# Kaltag Fall Season Test Drift Gillnet Salmon Fishery

## Yukon River Restoration and Enhancement Fund
## Yukon River Panel Project URE-06-05

A Project Conducted by:
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## ABSTRACT

The Kaltag drift gillnet test fishery was established in 1999 to assist fishery managers in tracking fall chum and coho salmon as they migrate upstream through the middle portion of the Yukon River drainage. The Kaltag test fishery utilizes techniques and gillnets of typical subsistence fishers in the middle Yukon River. Three drift sites located in the mainstream Yukon River were established in 1999 and used again for the 2005 season. After fall chum and coho salmon were collected at the drift sites, they were brought back to Kaltag for scale sampling and dispersal to subsistence users. The test fishery began on July 25$^{th}$ and was conducted through September 18, 2005. The midpoint for fall chum salmon occurred on August 30, 2005 with a cumulative catch per unit effort of 268.95. The highest daily catch per unit effort of 296.41 chum salmon was observed on August 16, 2005. The midpoint for coho salmon occurred on August 30, 2005 with a cumulative catch per unit effort of 77.27. The highest daily catch per unit effort of 142.27 for coho salmon was observed on August 23, 2005

## INTRODUCTION

The Kaltag drift gillnet test fishery was established in 1999 in response to a need by commercial fishery managers to have additional information on travel times and to build a comparative database for catch per unit effort (CPUE) of fall chum and coho salmon. This test fishery is located approximately half way (river mile 450) between the Pilot Station sonar and the village of Tanana projects on the mainstream Yukon River. At this point the project has operated through some the poorest returns on record for fall chum salmon and some of the best runs of coho salmon. Information obtained from this test fishery has proven to be of value to fishery's managers. The test fishery assists in tracking fall chum and coho salmon as they pass through what used to an "information void" in the middle Yukon River area.

## OBJECTIVES

The objectives for the Kaltag drift gillnet test fisheries are as follows:

1. To provide daily relative abundance information of fall chum and coho salmon in the Yukon River near Kaltag.

2. To provide relative run timing information for fall chum and coho salmon in the Yukon River near Kaltag.

3. To provide age, sex, and length information for fall chum and coho salmon in the Yukon River near Kaltag.

## METHODS

The Kaltag drift gillnet test fishery utilizes techniques and gear types of typical subsistence fishers in the middle Yukon River. Gillnets for the test fishery are 25 fathoms long and 29.5 meshes deep with a stretch mesh size of 5 7/8 inches. The size of gillnets used is also standardized with those operated in other test fisheries within the drainage. Three drift sites were established in 1999 within the mainstream Yukon River and these same sites were again utilized for the 2005 season (Figure 1). The fall fishing season is from July 25 to September 18.

Site #1 is located along the left bank of the Yukon River, across from and downstream a half mile from the village of Kaltag (GPS coordinates 64° 19.107' Latitude 158° 42.230' Longitude). Site #2 is approximately two miles upstream of Kaltag along the right bank of the Yukon River (GPS coordinates 64° 21.040' Latitude 158° 42.804' Longitude). Site #3 is located across from and slightly downstream from site #2, across the main

channel of the Yukon River along the bank of four mile Island (GPS coordinates 64°20.833' Latitude 158°42.089' Longitude). All GPS coordinates are from the upstream start of each drift site.

Drifts made at sites #1 and #3 were done using standard drifting techniques. Site #2 used a modified drifting technique where the crewman walked along the beach holding the end of a 50' rope attached to the end of the net allowing the net to be kept a uniform distance from the beach during the drift. The first drifts of each day were started at approximately 12:00 pm. The project leader accompanied each fisher and crewman on the first day of their fishing period to ensure starting points for each drift were as uniform as possible for the four different fishing periods.

Test Fishery Periods and Personnel:

| | | |
|---|---|---|
| **City of Kaltag | Richard Burnham | Project Leader |
| **Period #1 (7/25-8/7) | Lawrence Saunders<br>Darin Dayton | (Fisher)<br>(Crew) |
| **Period #2 (8/8-8/21) | Robert Nicholas<br>Lawrence Nicholas, Sr. | (Fisher)<br>(Crew) |
| **Period #3 (8/22-9/4) | Richard Burnham<br>Curtis Nickoli | (Fisher)<br>(Crew) |
| **Period #4 (9/5-9/18) | Scot Dementieff<br>Heather Burnham | (Fisher)<br>(Crew) |

The project leader also gave instruction to the crew members on taking weather observations and keeping track of the different times for each drift. Instructions for enumeration of fall chum and coho salmon were also provided. After fall chum and coho salmon were collected at the drift sites, they were brought back to Kaltag for sampling and dispersal. The project leader then gave instruction to the test fisher on taking scale samples and recording the sex and lengths of each of the samples. This was done in accordance with procedures used by the Alaska Department of Fish & Game (ADF&G). Each fall season one site visit is typically scheduled by ADF&G in order to keep in touch with the project.

Drift times, numbers, and species composition of fish caught were noted on all drifts. This information was logged in field notebooks as the drifts were conducted. Upon completion of all three drifts the information was brought to the project leader who transcribed the information into the backup permanent notebook. One summary sheet was provided for each day fished within the notebook. This information was then faxed daily to ADF&G who converted the daily catches into CPUE data. CPUE was calculated using fish per 200 fathom-hours:

- n=number of fish caught,
- L=length of net in fathoms
- T=the time the net fished.

The time the net fished was calculated using:

- T=[((set time+retrieval time)/2)+soak time)]

The amount of soak time varied with each drift. Total CPUE for each day was calculated as the sum of the net lengths from the individual daily drifts and the sum of soak time on that day.

- Daily CPUE=[((2 fathom*60 minutes)*(n)/(L*T)]

Where:

- n=total number of fish caught per day,
- L=total length of net in fathoms per day,
- T=total time the net fished per day.

The daily CPUE is used for in-season fishery monitoring, assessment, and management. The scale samples and associated sex and length data for fall chum and coho salmon were also recorded daily by the fishers. At the end of the test fish season all scale samples were shipped to ADF&G personnel in Anchorage and all recorded data including raw field data notebooks were shipped to Fairbanks for further analysis.

## RESULTS

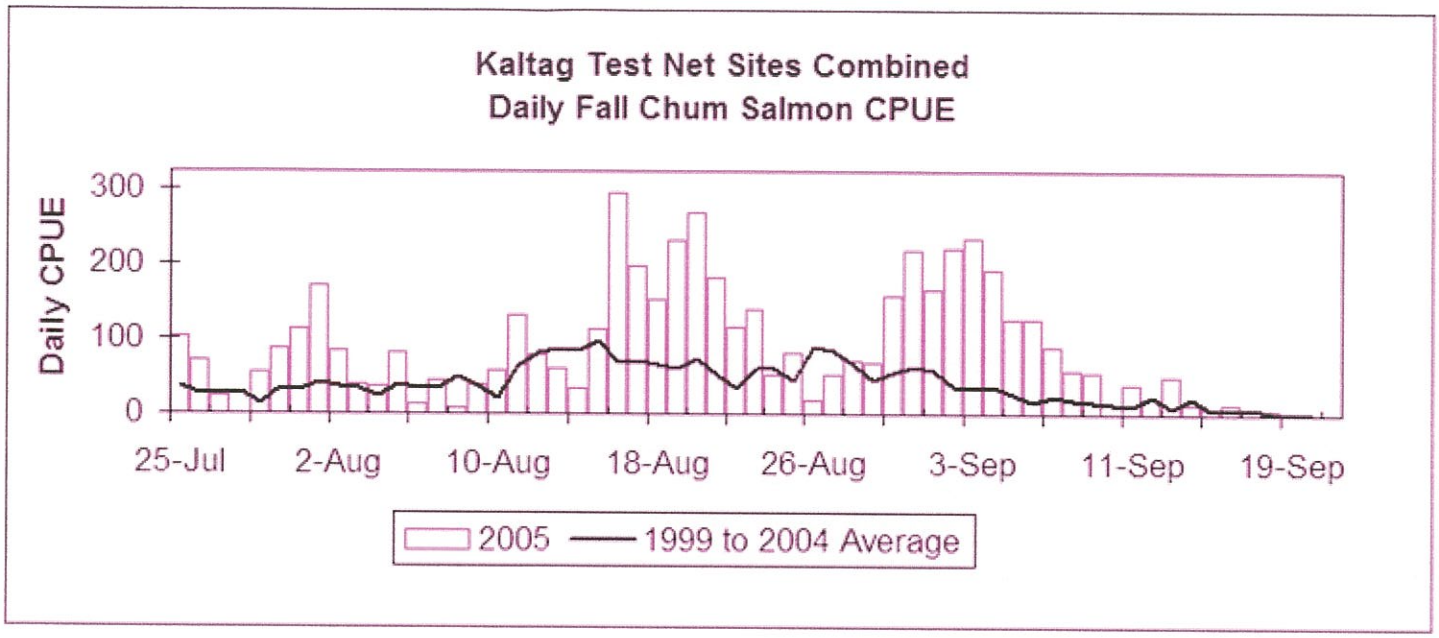
The midpoint for fall chum salmon occurred on August 20, 2005 with a cumulative CPUE of 2601.45. This date is one day prior to the average midpoint for 1999 to 2003 of August 19. The highest daily fall chum CPUE of 296.41 was observed on August 16, 2005. The midpoint for coho salmon occurred on August 30, 2005 with a cumulative CPUE of 229.51. The average midpoint for 1999-2003 was September 4. The highest daily coho salmon CPUE of 142.27 was observed on August 23, 2005. There was no non-salmon species of fish reported as captured.

A total of 688 fall chum and 127 coho salmon were sampled for age, sex, and length. Test fish from the project were provided to locals for subsistence uses. The age-composition data for 2005 was not completed at the time of this report and will be reported by ADF&G after further analysis.

This year's fall chum run started out slowly. At one point, there actually was some concern that the fall chum run might not follow the trend of this year's summer chum run. As the weather patterns began to change, though, and the winds changed to southwest winds began to blow on-shore, large and even "huge"

pulses of fall chum began entering the Yukon River. When the numbers on this year's run are finalized, we could be looking at one of the largest runs we have seen in decades. The test fishery in Kaltag this year is seeing the highest CPUE numbers since this project began. The normal 15 minute test drifts had to be shortened to 4, 3, and 2 minutes during the peak of the large pulses of fish. This was done so as not to catch so much fish that we would over saturate the community's ability to utilize the daily test catches of fish. The first coho salmon was caught on August 14th, which was about 6 days later than last year.

1



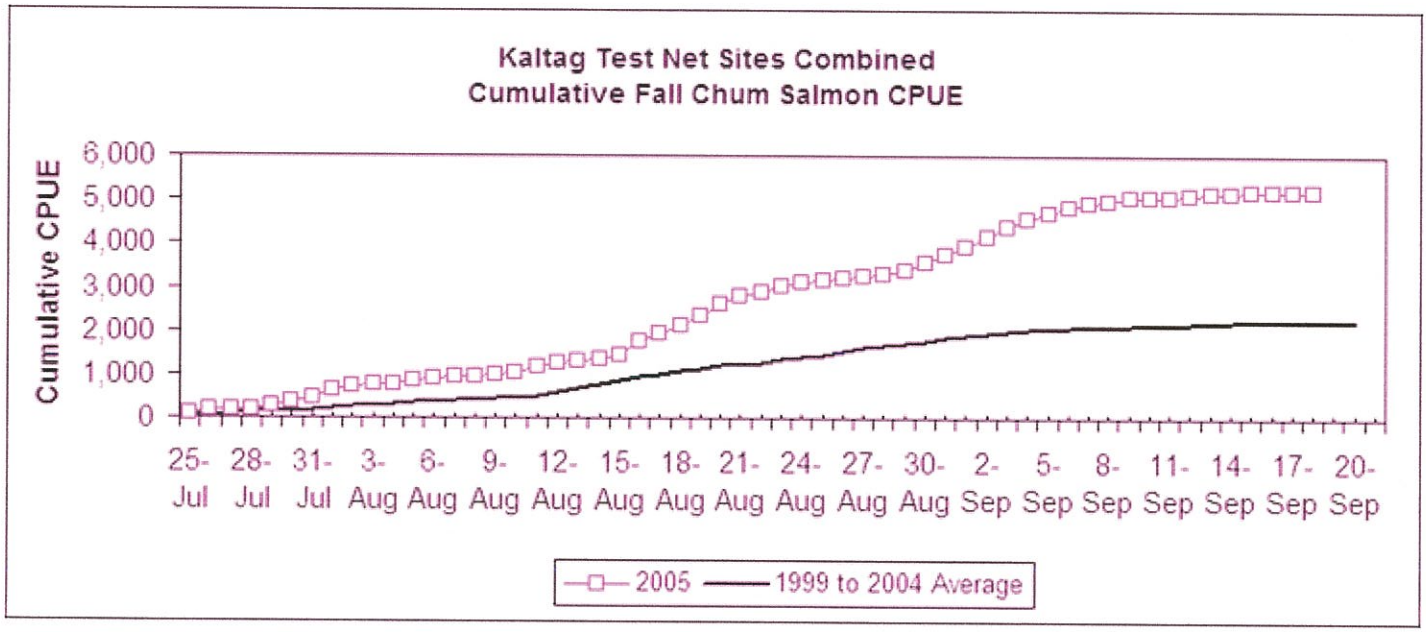
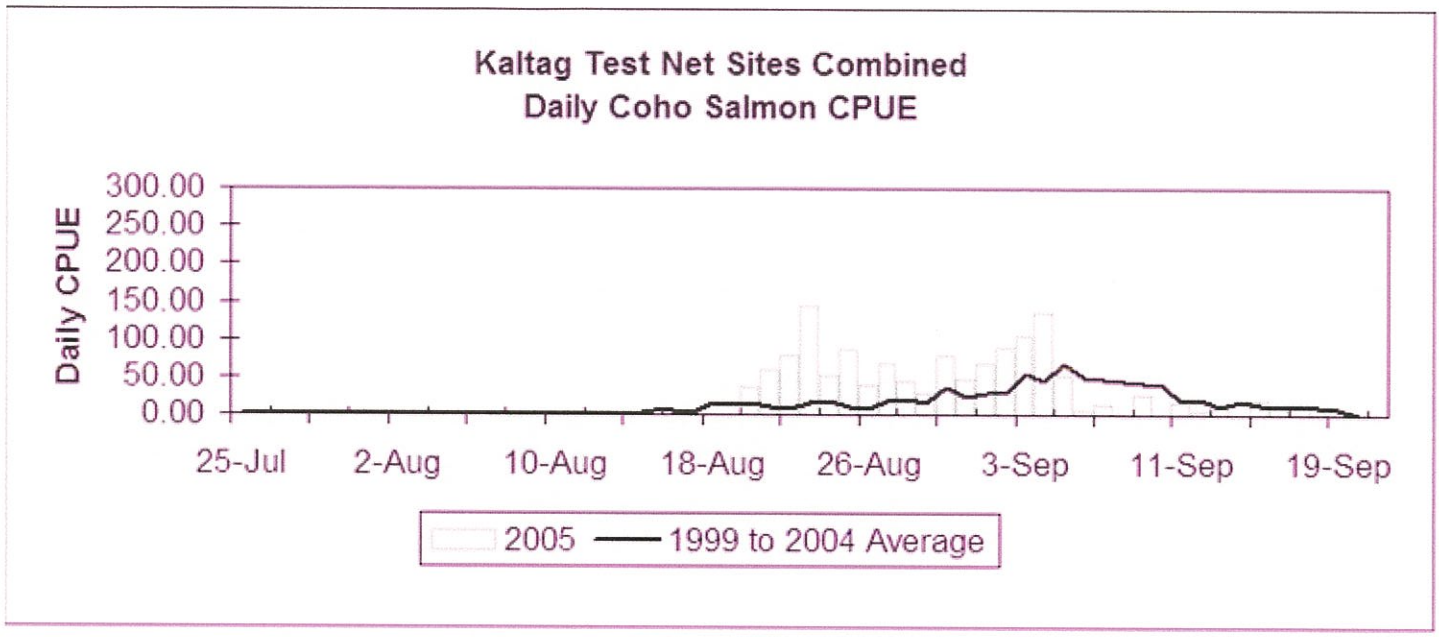




**Figure 10.** **Fall chum salmon daily and cumulative catch-per-unit-effort (CPUE), drift gillnet test fishery, located near the village of Kaltag, 1999 and 2004 average compared to 2005.**



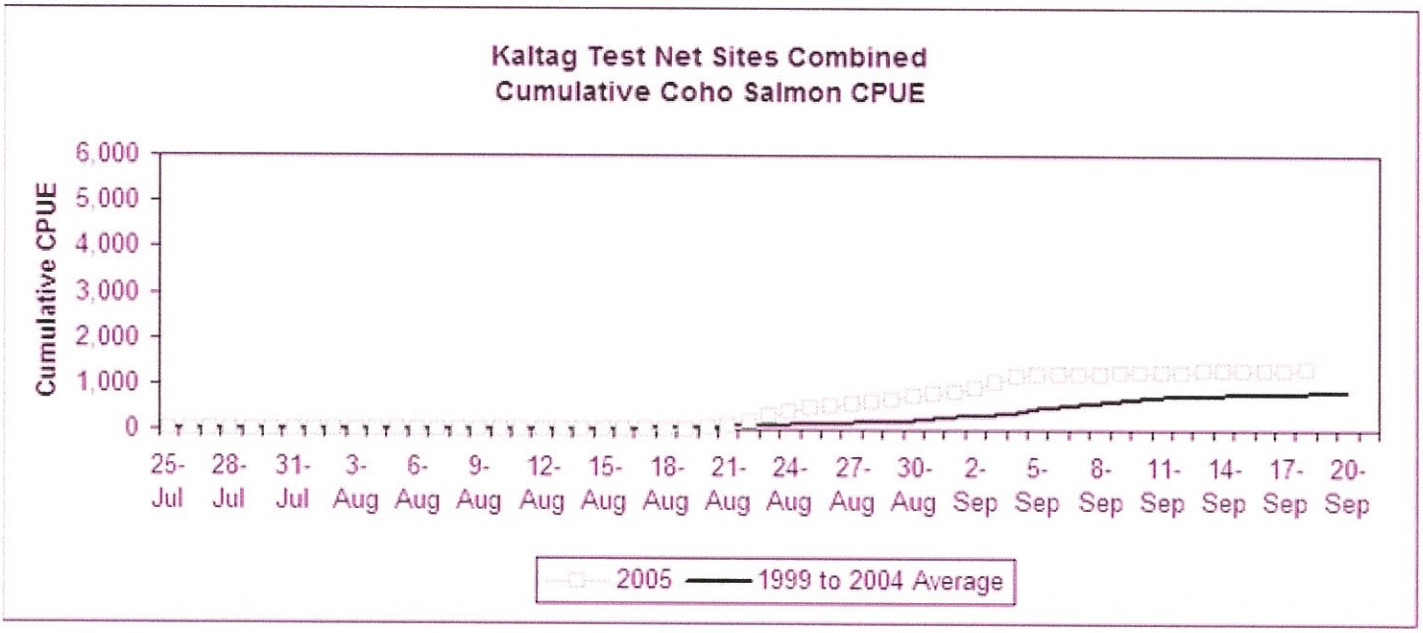




**Figure 11.** **Coho salmon daily and cumulative catch-per-unit effort (CPUE), drift gillnet test fishery, located near the village of Kaltag, 1999 and 2004 average compared to 2005.**

Daily Climatological Conditions at the Time of Test Fishing, 2005.
Kaltag Test Fishery

| Date | Time | Sky[a] | Precipitation[b] | Wind[c] | Air Temperature (°C) | Water Temperature (°C) | Water Clarity |
|---|---|---|---|---|---|---|---|
| 24-Jul | | | | | | | |
| 25-Jul | 12:21 | 1 | A | 2 | 24 | 20 | Turbid |
| 26-Jul | 12:00 | 1 | A | 1 | 22 | 20 | Turbid |
| 27-Jul | 12:02 | 1 | A | 0 | 21 | 18 | Turbid |
| 28-Jul | 12:00 | 1 | A | 1-S | 21 | 21 | Turbid |
| 29-Jul | 12:05 | 1 | A | 1-S | 20 | 18 | Turbid |
| 30-Jul | 12:00 | 1 | A | 1-S | 20 | 17 | Turbid |
| 31-Jul | 12:00 | 1 | A | 1-S | 21 | 18 | Turbid |
| 1-Aug | 12:00 | 1 | A | 1-S | 18 | 17 | Turbid |
| 2-Aug | 12:00 | 1 | A | 1-S | 19 | 17 | Turbid |
| 3-Aug | 12:00 | 5 | A | 0 | 19 | 17 | Turbid |
| 4-Aug | 12:00 | 1 | A | 1-S | 20 | 17 | Turbid |
| 5-Aug | 12:00 | 2 | A | 1-SW | 18 | 16 | Turbid |
| 6-Aug | 12:00 | 2 | A | 2-S | 17 | 16 | Turbid |
| 7-Aug | 12:00 | 4 | B | 1-S | 17 | 17 | Turbid |
| 8-Aug | 12:26 | 4 | A | 1-S | 19 | 18 | Turbid |
| 9-Aug | 12:00 | 4 | A | 1-N | 20 | 18 | Turbid |
| 10-Aug | 12:08 | 1 | A | 1-W | 18 | 17 | Turbid |
| 11-Aug | 12:35 | 3 | A | 1-S | 18 | 17 | Turbid |
| 12-Aug | 12:05 | 1 | A | 1-W | 19 | 17 | Turbid |
| 13-Aug | 12:00 | 1 | A | 1-N | 20 | 17 | Turbid |
| 14-Aug | 12:00 | 1 | A | 0 | 21 | 21 | Turbid |
| 15-Aug | 11:55 | 1 | A | 0 | 20 | 18 | Turbid |
| 16-Aug | 12:00 | 1 | A | 1-S | 17 | 18 | Turbid |
| 17-Aug | 11:55 | 1 | A | 0 | 17 | 17 | Turbid |
| 18-Aug | 11:54 | 2 | A | 1-N | 17 | 17 | Turbid |
| 19-Aug | 11:59 | 1 | A | 0 | 14 | 16 | Turbid |
| 20-Aug | 12:01 | 4 | A | 2-SW | 14 | 16 | Turbid |
| 21-Aug | 12:03 | 3 | B | 1-S | 15 | 16 | Turbid |
| 22-Aug | 12:00 | 3 | A | 2-SW | 17 | 16 | Turbid |
| 23-Aug | 11:59 | 3 | A | 1-S | 14 | 16 | Turbid |
| 24-Aug | 12:28 | 4 | B | 0 | 12 | 14 | Turbid |
| 25-Aug | 12:03 | 4 | A | 1-W | 13 | 14 | Turbid |

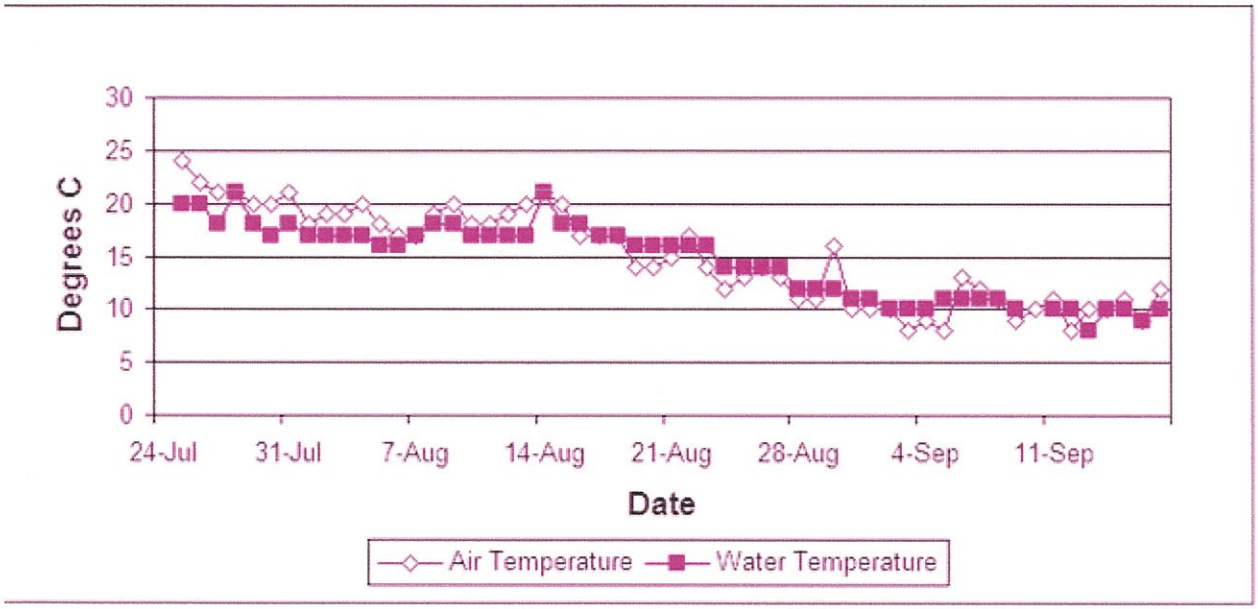
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 26-Aug | 12:03 | 3 | A | 0 | 14 | 14 | Turbid |
| 27-Aug | 12:08 | 3 | A | 1-S | 13 | 14 | Turbid |
| 28-Aug | 12:45 | 4 | C | 2-S | 11 | 12 | Turbid |
| 29-Aug | 12:06 | 4 | C | 1-S | 11 | 12 | Turbid |
| 30-Aug | 12:06 | 3 | A | 1-SW | 16 | 12 | Turbid |
| 31-Aug | 12:20 | 1 | A | 1-NW | 10 | 11 | Turbid |
| 1-Sep | 12:31 | 1 | A | 1-SW | 10 | 11 | Turbid |
| 2-Sep | 12:16 | 3 | A | 0 | 10 | 10 | Turbid |
| 3-Sep | 12:11 | 4 | C | 1-N | 8 | 10 | Turbid |
| 4-Sep | 12:12 | 4 | A | 1-N | 9 | 10 | Turbid |
| 5-Sep | 12:15 | 4 | A | 1-N | 8 | 11 | Turbid |
| 6-Sep | 12:32 | 4 | A | 0 | 13 | 11 | Turbid |
| 7-Sep | 11:52 | 4 | A | 0 | 12 | 11 | Turbid |
| 8-Sep | 11:40 | 2 | A | 1-N | 11 | 11 | Turbid |
| 9-Sep | 12:47 | 4 | C | 1-N | 9 | 10 | Turbid |
| 10-Sep | 12:00 | 4 | C | 3 | 10 | | Turbid |
| 11-Sep | 12:53 | 4 | A | 1-S | 11 | 10 | Turbid |
| 12-Sep | 11:34 | 4 | C | 1-S | 8 | 10 | Turbid |
| 13-Sep | 12:06 | 4 | A | 2-S | 10 | 8 | Turbid |
| 14-Sep | 12:07 | 4 | B | 1-S | 10 | 10 | Turbid |
| 15-Sep | 11:44 | 4 | C | 1-S | 11 | 10 | Turbid |
| 16-Sep | 11:45 | 4 | A | 2-S | 9 | 9 | Turbid |
| 17-Sep | 12:50 | 3 | A | 0 | 12 | 10 | Turbid |
| 18-Sep | 12:37 | 3 | A | 1-S | 11 | 9 | Turbid |

[a] Sky codes: 0=No observation, 1=Clear and visibility unlimited, 2=Cloud cover >50%, 3=Cloud cover >50%, 4=Complete overcast, 5=Thick fog.

[b] Precipitation codes: A=None, B=Intermittent, C=Continuous, D=Snow.

[c] Wind codes: 0=Calm, 1=1-10 mph, 2=11-20 mph, 3=21-30 mph,4=over 30 mph.

| | Air | Water | Water |
|---|---|---|---|



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