

Anadromous Water Catalog Volume SE (Vol. I)
 USGS Quad (S)Bradfield Canal A-5
 Name of Waterway Tyee Hydro Project Tailrace
 Anadromous Water Catalog Number of Waterway 107-46-10537-2008

ALASKA DEPT. OF
 FISH & GAME

SEP 23 1988

REGION II
 HABITAT DIVISION

For Office Use

Change to _____ Atlas
 _____ Catalog
X Both

Addition X

Deletion _____

Correction _____

Name addition:

USGS name _____

Local name _____

| | |
|--|-------------------------|
| Nomination # | <u>89 154</u> |
| <u>Richard Reed</u> Regional Supervisor | <u>9/22/88</u> Date |
| <u>SPK</u> | <u>11/1/88</u> |
| <u>FI</u> Drafted | <u>10/19/88</u> Date |

| Species | Date(s) Observed | Spawning | Rearing | Migration |
|-------------|------------------|----------|---------|-----------|
| <u>Pink</u> | <u>8/85 8/86</u> | <u>X</u> | | |
| <u>Chum</u> | <u>8/84</u> | <u>X</u> | | |
| | | | | |
| | | | | |

Comments: Provide any clarifying information, including number of fish observed, location of fish survey data, etc.

See attached

Attach a copy of a map showing location of mouth and upper points of each species, specific stream reaches identified for spawning or rearing, locations of barriers, such as falls. Attach a copy of the fish survey data, if available.

Name of Observer (please print) Don Cornelius

Date: _____ Signature: Don Cornelius

Address: ADFG Box 667

Petersburg AK 99833

Signature of Area Biologist: Don Cornelius

TYEE HYDROELECTRIC PROJECT
YEAR-END SPAWNING TAILRACE
MONITORING REPORT

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INTRODUCTION

Under the auspices of the Alaska Power Authority (APA), construction of the Tyee Lake Hydroelectric Project was completed in January 1984. Power is produced by diverting water from Tyee Lake, an alpine lake near the head of Bradfield Canal, through a tunnel system to a powerhouse located on the south side of the Bradfield River delta. Flows from the powerhouse discharge into Bradfield Canal via a tailrace which carries the powerhouse discharge approximately 1,150 ft across a tidally influenced meadow to Airstrip Creek (figures 1, 2, 3, and 4). The tailrace is approximately 75 ft wide from bank to bank and 30 ft wide at the channel bed. Large riprap provide stability near the powerhouse and along the banks where small streams enter the channel. Approximately 18 in of gravel were originally deposited over the banks and channel bottom. About 950 linear ft or 28,500 sq ft of channel bed are available for spawning.

As part of the mitigation plan to comply with Article 43 of the Federal Energy Regulatory Commission (FERC) license, the tailrace was constructed as an experimental spawning channel. This was intended to offset the expected loss to the fishery resource of Tyee Creek from anticipated dewatering during powerhouse operation.

Article 43 of the FERC license requires a four-year program to monitor the performance of the experimental spawning tailrace. The APA has contracted with the Arctic Environmental Information and Data Center (AEIDC) to provide technical assistance for this program. AEIDC biologists have monitored the program since startup (1984) and conducted on-site visits annually since that time. During August 1986 and May 1987 AEIDC completed final efforts in the four-year program. During these visits AEIDC conducted field studies and

Table 12. List of common and scientific names of fish found in the Tyee project area waters.

| COMMON NAME | SCIENTIFIC NAME |
|------------------------|--|
| Chinook (king) salmon | <u>Oncorhynchus tsawytscha</u> (Walbaum) |
| Coho (silver) salmon | <u>Oncorhynchus kisutch</u> (Walbaum) |
| Chum (dog) salmon | <u>Oncorhynchus keta</u> (Walbaum) |
| Pink (humpback) salmon | <u>Oncorhynchus gorbuscha</u> (Walbaum) |
| Rainbow trout | <u>Salmo gairdneri</u> Richardson |
| Cutthroat trout | <u>Salmo clarki</u> Richardson |
| Dolly Varden char | <u>Salvelinus malma</u> (Walbaum) |
| Arctic grayling | <u>Thymallus arcticus</u> (Pallas) |
| Threespine stickleback | <u>Gasterosteus aculeatus</u> Linnaeus |
| Slimy sculpin | <u>Cottus cognatus</u> Richardson |

Table 13. Escapement counts in Tyee Creek, Tyee tailrace, and Airstrip Creek, 1980-1986.

| YEAR | TYEE CREEK | | | | TYEE TAILRACE | | AIRSTRIP CREEK | |
|------|------------|------|---------|------|---------------|------|----------------|------|
| | PINK | CHUM | CHINOOK | COHO | PINK | GHUM | PINK | COHO |
| 1980 | 250 | 600 | - | - | - | - | - | - |
| 1983 | 1,000 | 12 | - | - | - | - | - | - |
| 1984 | 40 | 200 | - | - | - | 50 | - | - |
| 1985 | 10,000 | 150 | 2 | 1 | 200 | - | 250 | 1 |
| 1986 | 350 | 20 | - | - | 50 | - | 55 | 1 |

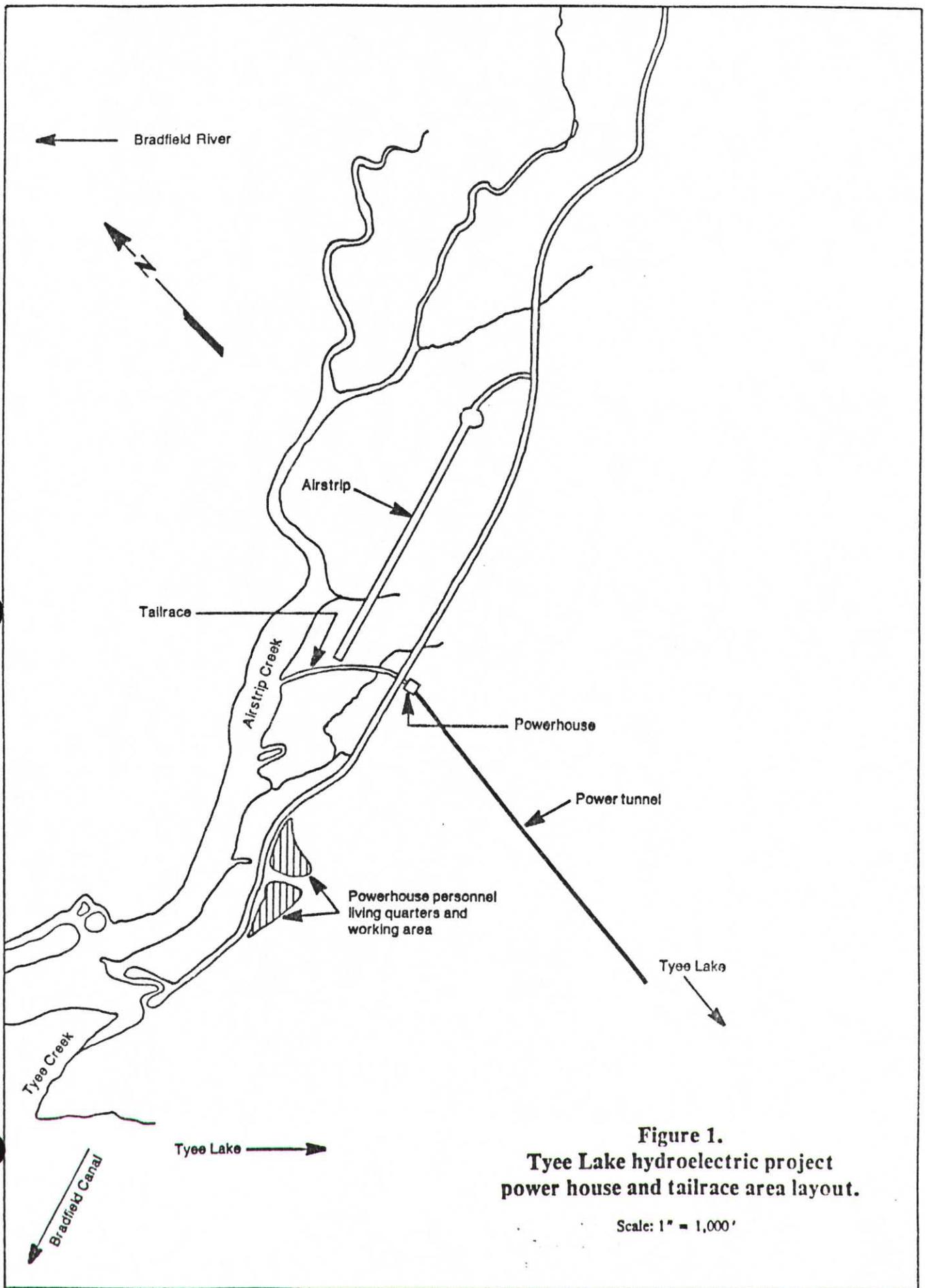


Figure 1.
Tyee Lake hydroelectric project
power house and tailrace area layout.

Scale: 1" = 1,000'

