION

The Fifteen Mile Falls Project (FMF) is a three development hydroelectric project on the upper Connecticut River (Figure 1-1). The three developments are Moore, Comerford, and McIndoes. Moore Dam is located near the town of Littleton in Grafton County, NH and Caledonia County, VT (Figure 1-2).

The Federal Energy Regulatory Commission (FERC) issued a license renewal to USGen New England, Inc. (USGenNE) for continued operation of the project on 8 April 2002 (FERC Project No. 2077). Article 410 of the license required that within 180 days of being notified by the NH Fish and Game Department (NHFWD), the VT Department of Fish and Wildlife (VTDFW), and the U.S. Fish and Wildlife Service (USFWS) that an Atlantic salmon (*Salmo salar*) stocking program had been initiated upstream from the Moore Reservoir and that such passage facilities are needed at the developments, the licensee must file, for FERC approval, a plan for the construction, operation, and maintenance of permanent downstream fish passage facilities at the Moore and Comerford developments. USGenNE received a request from the Connecticut River Atlantic Salmon Restoration Commission (CRASC) on 4 November 2002, to install downstream passage facilities at the two developments (implementation of downstream passage facilities at the lowermost, McIndoes Development, had been initiated prior to and separate from the request for facilities at the Moore and Comerford developments). In a letter to FERC dated 18 September 2003, USGenNE indicated there was a lack of sufficient information to adequately provide and construct such facilities and therefore requested a deadline extension for filing a plan in response to the CRASC letter. USGenNE filed a plan on December 15, 2003, which met FERC Approval through the Commission Order issued 18 March 2004. In the Order, FERC approved a two-year study plan to evaluate the timing and season for passage before filing a fish passage plan. USGenNE proposed to evaluate and characterize smolt downstream passage by constructing an inclined plane sampler in the skimmer gate at the Moore Dam. NHDES, as part of its 401 Water Quality Certificate, also approved the extension on the passage plan requirement but only authorized a one-year extension, noting that additional extensions could be sought by USGenNE.

Consultation with agencies resulted in a plan of study for a minimum two-year evaluation, with the second year contingent upon approval from the agencies. This report provides results from the first year of study. The study included monitoring the timing (diurnal and seasonal), duration, and abundance of the stream-reared Atlantic salmon migratory run at Moore Dam. In addition, tagged hatchery smolts were used to obtain preliminary information on the attractiveness, to smolts, of the skimmer gate entrance as a downstream passage route.

2.0 PROJECT DESCRIPTION

2.1 Moore Development

The Moore Development is located at river kilometer 156.2 (283.5 rm) and includes a 17.7 km (11 mi) long reservoir with a surface area of 1,412.4 hec (3,490 acres) and $275.9 \times 10^6 \text{ m}^3$ (223,722 acre-ft) of gross storage at a normal maximum operating level of 246.6 m (809 ft) msl. The earthen and concrete gravity dam is 890 m long, 54.2 m high, and consists of a 113.7 m long concrete spillway with a 4.6 m wide by 6.0 m high skimmer gate (this is the gate designated for downstream fish passage), four stanchion bays, three tainter gate bays and a powerhouse with four Francis type turbine-generator units (Figure 2-1). The turbines have a combined power rating of 225,600 hp under a design head of 45.7 m and a combined rated discharge of 13,300 cfs (FERC 2002). Maximum head and turbine discharge are 48.2 m and 18,300 cfs, respectively, and runner speed of the turbines is 128 rpm (NEP 1996).

The Moore Development operates as a daily peaking station and passes discharge directly into the Comerford Development reservoir. Elevation changes in Moore Reservoir average approximately 0.3 m

(1 ft) per day and generally have approached the normal operating level (~el. 245.0 – 245.7 m msl) by mid-May (NEP 1996). The license provides for 320 cfs year round minimum flows (NEP 1997).

2.2 Moore Dam Skimmer Gate and Sampler

The skimmer gate listed in the previous section is located approximately in the middle of the concrete dam and was originally designed for skimming debris and trash past the dam. The gate includes an adjustable overflow broad crested weir. The gate was fully overhauled in 2003. A targeted discharge of 450 cfs for downstream passage onto the fish sampler was used throughout the 2004 evaluation period except that lower discharges were used briefly during the first couple days of testing the new sampling facilities.

An inclined plan sampler was installed between March and mid-May 2004. The sampler was designed to collect all fish that pass over the weir when deployed, and therefore be useful in monitoring the diurnal and seasonal run timing characteristics of smolts.

Originally, the skimmer gate was intended to be adjusted to pond elevation changes via remote dispatch from the Connecticut River Control Center located at Wilder Station or by automatic pond following control at the site. Because optimal flow over the sampler, relative to pond height, was being established this year, only manual on-site adjustments of the gate were made. The inclined plane sampler is 4.4 m wide and consists of two sections, connected on a pivot (Figure 2-2). The front section, connected to the dam at an angle, is approximately 2.7 m long by 4.4 m wide; the elevation can be adjusted but the plane surface of this section remains horizontal at all times. The rear section is approximately 6.4 m long by 4.4 m wide and pivots at its junction with the front section. The angle of the rear section to the front section can be adjusted to optimize the amount of dewatering as flow passes over the screen. The surface of both sections was designed to dewater the discharge through the skimmer gate, and was made of 3.2 by 0.9 cm aluminum bars placed parallel to one another to create a gap. The gap width was set at 0.5 cm for this study, but could be adjusted if necessary. On top of the screen surface was a set of flow guidance structures placed during the start-up period to facilitate even flow and proper velocity across the downstream end of the screen (Figure 2-3).

At the end of the inclined plane is an angled, fabricated metal trough with solid sides that connects to a 30.5 cm diameter discharge pipe (Figure 2-4). The elbowed discharge pipe is adjustable vertically and conveys water from the trough to the collection tank. The collection tank is a 2.4 m by 1.2 m rectangular, open topped, metal box, 1.2 m deep (Figure 2-5). Perforations around top portions of the tank, and an adjustable drainage valve at the bottom provided circulating water through the tank and a pre-determined water depth. A 208 l (55 gal) drum affixed to a monorail system was available to transport fish from the collection tank to a processing area on the headworks of the dam.

3.0 METHODS AND MATERIALS

3.1 Moore Dam Sampler

The sampler was monitored during each day of operation. A sampling event entailed engaging the shut-off valve on the discharge pipe, allowing the collection tank to drain, and dip-netting all fish out of the tank. After all fish were removed, the valve was opened and the collection tank filled with water. Fish were put either into 19 l (5 gal) buckets and carried to the processing area located on the headworks of the dam, or transported via the monorail system in a 208 l (55 gal) drum. At the processing area, all fish were identified to species and noted whether alive or dead. Salmon were identified as hatchery or stream-reared and their physical condition noted in accordance with a coding system developed for this study (Table 3-1). All live salmon were released at the McIndoes Picnic Area below the McIndoes station (see Figure 1-1), after being transported from the dam in either a 94.6 l (25 gal) or 681 l (180 gal) aerated transport tank. Resident fish removed from the collection tank were identified to species, enumerated,

observed for injuries, and returned to Moore Reservoir.

At each sampling event, operation conditions such as pond elevation, gate position, and position of the front and rear sampler sections, were recorded. Sampling period (time when sampler was operating between sampling events) was also recorded. Adjustments to the rear sampler section were made by Normandeau personnel when necessary. Adjustments to the gate, front sampler section, and collection tank platform, were made only by USGenNE operators. Fluctuation in the reservoir elevation of 0.2m necessitated a gate adjustment, after which, the front sampler, rear sampler and collection tank platform were adjusted accordingly.

3.2 Hatchery Fish Procurement, Tagging and Release

Hatchery fish were obtained from the US Fish and Wildlife Service's (USFWS) White River National Fish Hatchery, in Bethel, VT. Fish were transported from the hatchery in aerated, 681 l (180 gal), rectangular tanks, to circular holding tanks on the headworks of Moore Dam. After transport to the dam, fish were acclimated to within 2° of ambient water temperature at a rate of approximately 2°C per hour. Water from Moore Reservoir flowed continuously through four holding tanks via a submersible pump and garden hoses. Two of the tanks held approximately 757.0 l (200 gal) and the other two 1,135.5 l (300 gal). Aeration, in addition to continuous flow, was achieved initially by placing the garden hose discharge above the surface of the water, creating a waterfall effect. Later, spray nozzle attachments were added to the hoses, and on occasion, various air pumps were placed in holding tanks if dissolved oxygen levels fell below 7 ppm. The number of hatchery fish in a tank ranged from about 75 to 150. For the smaller holding tanks, this equates to 10.2 to 4.9 l (2.7 to 1.3 gal) of water per smolt. The higher holding density occurred early in the study before the number of fish transported from the hatchery was reduced (see below).

The method of procuring and tagging fish changed slightly early in the study to reduce the number of handling events that elicit a stress response. Originally, fish were tagged at the dam at least one day after arrival from the hatchery and acclimation to holding tank water temperatures. Later, fish were tagged at the hatchery prior to transport, held at the dam overnight, and released the following day. This adjustment, as well as other changes, was made to the study plan after a large number of fish from the second tag and release group died prior to release. The high mortality rate (61%) was likely due to a combination of stressors experienced by the fish in a short amount of time. Mitigation measures included reducing the number of fish transported from the hatchery in one batch (from 250+, to approximately 150), tagging fish at the hatchery in the much cooler water (relative to ambient river temperature) they were reared in, and releasing fish the day after tagging.

Fish were tagged with Hallprint Pty. Ltd. polyethylene streamer tags, size 7S (Figure 3-1). The yellow tags were stamped with the identifying letters "NAI" and numbered sequentially. The tags were designed to minimize tag entry wound via a streamlined attachment of the disposable applicator needle to the tag. In preparation for tagging, five to seven fish were placed in a 40 mg/l solution of tricaine methanesulfonate (MS 222) and hatchery water, until sedated. Anesthetized fish were tagged by placing the applicator needle through the fish, approximately 5 mm below the base of the dorsal fin, pulling half of the tag through and cutting the needle end off. Smolts were also measured to total length, and a subsample weighed before being placed in a transport tank filled with hatchery water. After recuperation from the anesthesia, tagged fish were transported to the holding facilities at Moore Dam.

Fish were held overnight after tagging, and released at one of four locations: North Littleton, NH; Gilman, VT; Waterford, VT; and, the forebay of Moore dam at the buoy line (Figures 1-2 and 3-2). Fish were taken to the release site in the transport tanks, and except for two occasions, transferred to plastic garbage containers and boated to the middle of the channel for release. On the two exceptional occasions, fish were released from shore.

3.3 Continuous Temperature Monitoring

Twenty-minute interval water temperature data were collected in the forebay of Moore Reservoir and at the skimmer gate of Moore Dam between 17 May and 25 June, via Onset HOBO Water Temp Pro™ temperature loggers that had been checked for accuracy prior to use. All loggers were equipped with a protective boot supplied by Onset and suspended from weighted line. Four loggers were placed in the forebay at two stations along the buoy line and at two depths, 0.6 m and 6.0 m, below the surface (Figure 3-2). One logger was suspended from a railing on the Moore Dam headworks, into the skimmer gate entrance at approximately 0.6 m below the water surface.

Prior to deployment, each logger was programmed with a specific location identifier and was also programmed to log temperature readings at 20 min intervals. Logger accuracy checks were performed prior to and subsequent to the study. In both cases, loggers were within 0.3°C of the water bath used to check accuracy.

3.4 Data Collection and Analysis

Temperature data were downloaded at the end of the study and raw data from each logger compiled, checked for gross inaccuracies, and graphed. USGenNE provided operations data, including flow through the skimmer gate, unit generation and flow, and skimmer gate opening (Appendix A). Percent of flow through the skimmer gate (and onto the sampler) compared to generation flow, was calculated.

The number of stream-reared and hatchery fish removed from the collection tank was tallied for each day. A second tally was made of the number collected during each sample period (i.e., time between sampling events when the sampler was operating) within a 24-h time-scale. For example, all stream-reared salmon collected over the course of the study during the sampling period 0600h and 1100h were tallied. Catch per unit of effort (CPUE) was calculated for each sample period. CPUE is the catch of fish taken during a defined unit of fishing effort. Therefore, CPUE for stream-reared salmon during the sample period 0600-1100h equals 1 salmon (number caught during that time period) divided by 10 h (5 h between 0600 and 1100 * the number of days that sampling period occurred, i.e., 2) = 0.10 salmon/h. To obtain general information on time-of-day passage, sample periods were divided into three groups: Day, Evening, and Day and Evening. Day versus Evening distinctions were made based on the timing of sunrise and sunset as documented for Littleton, NH (www.sunrisesunset.com). During the course of the study, sunrise occurred at 0516 h on 19 May and at 0504 h on 25 June; sunset occurred at 2010 h on 18 May and at 2035 h on 25 June. When sample periods fell within both evening and daytime hours, they were put into the Day and Evening group.

4.0 RESULTS

4.1 Sampler Operation

The sampler was first tested on 14 May 2004, and modifications were made over the next few days to improve the performance of the inclined plane sampler, with short periods of operation in-between modifications; no salmon were collected during this time. On 18 May, the sampler became operational at 1800 h. The first sampling period ended on 19 May at 0800 h. Thereafter, the sampler was operated continuously through 16 June, except: when the skimmer gate was reset to follow fluctuations of 0.2 m (0.6 ft) in reservoir elevation (brief interruption of about 20 min), and on two occasions (20 and 21 May) when it was shut down for up to 3.5 h while modifications were made to the sampler. From 17 to 25 June, the sampler was operated daily from 1500 h to 0800 h the next day during weekdays, and 1800 h to 0800 h the next day on Saturday and Sunday.

The depth of the skimmer gate opening relative to reservoir elevation, ranged from 0.9 m to 1.7 m, equating to flows of approximately 235 cfs and 483 cfs through the sampler, respectively. Flows were categorized into 25 cfs increments and the proportion of time each category occurred was calculated

(Figure 4-1). The flow category with the greatest (22%) percent of occurrence was 425-450 cfs; the lowest (0.4%) percent occurrence was the 375-400 cfs category. Percent of flow through the skimmer gate, relative to total generation, ranged from 3.2 to 100. The mode was 43.0% and the mean percentage was 37.5%. During the study period, generation flow (cfs) generally peaked to 4,000 cfs at around noon, hovered at 3,000 cfs through the evening before falling to around 500 cfs near midnight, where it remained until a mid-morning gradual climb to the afternoon peak (Figure 4-2).

Sampling period ranged from approximately 1 to 20 hours. From 18 May through 9 June, and 13 June through 16 June, the sampler was monitored from about 1030 h to 1800 h, with sampling events occurring three to four times a day. On 10 and 11 June, the sampler was monitored over a 24-h period with sampling events generally occurring every two hours. From 17 to 25 June, when the sampler was only operated overnight (i.e., 1500 h to 0800 h, or 1800 h to 0800 h), a sampling event only occurred once at approximately 0800 h.

4.2 Timing of Stream-Reared Salmon Smolts

Stream-reared salmon smolts were collected on 28 of the 38 study days. Of the 240 stream-reared smolts collected, 89% (n=214) were collected by 8 June, the day on which the greatest number were observed in one day (n=27) (Figure 4-3 and Table 4-1). Based on the number of smolts collected during the first few days of the 2004 study, relative to the number collected each day, it is likely that the migratory run of stream-reared salmon smolts began before the study was initiated (Table 4-1). The abundance of smolts decreased after 6 June to zero for just over a week, after which, one smolt was collected on the last day of sampling. This likely represented the tail end of the migratory run of stream-reared smolts.

Sample periods often varied from day to day, resulting in a total of 76 sampling periods over a 24-hour time-scale (Table 4-2), and 459 sampling events between 19 May and 25 June. CPUE over the course of the study was 0.28 smolts/h for stream-reared smolts, compared to 0.45 smolts/h for all smolts (stream-reared and hatchery). The highest CPUE occurred during the 1100-1300 h (3.00 smolts/h) and 1135-1335 h (3.50 smolts/h) sample periods.

Of the 76 sample periods during operation of the sampler, 48 fell into the Day group, two into the Evening group, and 26 into the Day and Evening group. The low number of Evening sample periods was expected. In accordance with the study plan, only two, 24 hour monitoring events occurred over the course of the study. The Evening sampling periods represented just under 1% of the fishing effort. CPUE for stream-reared salmon during each time group was 0.31, 0.0, and 0.24 smolts/h, respectively (Tables 4.3, 4.4 and 4.5, respectively). The percent of time that no stream-reared salmon were caught over the course of the study was 29. This “no-catch effort” statistic, when applied to the sampling groups, breaks down as follows: Day collection - 34%, Evening collection - 100% (no stream reared salmon collected during the two Evening sample periods) and Day and Evening collection - 26%.

Of the 240 stream-reared smolts collected, 76% (n=182) had no observable injuries, 15% (n=35) had some form of injury (ranging from descaling to laceration), 5% were moribund (n=11), and 5% (n=12) died (Table 4-6). It should be noted that examining fish for injuries and other forms of handling, such as netting out of the collection box, contributed to descaling but that contribution to descaling was not quantified. Therefore, the reported injury rate due to the sampler may be overestimated.

4.3 Hatchery Smolt Procurement, Tagging, and Release

One thousand four hundred fifty (1,450) Atlantic salmon smolts from the White River National Hatchery were tagged with numbered streamer tags and 1,236 of those were released for the study. The remaining tagged fish were not released for the study; 204 died before release, six were released below McIndoes (see below) and four were used to test the sampler prior to full operation (Table 4-7). Hatchery salmon smolts ranged in size from 132 to 405 mm TL; mean and median lengths were 264 and 252 mm TL,

respectively. Weight was recorded for 192 of the tagged hatchery smolts and ranged from 50 to 520 g; mean and median weights were 153 g and 135 g, respectively.

Of the 204 mortalities, 138 (68%) were from one group released on 19 May. As discussed earlier, multiple stressors are believed to have caused the high mortality rate, and mitigation measures incorporated thereafter proved effective in reducing the mortality of tagged hatchery fish. The six fish released below McIndoes were from the high mortality release group. After releasing the live fish, moribund and dead fish were returned to the transport tank, which was still filled with aerated water. The crew then traveled to McIndoes to release fish that had been collected in the sampler and found that six of the moribund fish had recovered and so they were released.

In addition to the 1,236 tagged fish, 150 untagged smolts from the White River National Hatchery were released into the Moore forebay. The original release location, established with agency input, was North Littleton, NH, approximately 4.5 mi upstream from the dam. However, the number of fish recaptured at the Moore inclined plane sampler shortly after release was small and, with agency concurrence, alternate release sites were used. Because this was the first year of study, and smolt returns from the original release site were not significant, additional release sites were used to obtain a gross indication of whether release site affected return rate. As discussed in the results, an effective assessment could not be made for a number of reasons, including low return rates.

The three additional release sites and their approximate distance upstream from the Moore Dam were Waterford, VT (1.3 miles), Gilman, VT (11.0 miles), and the forebay of the Moore Dam at the safety buoy line (see Figures 1-2 and 3-2). The Waterford release site was selected because it was still believed to be far enough upstream that the release location would not bias the downstream passage route selection by smolts. When, after two weeks and two additional releases at North Littleton failed to result in significant recaptures in the Moore inclined plane sampler, 150 untagged hatchery smolts¹ were released in the forebay of the dam, at the safety buoy line. It was anticipated that these fish would more readily sense the current created by the skimmer gate opening and continue downstream via this route. When these fish were not recaptured in the sampler within a few days time, the next release occurred at Gilman, VT, the site that Normandeau Associates used in 2000 when conducting a downstream migration study at the Moore Dam (Normandeau Associates 2000). In that study, 77% of the 108 radio tagged smolts released at Gilman migrated to the Moore Dam, within a mean travel time of approximately 4.5 d.

Nine releases of between 43 and 293 fish occurred between 17 May and 11 June. Two releases of fewer than 100 fish occurred. The first release group of 50 fish was planned for release in the Moore forebay to test the sampler at the start of the study. Seven fish were placed onto the sampler for testing when modification were still being made, but because the sampler was not ready for operation, and there was a reluctance to hold the fish too long, the remainder were released at North Littleton. The second release group of fewer than 100 fish was due to high mortality prior to release. The fifth release group was the greatest number of fish released at one time (n=293). Essentially, two release groups were combined in an effort to release as many as possible before the end of the study.

Five releases groups totaling 780 fish were released at North Littleton, 137 fish in one release group were taken to Waterford, 180 fish in one release group were released at Gillman, and 289 fish were released in the Moore Dam forebay over two occasions. A summary of the final disposition of hatchery salmon smolts is provided in Table 4-7.

4.4 Hatchery Smolt Recapture

Of the 1,386 smolts released, 127 (9%) were collected in the sampler by 25 June (Table 4-1) (note that the two untagged hatchery fish collected on 19 May were used to test the sampler and therefore were not

¹ These hatchery fish were not tagged to reduce the stress and encourage movement downstream. Based on fin development and girth, biologists were confident that the untagged hatchery fish could be readily distinguished from stream-reared smolts.

included in this calculation). The highest recapture rate (30%) for an individual release group occurred with the 4 June release of untagged fish in the forebay (Table 4-8). It was anticipated that most of the smolts released in the forebay would appear in the collection tank within a few days of release. As shown in Table 4-1, untagged hatchery fish first appeared in the collection tank three days after release through the end of the study. Fourteen fish could not be definitively identified as stream-reared or untagged hatchery smolts and were therefore categorized as “Uncertain.” If all of these fish were stream-reared, the percent recapture rate for the untagged fish drops to 21%, still the greatest return for all release groups. If all the fish classified as uncertain origin were hatchery fish, the recapture rates increases to 39%. The second greatest recapture rate was from the Waterford release group, which was also the second closest release site. The farthest release site, Gilman, represented the lowest return rate of 3%.

The number of days smolts were at-large ranged from 0-6 for the 6% (n=8) of fish recaptured from the 11 June release in the forebay, to 4-37 d for the 7% (n=6) of fish recaptured from the 19 May release at North Littleton (Table 4-8).

The condition of hatchery fish recaptured in the sampler was generally similar to that of stream-reared salmon (Table 4-6). Seventy-five percent (n=95) exhibited no injuries, 16% (n=20) showed descaling, 3% (n=4) had other injuries, 1% (n=1) were moribund, and 6% (n=7) died prior to release. Again, the handling of fish pre-release and during recapture procedures probably affected the injury rate, especially with respect to descaling.

The CPUE for hatchery salmon over the course of the study was 0.15 smolts/h, compared to 0.28 smolts/h for stream-reared smolts (Table 4-2). The highest CPUE (1.25 smolts/h) occurred during the 0100-0300 h sample period. CPUE for hatchery salmon during each time-group was 0.07 smolts/h for Day, 0.88 smolts/h for Evening, and 0.17 smolts/h for Day and Evening (Tables 4-3, 4-4, and 4-5, respectively). Comparatively, the highest CPUE for stream-reared salmon (0.36 smolts/h) occurred during the Day time-group.

The percent of time that no hatchery salmon were caught over the course of the study was 25. This “no-catch effort” statistic, when applied to the sampling groups, breaks down as follows: Day collection - 49%, Evening collection - 0%, and Day and Evening collection - 17% (Tables 4-3, 4.4 and 4.5, respectively).

4.5 Water Temperature Monitoring

Water temperature was recorded every twenty minutes from 17 May through 29 June 2004, in the Moore forebay near the surface (Stations 2a and 3a), approximately 6 m below the surface (Stations 2b and 3b), and near the surface at the skimmer gate entrance (Station 1) (see Figure 3-2). The warmest water day was 18 June, when temperatures ranged from 23.3°C at the surface to 22.2 to 22.5°C at depth (approximately 6 m) (Table 4-9, Figures 4-4 through 4-8). The coolest water temperatures were recorded on 18 May at depth (12.4 and 13.6°C) and 29 May at the surface (14.2 to 14.4°C) (Table 4-9).

4.6 Resident Species

One thousand one hundred seventy-five resident fish representing 25 species were collected in the Moore Dam sampler (Table 4-10). Eighty-eight percent of the fish were alive and 12% dead when recaptured. The size of fish collected ranged from spottail shiners (*Notropis hudsonius*) measuring less than 20 mm TL to a lively 13-16 year old northern pike (*Esox lucius*) estimated to be approximately 1.2 m long. The majority (49%) of resident fish collected were juvenile and adult rock bass (*Ambloplites rupestris*). Yellow perch (*Perca flavescens*), smallmouth bass (*Micropterus dolomieu*) and spottail shiner were also common, collectively representing 41% of the overall collection of resident fish. Predation in the collection tank likely resulted in a significantly lower number of spottail shiners retrieved from the collection tank than were actually collected.

5.0 DISCUSSION

5.1 Stream-Reared Salmon

The purpose of the first year of this proposed two-year study was to obtain some information on the timing and abundance of the stream-reared smolt migration past the Moore Dam. It is believed that the beginning of the migratory run was not observed because construction of the inclined plane sampler could not be completed before onset of the outmigration; the end of the run appeared to be around 15 June. For a week after this date, representing the last week of the study, only two stream-reared salmon were collected. If the 14 fish that could not be distinguished between stream-reared and hatchery were assumed to be stream-reared, the number of fish collected during that week, increases to just three. Comparatively, the migratory run near Turners Falls, MA (rkm 188; rm 117), was noted to have ended the first week of June (S. McCormick, personal communication). By 2 June, 70% of the 240 stream-reared smolts collected had arrived at the sampler, and by 8 June, 89% were collected. Because the beginning of the run was not observed, it is not possible to determine what proportion of the stream-reared smolt run was sampled.

Timing of the smolt run appears to be influenced mostly by water temperature, with the run starting in earnest once the temperature remains above 10°C (Mills 1989). During this study, the lowest temperature recorded was 12.4°C on 29 May. Assuming the primary factor influencing timing of the run is in fact temperature, the run was likely well established by the start of this study.

In 2000, Normandeau Associates conducted a study of salmon smolt downstream movement behavior in the Moore Reservoir, in which temperature in the forebay was recorded. A comparison of the hourly average temperature between 2000 and 2004 shows that 2004 was a warmer water year for most of the study duration (Figure 5-1) (Normandeau Associates 2000). A trend line shows that in 2000 the temperature generally increased steadily, ranging approximately 7°C (11°C – 18°C). In 2004 the trend line had less of a slope and the temperature range was roughly 4°C (16°C – 20°C) but both range extremes were greater than in 2000. This comparison illustrates one environmental variation occurring between two discrete years that may affect the timing and duration of the smolt migration.

Though the length of stream-reared smolts was not measured, there appeared to be two distinct size groups or possibly age classes, a “small” group about 150 mm and a “large” group about 250 mm. This is not unusual; not all members of a sibling population mature in the same year and it is not surprising to find flexibility in the timing of maturation both within and between populations of Atlantic salmon smolts (Thorpe 1987). Ages of 1 to 8 years have been recorded within the same population, and ages 2, 3, and 4 are common. Randall and Paim (1982) found that most wild smolts are between 130 and 170 mm in length, regardless of age. The larger size class may represent smolts that had been stocked in 2000, the first year salmon fry were stocked above Moore Reservoir. This was the first year since 2000, that downstream passage, other than through spill or turbines, was available to the stocked salmon.

Some sample periods were not easily separated into day and evening time-groups, from which CPUE could be calculated to discern gross diel migration patterns. Therefore, a third group “Day and Evening” was created to capture sample periods that included both segments of a day. Because only 2.3% of the sampling periods (N=2) occurred during the Evening time-group, the “grouped” results are potentially biased and require further data collection. Though CPUE for all fish during the Evening time-period was 0.88 smolts/h, no stream-reared smolts were collected during that time-period. There was little variation between the Day (CPUE = 0.40 smolts/h), and Evening and Day (CPUE = 0.46 smolt/h) groups. Highest CPUE occurred during the 1100-1300 h (3.0 smolts/h) and 1135-1335 h (3.5 smolts/h) sample periods. Munro (1965) and Mills (1989) note that during the early (April and early May) part of the Atlantic salmon smolt migration, smolt movement is greatest during the hours of darkness but later on (late May and early June) movement occurs during the middle part of the day. The CPUE results observed at Moore in 2004, in context with the work just cited, seem to support that the middle and later portions of the upper basin run were sampled.

A significant portion (85%) of salmon passing through the sampler experienced few or no injuries. No eye injuries were observed and contusions or lacerations were found on only 5% of the stream-reared smolts. Potential causes for injury included: the plunge from the forebay onto the inclined plane sampler; turbulence in the trough as well as the velocity at which fish enter the trough; duration in the collection tank, from a physical injury perspective and water quality; and, handling.

5.2 Hatchery Salmon

Multiple stressors led to the mortality of 61% of hatchery fish collected for the second release group. Two stress conditions were of primary concern: a large temperature variance between water in which the smolts were reared at the hatchery and water in the holding tanks that is supplied from ambient temperature water in the Moore Dam forebay; and a large number of fish in the transport tank. Early in the study, approximately 250 fish were transported in a 681 l (180gal) tank filled with hatchery water and tempered from the 9°C hatchery water to within 2°C of the 17-18°C holding tank water. The following day they were tagged and transported to the release site. After the loss, the protocol was changed to reduce stress on the fish. The primary change was tagging fish at the hatchery in the cool hatchery water, and transporting fewer in each batch. In addition, measures were taken to minimize the potential for low dissolved oxygen levels in the hold tanks. Mortalities were significantly reduced after the mitigative measures were implemented.

It was anticipated that hatchery salmon released at North Littleton would be collected in the sampler within a few days of release. In 2000, Normandeau radio tagged 108 hatchery salmon smolts, released them at Gilman (over five release groups) and tracked their movement to the Moore Dam. Eighty-three (76.9%) smolts migrated to the forebay within 1 to 20 d and remained there from less than one day to greater than 21 d. The only downstream passage routes available to smolts in 2000 were via spill or through the turbines. In 2000, nine smolts passed the Moore Dam via spill and one went through a turbine.

When, in this study, large numbers of hatchery smolts did not appear in the sampler within a few days, alternate release sites were selected with the consideration that hatchery smolts were not finding an appropriate cue at North Littleton to initiate their downstream migration. Of the nine release groups and four release sites, the 4 June release in the forebay proved to have the highest return rate (30%). Although return rate may appear to be related to distance from the dam, the temporal aspect of the study must be considered. The farthest release site, Gilman, was used on 8 June with 3% of the released smolts recaptured by 25 June (a span of 17 days), and the mean days at large equal to eight. For the seven prior release groups, the mean days at large ranged from 15-23; therefore, additional smolts from the Gilman release might have been collected if the sampler operated longer.

In 2004 several tagged and untagged salmon smolts were observed swimming in the forebay along the dam and in the shallows near the visitor's center. Whether these fish were collected in the sampler is not known nor is it known how many smolts showed similar behavior. On 5 June an effort was made to sample the forebay for salmon smolts via electrofishing, to determine if large numbers of smolts were in the forebay and not being collected in the sampler. Sampling was not successful due to low conductivity of the reservoir water. However, discussions with local anglers during subsequent weeks revealed that salmon smolts were biting on baited lines. It is still unclear whether hatchery smolts were making their way to the forebay and not finding the sampler entrance, or simply not making their way to the forebay in large numbers. However, given the relatively high reservoir water temperatures during this study it is plausible that salmon were not moving downstream in a typical fashion. The relatively high water temperature effects may have manifested in two ways: 1) Water temperatures were high enough to reduce the urge to move downstream; 2) The stress response due to handling/holding/tagging may have been exacerbated by relatively high water temperatures resulting in poor performance by test specimens. Additionally, release sites may have caused difficulty in locating a downstream flow as opposed to a riverine release below Gilman.

During a previous outmigration study at the Moore Development, a significant proportion of the test fish were not fully smoltified and therefore did not move downstream (Normandeau Associates 1998). This situation was not likely in 2004 because smolts from the same hatchery pond were used in a downstream fishway effectiveness evaluation at the McIndoes Development, and the McIndoes smolts migrated, as is expected of smoltified salmon.

5.3 Conclusions

It is anticipated that the second year of study will begin by 1 May, if not earlier, if reservoir conditions allow, and the start of the stream-reared smolt migration will be captured. Additionally, an effort should be made to regulate sampling periods so that comparisons between evening and daylight collections can more easily be identified. The following conclusions can be made:

- The inclined plane sampler was effective at collecting fish that passed over the skimmer gate, although investigation into the injury rates may be useful;
- Based on previous outmigration studies in Moore Reservoir and this evaluation, it is unclear if release sites in this evaluation for hatchery-reared fish proved problematic in terms of repeating the results from earlier studies.
- PIT tags would provide automated exact passage date and time of day information vs. the classification of passage time of day into a time block based on manual sampling intervals;
- Total length and weight measurements for stream-reared smolts should be collected to better characterize the condition of smolts and to put age and growth into context with lower basin subpopulations.

6.0 LITERATURE CITED

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Tables

Table 3-1. Codes used to document condition of salmon smolts collected in the Moore sampler, spring 2004.

Code Number	Condition
1	No observed injuries or descalation
2	Minor descalation (<10%)
3	Moderate descalation (10-25%)
4	Major descalation (>25%)
5	Eye injury
6	Contusion on body
7	Lacerations or other open wounds likely caused by sampler
8	Moribund
9	Dead

Table 4-1. Daily collection of salmon smolts at the Moore sampler, spring 2004.

Date	Time of 1st check	Time of last check	Tagged Hatchery	Untagged Hatchery	Stream Reared	Uncertain	Total
5/19/2004	800	2145	0	2 ^a	19		21
5/20/2004	800	2230	0		11		11
5/21/2004	800	1800	0		3		3
5/22/2004	800	1800	1 ^b		10		11
5/23/2004	1030	1800	3		7		10
5/24/2004	1040	1800	0		14		14
5/25/2004	1100	1800	1		8		9
5/26/2004	1100	1800	1		6		7
5/27/2004	1130	1800	0		11		11
5/28/2004	1130	1800	2		13		15
5/29/2004	1000	1800	0		9		9
5/30/2004	1130	1745	1		17		18
5/31/2004	1100	1800	1		19		20
6/1/2004	1100	1800	1		11		12
6/2/2004	1100	1800	0		10		10
6/3/2004	1030	1800	0		3		3
6/4/2004 ^c	930	1800	3		2		5
6/5/2004	1030	1800	3		5		8
6/6/2004	1030	1800	1		7		8
6/7/2004	1120	1800	1	1	2		4
6/8/2004	1015	1800	5	1	27		33
6/9/2004	1000	1800	2		1		3
6/10/2004 ^d	1130	2300	5	4	6		15
6/11/2004 ^{d,e}	100	2300	8	2	0		10
6/12/2004	100	1800	3		1	5	9
6/13/2004	1045	1800	6	3	4	4	17
6/14/2004	1045	1800	2		0	1	3
6/15/2004	1200	1800	2		12	2	16
6/16/2004	1100	1800	6 ^f		1		7
6/17/2004	800	800	3	1	0		4
6/18/2004 ^g	800	800	3	3	0	2	8
6/19/2004 ^g	800	800	2	2	0		4
6/20/2004 ^h	800	800	3	1	0		4
6/21/2004 ^h	800	800	4	1	0		5
6/22/2004	830	830	3	1	0		4
6/23/2004	815	815	2	5	0		7
6/24/2004	815	815	2	15	0		17
6/25/2004	800	800	4	3	1		8
Total			84	45	240	14	383

^a These two fish were used to test the sampler and were not release above the dam

^b Tag unable to be read

^c Untagged hatchery fish released in forebay (N=75)

^d Overnight

^e Tagged hatchery fish release in forebay (N=150)

^f One tag lost and not read

^g Gate opened from 1500 to 0800 the next day

^h Gate opened from 1800 to 0900 the next day

Table 4-2. Catch-per-unit-effort for salmon smolts (hatchery and stream-reared) collected over 76 sample periods within a 24-hour time-frame, in the Moore sampler, spring 2004.

Sample Period	Stream Reared	Hatchery	Uncertain	Total			Effort (days*hours)	CPUE			No Catch Effort			
				Salmon	Total Days	Total Hours		Stream Reared	Hatchery	Uncertain	Total	Stream Reared	Hatchery	No Salmon Collected
0100-0300	0	5		5	2	2	4		1.25		1.25	4		
0300-0600	0	0		0	2	3	6			0.00		6	6	6
0600-1100	1	0		1	2	5	10	0.10		0.10			10	
0800-0945	1	0		1	1	1.75	1.75	0.57		0.57			1.75	
0800-1000	1	0		1	2	2	4	0.25		0.25			4	
0800-1330	4	0		4	1	5.5	5.5	0.73		0.73			5.5	
0930-1300	0	0		0	1	3.5	3.5			0.00	3.5	3.5	3.5	3.5
0945-1315	4	0		4	1	3.5	3.5	1.14		1.14			3.5	
1000-1200	1	0		1	3	2	6	0.17		0.17			6	
1015-1215	0	0		0	1	2	2			0.00	2	2	2	2
1030-1200	0	0		0	4	1.5	6			0.00	6	6	6	6
1040-1240	0	0		0	1	2	2			0.00	2	2	2	2
1045-1205	0	0		0	2	1.33	2.66			0.00	2.66	2.66	2.66	2.66
1100-1200	0	0		0	3	1	3			0.00	3	3	3	3
1100-1230	0	0		0	2	1.5	3			0.00	3	3	3	3
1100-1300	6	0		6	1	2	2	3.00		3.00			2	
1100-1400	1	1		2	2	3	6	0.17	0.17	0.33				
1120-1300	0	0		0	1	1.33	1.33			0.00	1.33	1.33	1.33	1.33
1130-1245	0	0		0	1	1.25	1.25			0.00	1.25	1.25	1.25	1.25
1130-1330	0	0		0	1	2	2			0.00	2	2	2	2
1130-1350	0	0		0	1	2.33	2.33			0.00	2.33	2.33	2.33	2.33
1135-1335	7	0		7	1	2	2	3.50		3.50			2	
1200-1400	3	1		4	13	2	26	0.12	0.04	0.15				
1215-1415	0	0		0	1	2	2			0.00	2	2	2	2
1230-1400	0	0		0	1	1.5	1.5			0.00	1.5	1.5	1.5	1.5
1230-1415	0	1		1	1	1.75	1.75		0.57	0.57	1.75	1.75	1.75	1.75
1240-1400	0	0		0	1	1.33	1.33			0.00	1.33	1.33	1.33	1.33
1245-1400	1	0		1	1	1.25	1.25	0.80		0.80			1.25	
1300-1400	0	0		0	1	1	1			0.00	1	1	1	1
1300-1430	0	0		0	1	1.5	1.5			0.00	1.5	1.5	1.5	1.5
1300-1630	0	2		2	1	3.5	3.5		0.57	0.57	3.5	3.5	3.5	3.5
1315-1500	1	0		1	1	1.75	1.75	0.57		0.57			1.75	
1320-1520	0	0		0	1	2	2			0.00	2	2	2	2
1330-1515	0	0		0	1	1.75	1.75			0.00	1.75	1.75	1.75	1.75
1330-1640	0	1		1	1	3.17	3.17		0.32	0.32	3.17	3.17	3.17	3.17
1335-1535	2	1		3	1	2	2	1.00	0.50	1.50				

Table 4.2 Continued

Sample Period	Stream			CPUE				No Catch Effort			No Salmon Collected			
	Reared	Hatchery	Uncertain	Total Salmon	Total Days	Hours	Effort (days*hours)	Stream Reared	Hatchery	Uncertain		Total	Stream Reared	Hatchery
1350-1600	0	0		0	1	2.17	2.17				0.00	2.17	2.17	2.17
1400-1600	17	2	5	24	17	2	34	0.50	0.06	0.15	0.71			
1400-1800	0	0		0	3	4	12				0.00	12	12	12
1415-1600	0	2		2	2	1.75	3.5		0.57		0.57	3.5		
1430-1600	3	0		3	1	1.5	1.5	2.00			2.00		1.5	
1500-0800	1	10		11	2	16	32	0.03	0.31		0.34			
1500-0815	0	24		24	2	16.25	32.5		0.74		0.74	32.5		
1500-0830	0	11	2	13	2	16.5	33		0.33	0.06	0.39	33		
1500-1900	4	0		4	1	4	4	1.00			1.00		4	
1515-1645	1	0		1	1	1.5	1.5	0.67			0.67		1.5	
1520-1720	0	0		0	1	2	2				0.00	2	2	2
1535-1745	0	0		0	1	2.17	2.17				0.00	2.17	2.17	2.17
1600-1800	12	4		16	18	2	36	0.33	0.11		0.44			
1630-1800	1	0		1	1	1.5	1.5	0.67			0.67		1.5	
1640-1800	0	0		0	1	1.67	1.67				0.00	1.67	1.67	1.67
1645-1930	0	0		0	1	2.75	2.75				0.00	2.75	2.75	2.75
1720-1930	0	0		0	1	2.17	2.17				0.00	2.17	2.17	2.17
1745-1100	12	1		13	1	17.25	17.25	0.70	0.06		0.75			
1800-0800	9	4		13	2	14	28	0.32	0.14		0.46			
1800-0815	0	5		5	1	14.25	14.25		0.35		0.35	14.25		
1800-0900	0	4		4	1	16	16		0.25		0.25	16		
1800-0930	2	3		5	1	16.5	16.5	0.12	0.18		0.30			
1800-1000	1	2		3	2	16	32	0.03	0.06		0.09			
1800-1015	22	6		28	1	16.25	16.25	1.35	0.37		1.72			
1800-1030	17	6		23	4	16.5	66	0.26	0.09		0.35			
1800-1040	14	0		14	1	16.67	16.67	0.84			0.84		16.67	
1800-1045	0	10	5	15	2	16.75	33.5		0.30	0.15	0.45	33.5		
1800-1100	25	7		32	5	17	85	0.29	0.08		0.38			
1800-1120	1	0		1	1	17.33	17.33	0.06			0.06		17.33	
1800-1130	26	6		32	3	17.5	52.5	0.50	0.11		0.61			
1800-1135	8	0		8	1	17.58	17.58	0.46			0.46		17.58	
1800-1200	0	1	2	3	1	18	18		0.06	0.11	0.17	18		
1800-1400	11	0		11	1	20	20	0.55			0.55		20	
1800-2300	2	4		6	2	5	10	0.20	0.40		0.60			
1900-2145	0	0		0	1	2.75	2.75				0.00	2.75	2.75	2.75
1930-2145	0	0		0	1	2.25	2.25				0.00	2.25	2.25	2.25

Table 4.2 Continued

Sample Period	Stream			Total Salmon	Total Days	Effort Hours (days*hours)	CPUE				No Catch Effort			
	Reared	Hatchery	Uncertain				Stream Reared	Hatchery	Uncertain	Total	Stream Reared	Hatchery	No Salmon Collected	
1930-2230	0	0		0	1	3	3				0.00	3	3	3
2145-0800	8	0		8	2	10.75	21.5	0.37			0.37		21.5	
2230-0800	10	1		11	1	9.5	9.5	1.05	0.11		1.16			
2300-0100	0	2		2	2	2	4		0.50		0.50	4		
Total	240	127	14	381			854.58	0.28	0.15	0.02	0.45	246.25	218.41	79.08

Table 4-3. Catch-per-unit-effort for salmon smolts (hatchery and stream-reared) collected during the "Day" time-group, in the Moore sampler, spring 2004.

Sample Period	Stream Reared	Hatchery	Uncertain	Total Salmon	Total # Days	Hours	Effort (days*hours)	CPUE				No Catch Effort		
								Stream Reared	Hatchery	Uncertain	Total	Stream Reared	Hatchery	No Salmon Collected
0600-1100	1	0		1	2	5	10	0.10			0.10		10	
0800-0945	1	0		1	1	1.75	1.75	0.57			0.57		1.75	
0800-1000	1	0		1	2	2	4	0.25			0.25		4	
0800-1330	4	0		4	1	5.5	5.5	0.73			0.73		5.5	
0930-1300	0	0		0	1	3.5	3.5				0.00	3.5	3.5	3.5
0945-1315	4	0		4	1	3.5	3.5	1.14			1.14		3.5	
1000-1200	1	0		1	3	2	6	0.17			0.17		6	
1015-1215	0	0		0	1	2	2				0.00	2	2	2
1030-1200	0	0		0	4	1.5	6				0.00	6	6	6
1040-1240	0	0		0	1	2	2				0.00	2	2	2
1045-1205	0	0		0	2	1.33	2.66				0.00	2.66	2.66	2.66
1100-1200	0	0		0	3	1	3				0.00	3	3	3
1100-1230	0	0		0	2	1.5	3				0.00	3	3	3
1100-1300	6	0		6	1	2	2	3.00			3.00		2	
1100-1400	1	1		2	2	3	6	0.17	0.17		0.33			
1120-1300	0	0		0	1	1.33	1.33				0.00	1.33	1.33	1.33
1130-1245	0	0		0	1	1.25	1.25				0.00	1.25	1.25	1.25
1130-1330	0	0		0	1	2	2				0.00	2	2	2
1130-1350	0	0		0	1	2.33	2.33				0.00	2.33	2.33	2.33
1135-1335	7	0		7	1	2	2	3.50			3.50		2	
1200-1400	3	1		4	13	2	26	0.12	0.04		0.15			
1215-1415	0	0		0	1	2	2				0.00	2	2	2
1230-1400	0	0		0	1	1.5	1.5				0.00	1.5	1.5	1.5
1230-1415	0	1		1	1	1.75	1.75		0.57		0.57	1.75		
1240-1400	0	0		0	1	1.33	1.33				0.00	1.33	1.33	1.33
1245-1400	1	0		1	1	1.25	1.25	0.80			0.80		1.25	
1300-1400	0	0		0	1	1	1				0.00	1	1	1
1300-1430	0	0		0	1	1.5	1.5				0.00	1.5	1.5	1.5
1300-1630	0	2		2	1	3.5	3.5		0.57		0.57	3.5		
1315-1500	1	0		1	1	1.75	1.75	0.57			0.57		1.75	
1320-1520	0	0		0	1	2	2				0.00	2	2	2
1330-1515	0	0		0	1	1.75	1.75				0.00	1.75	1.75	1.75
1330-1640	0	1		1	1	3.17	3.17		0.32		0.32	3.17		
1335-1535	2	1		3	1	2	2	1.00	0.50		1.50			
1350-1600	0	0		0	1	2.17	2.17				0.00	2.17	2.17	2.17
1400-1600	17	2	5	24	17	2	34	0.50	0.06	0.15	0.71			
1400-1800	0	0		0	3	4	12				0.00	12	12	12
1415-1600	0	2		2	2	1.75	3.5		0.57		0.57	3.5		
1430-1600	3	0		3	1	1.5	1.5	2.00			2.00		1.5	
1500-1900	4	0		4	1	4	4	1.00			1.00		4	

Table 4-3 Continued

Sample Period	Stream Reared	Hatchery	Uncertain	Total Salmon	Total # Days	Hours	Effort (days*hours)	CPUE				No Catch Effort		
								Stream Reared	Hatchery	Uncertain	Total	Stream Reared	Hatchery	No Salmon Collected
1515-1645	1	0		1	1	1.5	1.5	0.67			0.67		1.5	
1520-1720	0	0		0	1	2	2			0.00		2	2	2
1535-1745	0	0		0	1	2.17	2.17			0.00		2.17	2.17	2.17
1600-1800	12	4		16	18	2	36	0.33	0.11		0.44			
1630-1800	1	0		1	1	1.5	1.5	0.67			0.67		1.5	
1640-1800	0	0		0	1	1.67	1.67			0.00		1.67	1.67	1.67
1645-1930	0	0		0	1	2.75	2.75			0.00		2.75	2.75	2.75
1720-1930	0	0		0	1	2.17	2.17			0.00		2.17	2.17	2.17
Total	71	15	5	91	108	104.17	227.25	0.31	0.07	0.02	0.40	77	111.33	65.08

Table 4-4. Catch-per-unit-effort for salmon smolts (hatchery and stream-reared) collected during the "Evening" time-group, in the Moore sampler, spring 2004.

Sample Period	Stream Reared	Hatchery	Uncertain	Total Salmon	Total # Days	Hours	Effort (days*hours)	CPUE				No Catch Effort			
								Stream Reared	Hatchery	Uncertain	Total	Stream Reared	Hatchery	No Salmon Collected	
0100-0300	0	5		5	2	2	4		1.25			1.25	4		
2300-0100	0	2		2	2	2	4		0.50			0.50	4		
Total	0	7	0	7	4	4	8	0.00	0.88	0.00	0.88	8	0	0	

Table 4-5. Catch-per-unit-effort for salmon smolts (hatchery and stream-reared) collected during the "Day and Evening" time-group, in the Moore sampler, spring 2004.

Sample Period	Stream			Total Salmon	Total # Days	Hours	Effort (days*hours)	CPUE				No Catch Effort		
	Reared	Hatchery	Uncertain					Stream Reared	Hatchery	Uncertain	Total	Stream Reared	Hatchery	Total
0300-0600	0	0		0	2	3	6				0.00	6	6	6
1500-0800	1	10		11	2	16	32	0.03	0.31		0.34			
1500-0815	0	24		24	2	16.25	32.5		0.74		0.74	32.5		
1500-0830	0	11	2	13	2	16.5	33		0.33	0.06	0.39	33		
1745-1100	12	1		13	1	17.25	17.25	0.70	0.06		0.75			
1800-0800	9	4		13	2	14	28	0.32	0.14		0.46			
1800-0815	0	5		5	1	14.25	14.25		0.35		0.35	14.25		
1800-0900	0	4		4	1	16	16		0.25		0.25	16		
1800-0930	2	3		5	1	16.5	16.5	0.12	0.18		0.30			
1800-1000	1	2		3	2	16	32	0.03	0.06		0.09			
1800-1015	22	6		28	1	16.25	16.25	1.35	0.37		1.72			
1800-1030	17	6		23	4	16.5	66	0.26	0.09		0.35			
1800-1040	14	0		14	1	16.67	16.67	0.84			0.84		16.67	
1800-1045	0	10	5	15	2	16.75	33.5		0.30	0.15	0.45	33.5		
1800-1100	25	7		32	5	17	85	0.29	0.08		0.38			
1800-1120	1	0		1	1	17.33	17.33	0.06			0.06		17.33	
1800-1130	26	6		32	3	17.5	52.5	0.50	0.11		0.61			
1800-1135	8	0		8	1	17.58	17.58	0.46			0.46		17.58	
1800-1200	0	1	2	3	1	18	18		0.06	0.11	0.17	18		
1800-1400	11	0		11	1	20	20	0.55			0.55		20	
1800-2300	2	4		6	2	5	10	0.20	0.40		0.60			
1900-2145	0	0		0	1	2.75	2.75				0.00	2.75	2.75	2.75
1930-2145	0	0		0	1	2.25	2.25				0.00	2.25	2.25	2.25
1930-2230	0	0		0	1	3	3				0.00	3	3	3
2145-0800	8	0		8	2	10.75	21.5	0.37			0.37		21.5	
2230-0800	10	1		11	1	9.5	9.5	1.05	0.11		1.16			
Total	151	104	9	283	44	352.58	619.33	0.24	0.17	0.01	0.46	161.25	107.08	14

Table 4-6. Physical condition of salmon smolts collected in the Moore sampler, spring 2004. For the last four conditions listed in the table, fish were noted to have either that condition only, or that condition and one or more of the previous listed conditions.

Condition	Stream-reared		Hatchery		Uncertain	
	Number	Percent	Number	Percent	Number	Percent
No injuries	182	76%	95	75%	11	79%
Descaling	22	9%	20	16%	2	14%
Eye injury	0	0%	0	0%	0	0%
Contusions, and...	5	2%	1	1%	1	7%
Lacerations, and	8	3%	3	2%	0	0%
Moribund, and...	11	5%	1	1%	0	0%
Dead, and	12	5%	7	6%	0	0%

Table 4-7. Disposition of hatchery salmon smolts used for the Moore study, spring 2004. Percent return equals the number of fish collected in the sampler, divided by the number in that release category.

Description	Number
Smolts tagged	1450*
Mortalities prior to release	204
Released below McIndoes	6
Tagged smolts released above Moore Pond	1097
Collected in sampler	74
	<i>Return = 6.75%</i>
Untagged smolts released in Moore forebay	150
Collected in sampler	45
	<i>Return = 30.00%</i>
Tagged smolts released in Moore forebay	139
Collected in sampler	8
	<i>Return = 5.76%</i>
Total smolts released	1386
Total smolts collected in sampler	127
	<i>Return = 9.16%</i>

* Four of these fish were used to test the sampler

Table 4-8. Release and recapture information for hatchery salmon smolts released for the Moore study, spring 2004.

Release Location	Approximate distance from Dam (mile)	Tag Date	Release Date	Number Released	Number Collected in Sampler	Percent Recapture	Days at Large - Range	Days at Large - Mean
North Littleton	4.5	5/13/2004	5/17/2004	43	4	9%	6-20	15
North Littleton	4.5	5/19/2004	5/19/2004	86	6	7%	4-37	23
Waterford	1.3	5/21/2004	5/22/2004	137	18	13%	3-34	20
North Littleton	4.5	5/24/2004	5/25/2004	217	12	6%	10-29	19
North Littleton	4.5	5/27/2004	5/28/2004	293	19	6%	2-28	15
North Littleton	4.5	5/31/2004	6/1/2004	141	9	6%	6-23	15
Moore Forebay	---	(untagged)	6/4/2004	150	45	30%	3-21	15
Gillman	11.0	6/8/2004	6/9/2004	180	6	3%	2-14	8
Moore Forebay	---	6/10/2004	6/11/2004	139	8	6%	0-6	1

Table 4-9. Location and minimum and maximum temperature readings for five temperature loggers in Moore Reservoir, 17 May through 29 June 2004.

Station	Location	Latitude	Longitude	Minimum Temperature (°C)			Maximum Temperature (°C)		
				Day	Time	Temp	Day	Time	Temp
1	Skimmer gate entrance, 0.6 m below surface			29-May	19:40	14.2	18-Jun	16:00	23.3
2a	Buoy 9 from dam, 0.6 m below surface	44°20.083"	71°52.446"	29-May	18:00	14.4	18-Jun	15:20	23.3
3a	Buoy 9 from shore, 0.6 m below surface	44°20.040"	72°52.437"	29-May	18:40	14.3	18-Jun	19:20	23.3
2b	Buoy 9 from dam, 6.0 m below surface	44°20.083"	71°52.446"	18-May	18:40	12.4	18-Jun	13:20	22.2
3b	Buoy 9 from shore, 6.0 m below surface	44°20.040"	72°52.437"	18-May	19:00	13.6	18-Jun	13:40	22.5

Table 4-10. Resident fish species collected in the Moore sampler, spring 2004.

Common Name	Latin Name	Number	Alive	Dead
Chain Pickerel	<i>Esox niger</i>	1	0	1
White Sucker	<i>Catostomus commersonii</i>	1	1	0
Tessellated Darter	<i>Etheostoma olmstedii</i>	1	0	1
Walleye	<i>Sander vitreus</i>	1	1	0
Longnose Dace	<i>Rhinichthys cataractae</i>	1	1	0
Bluegill	<i>Lepomis macrochirus</i>	2	1	1
Black Crappie	<i>Pomoxis nigromaculatus</i>	2	2	0
Rainbow Trout	<i>Oncorhynchus mykiss</i>	3	1	2
Brook Trout	<i>Salmo trutta trutta</i>	3	3	0
Northern Pike	<i>Esox lucius</i>	3	3	0
Fallfish	<i>Semotilus corporalis</i>	3	3	0
Unknown		3	3	0
Largemouth Bass	<i>Micropterus salmoides</i>	4	4	0
Minnnow (unk)	<i>Phoxinus phoxinus</i>	5	2	3
Brown Bullhead	<i>Ameiurus nebulosus</i>	5	2	3
Dace (unk)	<i>Leuciscus leuciscus</i>	5	0	5
Brown Trout	<i>Salmo trutta trutta</i>	16	14	2
Pumpkinseed	<i>Lepomis megalotis</i>	17	14	3
Golden Shiner	<i>Notemigonus crysoleucas</i>	43	34	9
Yellow Perch	<i>Perca flavescens</i>	152	104	48
Spottail Shiner	<i>Notropis hudsonius</i>	163	142	21
Smallmouth Bass	<i>Micropterus dolomieu</i>	168	165	3
Rock Bass	<i>Ambloplites rupestris</i>	573	534	39
Total		1175	1034	141

Figures

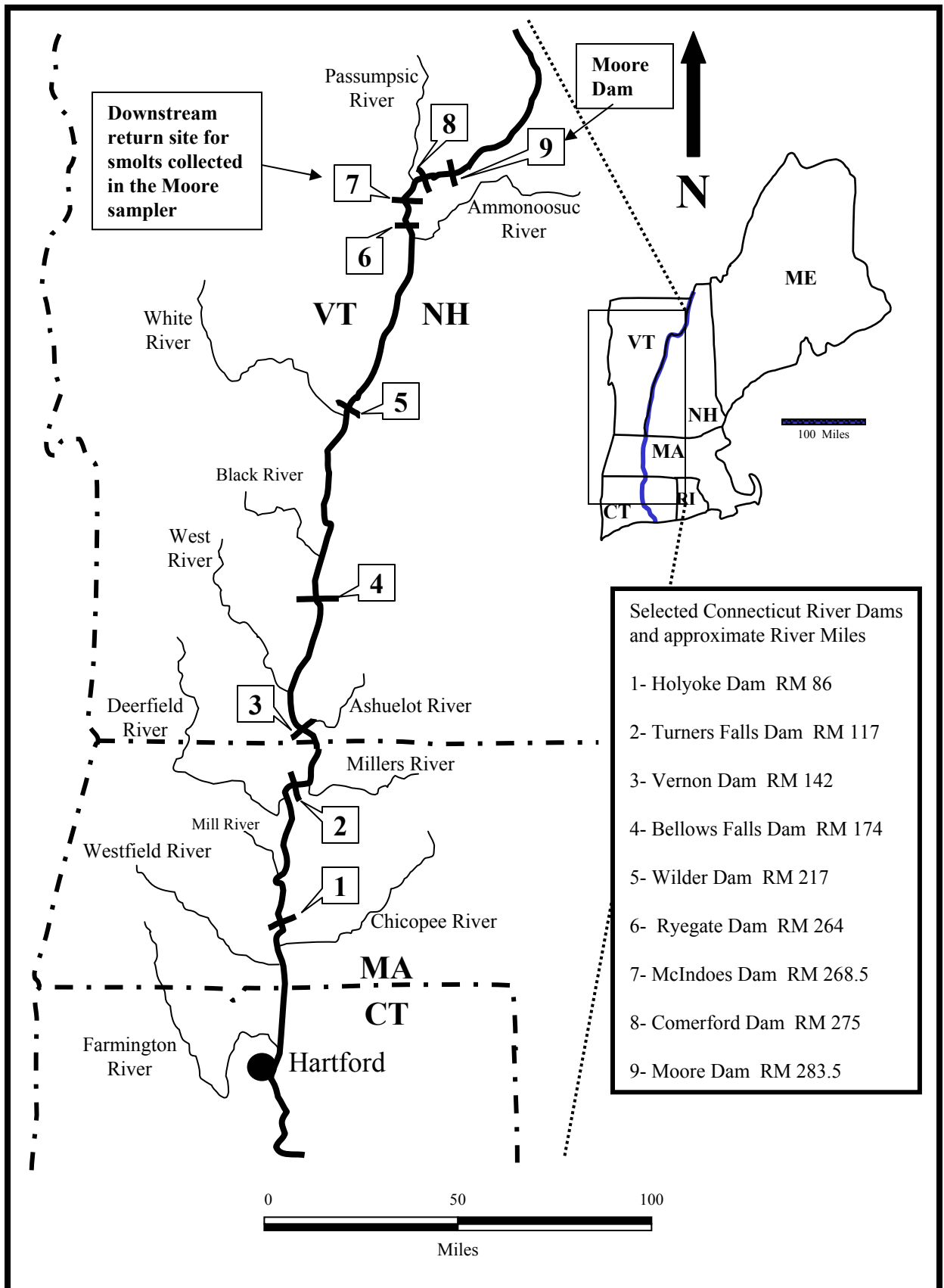


Figure 1-1. Location of selected tributaries and dams on the Connecticut River.

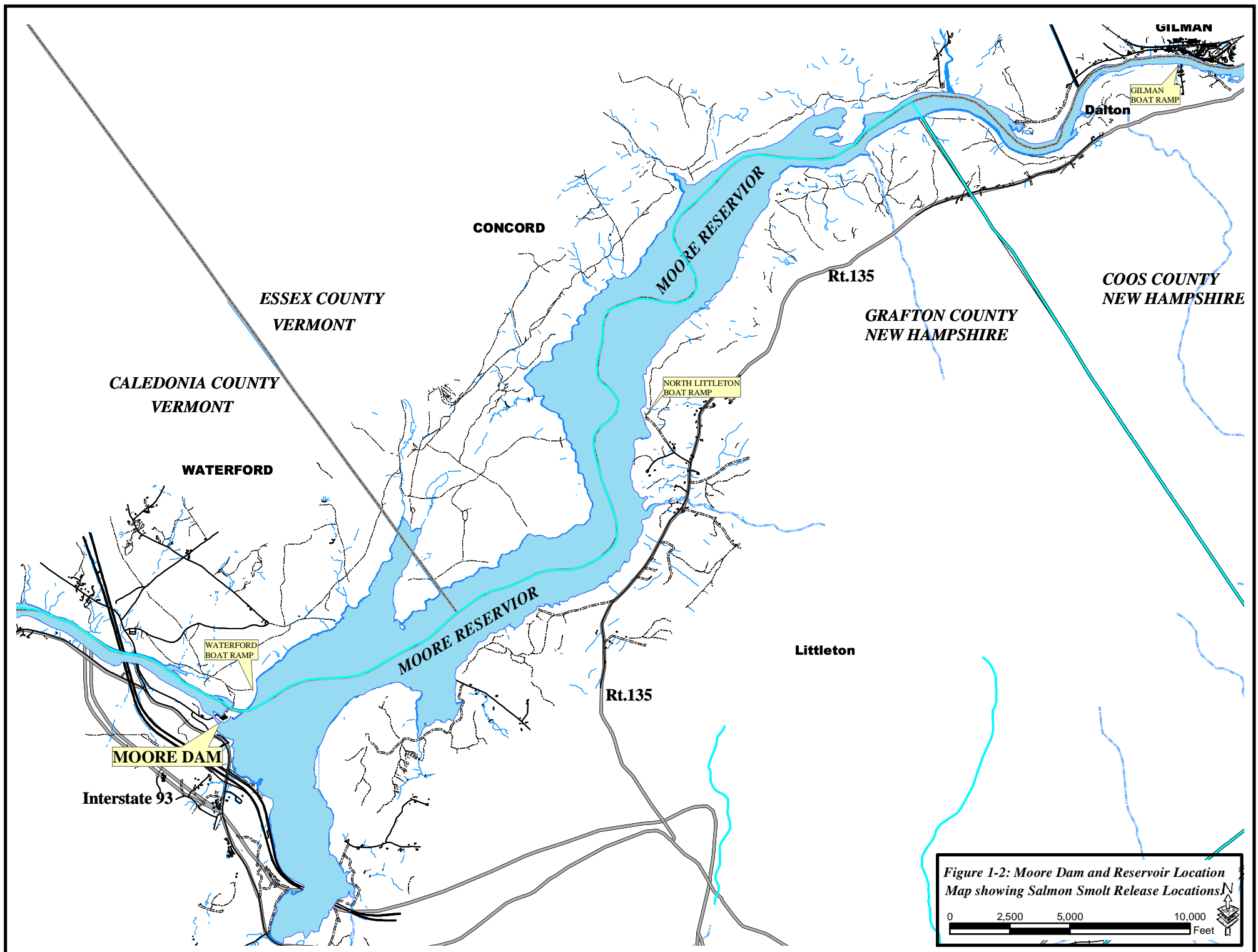


Figure 1-2: Moore Dam and Reservoir Location Map showing Salmon Smolt Release Locations.

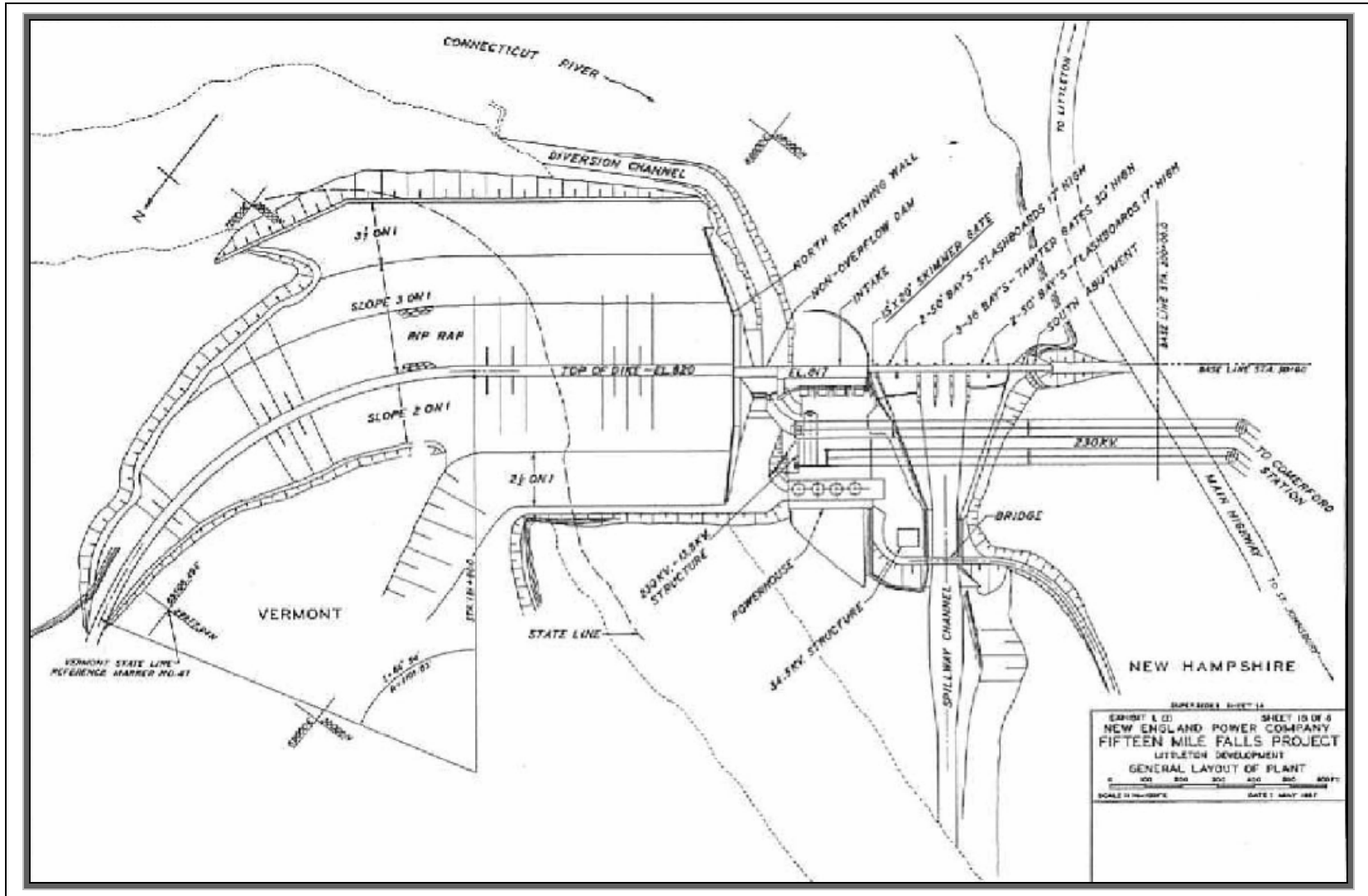


Figure 2-1. General layout of USGen New England's Moore Development, Connecticut River Mile 283.5

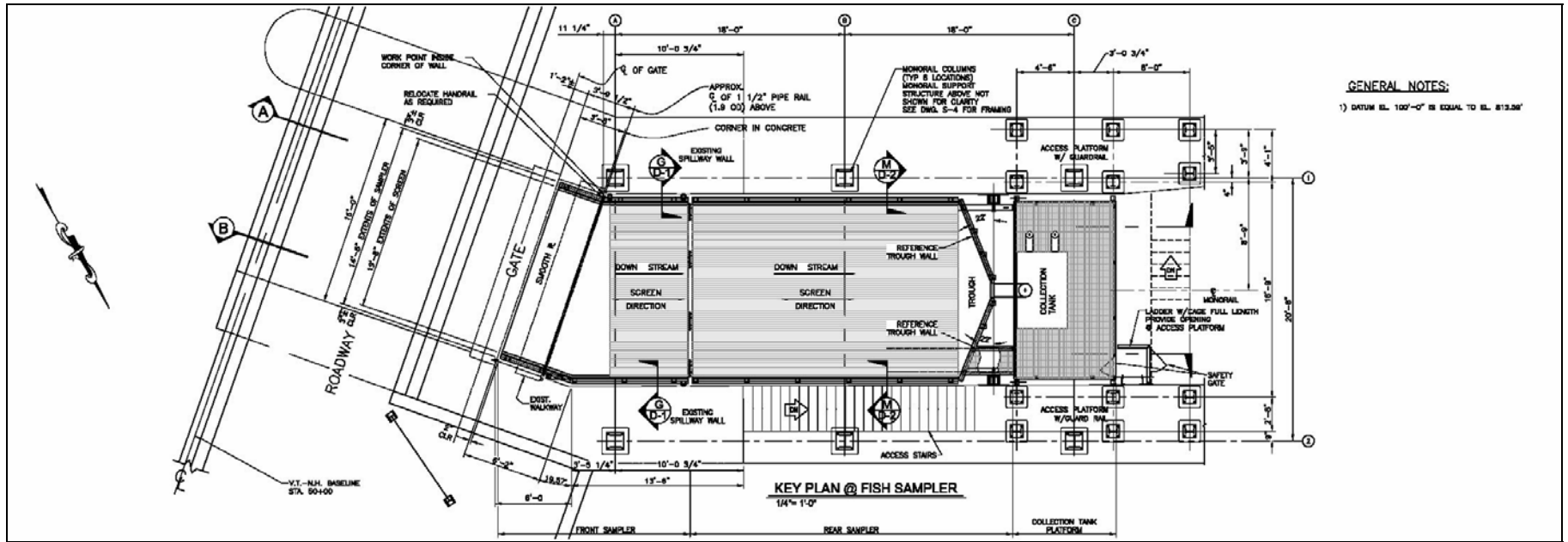


Figure 2-2. Key plan of USGen NE's Moore Development inclined plane sampler. The plan does not show flow reflectors installed after the sampler was erected. Plan drawing prepared by Kleinschmidt for USGen NE.



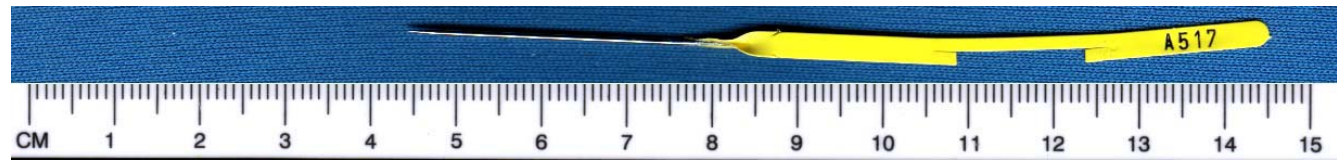
Figure 2-3. Moore Development, inclined plane sampler showing plywood flow adjusters.



Figure 2-4. Moore Development, inclined plane sampler showing the collection trough.



Figure 2-5. Collection tank, located below the inclined plane sampler at USGen NE's Moore Development.



Streamer tag size 7S

Figure 3-1. Hallprint Pty. Ltd., polyethylene streamer tag size 7S used to tag hatchery Atlantic salmon smolts for the Moore study, spring 2004.



Station 1

Station 2

Station 3

Figure 3-2. Thermistor locations in the forebay of the Moore Dam, spring 2004.

0 150 300 600 Feet



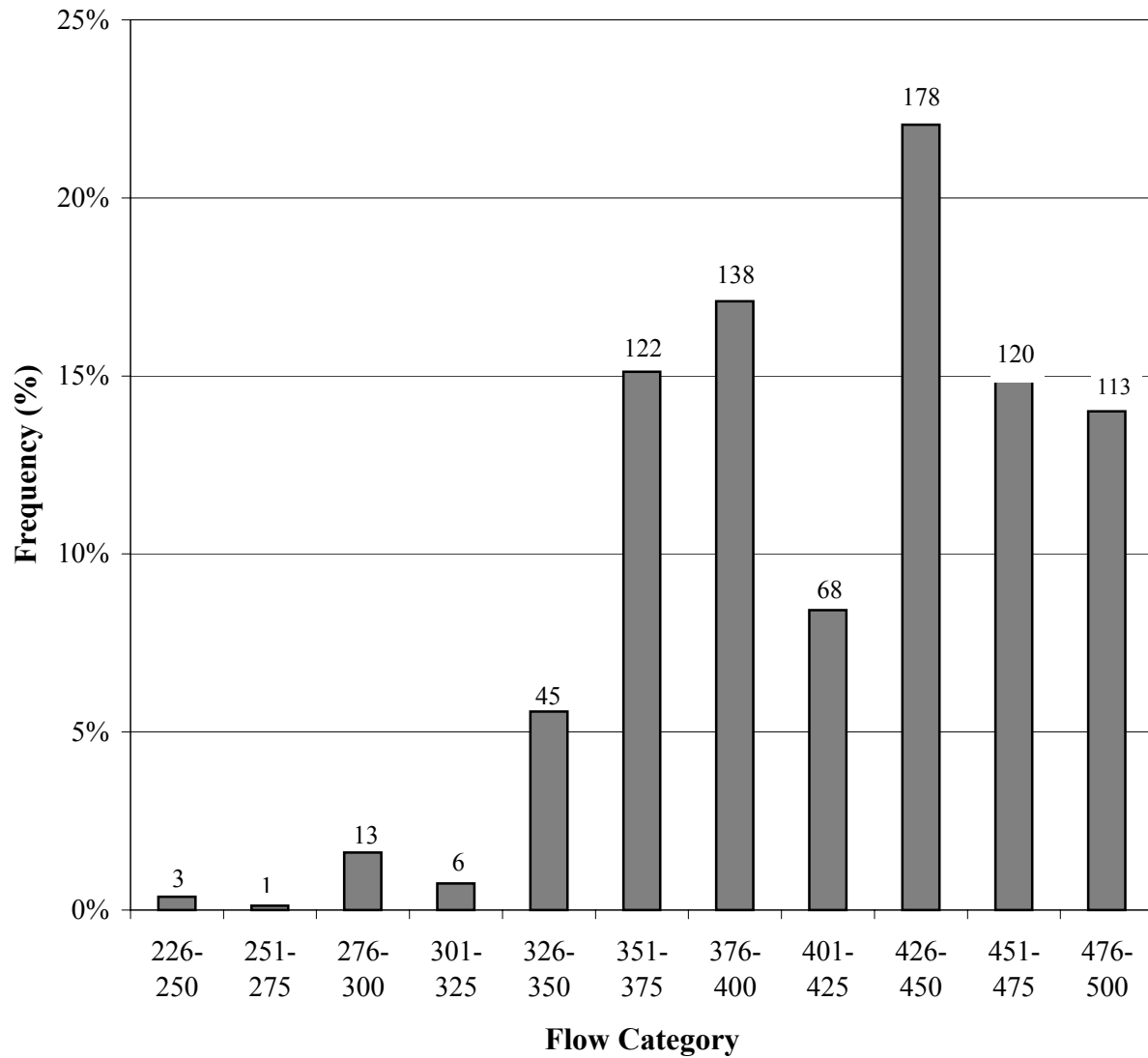


Figure 4-1. Frequency of calculated flow through the Moore Dam sampler during the study period, 18 May through 25 June 2004. Above each frequency bar is the number of hours the flow category occurred.

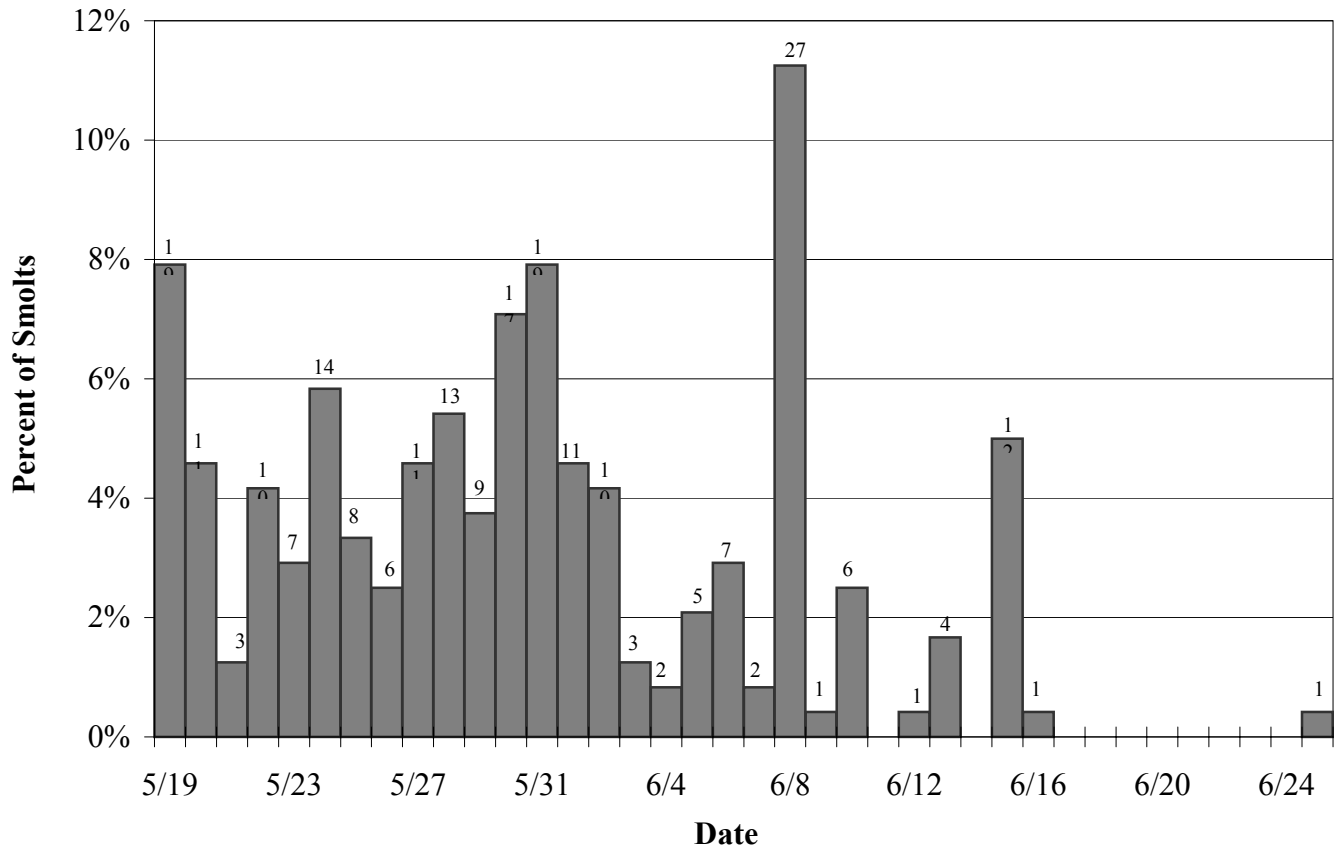


Figure 4-2. Daily percent of the total number of stream-reared salmon smolts collected in the Moore sampler, 19 May to 25 June 2004. Above each column is the number of smolts collected each day.

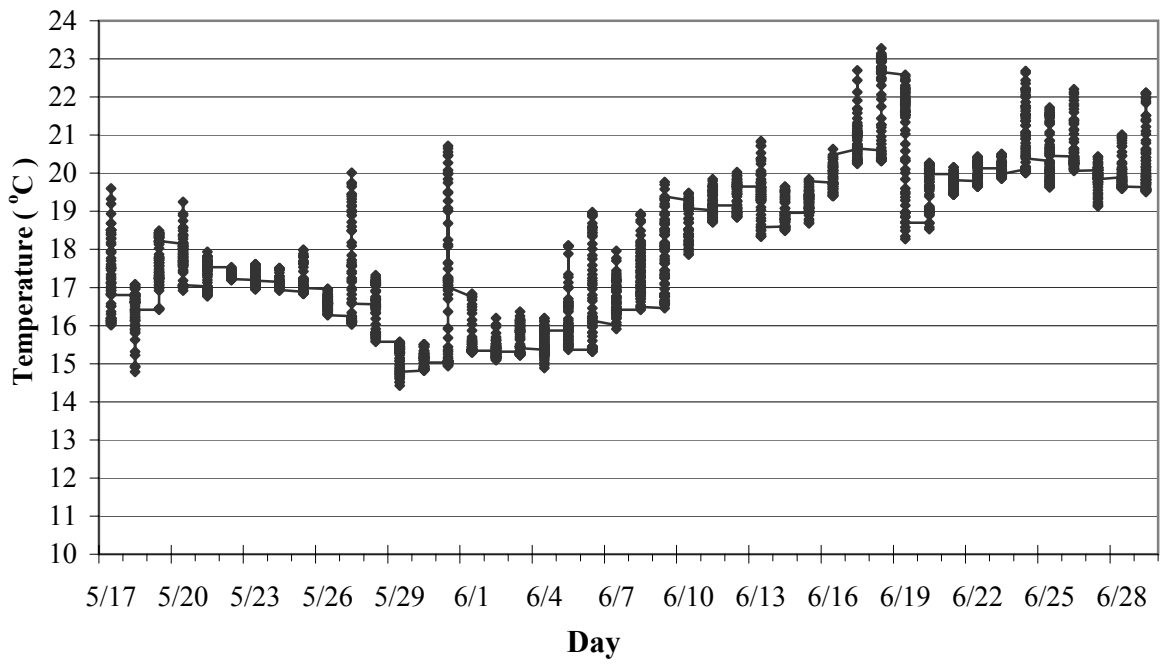


Figure 4-3. Temperature (°C) in the Moore Reservoir forebay at Station 2a (surface), 17 May through 29 June 2004.

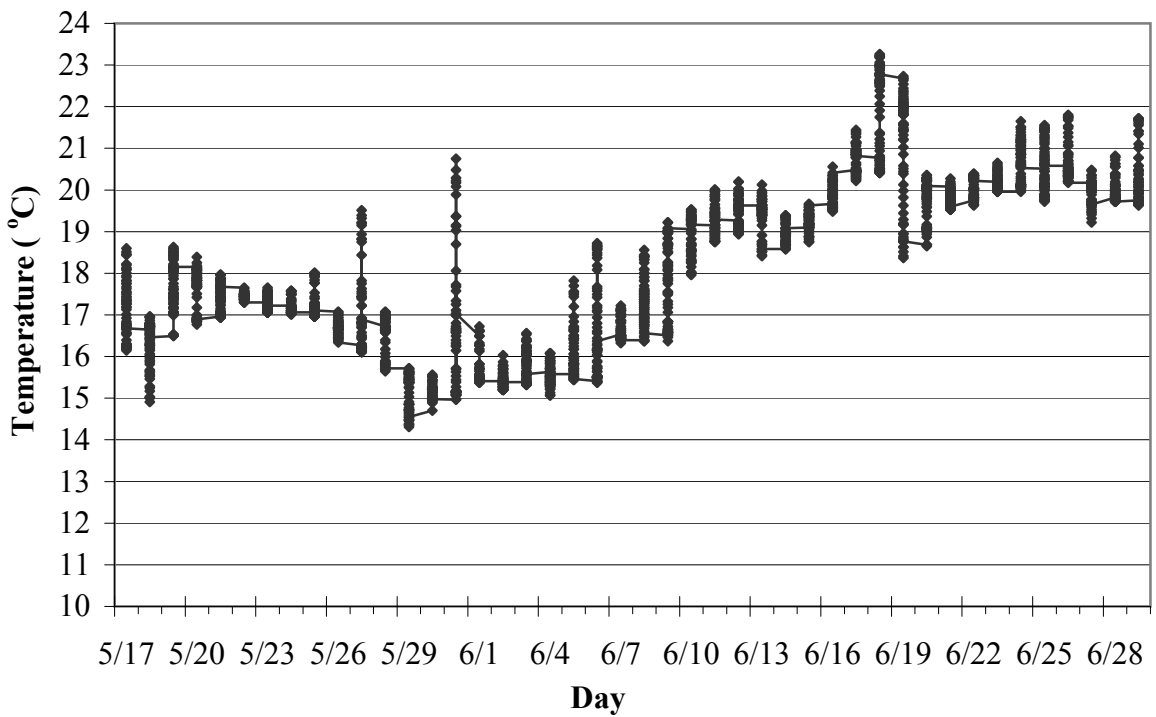


Figure 4-4. Temperature (°C) in the Moore Reservoir forebay at Station 3a (surface), 17 May through 29 June 2004.

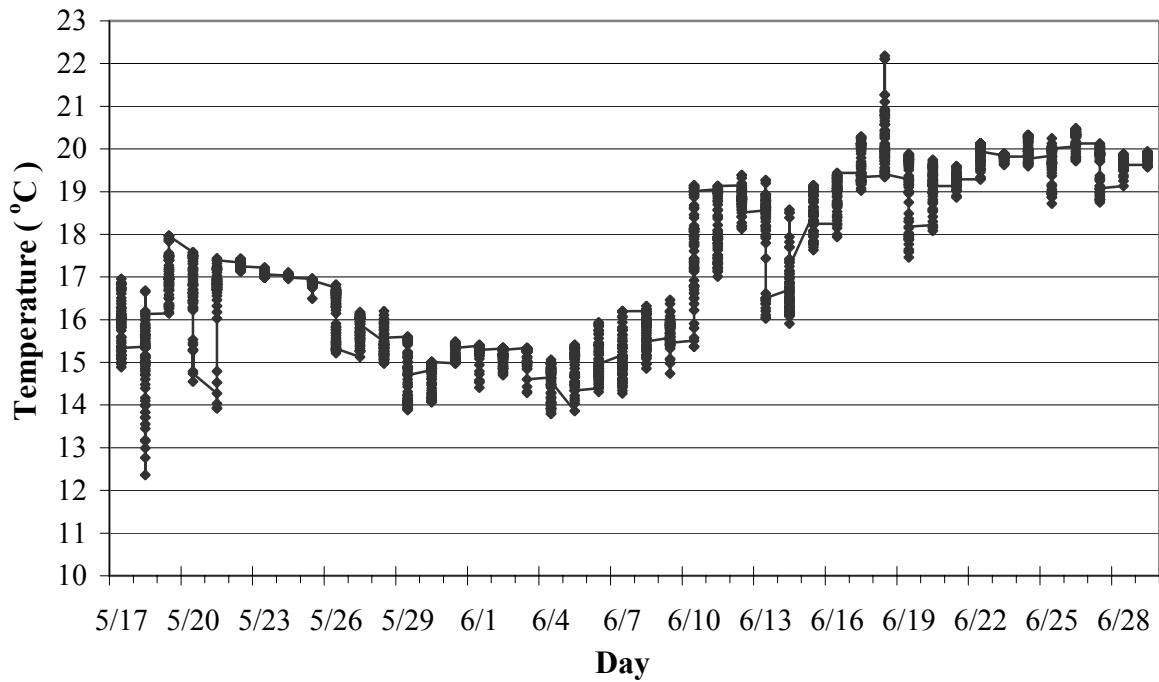


Figure 4-5. Temperature (°C) in the Moore Reservoir forebay at Station 2b (20 ft. deep), 17 May through 29 June 2004.

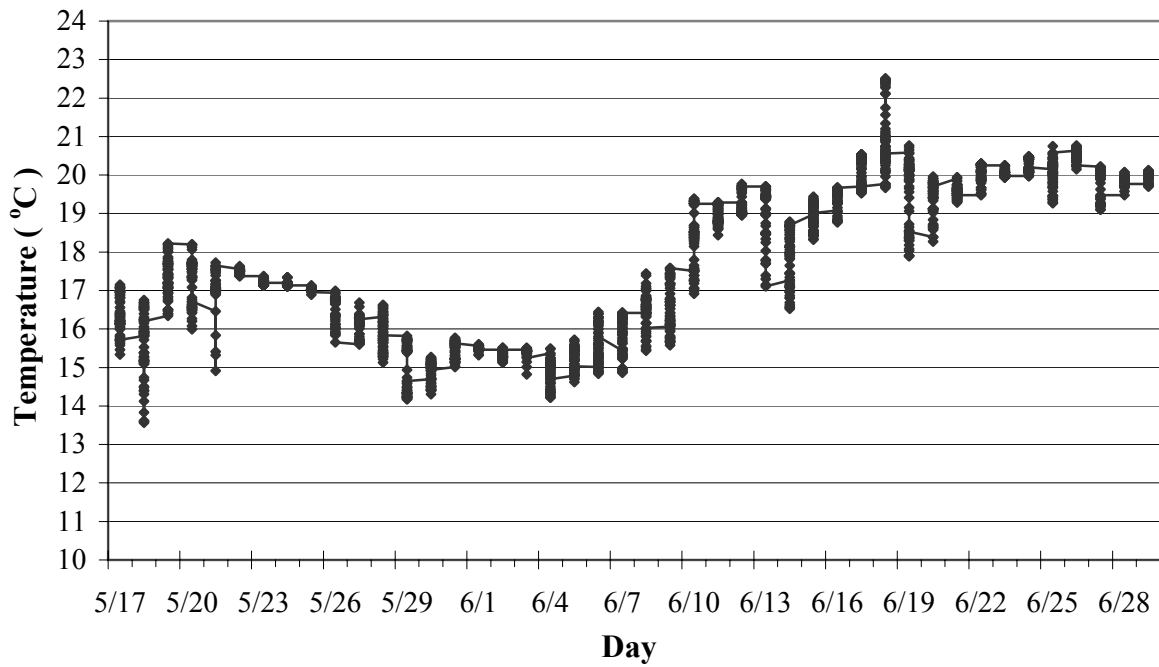


Figure 4-6. Temperature (°C) in the Moore Reservoir forebay at Station 3b (20 ft deep), 17 May through 29 June 2004.

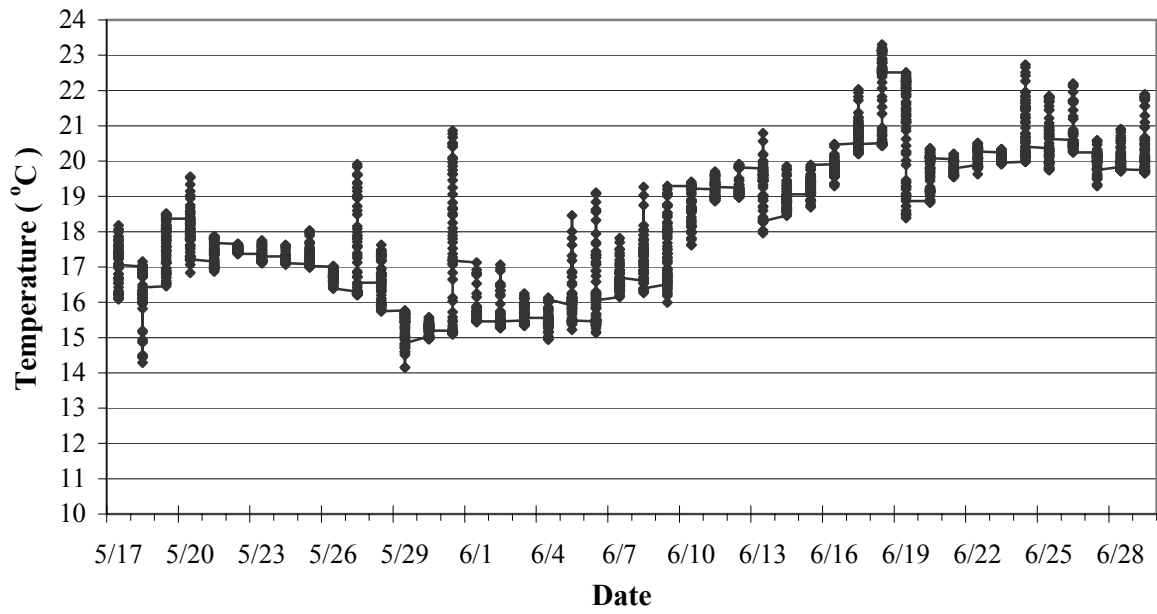


Figure 4-7. Temperature (°C) in the Moore Reservoir at Station 1 (skimmer gate), 17 May through 29 June 2004.

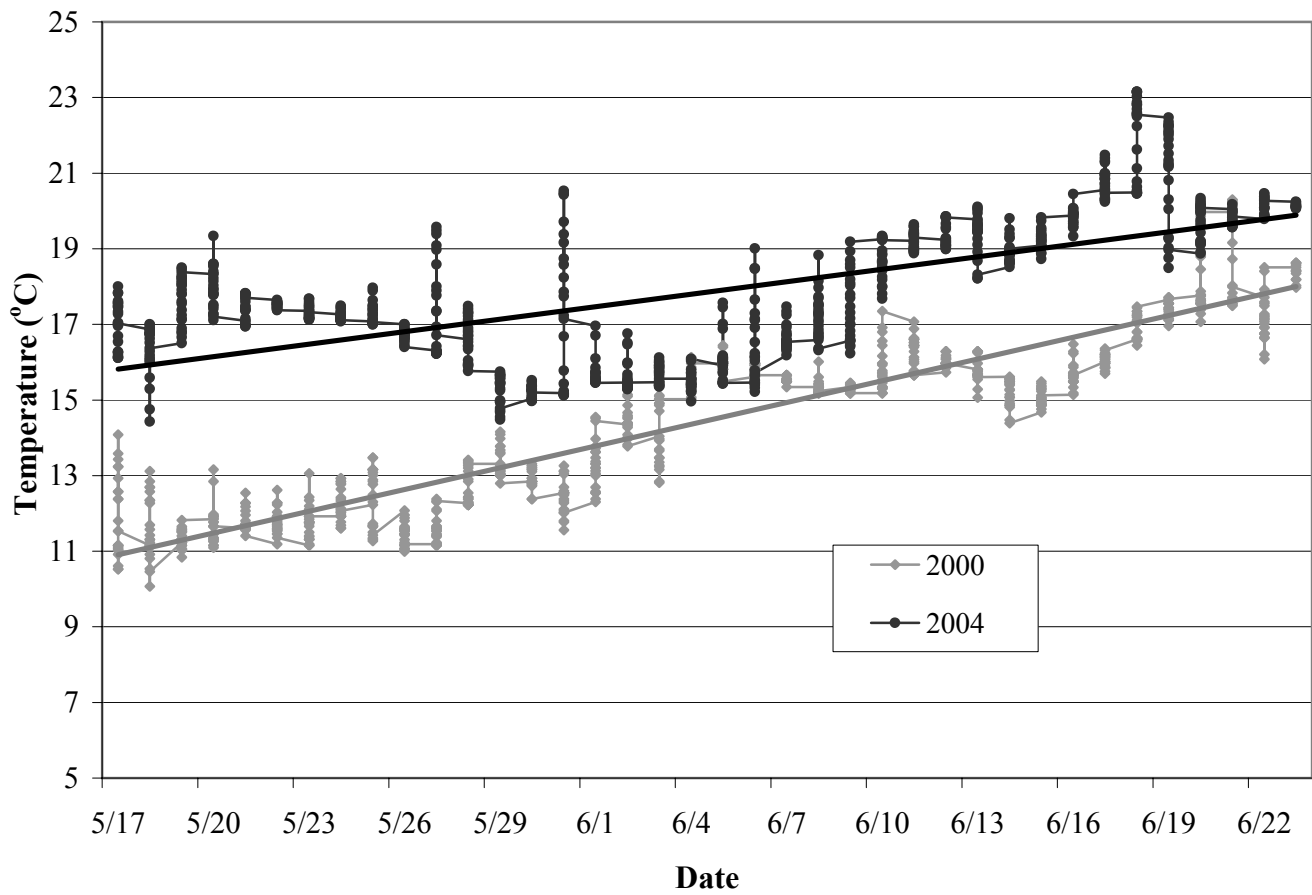


Figure 5-1. Comparison of hourly average surface (0.2 m below surface water) temperatures in Moore forebay for years 2000 and 2004.

Appendix A

Appendix A. Unit generation and project flow at USGen New England's Moore Development, during the 2004 fish sampling effort.

Date and Time	Res. Elev (ft.above SL)	Gate Opening (ft)	Fish Sampler Flow (cfs)	No. 1 Gen (cfs)	No. 2 Gen (cfs)	No. 3 Gen (cfs)	No. 4 Gen (cfs)	Total Gen (cfs)	Total Spill (cfs)
18-May-04 00:00:00	804.5	0.00	0.00	0.0	424.1	0.0	0.0	424.1	0
18-May-04 01:00:00	804.6	0.00	0.00	0.0	424.6	0.0	0.0	424.6	0
18-May-04 02:00:00	804.6	0.00	0.00	0.0	425.1	0.0	0.0	425.1	0
18-May-04 03:00:00	804.6	0.00	0.00	0.0	422.3	0.0	0.0	422.3	0
18-May-04 04:00:00	804.7	0.00	0.00	0.0	421.5	0.0	0.0	421.5	0
18-May-04 05:00:00	804.7	0.00	0.00	0.0	424.6	0.0	0.0	424.6	0
18-May-04 06:00:00	804.8	0.00	0.00	0.0	420.7	0.0	0.0	420.7	0
18-May-04 07:00:00	804.8	0.00	0.00	0.0	491.6	0.0	0.0	491.6	0
18-May-04 08:00:00	804.8	0.00	0.00	0.0	678.8	0.0	86.2	765.0	0
18-May-04 09:00:00	804.7	0.00	0.00	0.0	3572.5	0.0	3528.3	7100.8	0
18-May-04 10:00:00	804.6	4.04	345.60	0.0	3595.9	0.0	3539.2	7135.1	122
18-May-04 11:00:00	804.5	0.00	0.00	0.0	3590.7	0.0	3533.3	7124.0	96
18-May-04 12:00:00	804.4	0.00	0.00	0.0	3594.4	0.0	3541.4	7135.8	0
18-May-04 13:00:00	804.2	0.00	0.00	0.0	3605.2	0.0	3547.7	7153.0	0
18-May-04 14:00:00	804.1	0.00	0.00	0.0	3612.6	0.0	3555.2	7167.8	0
18-May-04 15:00:00	803.9	0.00	0.00	1220.2	3526.3	0.0	3499.6	8246.1	0
18-May-04 16:00:00	803.9	0.00	0.00	0.0	2896.8	0.0	815.1	3712.0	0
18-May-04 17:00:00	803.9	0.00	0.00	0.0	3199.2	0.0	556.5	3755.7	0
18-May-04 18:00:00	803.7	0.00	0.00	1594.5	2873.8	0.0	2486.5	6954.7	0
18-May-04 19:00:00	803.7	0.00	0.00	23.7	460.6	0.0	453.7	938.0	27
18-May-04 20:00:00	803.8	0.00	0.00	0.0	1063.2	0.0	1030.1	2093.3	0
18-May-04 21:00:00	803.6	0.00	0.00	1070.4	3445.2	0.0	3228.0	7743.6	0
18-May-04 22:00:00	803.6	0.00	0.00	0.0	625.2	0.0	0.0	625.2	0
18-May-04 23:00:00	803.7	0.00	0.00	0.0	467.7	0.0	0.0	467.7	0
19-May-04 00:00:00	803.7	0.00	0.00	0.0	531.2	0.0	0.0	531.2	0
19-May-04 01:00:00	803.7	0.00	0.00	0.0	467.6	0.0	0.0	467.6	0
19-May-04 02:00:00	803.8	0.00	0.00	0.0	466.6	0.0	0.0	466.6	0
19-May-04 03:00:00	803.8	0.00	0.00	0.0	472.1	0.0	0.0	472.1	0
19-May-04 04:00:00	803.8	0.00	0.00	0.0	473.9	0.0	0.0	473.9	0
19-May-04 05:00:00	803.9	0.00	0.00	0.0	468.4	0.0	0.0	468.4	0
19-May-04 06:00:00	803.9	0.00	0.00	0.0	538.3	0.0	0.0	538.3	0
19-May-04 07:00:00	803.9	0.00	0.00	0.0	2276.5	0.0	249.5	2526.0	0
19-May-04 08:00:00	803.7	0.00	0.00	0.0	3195.8	0.0	3180.1	6375.9	0
19-May-04 09:00:00	803.7	0.00	0.00	0.0	2276.6	0.0	2267.7	4544.3	0
19-May-04 10:00:00	803.6	0.00	0.00	0.0	2600.3	0.0	755.9	3356.2	0
19-May-04 11:00:00	803.5	0.00	0.00	0.0	3620.6	0.0	733.8	4354.4	0
19-May-04 12:00:00	803.5	0.00	0.00	0.0	3615.9	0.0	2086.2	5702.1	0
19-May-04 13:00:00	803.5	0.00	0.00	0.0	3644.4	0.0	0.0	3644.4	0
19-May-04 14:00:00	803.5	4.75	440.18	0.0	1153.7	0.0	17.5	1171.2	384
19-May-04 15:00:00	803.5	0.00	0.00	0.0	443.8	0.0	0.0	443.8	44
19-May-04 16:00:00	803.5	0.00	0.00	0.0	452.9	0.0	0.0	452.9	0
19-May-04 17:00:00	803.5	0.00	0.00	0.0	3023.7	0.0	2930.7	5954.4	0
19-May-04 18:00:00	803.5	0.00	0.00	0.0	469.5	0.0	0.0	469.5	0
19-May-04 19:00:00	803.5	0.00	0.00	0.0	466.6	0.0	0.0	466.6	0
19-May-04 20:00:00	803.5	0.00	0.00	0.0	464.5	0.0	0.0	464.5	0
19-May-04 21:00:00	803.6	5.09	482.99	0.0	461.8	0.0	0.0	461.8	418

Date and Time	Res. Elev (ft.above SL)	Gate Opening (ft)	Fish Sampler Flow (cfs)	No. 1 Gen (cfs)	No. 2 Gen (cfs)	No. 3 Gen (cfs)	No. 4 Gen (cfs)	Total Gen (cfs)	Total Spill (cfs)
19-May-04 22:00:00	803.7	5.17	482.99	0.0	467.5	0.0	0.0	467.5	511
19-May-04 23:00:00	803.7	5.17	482.99	0.0	460.0	0.0	0.0	460.0	515
20-May-04 00:00:00	803.7	4.92	468.57	0.0	467.1	0.0	0.0	467.1	500
20-May-04 01:00:00	803.8	5.01	482.99	0.0	23.6	0.0	0.0	23.6	487
20-May-04 02:00:00	803.9	4.65	426.21	0.0	0.0	0.0	0.0	0.0	479
20-May-04 03:00:00	803.9	4.74	440.18	0.0	0.0	0.0	0.0	0.0	446
20-May-04 04:00:00	804.0	4.78	440.18	0.0	0.0	0.0	0.0	0.0	453
20-May-04 05:00:00	804.1	4.87	454.30	0.0	0.0	0.0	0.0	0.0	465
20-May-04 06:00:00	804.1	4.91	468.57	0.0	0.0	0.0	0.0	0.0	474
20-May-04 07:00:00	804.2	4.96	468.57	0.0	400.4	0.0	0.0	400.4	481
20-May-04 08:00:00	804.2	5.05	482.99	0.0	411.8	0.0	0.0	411.8	490
20-May-04 09:00:00	804.2	5.05	482.99	0.7	1833.8	0.0	1676.9	3511.4	501
20-May-04 10:00:00	804.2	5.00	482.99	0.0	1963.8	12.7	1900.1	3876.6	498
20-May-04 11:00:00	804.0	0.00	0.00	0.8	3580.8	3517.4	3576.1	10675.1	79
20-May-04 12:00:00	803.8	0.00	0.00	32.6	3567.8	3559.5	3596.3	10756.3	0
20-May-04 13:00:00	803.6	0.00	0.00	1.4	3589.6	3568.8	3606.9	10766.6	0
20-May-04 14:00:00	803.5	0.00	0.00	0.0	2572.4	1850.2	601.6	5024.3	0
20-May-04 15:00:00	803.6	4.59	412.38	0.0	609.1	209.8	0.0	818.8	6
20-May-04 16:00:00	803.6	4.63	426.21	0.0	471.0	0.0	0.0	471.0	435
20-May-04 17:00:00	803.6	4.59	412.38	0.0	3617.5	0.0	0.0	3617.5	440
20-May-04 18:00:00	803.6	4.59	412.38	0.0	3643.8	0.0	59.2	3703.0	438
20-May-04 19:00:00	803.5	4.45	398.72	0.0	3650.4	0.0	3518.6	7169.0	430
20-May-04 20:00:00	803.4	4.37	385.20	0.0	3654.6	0.0	3617.4	7272.0	418
20-May-04 21:00:00	803.3	4.28	371.84	0.0	2576.0	0.0	2178.8	4754.9	401
20-May-04 22:00:00	803.3	4.32	385.20	0.0	446.5	0.0	0.0	446.5	392
20-May-04 23:00:00	803.4	4.41	398.72	0.0	0.0	0.0	0.0	0.0	398
21-May-04 00:00:00	803.5	4.45	398.72	0.0	0.0	0.0	0.0	0.0	407
21-May-04 01:00:00	803.5	4.54	412.38	0.0	0.0	0.0	0.0	0.0	419
21-May-04 02:00:00	803.6	4.59	412.38	0.0	0.0	0.0	0.0	0.0	425
21-May-04 03:00:00	803.6	4.63	426.21	0.0	0.0	0.0	0.0	0.0	436
21-May-04 04:00:00	803.7	4.72	440.18	0.0	0.0	0.0	0.0	0.0	446
21-May-04 05:00:00	803.8	4.76	440.18	0.0	0.0	0.0	0.0	0.0	453
21-May-04 06:00:00	803.8	4.81	454.30	0.0	0.0	0.0	0.0	0.0	461
21-May-04 07:00:00	803.9	4.85	454.30	0.0	337.4	0.0	0.0	337.4	468
21-May-04 08:00:00	803.9	4.89	454.30	0.0	462.4	0.0	47.9	510.3	475
21-May-04 09:00:00	803.8	4.76	440.18	0.0	3526.4	0.0	3472.9	6999.4	475
21-May-04 10:00:00	803.7	4.67	426.21	0.0	3554.2	0.0	3511.3	7065.5	462
21-May-04 11:00:00	803.6	0.00	0.00	0.0	3553.0	0.0	3517.9	7070.9	13
21-May-04 12:00:00	803.5	0.00	0.00	0.0	3566.2	0.0	3518.3	7084.6	0
21-May-04 13:00:00	803.4	0.00	0.00	0.0	3578.0	0.0	3516.5	7094.5	0
21-May-04 14:00:00	803.4	4.41	398.72	0.0	563.8	0.0	102.0	665.8	180
21-May-04 15:00:00	803.5	4.45	398.72	0.0	469.8	0.0	0.0	469.8	407
21-May-04 16:00:00	803.5	4.50	398.72	0.0	467.9	0.0	0.0	467.9	415
21-May-04 17:00:00	803.5	4.54	412.38	0.0	469.8	0.0	0.0	469.8	421
21-May-04 18:00:00	803.5	4.50	398.72	0.0	3466.6	0.0	0.0	3466.6	422
21-May-04 19:00:00	803.5	4.45	398.72	0.0	3574.3	0.0	0.0	3574.3	421
21-May-04 20:00:00	803.4	4.41	398.72	0.0	3581.2	0.0	0.0	3581.2	414
21-May-04 21:00:00	803.4	4.37	385.20	0.0	3579.8	0.0	0.0	3579.8	407

Date and Time	Res. Elev (ft.above SL)	Gate Opening (ft)	Fish Sampler Flow (cfs)	No. 1 Gen (cfs)	No. 2 Gen (cfs)	No. 3 Gen (cfs)	No. 4 Gen (cfs)	Total Gen (cfs)	Total Spill (cfs)
21-May-04 22:00:00	803.3	4.32	385.20	0.0	3575.5	0.0	0.0	3575.5	400
21-May-04 23:00:00	803.4	4.37	385.20	0.0	126.2	0.0	0.0	126.2	401
22-May-04 00:00:00	803.4	4.41	398.72	0.0	0.0	0.0	0.0	0.0	404
22-May-04 01:00:00	803.5	4.45	398.72	0.0	0.0	0.0	0.0	0.0	410
22-May-04 02:00:00	803.5	4.50	398.72	0.0	0.0	0.0	0.0	0.0	417
22-May-04 03:00:00	803.5	4.54	412.38	0.0	0.0	0.0	0.0	0.0	424
22-May-04 04:00:00	803.6	4.59	412.38	0.0	0.0	0.0	0.0	0.0	429
22-May-04 05:00:00	803.6	4.63	426.21	0.0	0.0	0.0	0.0	0.0	435
22-May-04 06:00:00	803.7	4.67	426.21	0.0	76.9	0.0	0.0	76.9	441
22-May-04 07:00:00	803.7	4.72	440.18	0.0	460.8	0.0	0.0	460.8	446
22-May-04 08:00:00	803.8	4.76	440.18	0.0	461.7	0.0	0.0	461.7	448
22-May-04 09:00:00	803.8	4.76	440.18	0.0	491.2	0.0	63.4	554.7	455
22-May-04 10:00:00	803.7	4.67	426.21	0.0	2689.5	0.0	2657.2	5346.7	457
22-May-04 11:00:00	803.6	4.63	426.21	0.0	2713.4	0.0	2678.0	5391.4	447
22-May-04 12:00:00	803.5	4.54	412.38	0.0	3579.4	0.0	3561.0	7140.4	432
22-May-04 13:00:00	803.5	4.50	398.72	0.0	2676.2	0.0	30.4	2706.5	423
22-May-04 14:00:00	803.5	4.45	398.72	0.0	2672.8	0.0	0.0	2672.8	416
22-May-04 15:00:00	803.4	4.41	398.72	0.0	2672.6	0.0	0.0	2672.6	415
22-May-04 16:00:00	803.4	4.41	398.72	0.0	2678.7	0.0	0.0	2678.7	409
22-May-04 17:00:00	803.4	4.37	385.20	0.0	2676.8	0.0	0.0	2676.8	407
22-May-04 18:00:00	803.3	4.28	371.84	0.0	3284.6	0.0	2204.5	5489.1	399
22-May-04 19:00:00	803.3	4.28	371.84	0.0	2674.8	0.0	0.0	2674.8	393
22-May-04 20:00:00	803.2	4.23	371.84	0.0	2670.6	0.0	0.0	2670.6	391
22-May-04 21:00:00	803.1	4.15	358.64	0.0	2670.0	0.0	2628.5	5298.5	385
22-May-04 22:00:00	803.1	4.06	345.60	0.0	2588.1	0.0	2619.7	5207.8	372
22-May-04 23:00:00	803.1	4.75	440.18	0.0	385.4	0.0	174.9	560.3	394
23-May-04 00:00:00	803.2	4.79	440.18	0.0	0.0	0.0	0.0	0.0	452
23-May-04 01:00:00	803.2	4.83	454.30	0.0	0.0	0.0	0.0	0.0	464
23-May-04 02:00:00	803.3	4.88	454.30	0.0	0.0	0.0	0.0	0.0	473
23-May-04 03:00:00	803.4	4.97	468.57	0.0	0.0	0.0	0.0	0.0	483
23-May-04 04:00:00	803.4	4.97	468.57	0.0	0.0	0.0	0.0	0.0	489
23-May-04 05:00:00	803.5	5.05	482.99	0.0	0.0	0.0	0.0	0.0	492
23-May-04 06:00:00	803.5	4.60	412.38	0.0	0.0	0.0	0.0	0.0	454
23-May-04 07:00:00	803.5	4.64	426.21	0.0	373.8	0.0	0.0	373.8	437
23-May-04 08:00:00	803.5	4.64	426.21	0.0	417.5	0.0	0.0	417.5	442
23-May-04 09:00:00	803.6	4.69	426.21	0.0	432.6	0.0	0.0	432.6	444
23-May-04 10:00:00	803.6	4.73	440.18	0.0	522.6	0.0	0.0	522.6	451
23-May-04 11:00:00	803.7	4.77	440.18	0.0	588.7	0.0	0.0	588.7	458
23-May-04 12:00:00	803.7	4.77	440.18	0.0	2683.1	0.0	0.0	2683.1	461
23-May-04 13:00:00	803.6	4.73	440.18	0.0	2679.6	0.0	64.8	2744.3	460
23-May-04 14:00:00	803.5	4.64	426.21	0.0	2687.0	0.0	2733.0	5420.0	454
23-May-04 15:00:00	803.5	4.60	412.38	0.0	2693.1	0.0	2708.3	5401.4	441
23-May-04 16:00:00	803.5	4.55	412.38	0.0	2690.8	0.0	2.4	2693.1	434
23-May-04 17:00:00	803.5	4.55	412.38	0.0	2696.6	0.0	0.0	2696.6	430
23-May-04 18:00:00	803.5	4.55	412.38	0.0	2700.5	0.0	0.0	2700.5	430
23-May-04 19:00:00	803.5	4.55	412.38	0.0	2701.5	0.0	0.0	2701.5	430
23-May-04 20:00:00	803.5	4.55	412.38	0.0	2701.3	0.0	19.9	2721.2	430
23-May-04 21:00:00	803.4	4.47	398.72	0.0	2702.3	0.0	2627.7	5330.0	428

Date and Time	Res. Elev (ft.above SL)	Gate Opening (ft)	Fish Sampler Flow (cfs)	No. 1 Gen (cfs)	No. 2 Gen (cfs)	No. 3 Gen (cfs)	No. 4 Gen (cfs)	Total Gen (cfs)	Total Spill (cfs)
23-May-04 22:00:00	803.3	4.42	398.72	0.0	2704.5	0.0	2657.1	5361.6	416
23-May-04 23:00:00	803.4	4.47	398.72	0.0	174.1	0.0	9.2	183.4	411
24-May-04 00:00:00	803.4	4.51	412.38	0.0	0.0	0.0	0.0	0.0	414
24-May-04 01:00:00	803.5	4.55	412.38	0.0	0.0	0.0	0.0	0.0	422
24-May-04 02:00:00	803.5	4.60	412.38	0.0	0.0	0.0	0.0	0.0	429
24-May-04 03:00:00	803.7	4.77	440.18	0.0	0.0	0.0	0.0	0.0	447
24-May-04 04:00:00	803.7	4.77	440.18	0.0	0.0	0.0	0.0	0.0	460
24-May-04 05:00:00	803.8	4.61	426.21	0.0	0.0	0.0	0.0	0.0	432
24-May-04 06:00:00	803.9	4.65	426.21	0.0	40.7	0.0	0.0	40.7	437
24-May-04 07:00:00	803.9	4.74	440.18	0.0	523.6	0.0	88.2	611.8	446
24-May-04 08:00:00	803.9	4.74	440.18	0.0	2690.8	0.0	2655.1	5345.9	456
24-May-04 09:00:00	803.9	4.69	426.21	0.0	2766.1	0.0	2746.1	5512.2	455
24-May-04 10:00:00	803.8	4.61	426.21	0.0	3511.1	0.0	3618.7	7129.8	448
24-May-04 11:00:00	803.8	4.56	412.38	875.7	3510.4	0.0	3623.4	8009.4	438
24-May-04 12:00:00	803.6	4.43	398.72	1567.9	3513.1	0.0	3627.8	8708.8	425
24-May-04 13:00:00	803.5	4.34	385.20	1567.2	3518.7	0.0	3640.0	8725.9	412
24-May-04 14:00:00	803.5	4.25	371.84	2047.9	3234.0	0.0	3262.9	8544.8	398
24-May-04 15:00:00	803.4	4.17	358.64	2364.6	2679.8	0.0	2653.2	7697.6	385
24-May-04 16:00:00	803.3	4.12	358.64	1954.9	2679.9	0.0	2653.3	7288.2	378
24-May-04 17:00:00	803.3	4.08	345.60	1583.3	2681.5	0.0	2654.8	6919.6	372
24-May-04 18:00:00	803.2	4.03	345.60	1212.3	2680.6	0.0	2651.9	6544.8	366
24-May-04 19:00:00	803.2	4.03	345.60	1209.7	2675.4	0.0	2319.7	6204.8	359
24-May-04 20:00:00	803.2	4.03	345.60	1209.7	2675.9	0.0	2287.6	6173.2	358
24-May-04 21:00:00	803.2	4.03	345.60	1212.0	2680.1	0.0	2288.2	6180.2	358
24-May-04 22:00:00	803.2	3.99	332.72	1209.0	2679.9	0.0	2287.8	6176.7	356
24-May-04 23:00:00	803.2	3.99	332.72	1215.3	2679.7	0.0	2286.7	6181.7	353
25-May-04 00:00:00	803.2	3.99	332.72	1215.4	2680.7	0.0	2287.6	6183.6	352
25-May-04 01:00:00	803.3	4.08	345.60	100.5	2681.6	0.0	151.6	2933.7	357
25-May-04 02:00:00	803.4	4.17	358.64	0.0	2651.4	0.0	0.0	2651.4	363
25-May-04 03:00:00	803.5	4.25	371.84	0.0	2573.0	0.0	0.0	2573.0	377
25-May-04 04:00:00	803.6	4.39	385.20	0.0	2480.2	0.0	0.0	2480.2	390
25-May-04 05:00:00	803.7	4.47	398.72	0.0	2609.5	0.0	0.0	2609.5	401
25-May-04 06:00:00	803.8	4.56	412.38	0.0	2829.6	0.0	0.0	2829.6	418
25-May-04 07:00:00	803.8	4.61	426.21	0.0	3230.6	0.0	1824.3	5054.8	443
25-May-04 08:00:00	803.8	4.71	440.18	0.0	3567.0	0.0	3576.6	7143.6	457
25-May-04 09:00:00	803.8	4.71	440.18	1324.7	3561.3	0.0	3583.2	8469.2	451
25-May-04 10:00:00	803.8	4.66	426.21	1525.8	3560.1	0.0	3584.1	8670.0	450
25-May-04 11:00:00	803.7	4.62	426.21	1528.3	3566.5	0.0	3588.6	8683.3	444
25-May-04 12:00:00	803.7	4.57	412.38	1532.1	3559.7	0.0	3586.7	8678.5	439
25-May-04 13:00:00	803.7	4.57	412.38	1530.3	3567.5	0.0	3585.5	8683.2	436
25-May-04 14:00:00	803.6	4.53	412.38	1805.7	3413.9	0.0	3422.7	8642.2	431
25-May-04 15:00:00	803.6	4.53	412.38	2679.9	2953.3	0.0	2890.8	8524.0	429
25-May-04 16:00:00	803.6	4.49	398.72	2681.6	2954.1	0.0	2890.2	8525.9	422
25-May-04 17:00:00	803.6	4.49	398.72	38.5	3568.7	0.0	3578.7	7185.9	420
25-May-04 18:00:00	803.6	4.49	398.72	0.0	3575.7	0.0	3591.7	7167.3	420
25-May-04 19:00:00	803.6	4.53	412.38	0.0	3575.4	0.0	3595.3	7170.6	420
25-May-04 20:00:00	803.6	4.49	398.72	0.0	3571.8	0.0	3591.3	7163.0	420
25-May-04 21:00:00	803.6	4.53	412.38	0.0	3573.1	0.0	3590.0	7163.1	423

Date and Time	Res. Elev (ft.above SL)	Gate Opening (ft)	Fish Sampler Flow (cfs)	No. 1 Gen (cfs)	No. 2 Gen (cfs)	No. 3 Gen (cfs)	No. 4 Gen (cfs)	Total Gen (cfs)	Total Spill (cfs)
25-May-04 22:00:00	803.6	4.53	412.38	0.0	3571.5	0.0	3592.8	7164.2	426
25-May-04 23:00:00	803.6	4.53	412.38	0.0	3573.1	0.0	3587.6	7160.7	426
26-May-04 00:00:00	803.6	4.53	412.38	0.0	3573.0	0.0	3588.1	7161.1	426
26-May-04 01:00:00	803.7	4.57	412.38	0.0	3205.0	0.0	3264.3	6469.3	427
26-May-04 02:00:00	803.7	4.57	412.38	0.0	3188.1	0.0	3252.9	6441.0	433
26-May-04 03:00:00	803.7	4.62	426.21	0.0	2712.7	0.0	2678.1	5390.8	435
26-May-04 04:00:00	803.8	4.71	440.18	0.0	2145.8	0.0	2103.2	4249.0	443
26-May-04 05:00:00	803.9	4.79	440.18	0.0	1935.1	0.0	1959.2	3894.3	454
26-May-04 06:00:00	803.9	4.79	440.18	0.0	3337.2	0.0	3349.7	6686.9	463
26-May-04 07:00:00	803.9	4.79	440.18	0.0	3660.1	0.0	3595.0	7255.1	464
26-May-04 08:00:00	803.9	4.79	440.18	1996.0	3087.1	0.0	3021.3	8104.4	464
26-May-04 09:00:00	803.9	4.75	440.18	2786.3	2859.0	0.0	2789.0	8434.3	462
26-May-04 10:00:00	803.8	4.71	440.18	2789.9	2859.3	0.0	2789.4	8438.6	457
26-May-04 11:00:00	803.8	4.66	426.21	2818.4	2895.7	0.0	2833.4	8547.5	453
26-May-04 12:00:00	803.7	4.62	426.21	2897.7	2980.0	0.0	2944.4	8822.1	447
26-May-04 13:00:00	803.7	4.57	412.38	2899.2	2977.8	0.0	2946.3	8823.3	439
26-May-04 14:00:00	803.6	4.49	398.72	2898.9	2980.0	0.0	2946.8	8825.7	426
26-May-04 15:00:00	803.5	4.44	398.72	2899.0	2977.9	0.0	2948.0	8824.9	419
26-May-04 16:00:00	803.5	4.40	385.20	2802.0	2811.1	0.0	2804.9	8418.1	414
26-May-04 17:00:00	803.5	4.35	385.20	2797.3	2817.5	0.0	2798.2	8413.0	408
26-May-04 18:00:00	803.4	4.31	385.20	2795.1	2818.5	0.0	2801.5	8415.1	398
26-May-04 19:00:00	803.3	4.32	385.20	2799.8	2819.9	0.0	2803.0	8422.7	400
26-May-04 20:00:00	803.3	4.28	371.84	2798.5	2825.3	0.0	2804.6	8428.4	398
26-May-04 21:00:00	803.2	4.23	371.84	2803.9	2822.2	0.0	2804.8	8430.9	391
26-May-04 22:00:00	803.2	4.19	358.64	66.9	3514.7	0.0	3514.5	7096.0	384
26-May-04 23:00:00	803.1	4.15	358.64	0.0	3529.9	0.0	3250.3	6780.3	378
27-May-04 00:00:00	803.2	4.23	371.84	0.0	3522.4	0.0	0.0	3522.4	379
27-May-04 01:00:00	803.3	4.28	371.84	0.0	3507.0	0.0	0.0	3507.0	383
27-May-04 02:00:00	803.3	4.32	385.20	0.0	3510.0	0.0	0.0	3510.0	390
27-May-04 03:00:00	803.4	4.41	398.72	0.0	3507.3	0.0	0.0	3507.3	397
27-May-04 04:00:00	803.5	4.45	398.72	0.0	3501.5	0.0	1.7	3503.2	409
27-May-04 05:00:00	803.5	4.45	398.72	0.0	3500.3	0.0	2810.9	6311.1	411
27-May-04 06:00:00	803.4	4.41	398.72	0.0	3500.4	0.0	3576.3	7076.7	413
27-May-04 07:00:00	803.4	4.41	398.72	0.0	3398.8	0.0	3584.4	6983.2	406
27-May-04 08:00:00	803.5	4.50	398.72	0.0	458.3	0.0	69.0	527.3	408
27-May-04 09:00:00	803.6	4.59	412.38	0.0	348.9	0.0	0.0	348.9	420
27-May-04 10:00:00	803.6	4.59	412.38	1887.6	2394.6	0.0	2296.8	6579.1	438
27-May-04 11:00:00	803.5	4.50	398.72	3219.5	3224.1	0.0	3234.8	9678.4	433
27-May-04 12:00:00	803.4	4.41	398.72	3224.8	3226.1	0.0	3236.6	9687.6	419
27-May-04 13:00:00	803.3	4.32	385.20	3234.7	3225.5	0.0	3243.3	9703.5	405
27-May-04 14:00:00	803.1	4.15	358.64	3245.5	3220.6	0.0	3246.7	9712.8	390
27-May-04 15:00:00	803.1	4.06	345.60	3242.6	3223.0	0.0	3247.0	9712.6	373
27-May-04 16:00:00	803.0	4.47	398.72	3247.0	3231.9	0.0	3249.6	9728.6	394
27-May-04 17:00:00	802.9	4.38	385.20	3252.4	3233.4	0.0	3250.2	9736.0	414
27-May-04 18:00:00	802.7	4.21	371.84	3254.0	3239.1	0.0	3255.6	9748.7	396
27-May-04 19:00:00	802.6	4.12	358.64	3254.6	3241.6	0.0	3259.7	9755.8	382
27-May-04 20:00:00	802.5	4.03	345.60	3259.7	3245.8	0.0	3266.2	9771.6	362
27-May-04 21:00:00	802.4	3.86	320.01	3266.6	3252.3	0.0	3268.9	9787.8	348

Date and Time	Res. Elev (ft.above SL)	Gate Opening (ft)	Fish Sampler Flow (cfs)	No. 1 Gen (cfs)	No. 2 Gen (cfs)	No. 3 Gen (cfs)	No. 4 Gen (cfs)	Total Gen (cfs)	Total Spill (cfs)
27-May-04 22:00:00	802.3	4.37	385.20	3268.1	3252.4	0.0	3267.5	9788.0	366
27-May-04 23:00:00	802.2	4.38	385.20	2475.8	2496.5	0.0	2511.6	7483.9	404
28-May-04 00:00:00	802.1	4.34	385.20	882.4	2099.0	0.0	2110.7	5092.1	402
28-May-04 01:00:00	802.3	4.47	398.72	0.0	163.5	0.0	143.3	306.8	404
28-May-04 02:00:00	802.4	4.56	412.38	0.0	0.0	0.0	0.0	0.0	417
28-May-04 03:00:00	802.4	4.64	426.21	0.0	0.0	0.0	0.0	0.0	431
28-May-04 04:00:00	802.6	4.82	454.30	0.0	0.0	0.0	0.0	0.0	452
28-May-04 05:00:00	802.7	4.91	468.57	0.0	0.0	0.0	0.0	0.0	466
28-May-04 06:00:00	802.8	5.00	468.57	0.0	266.9	0.0	0.0	266.9	481
28-May-04 07:00:00	802.8	4.60	412.38	0.0	2836.0	0.0	2549.3	5385.2	446
28-May-04 08:00:00	802.8	4.55	412.38	0.0	3095.0	0.0	3133.8	6228.8	434
28-May-04 09:00:00	802.7	4.46	398.72	592.2	3461.5	0.0	3489.0	7542.6	426
28-May-04 10:00:00	802.6	4.38	385.20	2594.7	2604.2	0.0	2620.8	7819.8	414
28-May-04 11:00:00	802.5	4.29	371.84	2682.1	2670.9	0.0	2641.0	7994.0	407
28-May-04 12:00:00	802.4	4.24	371.84	2487.7	2506.4	0.0	2513.0	7507.2	392
28-May-04 13:00:00	802.4	4.16	358.64	2160.2	2166.3	0.0	2171.7	6498.2	381
28-May-04 14:00:00	802.3	4.07	345.60	1948.2	1944.2	0.0	1930.3	5822.7	374
28-May-04 15:00:00	802.3	4.07	345.60	769.4	2067.0	0.0	2010.5	4847.0	367
28-May-04 16:00:00	802.3	4.11	358.64	101.9	1054.8	0.0	679.7	1836.4	365
28-May-04 17:00:00	802.3	4.07	345.60	2100.8	2132.6	0.0	2161.3	6394.8	369
28-May-04 18:00:00	802.3	4.07	345.60	1985.2	1980.3	0.0	1984.7	5950.2	365
28-May-04 19:00:00	802.2	3.98	332.72	1407.6	2464.3	0.0	2460.3	6332.1	358
28-May-04 20:00:00	802.1	3.94	332.72	0.0	2676.8	0.0	2694.8	5371.6	351
28-May-04 21:00:00	802.1	3.89	320.01	0.0	2784.2	0.0	2694.7	5479.0	345
28-May-04 22:00:00	802.1	3.89	320.01	0.0	2696.6	0.0	2695.6	5392.2	344
28-May-04 23:00:00	802.1	3.94	332.72	0.0	716.9	0.0	95.1	812.0	341
29-May-04 00:00:00	802.2	3.98	332.72	0.0	971.6	0.0	574.5	1546.1	348
29-May-04 01:00:00	802.3	4.11	358.64	0.0	466.9	0.0	38.5	505.4	358
29-May-04 02:00:00	802.4	4.16	358.64	0.0	469.2	0.0	0.0	469.2	371
29-May-04 03:00:00	802.5	4.29	371.84	0.0	470.1	0.0	0.0	470.1	386
29-May-04 04:00:00	802.6	4.38	385.20	0.0	469.8	0.0	0.0	469.8	394
29-May-04 05:00:00	802.6	4.42	398.72	0.0	469.4	0.0	0.0	469.4	407
29-May-04 06:00:00	802.7	4.61	426.21	0.0	468.0	0.0	0.0	468.0	427
29-May-04 07:00:00	802.9	4.78	440.18	0.0	469.4	0.0	0.0	469.4	448
29-May-04 08:00:00	803.0	4.87	454.30	0.0	493.6	0.0	0.0	493.6	459
29-May-04 09:00:00	803.0	4.87	454.30	0.0	3524.4	0.0	90.1	3614.6	472
29-May-04 10:00:00	802.9	4.78	440.18	0.0	3580.8	0.0	3532.3	7113.0	475
29-May-04 11:00:00	802.8	4.74	440.18	0.0	3594.6	0.0	3541.9	7136.5	467
29-May-04 12:00:00	802.8	4.70	426.21	0.0	3586.8	0.0	3550.3	7137.1	454
29-May-04 13:00:00	802.8	4.65	426.21	0.0	3590.0	0.0	235.7	3825.6	448
29-May-04 14:00:00	802.8	4.70	426.21	0.0	3584.9	0.0	0.0	3584.9	447
29-May-04 15:00:00	802.8	4.74	440.18	0.0	1203.6	0.0	0.0	1203.6	455
29-May-04 16:00:00	803.0	4.87	454.30	0.0	468.1	0.0	0.0	468.1	467
29-May-04 17:00:00	803.0	4.92	468.57	0.0	2871.9	0.0	0.0	2871.9	475
29-May-04 18:00:00	803.0	4.92	468.57	0.0	3581.0	0.0	0.0	3581.0	482
29-May-04 19:00:00	803.1	4.96	468.57	0.0	3571.8	0.0	0.0	3571.8	484
29-May-04 20:00:00	803.0	4.87	454.30	0.0	3581.8	0.0	3568.3	7150.1	485
29-May-04 21:00:00	802.9	4.83	454.30	0.0	3593.0	0.0	3658.3	7251.3	478

Date and Time	Res. Elev (ft.above SL)	Gate Opening (ft)	Fish Sampler Flow (cfs)	No. 1 Gen (cfs)	No. 2 Gen (cfs)	No. 3 Gen (cfs)	No. 4 Gen (cfs)	Total Gen (cfs)	Total Spill (cfs)
29-May-04 22:00:00	802.8	4.74	440.18	0.0	3594.8	0.0	3664.7	7259.5	467
29-May-04 23:00:00	802.8	4.70	426.21	0.0	3600.5	0.0	3671.5	7272.0	457
30-May-04 00:00:00	802.8	4.65	426.21	0.0	3593.5	0.0	3675.5	7268.9	449
30-May-04 01:00:00	802.8	4.74	440.18	0.0	603.3	0.0	242.7	846.0	440
30-May-04 02:00:00	802.9	4.78	440.18	0.0	455.3	0.0	0.0	455.3	454
30-May-04 03:00:00	803.0	4.92	468.57	0.0	496.9	0.0	0.0	496.9	470
30-May-04 04:00:00	803.1	5.00	482.99	0.0	497.2	0.0	0.0	497.2	484
30-May-04 05:00:00	803.2	4.89	454.30	0.0	494.7	0.0	0.0	494.7	478
30-May-04 06:00:00	803.2	4.93	468.57	0.0	574.2	0.0	0.0	574.2	478
30-May-04 07:00:00	803.4	5.07	482.99	0.0	495.6	0.0	0.0	495.6	490
30-May-04 08:00:00	803.4	5.07	482.99	0.0	3527.1	0.0	0.0	3527.1	504
30-May-04 09:00:00	803.4	5.11	482.99	0.0	2486.6	0.0	1340.5	3827.2	506
30-May-04 10:00:00	803.4	5.07	482.99	0.0	2299.9	0.0	2231.9	4531.8	510
30-May-04 11:00:00	803.3	5.02	482.99	0.0	3735.9	0.0	3722.0	7457.9	507
30-May-04 12:00:00	803.2	4.93	468.57	0.0	3803.5	0.0	3792.7	7596.2	495
30-May-04 13:00:00	803.2	4.89	454.30	0.0	3205.0	0.0	995.6	4200.6	486
30-May-04 14:00:00	803.2	4.93	468.57	0.0	3915.1	0.0	0.0	3915.1	485
30-May-04 15:00:00	803.2	4.93	468.57	0.0	3917.2	0.0	0.0	3917.2	485
30-May-04 16:00:00	803.2	4.93	468.57	0.0	3920.3	0.0	0.0	3920.3	485
30-May-04 17:00:00	803.2	4.93	468.57	0.0	3918.0	0.0	0.0	3918.0	485
30-May-04 18:00:00	803.2	4.93	468.57	0.0	3914.1	0.0	0.0	3914.1	485
30-May-04 19:00:00	803.2	4.89	454.30	0.0	3916.2	0.0	129.6	4045.8	485
30-May-04 20:00:00	803.1	4.85	454.30	0.0	3590.9	0.0	3536.7	7127.6	480
30-May-04 21:00:00	803.1	4.76	440.18	0.0	3671.4	0.0	3672.1	7343.6	471
30-May-04 22:00:00	803.0	4.67	426.21	0.0	3756.5	0.0	3764.3	7520.8	458
30-May-04 23:00:00	803.0	4.67	426.21	0.0	2452.2	0.0	2074.9	4527.1	445
31-May-04 00:00:00	803.0	4.72	440.18	0.0	464.2	0.0	0.0	464.2	444
31-May-04 01:00:00	803.1	4.80	454.30	0.0	467.7	0.0	0.0	467.7	456
31-May-04 02:00:00	803.1	4.85	454.30	0.0	466.5	0.0	0.0	466.5	463
31-May-04 03:00:00	803.2	4.93	468.57	0.0	471.5	0.0	0.0	471.5	475
31-May-04 04:00:00	803.3	4.98	468.57	0.0	464.5	0.0	0.0	464.5	485
31-May-04 05:00:00	803.4	5.07	482.99	0.0	464.9	0.0	0.0	464.9	493
31-May-04 06:00:00	803.4	4.81	454.30	0.0	466.5	0.0	0.0	466.5	485
31-May-04 07:00:00	803.5	4.90	454.30	0.0	467.6	0.0	0.0	467.6	470
31-May-04 08:00:00	803.5	4.90	454.30	0.0	2519.5	0.0	1233.3	3752.8	477
31-May-04 09:00:00	803.5	4.85	454.30	0.0	2317.6	0.0	2358.4	4676.1	479
31-May-04 10:00:00	803.4	4.81	454.30	0.0	2711.7	0.0	2709.0	5420.7	473
31-May-04 11:00:00	803.3	4.72	440.18	48.5	3559.8	0.0	3518.4	7126.7	459
31-May-04 12:00:00	803.1	4.55	412.38	3540.3	3577.6	0.0	3536.7	10654.6	443
31-May-04 13:00:00	803.0	4.37	385.20	270.5	3588.0	0.0	3538.3	7396.8	422
31-May-04 14:00:00	802.9	4.28	371.84	0.0	3593.2	0.0	3421.2	7014.5	403
31-May-04 15:00:00	802.9	4.28	371.84	0.0	3586.1	0.0	35.7	3621.8	394
31-May-04 16:00:00	802.8	4.24	371.84	0.0	3587.0	0.0	0.0	3587.0	392
31-May-04 17:00:00	802.8	4.20	358.64	0.0	3584.1	0.0	0.0	3584.1	386
31-May-04 18:00:00	802.8	4.20	358.64	0.0	3582.9	0.0	0.0	3582.9	380
31-May-04 19:00:00	802.8	4.15	358.64	0.0	3578.7	0.0	0.0	3578.7	378
31-May-04 20:00:00	802.7	4.11	358.64	0.0	3586.8	0.0	3391.5	6978.3	371
31-May-04 21:00:00	802.5	3.93	332.72	0.0	3590.2	0.0	3509.6	7099.8	359

Date and Time	Res. Elev (ft.above SL)	Gate Opening (ft)	Fish Sampler Flow (cfs)	No. 1 Gen (cfs)	No. 2 Gen (cfs)	No. 3 Gen (cfs)	No. 4 Gen (cfs)	Total Gen (cfs)	Total Spill (cfs)
31-May-04 22:00:00	802.5	3.93	332.72	0.0	1642.5	0.0	1432.7	3075.2	344
31-May-04 23:00:00	802.6	4.02	345.60	0.0	444.0	0.0	0.0	444.0	344
01-Jun-04 00:00:00	802.7	4.06	345.60	0.0	449.7	0.0	0.0	449.7	355
01-Jun-04 01:00:00	802.7	4.11	358.64	0.0	455.0	0.0	0.0	455.0	358
01-Jun-04 02:00:00	802.8	4.85	454.30	0.0	449.9	0.0	0.0	449.9	423
01-Jun-04 03:00:00	802.8	4.90	454.30	0.0	455.8	0.0	0.0	455.8	471
01-Jun-04 04:00:00	802.8	4.94	468.57	0.0	455.3	0.0	0.0	455.3	478
01-Jun-04 05:00:00	802.9	4.98	468.57	0.0	456.9	0.0	0.0	456.9	485
01-Jun-04 06:00:00	803.0	5.07	482.99	0.0	454.8	0.0	0.0	454.8	494
01-Jun-04 07:00:00	803.0	4.92	468.57	0.0	453.8	0.0	0.0	453.8	482
01-Jun-04 08:00:00	803.0	4.82	454.30	0.0	3453.6	0.0	0.0	3453.6	469
01-Jun-04 09:00:00	803.0	4.77	440.18	0.0	3531.1	0.0	0.0	3531.1	467
01-Jun-04 10:00:00	803.0	4.77	440.18	0.0	3523.5	0.0	73.0	3596.5	466
01-Jun-04 11:00:00	802.8	4.64	426.21	1145.8	3578.9	0.0	2559.0	7283.7	457
01-Jun-04 12:00:00	802.8	4.55	412.38	3537.8	3595.5	0.0	146.8	7280.0	442
01-Jun-04 13:00:00	802.7	4.46	398.72	3553.0	3593.5	0.0	0.0	7146.5	424
01-Jun-04 14:00:00	802.6	4.38	385.20	3444.7	3611.1	0.0	0.0	7055.8	412
01-Jun-04 15:00:00	802.5	4.29	371.84	185.2	3600.4	0.0	0.0	3785.6	400
01-Jun-04 16:00:00	802.4	4.24	371.84	0.0	3615.7	0.0	0.0	3615.7	392
01-Jun-04 17:00:00	802.4	4.24	371.84	0.0	3617.4	0.0	0.0	3617.4	386
01-Jun-04 18:00:00	802.4	4.20	358.64	0.0	3612.4	0.0	0.0	3612.4	384
01-Jun-04 19:00:00	802.4	4.16	358.64	0.0	3609.1	0.0	0.0	3609.1	380
01-Jun-04 20:00:00	802.3	4.11	358.64	0.0	3504.2	0.0	3333.7	6837.9	373
01-Jun-04 21:00:00	802.1	3.94	332.72	0.0	3489.3	0.0	3458.5	6947.8	360
01-Jun-04 22:00:00	802.2	3.98	332.72	0.0	568.9	0.0	228.6	797.5	352
01-Jun-04 23:00:00	802.3	4.07	345.60	0.0	471.3	0.0	0.0	471.3	352
02-Jun-04 00:00:00	802.3	4.11	358.64	0.0	467.0	0.0	0.0	467.0	358
02-Jun-04 01:00:00	802.4	4.16	358.64	0.0	469.1	0.0	0.0	469.1	367
02-Jun-04 02:00:00	802.4	4.20	358.64	0.0	467.8	0.0	0.0	467.8	375
02-Jun-04 03:00:00	802.4	4.24	371.84	0.0	471.2	0.0	0.0	471.2	379
02-Jun-04 04:00:00	802.5	4.29	371.84	0.0	468.3	0.0	0.0	468.3	389
02-Jun-04 05:00:00	802.5	4.33	385.20	0.0	471.7	0.0	0.0	471.7	392
02-Jun-04 06:00:00	802.6	4.42	398.72	0.0	468.2	0.0	0.0	468.2	399
02-Jun-04 07:00:00	802.6	4.38	385.20	0.0	2520.0	0.0	1831.9	4351.9	405
02-Jun-04 08:00:00	802.5	4.29	371.84	0.0	3278.8	0.0	3118.0	6396.8	402
02-Jun-04 09:00:00	802.4	4.20	358.64	0.0	3265.6	0.0	3110.5	6376.1	391
02-Jun-04 10:00:00	802.4	4.16	358.64	0.0	1997.6	0.0	1965.2	3962.8	383
02-Jun-04 11:00:00	802.4	4.16	358.64	0.0	2208.6	0.0	2201.9	4410.5	376
02-Jun-04 12:00:00	802.3	4.11	358.64	0.0	1970.9	0.0	1984.5	3955.5	374
02-Jun-04 13:00:00	802.2	4.02	345.60	0.0	3631.3	0.0	3363.2	6994.4	366
02-Jun-04 14:00:00	802.3	4.07	345.60	0.0	488.0	0.0	29.5	517.5	358
02-Jun-04 15:00:00	802.4	4.16	358.64	0.0	462.4	0.0	0.0	462.4	368
02-Jun-04 16:00:00	802.4	4.20	358.64	0.0	470.3	0.0	0.0	470.3	375
02-Jun-04 17:00:00	802.4	4.24	371.84	0.0	721.6	0.0	0.0	721.6	383
02-Jun-04 18:00:00	802.5	4.29	371.84	0.0	3656.1	0.0	0.0	3656.1	386
02-Jun-04 19:00:00	802.4	4.24	371.84	0.0	3666.2	0.0	86.9	3753.2	386
02-Jun-04 20:00:00	802.4	4.20	358.64	2149.2	2586.6	0.0	2500.9	7236.7	385
02-Jun-04 21:00:00	802.3	4.07	345.60	2416.0	2450.5	0.0	2389.9	7256.3	377

Date and Time	Res. Elev (ft.above SL)	Gate Opening (ft)	Fish Sampler Flow (cfs)	No. 1 Gen (cfs)	No. 2 Gen (cfs)	No. 3 Gen (cfs)	No. 4 Gen (cfs)	Total Gen (cfs)	Total Spill (cfs)
02-Jun-04 22:00:00	802.3	4.07	345.60	380.3	1649.7	0.0	1576.1	3606.1	366
02-Jun-04 23:00:00	802.3	4.11	358.64	181.7	811.3	0.0	814.5	1807.5	363
03-Jun-04 00:00:00	802.4	4.20	358.64	0.0	466.6	0.0	67.7	534.3	367
03-Jun-04 01:00:00	802.5	4.29	371.84	0.0	714.0	0.0	0.0	714.0	379
03-Jun-04 02:00:00	802.5	4.33	385.20	0.0	465.3	0.0	0.0	465.3	387
03-Jun-04 03:00:00	802.6	4.42	398.72	0.0	471.9	0.0	0.0	471.9	401
03-Jun-04 04:00:00	802.7	4.51	412.38	0.0	465.2	0.0	0.0	465.2	415
03-Jun-04 05:00:00	802.8	4.60	412.38	0.0	464.6	0.0	0.0	464.6	429
03-Jun-04 06:00:00	802.9	4.68	426.21	0.0	468.6	0.0	0.0	468.6	440
03-Jun-04 07:00:00	803.0	4.82	454.30	0.0	469.3	0.0	0.0	469.3	451
03-Jun-04 08:00:00	803.1	4.90	468.57	0.0	466.3	0.0	0.0	466.3	466
03-Jun-04 09:00:00	803.2	4.69	426.21	0.0	468.4	0.0	0.0	468.4	443
03-Jun-04 10:00:00	803.3	4.78	440.18	0.0	464.8	0.0	0.0	464.8	451
03-Jun-04 11:00:00	803.4	4.87	454.30	0.0	465.1	0.0	3.8	468.9	465
03-Jun-04 12:00:00	803.5	4.85	454.30	0.0	466.6	0.0	0.0	466.6	471
03-Jun-04 13:00:00	803.5	4.84	454.30	0.0	463.7	0.0	0.0	463.7	466
03-Jun-04 14:00:00	803.6	4.73	440.18	0.0	1039.5	0.0	645.4	1685.0	468
03-Jun-04 15:00:00	803.8	4.86	454.30	0.0	473.1	0.0	407.3	880.4	466
03-Jun-04 16:00:00	803.9	4.95	468.57	0.0	465.0	0.0	407.4	872.4	478
03-Jun-04 17:00:00	803.9	5.04	482.99	0.0	1441.3	0.0	1399.1	2840.4	492
03-Jun-04 18:00:00	803.9	4.64	426.21	0.0	1924.7	0.0	1904.9	3829.7	472
03-Jun-04 19:00:00	803.9	4.64	426.21	0.0	1927.0	0.0	1905.7	3832.8	442
03-Jun-04 20:00:00	804.0	4.68	426.21	0.0	1928.0	0.0	1904.7	3832.7	446
03-Jun-04 21:00:00	804.0	4.68	426.21	0.0	2261.3	0.0	2348.3	4609.6	448
03-Jun-04 22:00:00	804.0	4.68	426.21	0.0	2662.0	0.0	2708.2	5370.2	448
03-Jun-04 23:00:00	804.0	4.73	440.18	0.0	670.6	0.0	702.4	1373.0	450
04-Jun-04 00:00:00	804.1	4.77	440.18	0.0	1940.9	0.0	1660.3	3601.2	457
04-Jun-04 01:00:00	804.1	4.77	440.18	0.0	2125.4	0.0	2065.3	4190.7	461
04-Jun-04 02:00:00	804.2	4.90	468.57	0.0	535.0	0.0	220.2	755.2	465
04-Jun-04 03:00:00	804.3	4.99	468.57	0.0	469.6	0.0	0.0	469.6	477
04-Jun-04 04:00:00	804.4	5.08	482.99	0.0	469.0	0.0	0.0	469.0	492
04-Jun-04 05:00:00	804.5	5.17	482.99	0.0	468.7	0.0	0.0	468.7	508
04-Jun-04 06:00:00	804.6	5.25	482.99	0.0	464.5	0.0	0.0	464.5	523
04-Jun-04 07:00:00	804.6	5.34	482.99	0.0	469.5	0.0	0.0	469.5	538
04-Jun-04 08:00:00	804.7	5.43	482.99	0.0	644.8	0.0	230.8	875.6	549
04-Jun-04 09:00:00	804.7	5.39	482.99	0.0	2611.4	0.0	2660.2	5271.6	557
04-Jun-04 10:00:00	804.7	5.39	482.99	0.0	2626.7	0.0	2659.9	5286.6	559
04-Jun-04 11:00:00	804.6	5.34	482.99	0.0	2656.9	0.0	2661.8	5318.7	553
04-Jun-04 12:00:00	804.6	5.34	482.99	0.0	2658.1	0.0	2662.5	5320.6	546
04-Jun-04 13:00:00	804.6	5.30	482.99	0.0	2660.4	0.0	2662.2	5322.6	544
04-Jun-04 14:00:00	804.6	5.25	482.99	0.0	2657.7	0.0	2662.8	5320.5	536
04-Jun-04 15:00:00	804.5	5.21	482.99	0.0	2659.6	0.0	2663.4	5322.9	532
04-Jun-04 16:00:00	804.5	4.67	426.21	0.0	2657.7	0.0	2663.7	5321.4	513
04-Jun-04 17:00:00	804.4	4.62	426.21	0.0	2659.9	0.0	2663.8	5323.6	445
04-Jun-04 18:00:00	804.4	4.58	412.38	0.0	2661.5	0.0	2665.2	5326.7	443
04-Jun-04 19:00:00	804.4	4.58	412.38	0.0	2661.6	0.0	2664.8	5326.5	436
04-Jun-04 20:00:00	804.3	4.49	398.72	0.0	2664.4	0.0	2665.6	5330.0	429
04-Jun-04 21:00:00	804.2	4.45	398.72	0.0	2661.0	0.0	2666.4	5327.4	422

Date and Time	Res. Elev (ft.above SL)	Gate Opening (ft)	Fish Sampler Flow (cfs)	No. 1 Gen (cfs)	No. 2 Gen (cfs)	No. 3 Gen (cfs)	No. 4 Gen (cfs)	Total Gen (cfs)	Total Spill (cfs)
04-Jun-04 22:00:00	804.2	4.45	398.72	0.0	2662.9	0.0	2667.5	5330.4	415
04-Jun-04 23:00:00	804.2	4.40	398.72	0.0	2240.3	0.0	1662.6	3902.9	413
05-Jun-04 00:00:00	804.2	4.45	398.72	0.0	652.5	0.0	246.9	899.3	410
05-Jun-04 01:00:00	804.3	4.53	412.38	0.0	470.6	0.0	0.0	470.6	418
05-Jun-04 02:00:00	804.4	4.62	426.21	0.0	472.5	0.0	0.0	472.5	428
05-Jun-04 03:00:00	804.5	4.67	426.21	0.0	469.7	0.0	0.0	469.7	438
05-Jun-04 04:00:00	804.6	4.75	440.18	0.0	476.7	0.0	0.0	476.7	451
05-Jun-04 05:00:00	804.6	4.80	440.18	0.0	472.6	0.0	0.0	472.6	459
05-Jun-04 06:00:00	804.7	4.89	454.30	0.0	472.3	0.0	0.0	472.3	466
05-Jun-04 07:00:00	804.7	4.93	468.57	0.0	496.7	0.0	0.0	496.7	475
05-Jun-04 08:00:00	804.7	4.93	468.57	0.0	3380.5	0.0	1158.2	4538.7	484
05-Jun-04 09:00:00	804.6	4.84	454.30	0.0	3202.3	0.0	3147.5	6349.8	479
05-Jun-04 10:00:00	804.6	4.80	440.18	0.0	3360.7	0.0	3384.8	6745.5	468
05-Jun-04 11:00:00	804.4	4.62	426.21	0.0	3436.8	0.0	3461.1	6898.0	453
05-Jun-04 12:00:00	804.4	4.58	412.38	0.0	2720.0	0.0	2734.4	5454.4	439
05-Jun-04 13:00:00	804.3	4.53	412.38	0.0	2674.6	0.0	2676.1	5350.7	431
05-Jun-04 14:00:00	804.3	4.53	412.38	0.0	2689.6	0.0	112.0	2801.6	427
05-Jun-04 15:00:00	804.3	4.53	412.38	0.0	2159.6	0.0	0.0	2159.6	427
05-Jun-04 16:00:00	804.4	4.58	412.38	0.0	508.2	0.0	0.0	508.2	431
05-Jun-04 17:00:00	804.4	4.62	426.21	0.0	422.1	0.0	0.0	422.1	438
05-Jun-04 18:00:00	804.4	4.62	426.21	0.0	3193.9	0.0	0.0	3193.9	439
05-Jun-04 19:00:00	804.4	4.62	426.21	0.0	3485.9	0.0	58.7	3544.6	439
05-Jun-04 20:00:00	804.4	4.58	412.38	0.0	2784.3	0.0	2696.1	5480.5	438
05-Jun-04 21:00:00	804.3	4.49	398.72	0.0	2776.8	0.0	2709.3	5486.2	428
05-Jun-04 22:00:00	804.2	4.45	398.72	0.0	2335.9	0.0	2238.1	4574.0	417
05-Jun-04 23:00:00	804.3	4.49	398.72	0.0	471.0	0.0	0.0	471.0	415
06-Jun-04 00:00:00	804.3	4.53	412.38	0.0	469.7	0.0	0.0	469.7	420
06-Jun-04 01:00:00	804.4	4.58	412.38	0.0	472.7	0.0	0.0	472.7	432
06-Jun-04 02:00:00	804.5	4.67	426.21	0.0	471.8	0.0	0.0	471.8	435
06-Jun-04 03:00:00	804.5	4.71	440.18	0.0	472.4	0.0	0.0	472.4	447
06-Jun-04 04:00:00	804.5	4.71	440.18	0.0	473.4	0.0	0.0	473.4	454
06-Jun-04 05:00:00	804.6	4.80	440.18	0.0	469.6	0.0	0.0	469.6	462
06-Jun-04 06:00:00	804.6	4.84	454.30	0.0	473.0	0.0	0.0	473.0	469
06-Jun-04 07:00:00	804.7	4.89	454.30	0.0	671.8	0.0	266.8	938.6	476
06-Jun-04 08:00:00	804.6	4.84	454.30	0.0	3010.5	0.0	3025.7	6036.1	477
06-Jun-04 09:00:00	804.6	4.80	440.18	0.0	1985.6	0.0	115.8	2101.4	465
06-Jun-04 10:00:00	804.6	4.80	440.18	0.0	3511.6	0.0	0.0	3511.6	465
06-Jun-04 11:00:00	804.6	4.75	440.18	0.0	3530.7	0.0	0.0	3530.7	462
06-Jun-04 12:00:00	804.5	4.71	440.18	0.0	3534.3	0.0	0.0	3534.3	458
06-Jun-04 13:00:00	804.5	4.71	440.18	0.0	3519.9	0.0	0.0	3519.9	454
06-Jun-04 14:00:00	804.6	4.75	440.18	0.0	467.3	0.0	0.0	467.3	453
06-Jun-04 15:00:00	804.6	4.80	440.18	0.0	467.7	0.0	0.0	467.7	458
06-Jun-04 16:00:00	804.6	4.84	454.30	0.0	493.2	0.0	0.0	493.2	466
06-Jun-04 17:00:00	804.6	4.80	440.18	0.0	3536.2	0.0	0.0	3536.2	469
06-Jun-04 18:00:00	804.6	4.75	440.18	0.0	3541.7	0.0	116.0	3657.6	465
06-Jun-04 19:00:00	804.5	4.71	440.18	0.0	3536.5	0.0	1900.4	5436.9	460
06-Jun-04 20:00:00	804.4	4.62	426.21	0.0	3541.8	0.0	1903.5	5445.3	449
06-Jun-04 21:00:00	804.3	4.53	412.38	0.0	3544.6	0.0	1904.3	5448.9	439

Date and Time	Res. Elev (ft.above SL)	Gate Opening (ft)	Fish Sampler Flow (cfs)	No. 1 Gen (cfs)	No. 2 Gen (cfs)	No. 3 Gen (cfs)	No. 4 Gen (cfs)	Total Gen (cfs)	Total Spill (cfs)
06-Jun-04 22:00:00	804.3	4.53	412.38	0.0	2169.3	0.0	1682.7	3852.0	427
06-Jun-04 23:00:00	804.3	4.49	398.72	0.0	2510.4	0.0	240.9	2751.3	427
07-Jun-04 00:00:00	804.3	4.49	398.72	0.0	2650.0	0.0	0.0	2650.0	425
07-Jun-04 01:00:00	804.3	4.53	412.38	0.0	563.0	0.0	0.0	563.0	421
07-Jun-04 02:00:00	804.4	4.58	412.38	0.0	421.4	0.0	0.0	421.4	425
07-Jun-04 03:00:00	804.4	4.62	426.21	0.0	424.2	0.0	0.0	424.2	432
07-Jun-04 04:00:00	804.5	4.67	426.21	0.0	421.6	0.0	0.0	421.6	439
07-Jun-04 05:00:00	804.5	4.71	440.18	0.0	425.3	0.0	0.0	425.3	446
07-Jun-04 06:00:00	804.6	4.75	440.18	0.0	792.1	0.0	0.0	792.1	453
07-Jun-04 07:00:00	804.6	4.80	440.18	0.0	504.2	0.0	0.0	504.2	461
07-Jun-04 08:00:00	804.6	4.75	440.18	0.0	3478.4	0.0	0.0	3478.4	464
07-Jun-04 09:00:00	804.5	4.71	440.18	0.0	3543.4	0.0	0.0	3543.4	461
07-Jun-04 10:00:00	804.5	4.71	440.18	0.0	3481.5	0.0	0.0	3481.5	454
07-Jun-04 11:00:00	804.5	4.67	426.21	0.0	2755.4	0.0	0.0	2755.4	452
07-Jun-04 12:00:00	804.5	4.67	426.21	0.0	2653.6	0.0	0.0	2653.6	446
07-Jun-04 13:00:00	804.4	4.62	426.21	0.0	2843.0	0.0	0.0	2843.0	444
07-Jun-04 14:00:00	804.5	4.67	426.21	0.0	481.0	0.0	0.0	481.0	442
07-Jun-04 15:00:00	804.5	4.71	440.18	0.0	468.8	0.0	0.0	468.8	446
07-Jun-04 16:00:00	804.5	4.71	440.18	0.0	2615.2	0.0	0.0	2615.2	449
07-Jun-04 17:00:00	804.5	4.67	426.21	0.0	2300.4	0.0	0.0	2300.4	451
07-Jun-04 18:00:00	804.5	4.67	426.21	0.0	1881.0	0.0	62.3	1943.3	446
07-Jun-04 19:00:00	804.4	4.58	412.38	0.0	2735.9	0.0	2654.8	5390.7	445
07-Jun-04 20:00:00	804.3	4.49	398.72	0.0	3451.3	0.0	3278.5	6729.8	434
07-Jun-04 21:00:00	804.1	4.31	385.20	0.0	3569.9	0.0	3571.7	7141.6	413
07-Jun-04 22:00:00	804.1	4.31	385.20	0.0	1797.0	0.0	933.2	2730.2	396
07-Jun-04 23:00:00	804.2	4.36	385.20	0.0	424.7	0.0	0.0	424.7	394
08-Jun-04 00:00:00	804.2	4.36	385.20	0.0	426.9	0.0	0.0	426.9	401
08-Jun-04 01:00:00	804.2	4.40	398.72	0.0	418.4	0.0	0.0	418.4	402
08-Jun-04 02:00:00	804.2	4.45	398.72	0.0	441.4	0.0	0.0	441.4	409
08-Jun-04 03:00:00	804.2	4.45	398.72	0.0	419.5	0.0	0.0	419.5	414
08-Jun-04 04:00:00	804.3	4.49	398.72	0.0	422.3	0.0	0.0	422.3	417
08-Jun-04 05:00:00	804.3	4.53	412.38	0.0	422.6	0.0	0.0	422.6	424
08-Jun-04 06:00:00	804.4	4.58	412.38	0.0	424.0	0.0	0.0	424.0	428
08-Jun-04 07:00:00	804.4	4.62	426.21	0.0	425.2	0.0	0.0	425.2	432
08-Jun-04 08:00:00	804.4	4.62	426.21	0.0	425.6	0.0	0.0	425.6	439
08-Jun-04 09:00:00	804.5	4.67	426.21	0.0	425.6	0.0	0.0	425.6	440
08-Jun-04 10:00:00	804.5	4.67	426.21	0.0	2805.7	0.0	41.0	2846.7	445
08-Jun-04 11:00:00	804.4	4.62	426.21	0.0	800.7	0.0	0.0	800.7	443
08-Jun-04 12:00:00	804.3	4.53	412.38	0.0	2716.2	0.0	2512.2	5228.4	439
08-Jun-04 13:00:00	804.3	4.49	398.72	0.0	2695.8	0.0	178.5	2874.3	431
08-Jun-04 14:00:00	804.2	4.40	398.72	0.0	2702.5	0.0	2504.6	5207.0	421
08-Jun-04 15:00:00	804.2	4.40	398.72	0.0	2807.2	0.0	467.8	3275.0	408
08-Jun-04 16:00:00	804.2	4.36	385.20	0.0	1911.1	0.0	92.4	2003.5	402
08-Jun-04 17:00:00	804.2	4.36	385.20	0.0	2085.4	0.0	0.0	2085.4	402
08-Jun-04 18:00:00	804.1	4.31	385.20	0.0	1106.5	0.0	0.0	1106.5	399
08-Jun-04 19:00:00	804.2	4.36	385.20	0.0	467.7	0.0	0.0	467.7	400
08-Jun-04 20:00:00	804.2	4.40	398.72	0.0	471.5	0.0	0.0	471.5	402
08-Jun-04 21:00:00	804.2	4.40	398.72	0.0	471.2	0.0	0.0	471.2	407

Date and Time	Res. Elev (ft.above SL)	Gate Opening (ft)	Fish Sampler Flow (cfs)	No. 1 Gen (cfs)	No. 2 Gen (cfs)	No. 3 Gen (cfs)	No. 4 Gen (cfs)	Total Gen (cfs)	Total Spill (cfs)
08-Jun-04 22:00:00	804.2	4.45	398.72	0.0	467.0	0.0	0.0	467.0	408
08-Jun-04 23:00:00	804.2	4.45	398.72	0.0	470.3	0.0	0.0	470.3	410
09-Jun-04 00:00:00	804.3	4.49	398.72	0.0	467.2	0.0	0.0	467.2	414
09-Jun-04 01:00:00	804.3	4.49	398.72	0.0	472.9	0.0	0.0	472.9	417
09-Jun-04 02:00:00	804.3	4.53	412.38	0.0	470.5	0.0	0.0	470.5	421
09-Jun-04 03:00:00	804.3	4.53	412.38	0.0	471.2	0.0	0.0	471.2	425
09-Jun-04 04:00:00	804.4	4.58	412.38	0.0	469.1	0.0	0.0	469.1	427
09-Jun-04 05:00:00	804.4	4.58	412.38	0.0	475.9	0.0	0.0	475.9	433
09-Jun-04 06:00:00	804.4	4.62	426.21	0.0	474.6	0.0	0.0	474.6	435
09-Jun-04 07:00:00	804.4	4.62	426.21	0.0	470.1	0.0	0.0	470.1	439
09-Jun-04 08:00:00	804.5	4.67	426.21	0.0	471.2	0.0	0.0	471.2	440
09-Jun-04 09:00:00	804.5	4.67	426.21	0.0	474.4	0.0	0.0	474.4	443
09-Jun-04 10:00:00	804.5	4.71	440.18	0.0	474.9	0.0	0.0	474.9	450
09-Jun-04 11:00:00	804.5	4.71	440.18	0.0	472.4	0.0	0.0	472.4	452
09-Jun-04 12:00:00	804.6	4.75	440.18	0.0	474.8	0.0	0.0	474.8	453
09-Jun-04 13:00:00	804.5	4.71	440.18	0.0	3515.5	0.0	0.0	3515.5	456
09-Jun-04 14:00:00	804.4	4.62	426.21	0.0	3545.3	0.0	0.0	3545.3	449
09-Jun-04 15:00:00	804.4	4.62	426.21	0.0	3196.3	0.0	445.1	3641.4	442
09-Jun-04 16:00:00	804.2	4.45	398.72	0.0	3328.7	0.0	3347.5	6676.2	430
09-Jun-04 17:00:00	804.2	4.36	385.20	0.0	3329.9	0.0	3382.5	6712.4	416
09-Jun-04 18:00:00	804.2	4.36	385.20	0.0	811.9	0.0	418.1	1230.0	398
09-Jun-04 19:00:00	804.2	4.36	385.20	0.0	466.2	0.0	0.0	466.2	402
09-Jun-04 20:00:00	804.2	4.40	398.72	0.0	467.0	0.0	0.0	467.0	404
09-Jun-04 21:00:00	804.2	4.45	398.72	0.0	472.9	0.0	0.0	472.9	411
09-Jun-04 22:00:00	804.3	4.49	398.72	0.0	473.3	0.0	0.0	473.3	414
09-Jun-04 23:00:00	804.3	4.49	398.72	0.0	473.9	0.0	0.0	473.9	415
10-Jun-04 00:00:00	804.3	4.49	398.72	0.0	469.3	0.0	0.0	469.3	419
10-Jun-04 01:00:00	804.3	4.53	412.38	0.0	471.9	0.0	0.0	471.9	421
10-Jun-04 02:00:00	804.3	4.53	412.38	0.0	470.6	0.0	0.0	470.6	427
10-Jun-04 03:00:00	804.4	4.58	412.38	0.0	471.5	0.0	0.0	471.5	429
10-Jun-04 04:00:00	804.4	4.62	426.21	0.0	470.9	0.0	0.0	470.9	433
10-Jun-04 05:00:00	804.4	4.62	426.21	0.0	467.9	0.0	0.0	467.9	437
10-Jun-04 06:00:00	804.5	4.67	426.21	0.0	470.4	0.0	0.0	470.4	439
10-Jun-04 07:00:00	804.5	4.67	426.21	0.0	473.4	0.0	0.0	473.4	444
10-Jun-04 08:00:00	804.5	4.67	426.21	0.0	537.0	0.0	0.0	537.0	446
10-Jun-04 09:00:00	804.4	4.62	426.21	0.0	3325.9	0.0	0.0	3325.9	450
10-Jun-04 10:00:00	804.4	4.62	426.21	0.0	3307.3	0.0	0.0	3307.3	443
10-Jun-04 11:00:00	804.4	4.62	426.21	0.0	471.7	0.0	0.0	471.7	439
10-Jun-04 12:00:00	804.5	4.67	426.21	0.0	473.2	0.0	0.0	473.2	440
10-Jun-04 13:00:00	804.5	4.71	440.18	0.0	473.0	0.0	0.0	473.0	444
10-Jun-04 14:00:00	804.6	4.75	440.18	0.0	470.7	0.0	0.0	470.7	451
10-Jun-04 15:00:00	804.6	4.75	440.18	0.0	471.7	0.0	0.0	471.7	458
10-Jun-04 16:00:00	804.6	4.80	440.18	0.0	472.3	0.0	0.0	472.3	460
10-Jun-04 17:00:00	804.6	4.84	454.30	0.0	471.7	0.0	0.0	471.7	465
10-Jun-04 18:00:00	804.6	4.84	454.30	0.0	472.0	0.0	0.0	472.0	468
10-Jun-04 19:00:00	804.7	4.89	454.30	0.0	471.1	0.0	0.0	471.1	472
10-Jun-04 20:00:00	804.7	4.89	454.30	0.0	468.1	0.0	0.0	468.1	476
10-Jun-04 21:00:00	804.7	4.93	468.57	0.0	467.6	0.0	0.0	467.6	477

Date and Time	Res. Elev (ft.above SL)	Gate Opening (ft)	Fish Sampler Flow (cfs)	No. 1 Gen (cfs)	No. 2 Gen (cfs)	No. 3 Gen (cfs)	No. 4 Gen (cfs)	Total Gen (cfs)	Total Spill (cfs)
10-Jun-04 22:00:00	804.8	4.97	468.57	0.0	470.2	0.0	0.0	470.2	485
10-Jun-04 23:00:00	804.8	4.97	468.57	0.0	468.7	0.0	0.0	468.7	490
11-Jun-04 00:00:00	804.8	5.02	482.99	0.0	473.7	0.0	0.0	473.7	493
11-Jun-04 01:00:00	804.9	5.06	482.99	0.0	473.5	0.0	0.0	473.5	500
11-Jun-04 02:00:00	804.9	5.10	482.99	0.0	477.1	0.0	0.0	477.1	504
11-Jun-04 03:00:00	804.9	5.15	482.99	0.0	473.5	0.0	0.0	473.5	508
11-Jun-04 04:00:00	804.9	5.15	482.99	0.0	470.4	0.0	0.0	470.4	510
11-Jun-04 05:00:00	805.0	5.19	482.99	0.0	472.4	0.0	0.0	472.4	518
11-Jun-04 06:00:00	805.0	5.24	482.99	0.0	472.5	0.0	0.0	472.5	524
11-Jun-04 07:00:00	805.0	5.24	482.99	0.0	470.9	0.0	0.0	470.9	526
11-Jun-04 08:00:00	805.1	5.28	482.99	0.0	474.7	0.0	0.0	474.7	533
11-Jun-04 09:00:00	805.1	5.32	482.99	0.0	473.8	0.0	0.0	473.8	538
11-Jun-04 10:00:00	805.1	5.32	482.99	0.0	471.1	0.0	0.0	471.1	542
11-Jun-04 11:00:00	805.2	5.37	482.99	0.0	474.0	0.0	0.0	474.0	550
11-Jun-04 12:00:00	805.2	5.41	482.99	0.0	472.7	0.0	0.0	472.7	551
11-Jun-04 13:00:00	805.2	5.41	482.99	0.0	519.7	0.0	88.1	607.8	558
11-Jun-04 14:00:00	805.1	5.32	482.99	0.0	3308.6	0.0	3337.3	6645.9	553
11-Jun-04 15:00:00	805.0	5.24	482.99	0.0	3302.1	0.0	3348.3	6650.4	542
11-Jun-04 16:00:00	804.9	5.06	482.99	0.0	3310.2	0.0	3354.5	6664.8	522
11-Jun-04 17:00:00	804.8	4.97	468.57	0.0	3316.0	0.0	3351.6	6667.6	504
11-Jun-04 18:00:00	804.8	4.97	468.57	0.0	664.3	0.0	280.0	944.3	497
11-Jun-04 19:00:00	804.8	5.02	482.99	0.0	427.1	0.0	0.0	427.1	490
11-Jun-04 20:00:00	804.8	5.02	482.99	0.0	422.5	0.0	0.0	422.5	492
11-Jun-04 21:00:00	804.9	5.06	482.99	0.0	429.8	0.0	0.0	429.8	500
11-Jun-04 22:00:00	804.9	5.06	482.99	0.0	2601.8	0.0	0.0	2601.8	503
11-Jun-04 23:00:00	804.9	5.06	482.99	0.0	752.4	0.0	0.0	752.4	500
12-Jun-04 00:00:00	804.9	5.06	482.99	0.0	468.7	0.0	0.0	468.7	502
12-Jun-04 01:00:00	804.9	5.10	482.99	0.0	466.3	0.0	0.0	466.3	504
12-Jun-04 02:00:00	804.9	5.10	482.99	0.0	467.6	0.0	0.0	467.6	510
12-Jun-04 03:00:00	804.9	5.15	482.99	0.0	468.8	0.0	0.0	468.8	511
12-Jun-04 04:00:00	804.9	5.15	482.99	0.0	465.1	0.0	0.0	465.1	517
12-Jun-04 05:00:00	805.0	5.19	482.99	0.0	468.6	0.0	0.0	468.6	520
12-Jun-04 06:00:00	805.0	5.19	482.99	0.0	475.6	0.0	0.0	475.6	523
12-Jun-04 07:00:00	805.0	5.24	482.99	0.0	473.2	0.0	0.0	473.2	524
12-Jun-04 08:00:00	805.0	5.24	482.99	0.0	470.1	0.0	0.0	470.1	530
12-Jun-04 09:00:00	805.0	5.19	482.99	0.0	2791.5	0.0	0.0	2791.5	530
12-Jun-04 10:00:00	804.9	5.15	482.99	0.0	3354.5	0.0	0.0	3354.5	525
12-Jun-04 11:00:00	804.9	5.10	482.99	0.0	3356.9	0.0	0.0	3356.9	516
12-Jun-04 12:00:00	804.9	5.10	482.99	0.0	813.2	0.0	0.0	813.2	513
12-Jun-04 13:00:00	804.9	5.15	482.99	0.0	472.7	0.0	0.0	472.7	510
12-Jun-04 14:00:00	804.9	5.15	482.99	0.0	471.1	0.0	0.0	471.1	511
12-Jun-04 15:00:00	805.0	5.19	482.99	0.0	478.8	0.0	0.0	478.8	516
12-Jun-04 16:00:00	805.0	5.19	482.99	0.0	471.1	0.0	0.0	471.1	518
12-Jun-04 17:00:00	805.0	5.19	482.99	0.0	470.2	0.0	0.0	470.2	523
12-Jun-04 18:00:00	805.0	5.24	482.99	0.0	432.9	0.0	0.0	432.9	524
12-Jun-04 19:00:00	805.0	5.24	482.99	0.0	429.1	0.0	0.0	429.1	527
12-Jun-04 20:00:00	805.1	5.28	482.99	0.0	426.7	0.0	0.0	426.7	530
12-Jun-04 21:00:00	805.1	5.28	482.99	0.0	428.3	0.0	0.0	428.3	536

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12-Jun-04 22:00:00	805.1	5.32	482.99	0.0	427.6	0.0	0.0	427.6	537
12-Jun-04 23:00:00	805.1	5.32	482.99	0.0	425.8	0.0	0.0	425.8	538
13-Jun-04 00:00:00	805.1	5.32	482.99	0.0	428.8	0.0	0.0	428.8	543
13-Jun-04 01:00:00	805.1	5.32	482.99	0.0	430.2	0.0	0.0	430.2	543
13-Jun-04 02:00:00	805.2	5.37	482.99	0.0	430.1	0.0	0.0	430.1	544
13-Jun-04 03:00:00	805.2	5.37	482.99	0.0	429.6	0.0	0.0	429.6	544
13-Jun-04 04:00:00	805.2	5.37	482.99	0.0	425.4	0.0	0.0	425.4	549
13-Jun-04 05:00:00	805.2	5.41	482.99	0.0	430.7	0.0	0.0	430.7	551
13-Jun-04 06:00:00	805.2	5.41	482.99	0.0	429.0	0.0	0.0	429.0	557
13-Jun-04 07:00:00	805.2	5.41	482.99	0.0	434.6	0.0	0.0	434.6	557
13-Jun-04 08:00:00	805.2	5.41	482.99	0.0	428.5	0.0	0.0	428.5	557
13-Jun-04 09:00:00	805.3	5.46	482.99	0.0	473.6	0.0	0.0	473.6	558
13-Jun-04 10:00:00	805.3	5.46	482.99	0.0	475.6	0.0	0.0	475.6	562
13-Jun-04 11:00:00	805.3	5.46	482.99	0.0	475.2	0.0	0.0	475.2	564
13-Jun-04 12:00:00	805.3	5.46	482.99	0.0	474.7	0.0	0.0	474.7	564
13-Jun-04 13:00:00	805.3	5.46	482.99	0.0	472.5	0.0	0.0	472.5	564
13-Jun-04 14:00:00	805.3	5.50	482.99	0.0	472.0	0.0	0.0	472.0	566
13-Jun-04 15:00:00	805.3	4.20	371.84	0.0	470.9	0.0	0.0	470.9	531
13-Jun-04 16:00:00	805.3	4.20	371.84	0.0	477.3	0.0	0.0	477.3	380
13-Jun-04 17:00:00	805.3	4.24	371.84	0.0	471.2	0.0	0.0	471.2	380
13-Jun-04 18:00:00	805.3	4.24	371.84	0.0	471.6	0.0	0.0	471.6	384
13-Jun-04 19:00:00	805.3	4.24	371.84	0.0	468.8	0.0	0.0	468.8	386
13-Jun-04 20:00:00	805.3	4.24	371.84	0.0	472.4	0.0	0.0	472.4	386
13-Jun-04 21:00:00	805.4	4.29	371.84	0.0	471.7	0.0	0.0	471.7	386
13-Jun-04 22:00:00	805.4	4.29	371.84	0.0	476.3	0.0	0.0	476.3	388
13-Jun-04 23:00:00	805.4	4.29	371.84	0.0	472.6	0.0	0.0	472.6	393
14-Jun-04 00:00:00	805.4	4.29	371.84	0.0	473.4	0.0	0.0	473.4	393
14-Jun-04 01:00:00	805.4	4.33	385.20	0.0	471.0	0.0	0.0	471.0	393
14-Jun-04 02:00:00	805.4	4.33	385.20	0.0	466.8	0.0	0.0	466.8	397
14-Jun-04 03:00:00	805.4	4.33	385.20	0.0	468.0	0.0	0.0	468.0	399
14-Jun-04 04:00:00	805.5	4.38	385.20	0.0	469.4	0.0	0.0	469.4	399
14-Jun-04 05:00:00	805.4	4.33	385.20	0.0	469.1	0.0	0.0	469.1	399
14-Jun-04 06:00:00	805.5	4.38	385.20	0.0	468.4	0.0	0.0	468.4	401
14-Jun-04 07:00:00	805.5	4.38	385.20	0.0	478.1	0.0	50.3	528.3	405
14-Jun-04 08:00:00	805.4	4.33	385.20	0.0	1902.6	0.0	1922.5	3825.1	404
14-Jun-04 09:00:00	805.3	4.24	371.84	0.0	1911.5	0.0	1925.1	3836.6	395
14-Jun-04 10:00:00	805.3	4.24	371.84	0.0	587.9	0.0	80.4	668.3	387
14-Jun-04 11:00:00	805.3	4.20	371.84	0.0	2396.6	0.0	380.4	2777.1	386
14-Jun-04 12:00:00	805.3	4.20	371.84	0.0	1094.8	0.0	848.8	1943.6	380
14-Jun-04 13:00:00	805.3	4.16	358.64	0.0	1015.0	0.0	580.2	1595.2	378
14-Jun-04 14:00:00	805.3	4.16	358.64	0.0	425.4	0.0	449.8	875.3	375
14-Jun-04 15:00:00	805.3	4.16	358.64	0.0	482.1	0.0	506.7	988.8	375
14-Jun-04 16:00:00	805.2	4.11	358.64	0.0	1799.3	0.0	1857.2	3656.5	374
14-Jun-04 17:00:00	805.2	4.07	345.60	0.0	1812.8	0.0	1797.1	3609.9	369
14-Jun-04 18:00:00	805.0	3.94	332.72	0.0	2672.6	0.0	2683.5	5356.1	355
14-Jun-04 19:00:00	804.9	3.85	320.01	0.0	2680.1	0.0	2658.2	5338.3	342
14-Jun-04 20:00:00	804.9	3.76	307.46	0.0	2226.8	0.0	2052.0	4278.8	331
14-Jun-04 21:00:00	804.8	3.72	307.46	0.0	2719.7	0.0	1386.1	4105.8	322

Date and Time	Res. Elev (ft.above SL)	Gate Opening (ft)	Fish Sampler Flow (cfs)	No. 1 Gen (cfs)	No. 2 Gen (cfs)	No. 3 Gen (cfs)	No. 4 Gen (cfs)	Total Gen (cfs)	Total Spill (cfs)
14-Jun-04 22:00:00	804.7	3.59	282.87	0.0	2791.4	0.0	2170.8	4962.2	308
14-Jun-04 23:00:00	804.7	3.59	282.87	0.0	679.0	0.0	496.5	1175.6	301
15-Jun-04 00:00:00	804.7	3.59	282.87	0.0	472.8	0.0	0.0	472.8	300
15-Jun-04 01:00:00	804.7	3.59	282.87	0.0	472.8	0.0	0.0	472.8	300
15-Jun-04 02:00:00	804.7	3.59	282.87	0.0	476.5	0.0	0.0	476.5	300
15-Jun-04 03:00:00	804.7	3.63	295.08	0.0	475.4	0.0	0.0	475.4	300
15-Jun-04 04:00:00	804.7	3.63	295.08	0.0	476.8	0.0	0.0	476.8	303
15-Jun-04 05:00:00	804.7	3.63	295.08	0.0	473.3	0.0	0.0	473.3	305
15-Jun-04 06:00:00	804.7	3.63	295.08	0.0	475.0	0.0	0.0	475.0	305
15-Jun-04 07:00:00	804.7	3.63	295.08	0.0	473.0	0.0	0.0	473.0	305
15-Jun-04 08:00:00	804.7	3.59	282.87	0.0	2618.1	0.0	0.0	2618.1	305
15-Jun-04 09:00:00	804.6	3.54	282.87	0.0	2698.2	0.0	0.0	2698.2	304
15-Jun-04 10:00:00	804.6	3.54	282.87	0.0	1473.6	0.0	156.0	1629.5	297
15-Jun-04 11:00:00	804.5	3.37	258.97	977.0	2922.8	738.5	2904.7	7542.9	287
15-Jun-04 12:00:00	804.4	3.28	247.29	1346.9	2173.4	653.0	2086.5	6259.8	271
15-Jun-04 13:00:00	804.3	3.19	235.79	186.5	1787.8	126.1	613.1	2713.6	257
15-Jun-04 14:00:00	804.2	3.15	235.79	0.0	1937.4	0.0	693.8	2631.3	246
15-Jun-04 15:00:00	804.2	4.30	385.20	0.0	2520.7	0.0	1677.1	4197.8	249
15-Jun-04 16:00:00	804.1	4.17	358.64	0.0	2753.2	0.0	1353.9	4107.2	386
15-Jun-04 17:00:00	804.0	4.13	358.64	0.0	2752.5	0.0	0.0	2752.5	374
15-Jun-04 18:00:00	804.0	4.13	358.64	0.0	910.9	0.0	0.0	910.9	370
15-Jun-04 19:00:00	804.0	4.13	358.64	0.0	465.5	0.0	0.0	465.5	370
15-Jun-04 20:00:00	804.0	4.13	358.64	0.0	453.9	0.0	0.0	453.9	370
15-Jun-04 21:00:00	804.0	4.13	358.64	0.0	460.1	0.0	0.0	460.1	370
15-Jun-04 22:00:00	804.0	4.13	358.64	0.0	462.3	0.0	0.0	462.3	370
15-Jun-04 23:00:00	804.0	4.13	358.64	0.0	462.4	0.0	0.0	462.4	370
16-Jun-04 00:00:00	804.1	4.17	358.64	0.0	460.9	0.0	0.0	460.9	372
16-Jun-04 01:00:00	804.1	4.17	358.64	0.0	457.8	0.0	0.0	457.8	376
16-Jun-04 02:00:00	804.1	4.17	358.64	0.0	464.1	0.0	0.0	464.1	376
16-Jun-04 03:00:00	804.1	4.17	358.64	0.0	458.6	0.0	0.0	458.6	376
16-Jun-04 04:00:00	804.1	4.21	371.84	0.0	459.0	0.0	0.0	459.0	377
16-Jun-04 05:00:00	804.1	4.21	371.84	0.0	462.3	0.0	0.0	462.3	377
16-Jun-04 06:00:00	804.1	4.21	371.84	0.0	457.6	0.0	0.0	457.6	382
16-Jun-04 07:00:00	804.2	4.26	371.84	0.0	457.5	0.0	0.0	457.5	382
16-Jun-04 08:00:00	804.2	4.26	371.84	0.0	456.9	0.0	0.0	456.9	385
16-Jun-04 09:00:00	804.2	4.26	371.84	0.0	459.2	0.0	0.0	459.2	388
16-Jun-04 10:00:00	804.2	4.26	371.84	0.0	461.7	0.0	0.0	461.7	388
16-Jun-04 11:00:00	804.2	4.30	385.20	0.0	461.5	0.0	0.0	461.5	388
16-Jun-04 12:00:00	804.2	4.30	385.20	0.0	458.2	0.0	0.0	458.2	389
16-Jun-04 13:00:00	804.2	4.30	385.20	0.0	461.5	0.0	0.0	461.5	394
16-Jun-04 14:00:00	804.2	4.30	385.20	0.0	457.9	0.0	0.0	457.9	394
16-Jun-04 15:00:00	804.2	4.35	385.20	0.0	463.3	0.0	0.0	463.3	395
16-Jun-04 16:00:00	804.2	4.35	385.20	0.0	473.0	0.0	0.0	473.0	398
16-Jun-04 17:00:00	804.2	4.30	385.20	0.0	2656.9	0.0	0.0	2656.9	400
16-Jun-04 18:00:00	804.2	4.26	371.84	0.0	2508.8	0.0	0.0	2508.8	394
16-Jun-04 19:00:00	804.2	4.26	371.84	0.0	466.6	0.0	0.0	466.6	388
16-Jun-04 20:00:00	804.2	4.26	371.84	0.0	472.4	0.0	0.0	472.4	388
16-Jun-04 21:00:00	804.2	4.30	385.20	0.0	474.1	0.0	0.0	474.1	391

Date and Time	Res. Elev (ft.above SL)	Gate Opening (ft)	Fish Sampler Flow (cfs)	No. 1 Gen (cfs)	No. 2 Gen (cfs)	No. 3 Gen (cfs)	No. 4 Gen (cfs)	Total Gen (cfs)	Total Spill (cfs)
16-Jun-04 22:00:00	804.2	4.30	385.20	0.0	477.4	0.0	0.0	477.4	394
16-Jun-04 23:00:00	804.2	4.35	385.20	0.0	473.5	0.0	0.0	473.5	394
17-Jun-04 00:00:00	804.2	4.30	385.20	0.0	475.6	0.0	0.0	475.6	394
17-Jun-04 01:00:00	804.2	4.35	385.20	0.0	472.3	0.0	0.0	472.3	400
17-Jun-04 02:00:00	804.2	4.35	385.20	0.0	470.9	0.0	0.0	470.9	400
17-Jun-04 03:00:00	804.3	4.39	385.20	0.0	472.8	0.0	0.0	472.8	400
17-Jun-04 04:00:00	804.3	4.39	385.20	0.0	469.3	0.0	0.0	469.3	401
17-Jun-04 05:00:00	804.3	4.39	385.20	0.0	474.9	0.0	0.0	474.9	404
17-Jun-04 06:00:00	804.3	4.43	398.72	0.0	471.8	0.0	0.0	471.8	407
17-Jun-04 07:00:00	804.3	4.43	398.72	0.0	473.7	0.0	0.0	473.7	407
17-Jun-04 08:00:00	804.3	4.43	398.72	0.0	472.2	0.0	0.0	472.2	412
17-Jun-04 09:00:00	804.3	4.43	398.72	0.0	472.0	0.0	0.0	472.0	413
17-Jun-04 10:00:00	804.4	0.00	0.00	0.0	475.5	0.0	0.0	475.5	74
17-Jun-04 11:00:00	804.4	0.00	0.00	0.0	472.5	0.0	0.0	472.5	0
17-Jun-04 12:00:00	804.4	0.00	0.00	0.0	471.2	0.0	0.0	471.2	0
17-Jun-04 13:00:00	804.4	0.00	0.00	0.0	979.6	0.0	0.0	979.6	0
17-Jun-04 14:00:00	804.4	0.00	0.00	0.0	2090.5	0.0	0.0	2090.5	0
17-Jun-04 15:00:00	804.3	4.93	468.57	0.0	2646.0	0.0	0.0	2646.0	4
17-Jun-04 16:00:00	804.3	3.99	332.72	0.0	2651.6	0.0	0.0	2651.6	352
17-Jun-04 17:00:00	804.2	4.15	358.64	0.0	2620.8	0.0	0.0	2620.8	364
17-Jun-04 18:00:00	804.2	4.15	358.64	0.0	473.1	0.0	0.0	473.1	375
17-Jun-04 19:00:00	804.2	4.15	358.64	0.0	473.7	0.0	0.0	473.7	373
17-Jun-04 20:00:00	804.3	4.19	358.64	0.0	475.1	0.0	0.0	475.1	378
17-Jun-04 21:00:00	804.3	4.19	358.64	0.0	474.2	0.0	0.0	474.2	379
17-Jun-04 22:00:00	804.3	4.19	358.64	0.0	475.0	0.0	0.0	475.0	379
17-Jun-04 23:00:00	804.3	4.19	358.64	0.0	470.7	0.0	0.0	470.7	379
18-Jun-04 00:00:00	804.3	4.19	358.64	0.0	471.5	0.0	0.0	471.5	379
18-Jun-04 01:00:00	804.3	4.23	371.84	0.0	473.7	0.0	0.0	473.7	380
18-Jun-04 02:00:00	804.3	4.19	358.64	0.0	476.0	0.0	0.0	476.0	379
18-Jun-04 03:00:00	804.3	4.23	371.84	0.0	470.7	0.0	0.0	470.7	379
18-Jun-04 04:00:00	804.3	4.23	371.84	0.0	465.6	0.0	0.0	465.6	385
18-Jun-04 05:00:00	804.3	4.23	371.84	0.0	468.1	0.0	0.0	468.1	385
18-Jun-04 06:00:00	804.3	4.23	371.84	0.0	473.9	0.0	0.0	473.9	385
18-Jun-04 07:00:00	804.3	4.23	371.84	0.0	470.5	0.0	0.0	470.5	385
18-Jun-04 08:00:00	804.3	4.23	371.84	0.0	468.9	0.0	0.0	468.9	385
18-Jun-04 09:00:00	804.2	0.00	0.00	0.0	2664.9	0.0	2397.6	5062.5	171
18-Jun-04 10:00:00	804.2	0.00	0.00	0.0	3132.0	0.0	1353.8	4485.8	0
18-Jun-04 11:00:00	804.1	0.00	0.00	0.0	2626.2	0.0	2454.9	5081.2	0
18-Jun-04 12:00:00	804.0	0.00	0.00	0.0	1267.3	0.0	207.5	1474.8	0
18-Jun-04 13:00:00	804.0	0.00	0.00	0.0	570.0	0.0	0.0	570.0	0
18-Jun-04 14:00:00	804.0	0.00	0.00	0.0	1123.7	0.0	0.0	1123.7	0
18-Jun-04 15:00:00	804.0	4.18	358.64	0.0	3223.0	0.0	0.0	3223.0	131
18-Jun-04 16:00:00	803.9	4.14	358.64	0.0	3219.0	0.0	0.0	3219.0	376
18-Jun-04 17:00:00	803.9	4.05	345.60	0.0	2010.1	0.0	1827.4	3837.5	368
18-Jun-04 18:00:00	803.8	4.01	345.60	0.0	2052.9	0.0	128.3	2181.2	362
18-Jun-04 19:00:00	803.8	4.01	345.60	0.0	877.9	0.0	0.0	877.9	356
18-Jun-04 20:00:00	803.8	4.01	345.60	0.0	557.1	0.0	0.0	557.1	354
18-Jun-04 21:00:00	803.8	4.01	345.60	0.0	622.9	0.0	0.0	622.9	354

Date and Time	Res. Elev (ft.above SL)	Gate Opening (ft)	Fish Sampler Flow (cfs)	No. 1 Gen (cfs)	No. 2 Gen (cfs)	No. 3 Gen (cfs)	No. 4 Gen (cfs)	Total Gen (cfs)	Total Spill (cfs)
18-Jun-04 22:00:00	803.8	4.01	345.60	0.0	142.1	0.0	0.0	142.1	354
18-Jun-04 23:00:00	803.9	4.05	345.60	0.0	0.0	0.0	0.0	0.0	354
19-Jun-04 00:00:00	803.9	4.05	345.60	0.0	0.0	0.0	0.0	0.0	358
19-Jun-04 01:00:00	803.9	4.05	345.60	0.0	0.0	0.0	0.0	0.0	360
19-Jun-04 02:00:00	803.9	4.09	345.60	0.0	0.0	0.0	0.0	0.0	365
19-Jun-04 03:00:00	803.9	4.09	345.60	0.0	0.0	0.0	0.0	0.0	366
19-Jun-04 04:00:00	803.9	4.14	358.64	0.0	0.0	0.0	0.0	0.0	366
19-Jun-04 05:00:00	803.9	4.14	358.64	0.0	0.0	0.0	0.0	0.0	368
19-Jun-04 06:00:00	803.9	4.14	358.64	0.0	0.0	0.0	0.0	0.0	372
19-Jun-04 07:00:00	804.0	4.18	358.64	0.0	0.0	0.0	0.0	0.0	375
19-Jun-04 08:00:00	804.0	4.18	358.64	0.0	56.9	0.0	0.0	56.9	378
19-Jun-04 09:00:00	804.0	0.00	0.00	0.0	474.8	0.0	0.0	474.8	6
19-Jun-04 10:00:00	804.0	0.00	0.00	0.0	470.7	0.0	0.0	470.7	0
19-Jun-04 11:00:00	804.0	0.00	0.00	0.0	472.6	0.0	0.0	472.6	0
19-Jun-04 12:00:00	804.0	0.00	0.00	0.0	472.2	0.0	0.0	472.2	0
19-Jun-04 13:00:00	804.1	0.00	0.00	0.0	470.2	0.0	0.0	470.2	0
19-Jun-04 14:00:00	804.1	0.00	0.00	0.0	468.7	0.0	0.0	468.7	0
19-Jun-04 15:00:00	804.1	0.00	0.00	0.0	469.9	0.0	0.0	469.9	0
19-Jun-04 16:00:00	804.1	0.00	0.00	0.0	470.1	0.0	0.0	470.1	0
19-Jun-04 17:00:00	804.2	0.00	0.00	0.0	471.9	0.0	0.0	471.9	0
19-Jun-04 18:00:00	804.1	0.00	0.00	0.0	471.4	0.0	0.0	471.4	0
19-Jun-04 19:00:00	804.2	4.86	454.30	0.0	471.5	0.0	0.0	471.5	380
19-Jun-04 20:00:00	804.2	4.86	454.30	0.0	472.4	0.0	0.0	472.4	473
19-Jun-04 21:00:00	804.2	4.86	454.30	0.0	469.8	0.0	0.0	469.8	473
19-Jun-04 22:00:00	804.2	4.86	454.30	0.0	13.2	0.0	0.0	13.2	473
19-Jun-04 23:00:00	804.2	4.86	454.30	0.0	0.0	0.0	0.0	0.0	473
20-Jun-04 00:00:00	804.2	4.90	468.57	0.0	0.0	0.0	0.0	0.0	474
20-Jun-04 01:00:00	804.2	4.90	468.57	0.0	0.0	0.0	0.0	0.0	474
20-Jun-04 02:00:00	804.2	4.90	468.57	0.0	0.0	0.0	0.0	0.0	479
20-Jun-04 03:00:00	804.2	4.90	468.57	0.0	0.0	0.0	0.0	0.0	480
20-Jun-04 04:00:00	804.2	4.95	468.57	0.0	0.0	0.0	0.0	0.0	480
20-Jun-04 05:00:00	804.2	4.95	468.57	0.0	0.0	0.0	0.0	0.0	482
20-Jun-04 06:00:00	804.3	4.99	468.57	0.0	0.0	0.0	0.0	0.0	486
20-Jun-04 07:00:00	804.3	4.99	468.57	0.0	0.0	0.0	0.0	0.0	490
20-Jun-04 08:00:00	804.3	5.03	482.99	0.0	450.1	0.0	0.0	450.1	494
20-Jun-04 09:00:00	804.3	5.03	482.99	0.0	460.7	0.0	0.0	460.7	498
20-Jun-04 10:00:00	804.4	5.08	482.99	0.0	460.5	0.0	0.0	460.5	500
20-Jun-04 11:00:00	804.4	0.00	0.00	0.0	462.1	0.0	0.0	462.1	341
20-Jun-04 12:00:00	804.4	0.00	0.00	0.0	460.1	0.0	0.0	460.1	0
20-Jun-04 13:00:00	804.5	0.00	0.00	0.0	462.2	0.0	0.0	462.2	0
20-Jun-04 14:00:00	804.5	0.00	0.00	0.0	462.4	0.0	0.0	462.4	0
20-Jun-04 15:00:00	804.5	0.00	0.00	0.0	461.2	0.0	0.0	461.2	0
20-Jun-04 16:00:00	804.6	0.00	0.00	0.0	460.6	0.0	0.0	460.6	0
20-Jun-04 17:00:00	804.6	0.00	0.00	0.0	460.5	0.0	0.0	460.5	0
20-Jun-04 18:00:00	804.6	0.00	0.00	0.0	458.9	0.0	0.0	458.9	0
20-Jun-04 19:00:00	804.6	4.80	440.18	0.0	457.2	0.0	0.0	457.2	416
20-Jun-04 20:00:00	804.6	4.80	440.18	0.0	2327.5	0.0	0.0	2327.5	465
20-Jun-04 21:00:00	804.6	4.75	440.18	0.0	3159.1	0.0	0.0	3159.1	463

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20-Jun-04 22:00:00	804.5	4.71	440.18	0.0	3168.0	0.0	0.0	3168.0	456
20-Jun-04 23:00:00	804.5	4.71	440.18	0.0	785.7	0.0	0.0	785.7	452
21-Jun-04 00:00:00	804.5	4.71	440.18	0.0	407.5	0.0	0.0	407.5	452
21-Jun-04 01:00:00	804.6	4.75	440.18	0.0	0.0	0.0	0.0	0.0	452
21-Jun-04 02:00:00	804.6	4.80	440.18	0.0	0.0	0.0	0.0	0.0	458
21-Jun-04 03:00:00	804.6	4.84	454.30	0.0	0.0	0.0	0.0	0.0	465
21-Jun-04 04:00:00	804.6	4.84	454.30	0.0	0.0	0.0	0.0	0.0	471
21-Jun-04 05:00:00	804.7	4.89	454.30	0.0	0.0	0.0	0.0	0.0	474
21-Jun-04 06:00:00	804.7	4.89	454.30	0.0	0.0	0.0	0.0	0.0	477
21-Jun-04 07:00:00	804.7	4.93	468.57	0.0	0.0	0.0	0.0	0.0	482
21-Jun-04 08:00:00	804.7	4.93	468.57	0.0	0.0	0.0	0.0	0.0	484
21-Jun-04 09:00:00	804.8	4.97	468.57	0.0	273.7	0.0	0.0	273.7	484
21-Jun-04 10:00:00	804.8	0.00	0.00	0.0	463.0	0.0	0.0	463.0	253
21-Jun-04 11:00:00	804.8	0.00	0.00	0.0	462.8	0.0	0.0	462.8	0
21-Jun-04 12:00:00	804.9	0.00	0.00	0.0	462.7	0.0	0.0	462.7	0
21-Jun-04 13:00:00	804.8	0.00	0.00	0.0	2964.8	0.0	0.0	2964.8	0
21-Jun-04 14:00:00	804.8	0.00	0.00	0.0	3122.7	0.0	0.0	3122.7	0
21-Jun-04 15:00:00	804.7	0.00	0.00	0.0	3120.6	0.0	0.0	3120.6	0
21-Jun-04 16:00:00	804.7	0.00	0.00	0.0	3125.4	0.0	0.0	3125.4	0
21-Jun-04 17:00:00	804.6	4.74	440.18	0.0	3122.8	0.0	0.0	3122.8	300
21-Jun-04 18:00:00	804.6	4.74	440.18	0.0	526.7	0.0	0.0	526.7	456
21-Jun-04 19:00:00	804.6	4.74	440.18	0.0	472.1	0.0	0.0	472.1	456
21-Jun-04 20:00:00	804.6	4.74	440.18	0.0	467.3	0.0	0.0	467.3	456
21-Jun-04 21:00:00	804.7	4.79	440.18	0.0	466.2	0.0	0.0	466.2	456
21-Jun-04 22:00:00	804.7	4.79	440.18	0.0	466.2	0.0	0.0	466.2	459
21-Jun-04 23:00:00	804.7	4.79	440.18	0.0	466.7	0.0	0.0	466.7	463
22-Jun-04 00:00:00	804.7	4.79	440.18	0.0	469.4	0.0	0.0	469.4	463
22-Jun-04 01:00:00	804.7	4.79	440.18	0.0	8.9	0.0	0.0	8.9	463
22-Jun-04 02:00:00	804.7	4.83	454.30	0.0	0.0	0.0	0.0	0.0	463
22-Jun-04 03:00:00	804.7	4.83	454.30	0.0	0.0	0.0	0.0	0.0	469
22-Jun-04 04:00:00	804.7	4.83	454.30	0.0	0.0	0.0	0.0	0.0	469
22-Jun-04 05:00:00	804.8	4.87	454.30	0.0	0.0	0.0	0.0	0.0	472
22-Jun-04 06:00:00	804.8	4.87	454.30	0.0	0.0	0.0	0.0	0.0	476
22-Jun-04 07:00:00	804.8	4.92	468.57	0.0	0.0	0.0	0.0	0.0	476
22-Jun-04 08:00:00	804.8	4.92	468.57	0.0	23.5	0.0	0.0	23.5	476
22-Jun-04 09:00:00	804.8	4.92	468.57	0.0	463.0	0.0	0.0	463.0	482
22-Jun-04 10:00:00	804.9	0.00	0.00	0.0	464.3	0.0	0.0	464.3	233
22-Jun-04 11:00:00	804.9	0.00	0.00	0.0	463.7	0.0	0.0	463.7	0
22-Jun-04 12:00:00	804.9	0.00	0.00	0.0	457.1	0.0	0.0	457.1	0
22-Jun-04 13:00:00	804.9	0.00	0.00	0.0	458.8	0.0	0.0	458.8	0
22-Jun-04 14:00:00	804.9	0.00	0.00	0.0	459.2	0.0	0.0	459.2	0
22-Jun-04 15:00:00	804.9	0.00	0.00	0.0	461.5	0.0	0.0	461.5	0
22-Jun-04 16:00:00	804.9	0.00	0.00	0.0	2727.2	0.0	0.0	2727.2	0
22-Jun-04 17:00:00	804.8	0.00	0.00	0.0	2740.1	0.0	0.0	2740.1	0
22-Jun-04 18:00:00	804.8	0.00	0.00	0.0	2739.6	0.0	0.0	2739.6	0
22-Jun-04 19:00:00	804.7	0.00	0.00	0.0	2739.3	0.0	0.0	2739.3	0
22-Jun-04 20:00:00	804.7	0.00	0.00	0.0	597.5	0.0	0.0	597.5	0
22-Jun-04 21:00:00	804.7	0.00	0.00	0.0	465.7	0.0	0.0	465.7	0

Date and Time	Res. Elev (ft.above SL)	Gate Opening (ft)	Fish Sampler Flow (cfs)	No. 1 Gen (cfs)	No. 2 Gen (cfs)	No. 3 Gen (cfs)	No. 4 Gen (cfs)	Total Gen (cfs)	Total Spill (cfs)
22-Jun-04 22:00:00	804.7	4.63	426.21	0.0	4.1	0.0	0.0	4.1	460
22-Jun-04 23:00:00	804.8	4.67	426.21	0.0	0.0	0.0	0.0	0.0	441
23-Jun-04 00:00:00	804.8	4.67	426.21	0.0	0.0	0.0	0.0	0.0	447
23-Jun-04 01:00:00	804.8	4.72	440.18	0.0	0.0	0.0	0.0	0.0	447
23-Jun-04 02:00:00	804.8	4.72	440.18	0.0	0.0	0.0	0.0	0.0	450
23-Jun-04 03:00:00	804.8	4.72	440.18	0.0	0.0	0.0	0.0	0.0	453
23-Jun-04 04:00:00	804.9	4.76	440.18	0.0	0.0	0.0	0.0	0.0	454
23-Jun-04 05:00:00	804.9	4.76	440.18	0.0	0.0	0.0	0.0	0.0	459
23-Jun-04 06:00:00	804.9	4.80	454.30	0.0	0.0	0.0	0.0	0.0	460
23-Jun-04 07:00:00	804.9	4.80	454.30	0.0	0.0	0.0	0.0	0.0	466
23-Jun-04 08:00:00	804.9	4.85	454.30	0.0	48.9	0.0	0.0	48.9	466
23-Jun-04 09:00:00	804.9	0.00	0.00	0.0	497.0	0.0	0.0	497.0	46
23-Jun-04 10:00:00	804.9	0.00	0.00	0.0	647.6	0.0	0.0	647.6	0
23-Jun-04 11:00:00	804.9	0.00	0.00	0.0	544.8	0.0	0.0	544.8	0
23-Jun-04 12:00:00	805.0	0.00	0.00	0.0	470.4	0.0	0.0	470.4	0
23-Jun-04 13:00:00	804.9	0.00	0.00	0.0	2515.3	0.0	0.0	2515.3	0
23-Jun-04 14:00:00	804.9	0.00	0.00	0.0	2639.2	0.0	0.0	2639.2	0
23-Jun-04 15:00:00	804.9	4.46	398.72	0.0	2645.0	0.0	0.0	2645.0	4
23-Jun-04 16:00:00	804.9	4.86	454.30	0.0	79.2	0.0	0.0	79.2	473
23-Jun-04 17:00:00	804.9	4.86	454.30	0.0	0.0	0.0	0.0	0.0	474
23-Jun-04 18:00:00	804.9	4.90	468.57	0.0	0.0	0.0	0.0	0.0	476
23-Jun-04 19:00:00	804.9	4.90	468.57	0.0	0.0	0.0	0.0	0.0	480
23-Jun-04 20:00:00	804.9	4.95	468.57	0.0	0.0	0.0	0.0	0.0	481
23-Jun-04 21:00:00	804.9	4.95	468.57	0.0	0.0	0.0	0.0	0.0	485
23-Jun-04 22:00:00	804.9	4.95	468.57	0.0	0.0	0.0	0.0	0.0	487
23-Jun-04 23:00:00	805.0	4.99	468.57	0.0	0.0	0.0	0.0	0.0	487
24-Jun-04 00:00:00	805.0	4.99	468.57	0.0	0.0	0.0	0.0	0.0	489
24-Jun-04 01:00:00	805.0	5.04	482.99	0.0	0.0	0.0	0.0	0.0	493
24-Jun-04 02:00:00	805.0	5.04	482.99	0.0	0.0	0.0	0.0	0.0	497
24-Jun-04 03:00:00	805.0	5.04	482.99	0.0	0.0	0.0	0.0	0.0	500
24-Jun-04 04:00:00	805.1	5.08	482.99	0.0	0.0	0.0	0.0	0.0	500
24-Jun-04 05:00:00	805.1	5.08	482.99	0.0	0.0	0.0	0.0	0.0	500
24-Jun-04 06:00:00	805.1	5.08	482.99	0.0	0.0	0.0	0.0	0.0	506
24-Jun-04 07:00:00	805.1	5.12	482.99	0.0	0.0	0.0	0.0	0.0	506
24-Jun-04 08:00:00	805.1	5.12	482.99	0.0	70.6	0.0	0.0	70.6	509
24-Jun-04 09:00:00	805.1	0.00	0.00	0.0	463.2	0.0	0.0	463.2	334
24-Jun-04 10:00:00	805.1	0.00	0.00	0.0	461.5	0.0	0.0	461.5	0
24-Jun-04 11:00:00	805.2	0.00	0.00	0.0	460.8	0.0	0.0	460.8	0
24-Jun-04 12:00:00	805.2	0.00	0.00	0.0	486.8	0.0	0.0	486.8	0
24-Jun-04 13:00:00	805.1	0.00	0.00	0.0	2654.5	0.0	0.0	2654.5	0
24-Jun-04 14:00:00	805.1	0.00	0.00	0.0	2673.6	0.0	4.8	2678.4	0
24-Jun-04 15:00:00	805.0	0.00	0.00	0.0	2685.4	0.0	2654.4	5339.8	0
24-Jun-04 16:00:00	804.9	0.00	0.00	0.0	3085.3	0.0	91.5	3176.8	0
24-Jun-04 17:00:00	804.9	4.95	468.57	0.0	247.5	0.0	141.0	388.6	213
24-Jun-04 18:00:00	804.9	4.95	468.57	0.0	15.1	0.0	0.0	15.1	487
24-Jun-04 19:00:00	805.0	4.99	468.57	0.0	0.0	0.0	0.0	0.0	489
24-Jun-04 20:00:00	805.0	4.99	468.57	0.0	0.0	0.0	0.0	0.0	493
24-Jun-04 21:00:00	805.0	5.04	482.99	0.0	0.0	0.0	0.0	0.0	493

Date and Time	Res. Elev (ft.above SL)	Gate Opening (ft)	Fish Sampler Flow (cfs)	No. 1 Gen (cfs)	No. 2 Gen (cfs)	No. 3 Gen (cfs)	No. 4 Gen (cfs)	Total Gen (cfs)	Total Spill (cfs)
24-Jun-04 22:00:00	805.0	5.04	482.99	0.0	0.0	0.0	0.0	0.0	498
24-Jun-04 23:00:00	805.0	5.04	482.99	0.0	0.0	0.0	0.0	0.0	500
25-Jun-04 00:00:00	805.1	5.08	482.99	0.0	0.0	0.0	0.0	0.0	500
25-Jun-04 01:00:00	805.1	5.08	482.99	0.0	0.0	0.0	0.0	0.0	506
25-Jun-04 02:00:00	805.1	5.12	482.99	0.0	0.0	0.0	0.0	0.0	506
25-Jun-04 03:00:00	805.1	5.12	482.99	0.0	0.0	0.0	0.0	0.0	509
25-Jun-04 04:00:00	805.1	5.12	482.99	0.0	0.0	0.0	0.0	0.0	513
25-Jun-04 05:00:00	805.2	5.17	482.99	0.0	0.0	0.0	0.0	0.0	514
25-Jun-04 06:00:00	805.2	5.17	482.99	0.0	0.0	0.0	0.0	0.0	518
25-Jun-04 07:00:00	805.2	5.21	482.99	0.0	0.0	0.0	0.0	0.0	520
25-Jun-04 08:00:00	805.2	5.21	482.99	0.0	64.0	0.0	0.0	64.0	521
25-Jun-04 09:00:00	805.2	0.00	0.00	0.0	2500.6	0.0	0.0	2500.6	135
25-Jun-04 10:00:00	805.1	0.00	0.00	0.0	3120.7	0.0	1896.4	5017.1	0
25-Jun-04 11:00:00	805.0	0.00	0.00	0.0	3126.2	0.0	187.1	3313.3	0
25-Jun-04 12:00:00	804.9	0.00	0.00	0.0	3123.7	0.0	0.0	3123.7	0
25-Jun-04 13:00:00	804.9	0.00	0.00	172.0	3127.3	0.0	1110.6	4409.9	0
25-Jun-04 14:00:00	804.8	0.00	0.00	492.9	3136.0	0.0	2188.0	5817.0	0
25-Jun-04 15:00:00	804.7	0.00	0.00	5.6	2894.4	0.0	577.5	3477.5	0
25-Jun-04 16:00:00	804.7	0.00	0.00	0.0	1288.3	0.0	0.0	1288.3	0
25-Jun-04 17:00:00	804.7	0.00	0.00	0.0	1561.5	0.0	255.5	1817.0	0
25-Jun-04 18:00:00	804.7	0.00	0.00	0.0	1517.4	0.0	231.1	1748.5	0
25-Jun-04 19:00:00	804.6	0.00	0.00	0.0	822.6	0.0	670.1	1492.7	0
25-Jun-04 20:00:00	804.6	0.00	0.00	0.0	437.1	0.0	149.9	587.0	0
25-Jun-04 21:00:00	804.6	0.00	0.00	0.0	1504.1	0.0	365.6	1869.7	0
25-Jun-04 22:00:00	804.6	0.00	0.00	0.0	741.0	0.0	278.2	1019.2	0
25-Jun-04 23:00:00	804.6	0.00	0.00	0.0	466.5	0.0	0.0	466.5	0
26-Jun-04 00:00:00	804.6	0.00	0.00	0.0	467.9	0.0	0.0	467.9	0