ALASKA DEPARTMENT OF FISH AND GAME
SPORT FISH DIVISION

FISH POPULATION CONTROL A,
PRE-CHEMICAL RESTORATION PLAN

GENERAL

Region II Lake or Stream Johnson Lake Clearance obtained from None

Federal Clearance (date) _____ State Clearance (date) None Land Managing Agency State

1. Physical Characteristics: a,b. Borough Kenai t 2N r 11W s 6 Lat 60°17' Long 151°16' U.S. Map Call Out # K-B-4

Surf: acres 85 (when surveyed) Max. depth 16 Avg. depth 10.1 Acre feet 860 Established B.M. location _____

Describe method used in establishing information for contour map Aerial photograph and recording fathometer

Lake was previously reclaimed in (year) 1967 Toxicant used Powdered Rotenone Result Incomplete Kill

c. Outlet None

d. Inlet (number, miles, flow & description) None

e. Estimated duration of toxicity 60-90 days

f. Shoreline and lake bottom description (springs, seeps, bogs, swamp, shallow areas, aquatic vegetation) Some bog with abundant vegetation along most of the lake shore. No known springs

2. Fishery Characteristics: a. Target fish Threespine stickleback Population composition Threespine stickleback and a few stocked silver salmon

c. Sample method used Gill nets and visual observation d. Most recent survey date Sept. 20, 1971

3. Status of Existing Fishery: Fish growth and or survival and collection means (creel census, net, etc.) Annual fall gill net sampling showed a 0.13 catch/hour with a mean length of 297.3 mm

4. Restoration Plan: a. Toxicant Pro-nox fish Percent or weight (active ingredient) 6% rotenone Form to be applied Liquid

Application rate (active ingredient) 1.1 ppm c. Method of application Boat pumps time 11 month Sept. 1972

d. Quantity required 340 (10% error) (gal. or lbs.) Acre feet to be treated 860 (lake or stream) Lake

e. Number of sub-area treatments and description of sites Four sub-areas marked by permanent land points

f. Areas to be treated with caution None

g. Precautions to be taken in downstream areas (if none are needed, state why). None - no outlet

h. Chemical rehabilitation benefits Improved growth and survival of stocked fish i. Monitoring Periodic test fish samples

5. Water-Physical Chemistry Properties: a. ph 7.0 Methyl orange alkalinity 30 Total alkalinity 30 b. TDS dissolved solids 50 conductivity Date(s) May 20, 1975 6. Estimated Project Cost: Lbs or gallons/ 0.3 acre feet @ 3.75 cents per lb. or gal. = $ 1.46 Toxicant requirements 340 gal @ $ 3.75 /gal = $ 1,275 _____ lbs @ $ _____ lb. = $ _____ Man days 10

Wage $ 500 Per diem $ 40 Travel 35 Barrier dam (if required) type None $ _____

M & O cost: List None $ _____ Other cost (items) _____

_____ $ _____ Total estimated cost $ 1,850

7. Planned initial fish stocking:

DATE	SPECIES	INCHES	POUNDS	NUMBER
Late June	RT	130/lb		21,800

8. Public Considerations: a. Is water to be used locally for domestic, industrial or irrigation purposes? No

b. Public access assured (how) State campground c. If the affected waters contain any rare or endangered species, describe the measures to be undertaken for their protection None

d. Procedure for salvage and disposal of fish killed Donate to observing public

e. Cooperating agencies (attitude and support) None

f. General attitude of the public to the project Favorable toward project

g. Remarks _____

ALASKA DEPARTMENT OF FISH AND GAME
SPORT FISH DIVISION
FISH POPULATION CONTROL B.
POST-TREATMENT EVALUATION, CHEMICAL RESTORATION

Region II Project Number _____ Project Name _____ Submitted by S. Logan Date 1/30/76

Lake or Stream Johnson Lake Location: T. 2N R. 11W S. 6 Map Reference K-B-4 Lat. 60°17' Long. 151°16'

Borough Kenai Chemical Treatment (date) Sept. 11, 1972

1. Surface area at treatment 85 (acres) Water Volume 860 (acre-feet) Tributaries:

Name	Flow	Total Length	Length Treated
None			
		TOTAL	

Outlet(s):

Name	Flow	Total Length	Length Treated
None			
		TOTAL	

2. Stream(s) treated None total miles Main streams:

Name	Flow	Total Length	Length Treated

Tributaries:

Name	Flow	Total Length	Length Treated
None			
		TOTAL	

3. Toxicant used (lake) 5% emulsified rotenone (tributary) None

4. Methods used in distributing the toxicant: Boat Pumps

5. Cost of Project:

(items) Rotenone	$	1,275
(items) Salary	$	500
(items) Per diem & travel	$	75
(items) Total	$	1,850

6. Condition of water on date of treatment:

Depth (feet) or flow (cfs)	Temperature (°F)	pH	Dissolved Oxygen Content
0	57	7.0	13.0
6	57	7.0	13.0
12	57	7.0	12.0

Total Dissolved Solids 50 Conductivity

7. Species and estimated observed numbers of fish eradicated:

Lake (Stream)		Inlet (Tributaries)	
Threespine stickleback	Abundant	None	
Silver Salmon	Few		

8. Period of Toxicity Two-three months

9. Method of determination of effectiveness: Test fish and shoreline survey

10. Detoxification: Non-chemical (natural) Natural Outlet Control Structure Operation Date None

Chemical _____ Application dates _____ Amount applied _____ Cost of chemical $ _____

Results _____

11. Public reaction to project (after treatment) Favorable

12. Comments on angler use (after treatment) Use increased appreciably

13. Additional remarks: _____

POPULATION CONTROL

CHEMICAL RECLAMATION PLANS

For each body of water to be reclaimed with fish toxicant, present the following:

1. PHYSICAL CHARACTERISTICS

(a) Name of water Johnson Lake County Kenai Pen. Borough

(b) Surface Area 84.9 Acres (Max.) 16 Average Depth 10.1 feet

Surface Area 84.9 Acres (when treated)

(c) Volume 861 Acre feet Type of outlet None

(d) Miles of stream N/A Stream flow N/A

2. FISHERY CHARACTERISTICS

(a) Population composition (approx. quantity and species) threespine sticklebacks (abundant) and rainbow trout (sparse)

Sample method used visual observation, Scuba and gill net

(b) Utilization very lightly fished

Harvest rate UNK

(c) Most recent survey dated August 8, 1966

3. RECLAMATION PLAN

(a) Toxicant rotenone (Common Name) Percent or weight Active Ingredient 7.8%

Application rate (Active Ingred.) 1.1 ppm

(b) Method of Application outboard motor & pump Time July 1967 (Month)

3. Reclamation Plan (Cont'd.)

(c) Objective: (1) Complete kill yes or Partial (Percent) _____

(d) Estimated Toxicity Period 6-8 weeks

(e) Lake was reclaimed before in 1962 ~~1963~~ (Year) Toxicant used rotenone

(f) Measures to protect downstream resources N/A (no outlet)

(If none needed, specify why)

(g) Expected duration of beneficial effects forever years.

4. PUBLIC CONSIDERATIONS

(a) Is water used locally for domestic, industrial, or irrigation purposes? no

Clearance required? N/A Obtained from _____

(b) Is water State owned? yes (Yes or No) If not, explain how public will be assured access. _____

(c) If the area to be affected contains any rare, endangered, or endemic species, describe the measures to be undertaken for their protection.

N/A

(d) Procedure for salvage and disposal of fish killed N/A Sticklebacks have no value and rainbow are few in number.

(e) Remarks _____

Attitude of public Generally, favor rehabilitation

CHEMICAL REHABILITATION, POST-TREATMENT REPORT

Project Name _____ Project Number _____

Date Submitted _____

Lake or Stream Johnson Lake T. 2N, R. 11W S. 6,

County Kenai Pen. Borough

Date of Chemical Treatment July 12, 1967

1. Surface Area at Treatment 84.9 (acres) Water Volume 861 Acre-ft.

   Miles of Tributaries Treated None Stream flow N/A cfs.

2. Miles of Stream Treated _____ Stream flow _____ cfs.

   Miles of Tributaried Treated _____ Stream flow _____ cfs.

3. Toxicant Used powder and liquid rotenone

4. Amount and Concentration of Toxicant Used:

   Lake 2,600 lbs @ 7.8% powder & 55 gal. liquid @ 2.5% Stream N/A

5. Method used in distributing the Toxicant:
   Outboard motor, backpack pump and gas driven pump

6. Cost of Toxicant $ _____

7. Condition of water on date of treatment:

Depth or flow (feet)	Temperature (°F)	pH	Dissolved Oxygen Content
16	-	6.4 - 6.9	---

TDS M.O. alkalinity 80-90 ppm

8. Species and estimated numbers of fish eradicated:

   Lake: Sticklebacks (very numerous) - 22 rainbows collected.

   Tributaries:

9. Period of Toxicity: maximum of 52 days

10. Method of determination of effectiveness: visual observations

11. Detoxification required N/A. If so, report on effects recorded on downstream fishery.

12. Fish Stocking:

Date	Species	Size (inches)	Pounds	Number
10/3/67	SS	105/lb.	-	38,250
8/28/68 n	SS	93/lb.	-	26,000

13. Status of fishery, if applicable (creel census, gill or trap net) growth. Record method of sampling. On 9/27/68 gill net sampling revealed the following mean sizes: 153.6mm, weight 0.084 pounds.

14. Comments on angler use (before and after treatment) No sport fishery immediately prior to rehabilitation-fish are presently too small to support a fishery.

15. Public reaction to project (before and after treatment)

Favorable

16. Additional Remarks The rehabilitation is considered a failure because sticklebacks have returned to the lake (1968).

JOHNSON LAKE - July 12, 1967 specimens collected by SCUBA after rehabilitation

Species	Length (mm)	Weight (lb.)	Sex	
Rainbow	364	1 2/16	♀	N=22
RB	382	1 4/16	♀	$\bar{x}$=431.2 mm
RB	391	1 4/16	♂	$\bar{x}$=1 lb. 14 oz.
RB	392	1 7/16	♀	
RB	395	2 ——	♂	
RB	399	1 5/16	♀	
RB	405	1 8/16	♀	
RB	410	1 11/16	♀	
RB	413	2 4/16	♂	
RB	415	1 6/16	♀	
RB	415	1 6/16	♀	
RB	418	1 12/16	♀	
RB	425	1 8/16	♀	
RB	428	1 7/16	♀	
RB	431	1 14/16	♀	
RB	432	1 10/16	♀	
RB	465	1 13/16	♀	
RB	479	2 8/16	♀	
RB	497	2 6/16	♂	
RB	500	2 13/16	♂	
RB	510	3 3/16	♀	
RB	520	3 7/16	♀	

ALASKA DEPARTMENT OF FISH AND GAME
SPORT FISH DIVISION

FISH POPULATION CONTROL A,
PRE-CHEMICAL RESTORATION PLAN

GENERAL

Region II Lake or Stream Johnson Clearance obtained from D.E.C

Federal Clearance (date) none State Clearance (date) July 22, 1983 Land Managing Agency State of Alaska

1. Physical Characteristics: a,b. Borough Kenai t 2N r 11W s 6 Lat 60°17' Long 151°16' U.S. Map Call Out # K-B-4

Surf. acres 85 (when surveyed) Max. depth 16 Avg. depth 10.1 Acre feet 860 Established B.M. location

Describe method used in establishing information for contour map Aerial photograph and recording fathometer

Lake was previously reclaimed in (year) 1972 Toxicant used rotenone Result

c. Outlet none

d. Inlet (number, miles, flow & description) none

e. Estimated duration of toxicity 60-90 days

f. Shoreline and lake bottom description (springs, seeps, bogs, swamp, shallow areas, aquatic vegetation) Some bog with abundant vegetation along most of the lake shore. No known springs.

2. Fishery Characteristics: a. Target fish threespine stickleback Population composition threespine stickleback and stocked silver salmon

c. Sample method used gill nets and visual observation. Most recent survey date Sept. 15, 1983

3. Status of Existing Fishery: Fish growth and or survival and collection means (creel census, net, etc.) Annual fall gill net sampling showed a SS catch/hr. of 2.56 with a mean length of 240.8 mm

4. Restoration Plan: a. Toxicant Chem-fish synegizer Percent or weight (active ingredient) 5% rotenone Form to be applied liquid

Application rate (active ingredient) 2.1 ppm c. Method of application boat pump time 29 month Sept, 1983

d. Quantity required 605 gallons (gal. or lbs.) Acre feet to be treated 860 (lake or stream) lake

e. Number of sub-area treatments and description of sites three subareas marked by permanent land points.

f. Areas to be treated with caution none

g. Precautions to be taken in downstream areas (if none are needed, state why). none - no outlet

h. Chemical rehabilitation benefits Improved growth and survival of stocked fish i. Monitoring Periodic test fish samples

5. Water-Physical Chemistry Properties: a. ph Methyl orange alkalinity Total alkalinity b. TDS dissolved solids

Date(s) 6. Estimated Project Cost: ~~lbs~~ or gallons/ .70 acre feet @ $12.03 cents per ~~lb.~~ or gal. = $ 8.42 Toxicant requirements 605 gal @ $12.03/gal = $ 7,278.15 lbs @ $ lb. = $ Man days 7

Wage $ 891 Per diem $ 125 Travel $100 Barrier dam (if required) type $

M & O cost: List none $ Other cost (items)

$ Total estimated cost $ 8,394.15

7. Planned initial fish stocking:

DATE	SPECIES	INCHES	POUNDS	NUMBER
84	RB	unknown		

8. Public Considerations: a. Is water to be used locally for domestic, industrial or irrigation purposes? no

b. Public access assured (how) State campground c. If the affected waters contain any rare or endangered species, describe the measures to be undertaken for their protection

d. Procedure for salvage and disposal of fish killed Donate to observing public

e. Cooperating agencies (attitude and support) treatment coordinated with State Div. of Parks

f. General attitude of the public to the project favorable toward project

g. Remarks

1983 LAKE REHABILITATION

JOHNSON LAKE

860 ACRE-FEET @ 2.0 PPM = 0.66 GALS / ACRE-FOOT

860 AF x 0.66 = 567 GAL / 55 = 10.3 (11 BARRELS)

Used 605 gallons = $\frac{.70 \text{ gallons/acre ft}}{.33 \text{ gal/acre ft}}$ = 2.1 ppm

.33 gal/acre ft = 1 ppm

CENTENNIAL LAKE

192 ACRE-FEET @ 2.0 PPM = 0.66 GALS / ACRE-FOOT

192 AF x 0.66 = 127 GAL / 55 = 2.3 (3 BARRELS)

Used 165 gallons = $\frac{.86 \text{ gallons/acre ft}}{.33}$ = 2.6 ppm

.15 X = 50

X = 333

THE MEAD CORPORATION, DAYTON, O. 45402

ACCURACY, DATA PAD NO. 58-1304