



DEPARTMENT OF ECOLOGY  
JUN 07 2007  
WATER QUALITY PROGRAM

State of Washington

**DEPARTMENT OF FISH AND WILDLIFE**

Mailing Address: 600 Capitol Way N Olympia, WA 98501-1091 (360) 902-2222, TDD (360) 902-2207  
Main Office Location: Natural Resources Building 1111 Washington Street SE Olympia, WA

May 30, 2006

Kelly McLain  
Aquatic Pesticide Program  
Supplemental  
Department of Ecology  
P.O. Box 47600  
Olympia, Washington 98504-7600

NPDES Permit WA0041009  
Annual Report

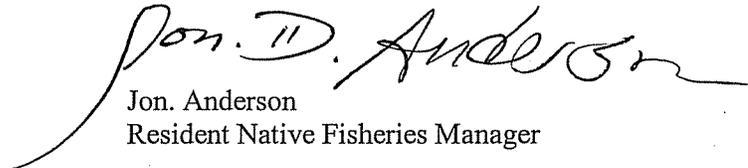
Dear Ms. McLain:

Enclosed are Washington Department of Fish and Wildlife's Post-Treatment Discharge Monitoring Reports for Pearrygin and Long Lakes (Okanogan County); Blue, Park, Vic Myers (Rainbow), and Alkali Lakes and the Westlake Ponds in WDFW's North Potholes wildlife area (Grant County); and McDowell Lake (Stevens County), treated with rotenone in the fall of 2006. All other pertinent documentation as mandated by the reporting requirement under S3.A of NPDES Waste Discharge Individual Permit Number WA0041009 is included. The Warden Lakes in Grant County were proposed for treatment through the SEPA process, but were not treated in 2006.

Also enclosed is a copy of the amended FSEIS for the lakes proposed for treatment in the fall of 2006, including all SEPA comments, results and decisions, as well as the 2007-2008 Lake and Stream Rehabilitation Proposal list.

Please feel free to contact me at 360-902-2711 or email [anderjda@dfw.wa.gov](mailto:anderjda@dfw.wa.gov) with any questions.

Sincerely,

  
Jon. Anderson  
Resident Native Fisheries Manager

Enclosures

cc: Jim Uehara, WDFW Olympia

# POST-TREATMENT DISCHARGE MONITORING REPORTS

## OKANOGAN COUNTY

PEARRYGIN LAKE

LONG LAKE

## GRANT COUNTY

VIC MEYERS (RAINBOW) LAKE

PARK LAKE (INCLUDING MIRROR POND)

BLUE LAKE

ALKALI LAKE

NORTH POTHoles (WESTLAKE PONDS)

## STEVENS COUNTY

McDOWELL LAKE

## POST TREATMENT DISCHARGE MONITORING REPORT

1. **Lake Name:** Pearrygin
2. **County:** Okanogan
3. **Section:** 36 **Township:** 35N **Range:** 21E
4. **Dates of Treatment:** Oct 9-10, 2006
5. **Purpose of Treatment:** Pearrygin Lake has historically been a very productive trout lake in Okanogan County. Illegal introductions of spiny ray fishes in recent years, has seriously compromised this once great fishing lake. Fingerling plants of rainbow can only produce yearling fish 8"-9" long due to competition with the warmwater species in the lake (largemouth bass). Legal plants of rainbow trout could prolong the fishery, but are much more expensive to produce at the hatcheries and could be used at other less productive waters instead. In addition, angler surveys indicate a preference for fingerling planted fish that have experienced an entire growing season in the lake versus catchable trout that are planted just prior to the opener. Treatment is needed at this time to restore Pearrygin Lake back to trout only water.
6. **Name of Licensed Applicator:** Jeff Korth
7. **Lake Description: Surface Acres:** 212 **Volume:** 6260 **Acre Feet:**  
**Maximum Depth:** 48 **Average Depth:** 29.5
8. **Stream Description: Width:** N/A, **Length:** N/A  
**Flow Rate of Stream/Outlet (cu. ft. per sec.):** N/A  
**Volume and Weight of Water Treated (gallons, pounds):** 17,022,993,000 lbs.
9. **Name of Fish Toxicant Product Used:** Rotenone Fish Toxicant Powder, Prenfish Fish Toxicant Liquid
10. **Description of Treatment Method(s):** Powder applied by pumper boats, which mixes chemical with water prior to broadcasting into lake. Air boat used to apply liquid rotenone to shallow water areas.
11. **Quantity of Fish Toxicant used (pounds and/or gallons):** 13,200 lbs of powder and 7 gals of liquid
12. **Concentration of rotenone in formulated Rotenone product:** 6.7% in powder and 5.0% in liquid
13. **Concentration of active rotenone in water (ppm):** 1.0 ppm

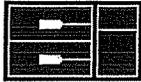
14. **Water conditions/quality:** Water sampling done within 24hrs pre-treatment:

Depth (m)	Temperature °C	pH	DO
1.0	15.47	9.10	3.52
2.0	15.19	9.04	3.27
3.0	15.14	8.95	3.16
4.1	15.09	8.84	3.10
5.0	15.07	8.80	3.12
6.0	15.07	8.79	2.74
7.2	15.04	8.60	2.10
8.3	13.97	7.67	0.94
9.4	11.43	7.44	0.95
10.8	10.18	7.33	0.95

15. **Detoxification of rotenone treated water (if required): Description of detoxification methods/equipment; potassium permanganate application rate (pounds per hour); flow rate of stream/outlet (cu. ft. per sec.); estimate of average concentration (ppm):** N/A
16. **Description of lake inlets(s)/outlet(s) and any temporary water control measures (if required):** No active inlet water source during treatment. Outlet gate, which is used for supplying irrigation water during the summer, was sealed for the duration of the treatment.
17. **Period of Toxicity (duration of water quality reduction):** 4-6weeks
18. **Eradicated fish species:** largemouth bass, bridgelip sucker, and rainbow trout
19. **Results of pre and post treatment monitoring:** Prior to the treatment, the lake was sampled for various parameters including temperature, pH, and zooplankton. Post sampling included VOC and Semi-VOC both within 24 hours of treatment and 4 weeks post-treatment.
20. **Impact on non-target organisms:** None observed
21. **Brief description of treatment/detoxification and other comments:** The treatment began at 1000 on Oct 9, 2006 and was completed by the afternoon on Oct 10, 2006. Treatment consisted of 0.75 ppm the first day and 0.25 ppm the second day, with liquid being sprayed into the shallows the first day only. The weather was mild all three days with a slight wind, which aided in mixing. Hundreds of largemouth bass started dying almost immediately, in addition to bridgelip suckers and rainbow trout. The bass were 4-12 inches; the bridgelip suckers from 8-18 inches, and the trout were mostly 8 inches with a few carryover fish to 12 inches. By the end of the second day, no live fish were noted, which indicated a successful treatment. A bioassay with 5 rainbow trout was conducted at 6 weeks and all fish

survived, indicating that the lake had detoxified. During Apr-May of 2007, up to 30,000 catchable and 65,000 fingerling rainbow trout will be planted in the lake.

- 22. Copy of the amended FSEIS for lakes/streams treated during the reporting period including all SEPA comments, results and decisions**
- 23. List of lakes/streams proposed for treatment during the upcoming year.**



CCI  
ANALYTICAL  
LABORATORIES, INC

**CERTIFICATE OF ANALYSIS**

CLIENT: WA DEPT. OF FISH AND WILDLIFE  
PO BOX 753  
OMAK, WA 98841

DATE: 10/20/2006  
CCIL JOB #: 0610070  
DATE RECEIVED: 10/13/2006  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: BOB JATEFF  
CLIENT PROJECT ID: PEARRYGIN LAKE REHABILITATION  
CLIENT SAMPLE ID: 10/12/200 11:00 #1  
CCIL SAMPLE #: -01

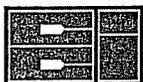
**DATA RESULTS**

ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
Benzene	EPA-8021	ND(<1)	UG/L	10/13/2006	GAP
Toluene	EPA-8021	ND(<1)	UG/L	10/13/2006	GAP
Ethylbenzene	EPA-8021	ND(<1)	UG/L	10/13/2006	GAP
Xylenes	EPA-8021	ND(<3)	UG/L	10/13/2006	GAP
Naphthalene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
1-Methylnaphthalene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
2-Methylnaphthalene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
Acenaphthylene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
Acenaphthene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
Fluorene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
Phenanthrene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
Benzo[A]Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
Chrysene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
Benzo[B]Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
Benzo[K]Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
Benzo(A)Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
Dibenz[A,H]Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
Benzo[G,H,I]Perylene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL

\* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT. REPORTING LIMIT IS GIVEN IN PARENTHESES.

\*\* UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

APPROVED BY:



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CCIL JOB #: 0610070  
DATE RECEIVED: 10/13/2006  
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CLIENT CONTACT: BOB JATEFF  
CLIENT PROJECT ID: PEARRYGIN LAKE REHABILITATION  
CLIENT SAMPLE ID: 10/12/200 11:00 #1  
CCIL SAMPLE #: -01

DATA RESULTS

ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
Benzene	EPA-8021	ND(<1)	UG/L	10/13/2006	GAP
Toluene	EPA-8021	ND(<1)	UG/L	10/13/2006	GAP
Ethylbenzene	EPA-8021	ND(<1)	UG/L	10/13/2006	GAP
Xylenes	EPA-8021	ND(<3)	UG/L	10/13/2006	GAP
Naphthalene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
1-Methylnaphthalene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
2-Methylnaphthalene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
Acenaphthylene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
Acenaphthene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
Fluorene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
Phenanthrene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
Benzo[A]Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
Chrysene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
Benzo[B]Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
Benzo[K]Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
Benzo(A)Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
Dibenz[A,H]Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL
Benzo[G,H,I]Perylene	EPA-8270 SIM	ND(<0.02)	UG/L	10/16/2006	RAL

\* ND\* INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT. REPORTING LIMIT IS GIVEN IN PARENTHESES.

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APPROVED BY:



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PO BOX 753  
OMAK, WA 98841

DATE: 10/20/2006  
CCIL JOB #: 0610070  
DATE RECEIVED: 10/13/2006  
WDOE ACCREDITATION #: C142

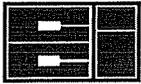
CLIENT CONTACT: BOB JATEFF  
CLIENT PROJECT ID: PEARRYGIN LAKE REHABILITATION

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

CCIL SAMPLE ID	METHOD	SUR ID	% RECV
0610070-01	EPA-8021	TFT	97
0610070-01	EPA-8270 SIM	Terphenyl-d14	108

APPROVED BY:



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ANALYTICAL  
LABORATORIES, INC

CERTIFICATE OF ANALYSIS

CLIENT: WA DEPT. OF FISH & WILDLIFE  
MS: 43200 NRB 600 CAPITOL WAY NORTH  
OLYMPIA, WA 98501

DATE: 11/14/2006  
CCIL JOB #: 0611050  
DATE RECEIVED: 11/9/2006  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: BOB JATEFF  
CLIENT PROJECT ID: PEARRYGIN LAKE REHABILITATION  
CLIENT SAMPLE ID: 11/8/2006 10:00 1,2,3  
CCIL SAMPLE #: -01

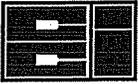
DATA RESULTS

ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
Benzene	EPA-8021	ND(<1)	UG/L	11/9/2006	GAP
Toluene	EPA-8021	ND(<1)	UG/L	11/9/2006	GAP
Ethylbenzene	EPA-8021	ND(<1)	UG/L	11/9/2006	GAP
Xylenes	EPA-8021	ND(<3)	UG/L	11/9/2006	GAP
Naphthalene	EPA-8270 SIM	ND(<0.02)	UG/L	11/10/2006	RAL
1-Methylnaphthalene	EPA-8270 SIM	ND(<0.02)	UG/L	11/10/2006	RAL
2-Methylnaphthalene	EPA-8270 SIM	ND(<0.02)	UG/L	11/10/2006	RAL
Acenaphthylene	EPA-8270 SIM	ND(<0.02)	UG/L	11/10/2006	RAL
Acenaphthene	EPA-8270 SIM	ND(<0.02)	UG/L	11/10/2006	RAL
Fluorene	EPA-8270 SIM	ND(<0.02)	UG/L	11/10/2006	RAL
Phenanthrene	EPA-8270 SIM	ND(<0.02)	UG/L	11/10/2006	RAL
Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	11/10/2006	RAL
Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	11/10/2006	RAL
Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	11/10/2006	RAL
Benzo[A]Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	11/10/2006	RAL
Chrysene	EPA-8270 SIM	ND(<0.02)	UG/L	11/10/2006	RAL
Benzo[B]Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	11/10/2006	RAL
Benzo[K]Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	11/10/2006	RAL
Benzo(A)Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	11/10/2006	RAL
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	11/10/2006	RAL
Dibenz[A,H]Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	11/10/2006	RAL
Benzo[G,H,I]Perylene	EPA-8270 SIM	ND(<0.02)	UG/L	11/10/2006	RAL

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\*\* UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

APPROVED BY:



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ANALYTICAL  
LABORATORIES, INC

CERTIFICATE OF ANALYSIS

CLIENT: WA DEPT. OF FISH & WILDLIFE  
MS: 43200 NRB 600 CAPITOL WAY NORTH  
OLYMPIA, WA 98501

DATE: 11/14/2006  
CCIL JOB #: 0611050  
DATE RECEIVED: 11/9/2006  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: BOB JATEFF  
CLIENT PROJECT ID: PEARRYGIN LAKE REHABILITATION

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

CCIL SAMPLE ID	METHOD	SUR ID	% RECV
0611050-01	EPA-8021	TFT	94
0611050-01	EPA-8270 SIM	Terphenyl-d14	103

APPROVED BY:

## POST TREATMENT DISCHARGE MONITORING REPORT

1. **Lake Name:** Long
2. **County:** Okanogan
3. **Section:** 13 **Township:** 36N **Range:** 29E
4. **Date(s) of Treatment:** Oct 1-3, 2006
5. **Purpose of Treatment:** Long Lake has historically been one of the more productive smaller lakes in Okanogan County. Illegal introductions of spiny ray fish (pumpkinseed sunfish) have seriously compromised the trout fishery. Fingerling plants of rainbow trout can only produce yearling fish 8 inches long due to competition with the sunfish population. Legal plants of rainbow are costly to produce and would only mask the problem created by the sunfish. Treatment at this time is needed to restore Long Lake back to trout only waters.
6. **Name of Licensed Applicator:** Jeff Korth
7. **Lake Description: Surface Acres:** 14.3 **Volume:** 203 **Acre Feet:**  
**Maximum Depth:** 29 **Average Depth:** 14.2
8. **Stream Description: Width:** N/A, **Length:** N/A  
**Flow Rate of Stream/Outlet (cu. ft. per sec.):** N/A  
**Volume and Weight of Water Treated (gallons, pounds):** 552,023,584 lbs.
9. **Name of Fish Toxicant Product Used:** Rotenone Fish Toxicant Powder, Prenfish Fish Toxicant Liquid
10. **Description of Treatment Method(s):** Powder applied by pumper boats, which mixes chemical with water prior to broadcasting into lake. Canoe with small spray tank was used to distribute liquid rotenone in areas that the pumper boats could not access.
11. **Quantity of Fish Toxicant used (pounds and/or gallons):** 440 lbs of powder and 7.5 gals of liquid
12. **Concentration of rotenone in formulated Rotenone product:** 6.7% in powder and 5.0% in liquid
13. **Concentration of active rotenone in water (ppm):** 1.0 ppm

14. **Water conditions/quality:** Water sampling done within 24hrs pre-treatment:

Depth (m)	Temperature °C	pH	DO
0.2	15.97	9.51	5.9
1.0	15.58	9.53	6.04
2.2	15.30	9.54	6.10
3.6	14.92	9.22	5.69
4.6	14.66	9.04	3.65
5.8	14.45	8.93	2.40

15. **Detoxification of rotenone treated water (if required):** Description of detoxification methods/equipment; potassium permanganate application rate (pounds per hour); flow rate of stream/outlet (cu. ft. per sec.); estimate of average concentration (ppm): N/A
16. **Description of lake inlets(s)/outlet(s) and any temporary water control measures (if required):** N/A
17. **Period of Toxicity (duration of water quality reduction):** 4-6weeks
18. **Eradicated fish species:** pumpkinseed sunfish and rainbow trout
19. **Results of pre and post treatment monitoring:** Prior to the treatment, the lake was sampled for various parameters including temperature, pH, and zooplankton. Post sampling included VOC and Semi-VOC both within 24 hours of treatment.
20. **Impact on non-target organisms:** None observed
21. **Brief description of treatment/detoxification and other comments:** The treatment began at 1000 on Oct 1, 2006 and was completed by the afternoon on Oct 3, 2006. Treatment consisted of 1.0 ppm the first day with a follow up of liquid rotenone in the shallow areas both the second and third days. The weather was mild all three days with a slight wind, which aided in mixing. Thousands of sunfish 1-6 inches started dying immediately along with a few hundred carryover rainbows to 11 inches (2+), and one yellow perch (12"). On the second day, there were still sunfish in the upper shallow area, which necessitated another liquid treatment with the canoe and small sprayer unit. On Oct 3, observations still indicated some live fish, so a third spraying of liquid was done in the north end. The following day, there were no fish observed swimming at any part of the lake, which indicated good treatment efficiency. Tens of thousands of sunfish of every age class littered the shoreline after the third day. A bioassay with 5 rainbow trout was conducted at 6 weeks and all fish survived, indicating that the lake had detoxified. During Apr-May of 2007, 2,000 catchable and 4,000 fingerling rainbow trout will be planted in the lake.

CERTIFICATE OF ANALYSIS

CLIENT: WA DEPT. OF FISH & WILDLIFE  
MS: 43200 NRB 600 CAPITOL WAY NORTH  
OLYMPIA, WA 98501

DATE: 10/16/2006  
CCIL JOB #: 0610031  
DATE RECEIVED: 10/6/2006  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: BOB JATEFF  
CLIENT PROJECT ID: LONG LAKE REHABILITATION  
CLIENT SAMPLE ID: 10/3/2006 17:00 1  
CCIL SAMPLE #: -01

DATA RESULTS

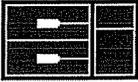
ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
Benzene	EPA-8021	ND(<1)	UG/L	10/9/2006	GAP
Toluene	EPA-8021	ND(<1)	UG/L	10/9/2006	GAP
Ethylbenzene	EPA-8021	ND(<1)	UG/L	10/9/2006	GAP
Xylenes	EPA-8021	ND(<3)	UG/L	10/9/2006	GAP
Naphthalene	EPA-8270 SIM	14	UG/L	10/7/2006	RAL
1-Methylnaphthalene	EPA-8270 SIM	23	UG/L	10/7/2006	RAL
2-Methylnaphthalene	EPA-8270 SIM	39	UG/L	10/7/2006	RAL
Acenaphthylene	EPA-8270 SIM	0.18	UG/L	10/7/2006	RAL
Acenaphthene	EPA-8270 SIM	0.48	UG/L	10/7/2006	RAL
Fluorene	EPA-8270 SIM	0.59	UG/L	10/7/2006	RAL
Phenanthrene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL
Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL
Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL
Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL
Benzo[A]Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL
Chrysene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL
Benzo[B]Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL
Benzo[K]Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL
Benzo(A)Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL
Dibenz[A,H]Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL
Benzo[G,H,I]Perylene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL

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\*\* UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

APPROVED BY:





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MS: 43200 NRB 600 CAPITOL WAY NORTH  
OLYMPIA, WA 98501

DATE: 10/16/2006  
CCIL JOB #: 0610031  
DATE RECEIVED: 10/6/2006  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: BOB JATEFF  
CLIENT PROJECT ID: LONG LAKE REHABILITATION

**QUALITY CONTROL RESULTS**

**SURROGATE RECOVERY**

CCIL SAMPLE ID	METHOD	SUR ID	% RECV
0610031-01	EPA-8021	TFT	102
0610031-01	EPA-8270 SIM	Terphenyl-d14	116
0610031-01 DILUTION	EPA-8270 SIM	Terphenyl-d14	93

APPROVED BY:

CERTIFICATE OF ANALYSIS

CLIENT: WA DEPT. OF FISH & WILDLIFE  
MS: 43200 NRB 600 CAPITOL WAY NORTH  
OLYMPIA, WA 98501

DATE: 2/7/2007  
CCIL JOB #: 0701111  
DATE RECEIVED: 1/29/2007  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: BOB JATEFF  
CLIENT PROJECT ID: LONG LAKE REHAB  
CLIENT SAMPLE ID: 1/24/2007 12:00 1  
CCIL SAMPLE #: -01

DATA RESULTS

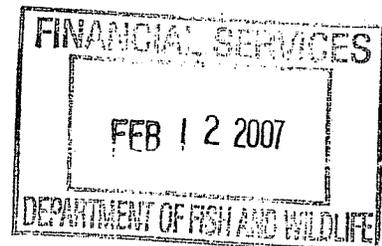
ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
Benzene	EPA-8021	ND(<1)	UG/L	1/29/2007	GAP
Toluene	EPA-8021	ND(<1)	UG/L	1/29/2007	GAP
Ethylbenzene	EPA-8021	ND(<1)	UG/L	1/29/2007	GAP
Xylenes	EPA-8021	ND(<3)	UG/L	1/29/2007	GAP
Naphthalene	EPA-8270 SIM	0.11*	UG/L	1/30/2007	RAL
1-Methylnaphthalene	EPA-8270 SIM	0.07	UG/L	1/30/2007	RAL
2-Methylnaphthalene	EPA-8270 SIM	0.08	UG/L	1/30/2007	RAL
Acenaphthylene	EPA-8270 SIM	ND(<0.02)	UG/L	1/30/2007	RAL
Acenaphthene	EPA-8270 SIM	ND(<0.02)	UG/L	1/30/2007	RAL
Fluorene	EPA-8270 SIM	ND(<0.02)	UG/L	1/30/2007	RAL
Phenanthrene	EPA-8270 SIM	ND(<0.02)	UG/L	1/30/2007	RAL
Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	1/30/2007	RAL
Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	1/30/2007	RAL
Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	1/30/2007	RAL
Benzo[A]Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	1/30/2007	RAL
Chrysene	EPA-8270 SIM	ND(<0.02)	UG/L	1/30/2007	RAL
Benzo[B]Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	1/30/2007	RAL
Benzo[K]Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	1/30/2007	RAL
Benzo(A)Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	1/30/2007	RAL
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	1/30/2007	RAL
Dibenz[A,H]Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	1/30/2007	RAL
Benzo[G,H,I]Perylene	EPA-8270 SIM	ND(<0.02)	UG/L	1/30/2007	RAL

\* NAPHTHALENE OBSERVED IN EXTRACTION BLANK AT 0.03 UG/L. SAMPLE RESULT MAY BE BIASED HIGH.

\*\* ND\* INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT. REPORTING LIMIT IS GIVEN IN PARENTHESES.

\*\* UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

APPROVED BY:





**TREATMENT DESCRIPTION:**

**Toxicant used: Rotenone** - Cube powdered Fish Toxicant EPA Reg # 6458-6, Liquid CFT Legumine EPA Reg # 75338-2 and Liquid Prenfish EPA Reg # 655-422.

Water	Date 2006	Actual Rotenone used		ppm (product)
		Powder lbs @ conc.	Liquid gals @ 5%	
1. <b>Alkali Lake</b>	Oct 23-26	≤ 11.75 @ 5.0 % *	≤ 1.0	≤ 0.002
<i>* note – Alkali Lake was only treated via outflow of treated water from Blue Lake. Rotenone amounts calculated as volume from Blue Lk added at 1 ppm rotenone product.</i>				
2. <b>Blue Lake</b>	Oct 23	7,425 @ 7.9 %	0	0.21 cumulative
	Oct 24	11,770 @ 7.9 %	10 (CFT)	0.53 cumulative
	Oct 25	13,365 @ 8.2 %	20 (CFT)	0.90 cumulative
	Oct 26	<u>3,135 @ 8.2 %</u>	<u>1 (Prenfish)</u>	<u>0.99 cumulative</u>
	TOTAL	35,695 lbs	31 gals	
Equivalent	57,388 lbs @ 5%	248 lbs @ 5%	≤ 1 ppm	
3. <b>Park Lake</b>	Nov 16	7,370 @ 7.5 %	0	0.32 cumulative
	Nov 17	15,730 @ 7.5 %	0	0.98 cumulative
	Nov 18	<u>0</u>	<u>24 (CFT)</u>	<u>0.98 cumulative</u>
	TOTAL	23,100 lbs	24 gals	
	Equivalent	34,650 lbs @ 5%	192 lbs @ 5%	≤ 1 ppm
4. <b>Vic Meyers Lake &amp; outlet/Mirror Pond</b>	Nov 18	825 @ 7.9 %	0	4.00 cumulative
	Nov 19	<u>0</u>	<u>7 (CFT)</u>	<u>3.43 cumulative</u>
	TOTAL	825 lbs	7 gals	
	Equivalent	1,304 lbs @ 5%	56 lbs @ 5%	≤ 4 ppm

All powder slurried with lake water; liquid mixed with lake water and sprayed in shallow waters.

Rotenone concentrations achieved during the treatment were calculated without regard to daily rates of degradation. Precise rates of detoxification on a daily basis were not known. Only enough rotenone was used during the entire treatment to achieve the desired concentrations given an instantaneous treatment (1 ppm product, 0.05 ppm actual rotenone for Park and Blue lakes; 4 ppm product, 0.20 ppm actual rotenone for Vic Meyers Lake, outlets, and Mirror Pond). Actual concentrations in the lakes would have been somewhat less since rotenone began degrading on the first day of treatment.

Detoxification Procedures: treated waters naturally detoxified.

- No detoxification was necessary; all outflow from system was subterranean.

**SPECIES OF FISH ERADICATED IN ORDER OF RELATIVE ABUNDANCE:**

Water – Species, Size; observed abundance

1. Blue Lake (totals based on 20% observation ability rate).

<b>Yellow perch</b>	2-6"; hundreds of thousands (maximum estimate = 800K) 6-12"; tens of thousands (maximum estimate = 30K) 12+"; hundreds (maximum estimate = 500)
<b>Sculpins</b>	.05-4"; hundreds of thousands (maximum estimate = 300K)
<b>Pumpkinseed</b>	.05-3"; tens of thousands (maximum estimate = 50K)
<b>Sunfish</b>	
<b>Largemouth bass</b>	2-7"; thousands, (maximum estimate = 5K) 12+"; hundreds (maximum estimate = 500)
<b>Smallmouth bass</b>	2-7"; thousands, (maximum estimate = 5K) 12+"; hundreds (maximum estimate = 500)
<b>Brown bullheads</b>	4-8"; hundreds (maximum estimate = 300)
<b>Rainbow trout</b>	12-15"; hundreds (maximum estimate = 250)
<b>Brown trout</b>	18-30"; hundreds (maximum estimate = 250)
<b>Carp</b>	Three 20+" adults observed.

2. Park Lake (due to late timing and cold water, it was very likely that less than the usual percentage of fish were observed; actual species and numbers were probably proportionately per acre similar to Blue Lk).

<b>Yellow perch</b>	2-6"; hundreds of thousands 6-9"; tens of thousands 9+"; hundreds
<b>Sculpins</b>	.05-4"; hundreds of thousands
<b>Pumpkinseed</b>	.05-3"; tens of thousands
<b>Sunfish</b>	
<b>Smallmouth bass</b>	2-7"; thousands 12+"; hundreds
<b>Largemouth bass</b>	none observed during treatment, although known to be present
<b>Brown bullheads</b>	4-8"; thousands
<b>Rainbow trout</b>	12-13"; hundreds
<b>Brown trout</b>	none observed during treatment, although known to be present

3. Vic Meyers Lake (due to late timing and cold water, it was very likely that far fewer fish than usual were observed).

<b>Brown bullheads</b>	4-8"; thousands
<b>Sculpins</b>	.05-4"; hundreds
<b>Yellow perch</b>	none observed during treatment, although known to be present
<b>Trout</b>	16+"; 3-4 brown or tiger trout were observed; no rainbow

4. Vic Meyers Lk drainage and Mirror Pond

<b>Largemouth bass</b>	2-3"; hundreds
<b>Sculpins</b>	.05-4"; hundreds
<b>Trout</b>	16+"; 3-4 brown and rainbow trout were observed
<i>No brown bullheads or yellow perch were observed.</i>	

5. Alkali Lake – no dead fish were observed in Alkali Lk (see narrative)

## PHYSICAL CHARACTERISTICS OF THE LAKE DURING TREATMENT:

### 1. Blue Lake

Weather – Mostly sunny, air temp = 55-65 °F.; mostly 0-8 mph south wind, except 5-25 mph south wind on afternoon of Oct 24 and 2-3 mph north wind on morning of Oct 25.

#### Pre-treatment water quality parameters – Blue Lake, 22 October 2006.

Depth (ft)	Water Temp (°C)	Dissolved Oxygen (mg/l)	pH	Conductivity (mu/l)
surface	13.99	9.26	7.69	512
20	13.49	9.20	7.69	512
30	13.41	9.15	7.69	513
40	13.39	9.20	7.69	513
50	13.32	8.74	7.68	514
60 (bottom)	13.16	6.75	7.67	516

### 2. Park Lake

Weather – Partly to mostly sunny, air temp = 30-50 °F.; 5-10 mph south wind at start of treatment on afternoon of Nov 16, mostly 0-5 mph south or east winds next two days.

#### Pre-treatment water quality parameters – Park Lake, 16 November 2006.

Depth (ft)	Water Temp (°C)	Dissolved Oxygen (mg/l)	pH	Conductivity (mu/l)
surface	8.7	10.6	7.20	475
25	8.6	10.5	7.15	475
55 (bottom)	8.5	10.4	7.20	477

**PRE- AND POST- TREATMENT MONITORING** (all monitoring conducted as outlined in DFW's NPDES permit WA0041009):

**Impact to non-targeted organisms** – Zooplankton were sampled for diversity and abundance just previous to treatment, six months post treatment, and will again be sampled 12 months post treatment. Samples are currently being processed, and the results will be available by separate report.

**Liquid rotenone formulation longevity** – Water samples were taken at both Blue and Park lakes 24 hours and four weeks post treatment to check for residues related to the carriers present in the liquid formulation of rotenone. Water samples were taken in areas of the lake where the heaviest concentrations of liquid rotenone were applied. Samples were sent to an accredited lab for analyses per EPA methods.

**Blue Lake:** Water samples were taken near the outlet at the southeast end of the lake. The amounts of all 23 volatile and semi-volatile organic compounds, including benzene, toluene, phenol, xylene, and derivatives of these compounds, were below detection limits (0.02-3.0 ug/l, variously) in the 24 hour and four week post treatment samples.

**Park Lake:** The 24 hour post treatment water sample was taken at the State Park at the north end of the lake, near the inlet. Inflow from Mirror Pond would have the highest concentration of liquid rotenone used for the entire project (3.43 ppm product). Semi-volatile organic compound testing revealed naphthalene (13 ug/l), 2-methylnaphthalene (43 ug/l), and 1-methylnaphthalene (21 ug/l). The amounts of 20 other compounds possibly present in liquid rotenone formulations, including benzene, toluene, phenol, xylene, and derivatives of these compounds, were below detection limits (0.02-3.0 ug/l, variously) in the same sample. The 4-week post treatment water samples were taken at

two locations. The amounts of all 22 volatile and semi-volatile organic compounds were below detection limits (0.02-3.0 ug/l, variously) in the sample taken at the same location as the 24-hour sample (State Park at the north end of the lake, near the inlet). Semi-volatile organic compound testing revealed 1-methylnaphthalene (0.03 ug/l; detection limit 0.02 ug/l) in a second sample taken from the bay in the mid-west portion of the lake. The amounts of 21 other compounds possibly present in liquid rotenone formulations were below detection limits (0.02-3.0 ug/l, variously) in that same sample. WDFW is unable to account for the presence of naphthalene and methyl-naphthalene in the samples, as the use of CFT-Legumine liquid formulation should not have contributed these semi-VOC compounds. An additional sample, not required by the NPDES permit, was taken at the State Park at the north end of the lake, near the inlet about 50 days post-treatment. The amounts of all 23 volatile and semi-volatile organic compounds, including benzene, toluene, phenol, xylene, and derivatives of these compounds, were below detection limits (0.02-3.0 ug/l, variously) in this sample.

**Period of Toxicity** – Persistent rotenone toxicity was determined by bioassay. Live trout were held in a live-box (5 gal volume with free flow-through) in the lake and survival monitored. Trout exhibit signs of stress and loose equilibrium after three hours at rotenone concentrations of 0.05 ppm product (0.0025 ppm actual rotenone) at water temperatures of 47° F, and response is fairly uniform among individuals in similar circumstances. Rotenone is considered below detection limits when trout remain alive for at least 48 hours. Individual mortalities within a group of trout frequently occur due to mechanical damage when handled or transported/confined in relatively small containers.

**Blue Lake:** Bioassay began 12 days post-treatment. Five 3-5 inch rainbow trout were placed in a live-box at the south end of the lake. Water temperature was 53° F, and the holding tank water was 56° F. No sign of distress was observed after an hour in the lake. After 48 hours in the lake, one trout had perished, and after 72 hours in the lake a second trout perished (wind moved the live-box into very shallow water). Three of the original five trout survived at least 7 days without signs of distress. Rotenone toxicity was determined to be below detection limits when the bioassay was initiated, and the two trout mortalities were due to other factors (mechanical damage during transport or captivity).

**Park Lake:** Due to the late timing of the treatment, bioassays on Park Lake were complicated by cold water and ice, and in one case, other wildlife. The first bioassay began 29 days post-treatment. Six 6-8 inch rainbow trout were placed in a live-box at the State Park at the north end of the lake, near the inlet. Water temperature was 38° F, and the holding tank water was tempered to 44° F before the trout were placed in the lake. No sign of distress was observed after 1.5 hours in the lake. All trout had perished after 48 hours in the lake; however, a heron had been observed on several occasions vigorously attempting to access the live-box. Trout death may have been mechanically or stress-induced, and the test was inconclusive.

A second bioassay began 44 days post-treatment. Eight 7-8 inch rainbow trout were placed in a live-box at the mid-western shoreline of the lake. Water temperature was 39° F, but the holding tank water was only tempered to 51° F before the trout were placed in the lake. One trout was immediately distressed, but the other seven showed no signs of distress after 20 minutes in the lake. Mechanical damage or cold water shock may have been responsible for the stress of the single trout. All trout were alive after 24 hours in the lake; however, four of the trout showed signs of stress. As the stress may have been due to temperature shock, the four stressed trout were removed and five additional trout were added to the live-box. Water temperature was 38° F, and this time the holding tank water was tempered to 45° F before the additional trout were placed in the lake. There were then nine total trout in the live-box (4 old, 5 new). After 48 hours in the lake, two trout had perished, and two trout

were stressed. Five trout showed no signs of stress. The two mortalities and the two stressed trout were assumed to be from the initial batch of eight trout, which had then been in the lake at least 48 hours. The five healthy trout were assumed to be from the second batch of trout, which had then been in the lake at least 24 hours. The live-box was checked again five days later, and three trout remained alive and well (no apparent stress after at least six days in the lake). Rotenone toxicity was determined to be below detection limits at least by initiation of the second bioassay, and the trout mortalities observed during the test were due to other factors (cold water shock and/or mechanical damage during transport or captivity).

#### **GENERAL DESCRIPTION OF TREATMENT PROJECT AND OTHER COMMENTS:**

A fall treatment for the 2006 treatment of Park and Blue Lakes was chosen primarily so as not to interfere with a spring opening day fishery. In addition, seeps and flows in the system would be at relatively low ebb in the fall. A spring rehab would also have risked early spawning of the yellow perch in the system. All target species should have been finished spawning by mid October with the possible exception of the sunfish. However, centrarchid eggs hatch in a few days and would have then been susceptible to rotenone poisoning.

#### **Blue Lake**

The treatment of Blue Lake commenced October 23, 2006 and was accomplished over a four-day period. Conditions were generally favorable. Weather was clear or slightly overcast. Light winds (0-5 mph) prevailed with the exception of high winds (5-25 mph) late afternoon of the second day. The lake had turned over and was well mixed, and water temperature was in the 50 °F range - cool enough to retain a reasonable length of toxicity, and warm enough that fish were still fairly active.

The treatment was staged at Blue Lake Resort to provide cooking and other facilities and for the security of the rotenone and crew. Rotenone was stored on-site in lockable semi-truck trailers. A crew of 12 DFW employees was present most days. Eight crewed the four pumper-boats used to slurry the powdered rotenone with lake water, and a crew of four managed shoreline operations and supervision. As needed, two also crewed the airboat for liquid rotenone application. Four DFW Enforcement agents were on hand to secure the treatment area, address public concerns, and remove dead fish from private property as requested. Two WA Dept of Agriculture employees were present to inspect the operation for pesticide label compliance.

The treatment plan was designed to provide for as even a distribution of rotenone as possible over the entire lake each day. Blue Lake was divided into 19 sections, and the appropriate amount of rotenone used in each section was calculated based on the volume of water in each section. Powdered rotenone was generally distributed over as much of the lake as possible each day, and the amount each section received was carefully tracked. Liquid rotenone was applied by airboat only where emergent vegetation occurred and where shallow water prevented the entry of the pumper boats with outboard motors. A new formulation of liquid rotenone (CFT Legumine) was used in most areas to limit the amount of volatile chemicals formerly found in past formulations.

The entire treatment could probably have been finished in three days except for several delays. Treatment was halted twice on the first day of treatment. First, when a lawn sprinkler was observed running, work stopped until it was determined that no lake water was being used for irrigation. Second, letters on the signs posted along the shoreline of the lake were found to be short by fractions of an inch, and all signs were replaced with appropriately sized lettering. High winds caused work to halt for safety reasons several hours early on the second day.

The success of the treatment in terms of fish eradication was very good. Fish began to stress by the end of the first day of treatment, and no live fish were observed by the end of the treatment. As expected, yellow perch were the most numerous species observed. By far, mostly smaller perch (< 6") were decimated. While many thousands of larger (6-12") perch were also observed, these only accounted for less than 4 % of the entire perch population. The numbers of sculpin, sunfish, bass, and bullheads were also as expected. Likewise, the relative paucity of rainbow and brown trout, as well as the larger size of these species, was also as predicted. Very few yearling rainbow trout were found, indicating almost nil recruitment. Most surprising, and perhaps dismaying, was the presence of several adult carp. Smallmouth bass, brown bullheads, and carp were not observed in Blue Lake during the previous rehabilitation in 1996. The bullheads likely came from upstream waters (Park Lk), but the smallmouth and carp were more than likely illegally stocked.

### Alkali Lake

The partial treatment of Alkali Lake was to be accomplished by outflow of treated water from Blue Lake. The target species were the many small sunfish and perch inhabiting the weed beds at the north end of the lake and around the inlet. However, the flows from Blue Lake during the treatment varied from two to six cfs, too low to carry sufficient rotenone-laden water downstream to cause any significant fish eradication. No dead fish were observed in Alkali Lake during or after the treatment; however, it was likely that at least some fish mortality occurred. Birds may have removed the dead fish, and some sank or were under the vegetation and were not visible. There was no outflow from Alkali Lake until spring of 2007, long past detoxification of the system.

### Park Lake

The rehabilitation of Park Lake was intended to begin immediately after the treatment of Blue Lake was completed; however, one family of private landowners on Park Lake refused DFW's request that the landowners not exercise a surface water right claim. The surface water right claim was only valid April through October, so the Park Lake treatment was delayed until November. The landowners further sought to stop the treatment of Park Lake through other venues, including a hearing with the Pollution Control Hearings Board. DFW eventually prevailed, and the Park Lake rehabilitation was rescheduled. Landowner interference continued during the treatment to little avail.

The treatment of Park Lake commenced November 16, 2006 and was accomplished over a three-day period. Although strong winds (25-30 mph) delayed the start of the treatment on the morning of November 16<sup>th</sup>, conditions thereafter were generally favorable. Weather was clear or slightly overcast and light winds (0-10 mph) prevailed. The lake had turned over and was well mixed. Water temperature was in the high 40 °F range, a little cooler than optimal but warm enough that most fish were still fairly active, particularly the perch. The colder water would also retain a longer period of toxicity.

The treatment was staged at Sun Lakes State Park for the security of the rotenone and crew. Rotenone was stored on-site in a lockable semi-truck trailer. Laurent's Resort was used to provide cooking and other facilities. A crew of 12 DFW employees was present the first two days. Eight crewed the four pumper-boats used to slurry the powdered rotenone with lake water, and a crew of four managed shoreline operations and supervision. Two DFW employees also crewed the airboat for liquid rotenone application. Three DFW Enforcement agents were on hand to secure the treatment area, address public concerns, and remove dead fish from private property as requested. Two WA Dept of Agriculture employees were present to inspect the operation for pesticide label compliance.

The treatment plan was designed to provide for as even a distribution of rotenone as possible over the entire lake each day. Park Lake was divided into 16 sections, and the appropriate amount of rotenone used in each section was calculated based on the volume of water in each section. Powdered rotenone was generally distributed over as much of the lake as possible each day, and the amount each section received was carefully tracked. Liquid rotenone was applied by airboat only where emergent vegetation occurred and where shallow water prevented the entry of the pumper boats with outboard motors. A new formulation of liquid rotenone (CFT Legumine) was used in all areas to limit the amount of volatile chemicals formerly found in past formulations. All powdered rotenone was distributed during the first two days of the treatment, and liquid was distributed on the second and third days.

The success of the treatment in terms of fish eradication was very good. Fish began to stress by the end of the first day of treatment, and no live fish were observed by the end of the treatment. Although relatively few fish were observed compared to the results of the Blue Lake treatment, it was likely that most fish had already sought refuge in the deeper waters of the lake due to the colder water temperatures, and a smaller than normal percentage of the population appeared at the surface of the lake. As expected, yellow perch were the most numerous species observed. By far, mostly smaller perch (< 6") were decimated. The numbers of sculpin, sunfish, and bullheads were also as expected. Only smallmouth bass were observed, although largemouth bass were known to be present. Smallmouth bass were not observed in Park Lake during the previous rehabilitation in 1996. The relative paucity of rainbow was also as predicted, and most of these were probably remnants of the catchables stocked the previous spring. No brown trout were observed, although this species was also known to be present. Brown bullheads continued to stress and perish through the third day, but none were observed alive by the fourth day.

#### **Vic Meyers Lake, outlets, and Mirror Pond**

The treatment of Vic Meyers Lake commenced November 18, 2006 and was accomplished in less than a day. Conditions were favorable. Weather was clear or slightly overcast and light winds (0-2 mph) prevailed. Water temperature was 43 °F, cooler than optimal for the target species, but the colder water would also retain a longer period of toxicity. Only powdered rotenone was used to treat the lake. Two DFW employees crewed the pumper-boat used to slurry the powdered rotenone with lake water. One WA Dept of Agriculture employee was present to inspect the operation for pesticide label compliance.

The treatment of the outlets and Mirror Pond commenced November 19, 2006 and was accomplished in less than a day. Conditions were favorable. Weather was clear or slightly overcast and light winds (0-2 mph) prevailed. Water temperature was 43 °F. Only liquid rotenone was used to treat the lake. Two DFW employees crewed the canoe and electric pumper used to spray the liquid rotenone over the surface of the water. A new formulation of liquid rotenone (CFT Legumine) was used in all areas to limit the amount of volatile chemicals formerly found in past formulations.

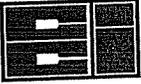
The success of the treatment in terms of fish eradication was good. Fish began to stress by the end of the treatment. Brown bullheads continued to stress and perish through the third day at Vic Meyers Lake, but none were observed alive by the fourth day. Yellow perch were not observed in Vic Meyers Lake during treatment, although this species was known to be present. The relative paucity of trout, and the large size, was also as predicted. Somewhat surprising were the small schools of largemouth bass observed in Mirror Pond, and that no bullheads were found therein.

**Cost:** About 78 man-days (man-day = 8 hrs) were required to complete the treatment of Blue Lake, and about 57 man-days were required to complete the treatment of Park Lake (including Vic Meyers and Mirror) from pre-treatment preparation (signing, sampling, rotenone and equipment transport) through treatment, clean up, and travel. Total cost of the treatment alone (rotenone, labor - \$268/day, travel, expendable equipment) was approximately \$200,000, including about \$36,000 for labor during the treatment and \$157,424 for rotenone (93,342 lbs powder @ \$1.65/lb @ 5%, delivered; 62 gal liquid @ \$55/gal). Enforcement contributed another 10+ days during the treatment. Estimated time for pre-rehabilitation proposals, general public outreach, post-rehabilitation sampling and reports added 15 days, and extra attention due to public opposition (primarily Park Lake) added an estimated 15 days. In addition, significant participation was required of WA Departments of Ecology, Agriculture, Health, and the Attorney General's office.

**Epilogue:** The majority of people, local and statewide, anglers or not, supported the rehabilitation of Blue and Park lakes; however, there was some determined opposition to the treatments. As a result, these projects were under very intense scrutiny by the public and several state agencies including WA Departments of Ecology (DOE), Agriculture (DOA), and Health (DOH). Internal DFW review was also heightened. The value of DFW's detailed internal process, DOA's license and label training, USFWS rotenone training, and focus on the letter and intent of DOE's NPDES permit and state/federal pesticide label requirements can not be over-estimated in their contribution to successfully completing these projects in the face of logistical complexity and circumstantial adversity.

DOE and DOA oversight was welcome and helpful, lending confidence to DFW's ability to pursue the rotenone program. In those few circumstances that DFW inadvertently was short of complete compliance, the situations were easily remedied before treatment continued. The DOE Pollution Control Hearing Board found DFW was in overall compliance with the NPDES permit and competent to conduct the treatments. Based on site inspections conducted over most of the treatment period, DOA concluded that the treatments on both waters were conducted in accordance with the pesticide labels and in compliance with state and federal regulations within the jurisdiction of DOA. In regard to an incident on Park Lake and based on statements from the participants and medical staff, DOH concluded that a public individual's mild symptoms were probably due to a pesticide exposure during the treatment. However, no agency implicated negligence on the part of DFW as the cause of the exposure.

Blue, Park, and Vic Meyers lakes were stocked in March and April 2007 with over 180,000 catchable-sized rainbow (10-12") for the April 28th opener. These provided a fair fishery with catch rates at least 2 fish/angler overall. Fingerling trout stocking was delayed until May 2007 to allow zooplankton and insect populations to recover. Over 340,000 fingerling rainbow and brown trout have been stocked to date, and the 2008 season fingerling-based fisheries are much anticipated by anglers and biologists alike.



CCI  
ANALYTICAL  
LABORATORIES

CERTIFICATE OF ANALYSIS

CLIENT: WA DEPT. OF FISH & WILDLIFE  
MS: 43200 NRB 600 CAPITOL WAY NORTH  
OLYMPIA, WA 98501

DATE: 11/29/2006  
CCIL JOB #: 0611089  
DATE RECEIVED: 11/22/2006  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JEFF KORTH  
CLIENT PROJECT ID: PARK LAKE  
CLIENT SAMPLE ID: 11/20/2006 16:10 PARK LAKE  
CCIL SAMPLE #: -01

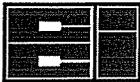
DATA RESULTS

ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
Benzene	EPA-8260	ND(<1)	UG/L	11/22/2006	MLC
Toluene	EPA-8260	ND(<1)	UG/L	11/22/2006	MLC
Ethylbenzene	EPA-8260	ND(<1)	UG/L	11/22/2006	MLC
o-Xylene	EPA-8260	ND(<1)	UG/L	11/22/2006	MLC
m,p-Xylene	EPA-8260	ND(<2)	UG/L	11/22/2006	MLC
Naphthalene	EPA-8270	13	UG/L	11/27/2006	RAL
2-Methylnaphthalene	EPA-8270	43	UG/L	11/27/2006	RAL
1-Methylnaphthalene	EPA-8270	21	UG/L	11/27/2006	RAL
Acenaphthylene	EPA-8270	ND(<2)	UG/L	11/27/2006	RAL
Acenaphthene	EPA-8270	ND(<2)	UG/L	11/27/2006	RAL
Fluorene	EPA-8270	ND(<2)	UG/L	11/27/2006	RAL
Phenanthrene	EPA-8270	ND(<2)	UG/L	11/27/2006	RAL
Anthracene	EPA-8270	ND(<2)	UG/L	11/27/2006	RAL
Fluoranthene	EPA-8270	ND(<2)	UG/L	11/27/2006	RAL
Pyrene	EPA-8270	ND(<2)	UG/L	11/27/2006	RAL
Benzo[A]Anthracene	EPA-8270	ND(<2)	UG/L	11/27/2006	RAL
Chrysene	EPA-8270	ND(<2)	UG/L	11/27/2006	RAL
Benzo[B]Fluoranthene	EPA-8270	ND(<2)	UG/L	11/27/2006	RAL
Benzo[K]Fluoranthene	EPA-8270	ND(<2)	UG/L	11/27/2006	RAL
Benzo[A]Pyrene	EPA-8270	ND(<2)	UG/L	11/27/2006	RAL
Indeno[1,2,3-Cd]Pyrene	EPA-8270	ND(<2)	UG/L	11/27/2006	RAL
Dibenz[A,H]Anthracene	EPA-8270	ND(<2)	UG/L	11/27/2006	RAL
Benzo[G,H,I]Perylene	EPA-8270	ND(<2)	UG/L	11/27/2006	RAL

\* ND\* INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT. REPORTING LIMIT IS GIVEN IN PARENTHESES.

\*\* UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

APPROVED BY:



CCI  
ANALYTICAL  
LABORATORIES

CERTIFICATE OF ANALYSIS

CLIENT: WA DEPT. OF FISH & WILDLIFE  
MS: 43200 NRB 600 CAPITOL WAY NORTH  
OLYMPIA, WA 98501

DATE: 11/29/2006  
CCIL JOB #: 0611089  
DATE RECEIVED: 11/22/2006  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JEFF KORTH  
CLIENT PROJECT ID: PARK LAKE

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

CCIL SAMPLE ID	METHOD	SUR ID	% RECV
0611089-01	EPA-8260	Toluene-d8	85
0611089-01	EPA-8270	Terphenyl-d14	84

APPROVED BY:

CERTIFICATE OF ANALYSIS

CLIENT: WA DEPT. OF FISH & WILDLIFE  
MS: 43200 NRB 600 CAPITOL WAY NORTH  
OLYMPIA, WA 98501

DATE: 12/21/2006  
CCIL JOB #: 0612090  
DATE RECEIVED: 12/19/2006  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JEFF KORTH  
CLIENT PROJECT ID: PARK LAKE - CREEK  
CLIENT SAMPLE ID: 12/18/2006 13:10 #1  
CCIL SAMPLE #: -01

DATA RESULTS

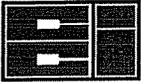
ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
Benzene	EPA-8021	ND(<1)	UG/L	12/19/2006	GAP
Toluene	EPA-8021	ND(<1)	UG/L	12/19/2006	GAP
Ethylbenzene	EPA-8021	ND(<1)	UG/L	12/19/2006	GAP
Xylenes	EPA-8021	ND(<3)	UG/L	12/19/2006	GAP
Naphthalene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL
1-Methylnaphthalene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL
2-Methylnaphthalene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL
Acenaphthylene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL
Acenaphthene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL
Fluorene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL
Phenanthrene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL
Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL
Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL
Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL
Benzo[A]Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL
Chrysene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL
Benzo[B]Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL
Benzo[K]Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL
Benzo(A)Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL
Dibenz[A,H]Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL
Benzo[G,H,I]Perylene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL

\*ND\* INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT. REPORTING LIMIT IS GIVEN IN PARENTHESES.

\*\* UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

APPROVED BY:





CCI  
ANALYTICAL  
LABORATORIES

CERTIFICATE OF ANALYSIS

CLIENT: WA DEPT. OF FISH & WILDLIFE  
MS: 43200 NRB 600 CAPITOL WAY NORTH  
OLYMPIA, WA 98501

DATE: 12/21/2006  
CCIL JOB #: 0612090  
DATE RECEIVED: 12/19/2006  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JEFF KORTH  
CLIENT PROJECT ID: PARK LAKE - CREEK

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

CCIL SAMPLE ID	METHOD	SUR ID	% RECV
0612090-01	EPA-8021	TFT	82
0612090-01	EPA-8270 SIM	Terphenyl-d14	91

APPROVED BY:

**CERTIFICATE OF ANALYSIS**

CLIENT: WA DEPT. OF FISH & WILDLIFE  
MS: 43200 NRB 600 CAPITOL WAY NORTH  
OLYMPIA, WA 98501

DATE: 12/21/2006  
CCIL JOB #: 0612089  
DATE RECEIVED: 12/19/2006  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JEFF KORTH  
CLIENT PROJECT ID: PARK LK - GREGSON'S BAY  
CLIENT SAMPLE ID: 12/18/2006 14:55 #1  
CCIL SAMPLE #: -01

**DATA RESULTS**

ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
Benzene	EPA-8021	ND(<1)	UG/L	12/19/2006	GAP
Toluene	EPA-8021	ND(<1)	UG/L	12/19/2006	GAP
Ethylbenzene	EPA-8021	ND(<1)	UG/L	12/19/2006	GAP
Xylenes	EPA-8021	ND(<3)	UG/L	12/19/2006	GAP
Naphthalene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL
1-Methylnaphthalene	EPA-8270 SIM	0.03	UG/L	12/19/2006	RAL
2-Methylnaphthalene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL
Acenaphthylene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL
Acenaphthene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL
Fluorene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL
Phenanthrene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL
Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL
Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL
Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL
Benzo[A]Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL
Chrysene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL
Benzo[B]Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL
Benzo[K]Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL
Benzo(A)Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL
Dibenz[A,H]Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL
Benzo[G,H,I]Perylene	EPA-8270 SIM	ND(<0.02)	UG/L	12/19/2006	RAL

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\*\* UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

APPROVED BY:

*Pat Bayan*

**RECEIVED**  
DEC 29 2006  
**FISH PROGRAM**

**FINANCIAL SERVICES**  
DEC 27 2006  
**DEPARTMENT OF FISH AND WILDLIFE**

CERTIFICATE OF ANALYSIS

CLIENT: WA DEPT. OF FISH & WILDLIFE  
MS: 43200 NRB 600 CAPITOL WAY.NORTH  
OLYMPIA, WA 98501

DATE: 12/21/2006  
CCIL JOB #: 0612089  
DATE RECEIVED: 12/19/2006  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JEFF KORTH  
CLIENT PROJECT ID: PARK LK - GREGSON'S BAY

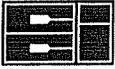
QUALITY CONTROL RESULTS

SURROGATE RECOVERY

CCIL SAMPLE ID	METHOD	SUR ID	% RECV
0612089-01	EPA-8021	TFT	94
0612089-01	EPA-8270 SIM	Terphenyl-d14	107

APPROVED BY:





CERTIFICATE OF ANALYSIS

CLIENT: WA DEPT. OF FISH & WILDLIFE  
MS: 43200 NRB 600 CAPITOL WAY NORTH  
OLYMPIA, WA 98501

DATE: 3/29/2007  
CCIL JOB #: 0703126  
DATE RECEIVED: 3/23/2007  
WDOE ACCREDITATION #: C142

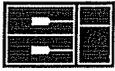
CLIENT CONTACT: JEFF KORTH  
CLIENT PROJECT ID: PARK LK  
CLIENT SAMPLE ID: 3/21/2007 17:05  
CCIL SAMPLE #: -01

DATA RESULTS

ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
Benzene	EPA-8260	ND(<1)	UG/L	3/23/2007	MLC
Toluene	EPA-8260	ND(<1)	UG/L	3/23/2007	MLC
Ethylbenzene	EPA-8260	ND(<1)	UG/L	3/23/2007	MLC
o-Xylene	EPA-8260	ND(<1)	UG/L	3/23/2007	MLC
m,p-Xylene	EPA-8260	ND(<2)	UG/L	3/23/2007	MLC
Naphthalene	EPA-8270 SIM	ND(<0.02)	UG/L	3/27/2007	RAL
1-Methylnaphthalene	EPA-8270 SIM	ND(<0.02)	UG/L	3/27/2007	RAL
2-Methylnaphthalene	EPA-8270 SIM	ND(<0.02)	UG/L	3/27/2007	RAL
Acenaphthylene	EPA-8270 SIM	ND(<0.02)	UG/L	3/27/2007	RAL
Acenaphthene	EPA-8270 SIM	ND(<0.02)	UG/L	3/27/2007	RAL
Fluorene	EPA-8270 SIM	ND(<0.02)	UG/L	3/27/2007	RAL
Phenanthrene	EPA-8270 SIM	ND(<0.02)	UG/L	3/27/2007	RAL
Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	3/27/2007	RAL
Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	3/27/2007	RAL
Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	3/27/2007	RAL
Benzo[A]Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	3/27/2007	RAL
Chrysene	EPA-8270 SIM	ND(<0.02)	UG/L	3/27/2007	RAL
Benzo[B]Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	3/27/2007	RAL
Benzo[K]Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	3/27/2007	RAL
Benzo[A]Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	3/27/2007	RAL
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	3/27/2007	RAL
Dibenz[A,H]Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	3/27/2007	RAL
Benzo[G,H,I]Perylene	EPA-8270 SIM	ND(<0.02)	UG/L	3/27/2007	RAL

\*ND\* INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT. REPORTING LIMIT IS GIVEN IN PARENTHESES.  
\*\* UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

APPROVED BY:



CCI  
ANALYTICAL  
LABORATORIES

CERTIFICATE OF ANALYSIS

CLIENT: WA DEPT. OF FISH & WILDLIFE  
MS: 43200 NRB 600 CAPITOL WAY NORTH  
OLYMPIA, WA 98501

DATE: 3/29/2007  
CCIL JOB #: 0703126  
DATE RECEIVED: 3/23/2007  
WDOE ACCREDITATION #: C142

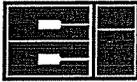
CLIENT CONTACT: JEFF KORTH  
CLIENT PROJECT ID: PARK LK

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

CCIL SAMPLE ID	METHOD	SUR ID	% RECV
0703126-01	EPA-8260	Toluene-d8	98
0703126-01	EPA-8270 SIM	Terphenyl-d14	111

APPROVED BY:



CERTIFICATE OF ANALYSIS

CLIENT: WA DEPT. OF FISH & WILDLIFE  
MS: 43200 NRB 600 CAPITOL WAY NORTH  
OLYMPIA, WA 98501

DATE: 11/3/2006  
CCIL JOB #: 0610165  
DATE RECEIVED: 10/31/2006  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JEFF KORTH  
CLIENT PROJECT ID: BLUE LAKE  
CLIENT SAMPLE ID: 10/27/2006 17:00 BLUE LAKE  
CCIL SAMPLE #: -01

DATA RESULTS

ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
Benzene	EPA-8260	ND(<1)	UG/L	10/31/2006	MLC
Toluene	EPA-8260	ND(<1)	UG/L	10/31/2006	MLC
Ethylbenzene	EPA-8260	ND(<1)	UG/L	10/31/2006	MLC
o-Xylene	EPA-8260	ND(<1)	UG/L	10/31/2006	MLC
m,p-Xylene	EPA-8260	ND(<2)	UG/L	10/31/2006	MLC
Naphthalene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
2-Methylnaphthalene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
1-Methylnaphthalene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
Acenaphthylene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
Acenaphthene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
Fluorene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
Phenanthrene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
Anthracene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
Fluoranthene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
Pyrene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
Benzo[A]Anthracene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
Chrysene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
Benzo[B]Fluoranthene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
Benzo[K]Fluoranthene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
Benzo[A]Pyrene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
Indeno[1,2,3-Cd]Pyrene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
Dibenz[A,H]Anthracene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
Benzo[G,H,I]Perylene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL

\* ND\* INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT. REPORTING LIMIT IS GIVEN IN PARENTHESES.

\*\* UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

APPROVED BY:



CCI  
ANALYTICAL  
LABORATORIES, INC

CERTIFICATE OF ANALYSIS

CLIENT: WA DEPT. OF FISH & WILDLIFE  
MS: 43200 NRB 600 CAPITOL WAY NORTH  
OLYMPIA, WA 98501

DATE: 11/3/2006  
CCIL JOB #: 0610165  
DATE RECEIVED: 10/31/2006  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JEFF KORTH  
CLIENT PROJECT ID: BLUE LAKE

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

CCIL SAMPLE ID	METHOD	SUR ID	% RECV
0610165-01	EPA-8260	Toluene-d8	91
0610165-01	EPA-8270	Terphenyl-d14	76

APPROVED BY:

CERTIFICATE OF ANALYSIS

CLIENT: WA DEPT. OF FISH & WILDLIFE  
MS: 43200 NRB 600 CAPITOL WAY NORTH  
OLYMPIA, WA 98501

DATE: 12/5/2006  
CCIL JOB #: 0611099  
DATE RECEIVED: 11/28/2006  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JEFF KORTH  
CLIENT PROJECT ID: BLUE LAKE  
CLIENT SAMPLE ID: 11/27/2006 10:27 SAMPLE 1  
CCIL SAMPLE #: -01

DATA RESULTS

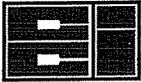
ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
Benzene	EPA-8021	ND(<1)	UG/L	12/1/2006	GAP
Toluene	EPA-8021	ND(<1)	UG/L	12/1/2006	GAP
Ethylbenzene	EPA-8021	ND(<1)	UG/L	12/1/2006	GAP
Xylenes	EPA-8021	ND(<3)	UG/L	12/1/2006	GAP
Naphthalene	EPA-8270 SIM	ND(<0.02)	UG/L	11/28/2006	RAL
1-Methylnaphthalene	EPA-8270 SIM	ND(<0.02)	UG/L	11/28/2006	RAL
2-Methylnaphthalene	EPA-8270 SIM	ND(<0.02)	UG/L	11/28/2006	RAL
Acenaphthylene	EPA-8270 SIM	ND(<0.02)	UG/L	11/28/2006	RAL
Acenaphthene	EPA-8270 SIM	ND(<0.02)	UG/L	11/28/2006	RAL
Fluorene	EPA-8270 SIM	ND(<0.02)	UG/L	11/28/2006	RAL
Phenanthrene	EPA-8270 SIM	ND(<0.02)	UG/L	11/28/2006	RAL
Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	11/28/2006	RAL
Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	11/28/2006	RAL
Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	11/28/2006	RAL
Benzo[A]Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	11/28/2006	RAL
Chrysene	EPA-8270 SIM	ND(<0.02)	UG/L	11/28/2006	RAL
Benzo[B]Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	11/28/2006	RAL
Benzo[K]Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	11/28/2006	RAL
Benzo(A)Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	11/28/2006	RAL
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	11/28/2006	RAL
Dibenz[A,H]Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	11/28/2006	RAL
Benzo[G,H,I]Perylene	EPA-8270 SIM	ND(<0.02)	UG/L	11/28/2006	RAL

\* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT. REPORTING LIMIT IS GIVEN IN PARENTHESES.

\*\* UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

APPROVED BY:





CCI  
ANALYTICAL  
LABORATORIES

CERTIFICATE OF ANALYSIS

CLIENT: WA DEPT. OF FISH & WILDLIFE  
MS: 43200 NRB 600 CAPITOL WAY NORTH  
OLYMPIA, WA 98501

DATE: 12/5/2006  
CCIL JOB #: 0611099  
DATE RECEIVED: 11/28/2006  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JEFF KORTH  
CLIENT PROJECT ID: BLUE LAKE

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

CCIL SAMPLE ID	METHOD	SUR ID	% RECV
0611099-01	EPA-8021	TFT	92
0611099-01	EPA-8270 SIM	Terphenyl-d14	113

APPROVED BY:



STATE OF WASHINGTON  
DEPARTMENT OF AGRICULTURE

Pesticide Management Division • 21 North 1<sup>st</sup> Avenue • Suite # 236 • Yakima, Washington 98903  
Telephone (509) 575-2746 • Fax (509) 575-2210

January 29, 2007

Jeff Korth  
Fish Biologist  
WA State Dept of Fish & Wildlife  
520 South Beech  
Moses Lake, WA 98837

Dear Mr. Korth:

I have completed my inspection regarding the application of Rotenone to Park and Blue Lakes. I appreciated your cooperation and the cooperation of all your employees during the inspection.

As a result of this investigation I have found that you are in compliance with state regulations in regard to the applications that were made. I have enclosed is a copy of the *Inspection Report No. 2007B0002* for your information and file.

If you have any questions, please call me at (509) 225-2647.

Sincerely:

**PESTICIDE MANAGEMENT DIVISION**

A handwritten signature in cursive script, appearing to read "Gary R. Buckner".

Gary R. Buckner  
Area Manager

Enclosure

cc: Inspection File

**RECEIVED**

**FEB 05 2007**

**FISH PROGRAM**



### NON-AGRICULTURAL USE INSPECTION

APPLICATOR <i>Jeff Korth</i>	LIC. NO. <i>39429 PO</i>	CAT. <i>Q</i>
OPERATOR	LIC. NO.	CAT.
OPERATOR	LIC. NO.	CAT.
FIRM / AGENCY <i>WA State Dept. of Fish &amp; Wildlife</i>	TELEPHONE <i>509-765-8255</i>	
ADDRESS <i>1550 Alder St. NW, Ephrata, WA 98823-9651</i>		
CUSTOMER <i>SAME (Blue Lake)</i>	TELEPHONE	
ADDRESS		

#### PESTICIDE USE INFORMATION

PESTICIDE NAME	EPA REG. NO.	RATE	CONCENTRATION	SITE	APP. METHOD
<i>Cube Powder</i>	<i>6458-6</i>	<i>2.7 LBS/Ac.Ft.</i>	<i>1 PPM</i>	<i>Blue Lk.</i>	<i>Boat</i>
<i>CFT Legumine</i>	<i>75338-2</i>	<i>1 gal / 3 Ac.Ft.</i>	<i>1 PPM</i>	<i>Blue Lk.</i>	<i>Air Boat</i>

Samples Collected  Yes  No Sample Number(s): *B002-2006-01, B002-2006-02, B002-2006-03*

Read and Understand Label *Yes* Proper PPE *Yes* Wind Speed and Dir. *0-2 NW* Temp. *62° F*

Apparatus Condition (WAC 16-228-190) <i>OK</i>	Landscape Apparatus ID (RCW 17.21.400) (WAC 16-228-214) <i>NA</i>	Apparatus Licensing (RCW 17.21.290) (WAC 16-228-213) <i>NA</i>	Right of Way ID (RCW 17.21.400) (WAC 16-228-214) <i>NA</i>
Labels and MSDS (available) (RCW 17.21.400) <i>OK</i>	Container Security (WAC 16-228-185) <i>OK</i> <i>posting sign</i>	Container Condition (WAC 16-228-185) <i>OK</i>	Disposal (WAC 16-228-185) <i>Riuse &amp; Landfill</i>
Pesticide Sensitive (WAC 17.21.400) <i>NA</i>	Landscape Posting (RCW 17.21.410) <i>NA</i>	WDO Report (RCW 16-228-410) <i>NA</i>	Prepared Mixtures ID (RCW 16-228-190(11)) <i>NA</i>

#### MAINTAIN PESTICIDE APPLICATION RECORDS (RCW 17.21.100 and WAC 16-228-190) *OK (version 2)*

Customer Name and Address	Licensed applicator name, address, telephone	Specific crop or site
Address or location pesticide applied to	Person applying pesticide, license number	Target pests (PCO only)
Date and time	Total amount pesticide applied	Acres or other measure applied to
Product name and EPA Reg. No.	Concentration	Apparatus license plate number
Wind (speed and direction) Temperature	Rate	

**COMMENTS** *This application took place over several days & extended to another lake (Park Lake) the next month (Nov. 06) I monitored the application on both lakes. (see narrative report for details)*

COMPANY REPRESENTATIVE

*Jeff Korth*

NAME (Please print)

*Gary R. Buckner* 10-23-06  
WSDA REPRESENTATIVE DATE

*Gary R. Buckner*

NAME (Please print)

S = satisfactory U = unsatisfactory NA = not apply  
AGR 4270 (N/5/95)

DISTRIBUTION: WHITE -- Inspector CANARY: Firm/Agency

For more information, see reverse.

## Non Agricultural Use Inspection

### Pesticide Use Information:

**Pesticide Name:** The brand name of the product(s) used.

**Rate:** The rate the pesticide was applied. The rate is indicated as an amount per area such as gallons per acre (gpa), gallons/ounces per thousand square feet or any other applicable measure.

**Concentration:** Measurements used in filling tank. May be pounds per hundred gallons, ounces per gallon or any other applicable measure. The basic measurement should be used - One pound per hundred gallons not six pounds per six hundred gallons, or half pound per fifty gallons.

**Site:** Where the pesticide was applied, such as landscape, right of way, crawl space, etc.

**Application Method:** How the pesticide was applied, such as power sprayer, back pack, etc.

*Apparatus is defined as the equipment used to apply a pesticide. It is either motorized, mechanical or pressurized.*

**Apparatus Condition:** The overall condition of the application equipment. There should be no leaks, corrosion, etc.

**Landscape Apparatus Identification:** Name and telephone number of applicator or applicator's employer on any power apparatus.

**Apparatus Licensing:** The WSDA supplied apparatus license plate or sticker.

**Right of Way Identification:** Name and telephone number of applicator or applicator's employer and the words: VEGETATION MANAGEMENT APPLICATION on any power equipment.

MSDS are required to be carried by certified applicators conducting landscape and right of way applications. Labels and MSDS are recommended for all pesticide applications.

**Container Condition and Security:** Pesticide concentrates transported with or on the application equipment should be in adequate containers free from leaks. The containers should be legibly labeled and secured to prevent spills and tampering.

**Pesticide Sensitive:** Persons conducting landscape or right of way applications are required to notify those people on the WSDA registry who are living adjacent to targeted properties.

**WDO Report:** A limited or complete inspection report is required before a PCO may apply a pesticide to the property of a new customer.

**Prepared Mixtures Identification:** All containers used for prepared mixtures, such as hand cans and back packs, need to be labeled as a pesticide and identify the active ingredient(s) and cautions.



**EPA INSPECTION REPORTING  
FISCAL YEAR JULY 2006 thru JUNE 2007**

*Washington State Department of Agriculture  
Pesticide Management*

TYPE OF INVESTIGATION		
<input type="checkbox"/> Ag Use Insp. / Obser (A)	<input type="checkbox"/> Dealer Record Insp. (D)	<input type="checkbox"/> Market Place Insp. (H)
<input checked="" type="checkbox"/> Non-Ag Use Insp. / Obser (B)	<input type="checkbox"/> Experimental Use Insp. (E)	<input type="checkbox"/> Producer Estab Insp. (I)
<input type="checkbox"/> Appl / License Record Insp. (C)	<input type="checkbox"/> Import Insp. (G)	<input type="checkbox"/> Export Insp. (J)
		<input type="checkbox"/> WPS Inspection
<b>EPA Case No.</b>	<b>NAME AND ADDRESS OF PARTIES INVOLVED</b>	<b>Open Date:</b> 10/23/06
<b>WSDA Case No.</b> 2007B0002	WA State Dept of Fish & Wildlife	<b>Close Date:</b>
<b>Inspector:</b> Gary R. Buckner	Jeff Korth, Fish Biologist	<b>= Samples =</b>
<b>County:</b> Grant	520 South Beech Moses Lake, WA 98837 Phone: 509-765-8255	<b>Documentary:</b> 187 - photos, 2 - labels, 2 - records
		<b>Physical:</b> 3 water samples

**DID THIS INSPECTION ADDRESS ANY OF THE FOLLOWING ELEMENTS?**

Worker Protection Standard     Ground Water     Endangered Species     Cancellations / Suspensions

**NATURE OF INSPECTION FINDINGS AND FINAL ACTION**

On Tuesday October 17 Kirk Cook, Supervisor of the WSDA Natural Resources Assessment Section received an e-mail from a Mr. Don White. Mr. White stated in his e-mail:

"Fish and Wildlife plans to kill the fish and whatever else dies in, Blue and Park Lakes, Grant County.

The permit, WA0041009, states that "the permittee shall comply with all label instructions." The label for the CUBE POWDER states, "properly dispose of dead fish" and "do not use water treated with Rotenone to irrigate crops or release within 1/2 mile upstream of a potable water or irrigation water intake in a standing body of water such as a lake, pond or reservoir." There are more than 15 wells on Blue Lake, all of which get some portion of their potable from the lake. These wells are all within 250' of the lake. These wells are the sole source of potable water.

As Fish and Wildlife does not intend to comply with the requirements of the label, I am asking that you rescind their permit to Rotenone these lakes until they are in compliance.

The Bacteria from the decomposing fish creates as much if not more danger to our potable water supply than the Rotenone and its 95% something else."

Mr. Cook then forwarded this message to Kelly McLain, Aquatic Pesticide Specialist/Permit Writer, Water Quality Program, Department of Ecology who then forwarded to Cliff Weed, Program Manager for WSDA Pesticide Management Division who forwarded it to Tim Schultz, WSDA Pesticide Management Division Area Manager in Spokane who forwarded it to me.

At this time there was no other investigator available so I took the Inspection myself.

October 23, 2006

I left Yakima at about 4:30 AM and drove to Blue Lake in Grant County. I arrived at about 7:30 AM and drove around the lake. I took photos of the signs that were posted around the edge of the lake. I then drove back to the south end of the lake where I met Jeff Korth who is a fish biologist for the Washington State Department of Fish and Wildlife (WDFW).

I introduced myself to Mr. Korth and explained that we had received an e-mail that came to us in a round about way from a Mr. Don White. Mr. Korth said he was familiar with Mr. White. I told him that we would be conducting a routine Non-Ag Use Inspection and that we would be monitoring at least part of the application. Mr. Korth said he would cooperate in any way and he was glad that we were present. Bruce Olson from our WSDA Wenatchee office joined us at about 8:15 AM

Mr. Korth had all employees and anyone involved in the project attend a safety meeting where he went over the method of application and the product being used. In this case the AK Cube Powder. He talked about the safety precautions necessary when handling the product and what the proper personal protective equipment was for handling and applying the product. He also said that it was a restricted use product and needed to be applied by a licensed applicator. There was some question on if a person could be in another boat that was close to a licensed applicator. I explained that WSDA's definition of direct supervision in this case would be ear shot and eye shot. With that he revised things so that there was a licensed applicator in each boat.

There were also 2 enforcement officers from WDFW and when the application began I asked if I could ride along with them and they said I could. One of the things that Mr. Korth pointed out in his safety meeting was that he had gone to all of the people along the lake that had water rights to irrigate from the lake. He stated that they had all signed an agreement stating that they would not irrigate during the time of the application. He said to watch for any sprinklers going and that if any were noticed they were to stop the application and report back to him. Shortly after the applications were started one of the boats came up to the enforcement officers and reported seeing a sprinkler going on someone's lawn. They went back to tell Mr. Korth and the 2 officers and I went to investigate.

We did find a sprinkler going on the lawn of one of the residences. One of the officers left the boat to see if it could be shut off. A lady came out from the house next door and said that no one was home and she thought that they were on vacation. As the officer was looking for a shut off a man drove up in a white truck and started yelling at the officer telling him that he was trespassing on private property. At that point the second officer left the boat and said he thought that it was Mr. Don White. This is the same individual that sent us the e-mail complaining about the application.

Mr. White continued to complain and said that the WDFW was in violation of a lot of things including the label. One of the applicators said "well, the guys from the Department of Agriculture are here and one is right over there" and he pointed to me. I was asked to come over and try to answer Mr. White's questions. He had 2 main concerns; 1. He read the label to say that they should not make the applications because of the close proximity of the wells used for drinking water and the lake. 2. That the fish were not being properly disposed of.

I answered with the following; 1. I explained to Mr. White that I had asked our Registration Office in Olympia the same question and they said that they would not consider it a violation unless the water was taken directly from the lake. 2. I further explained that our Registration Office said that because WDFW had studied the issue and had determined that the best method of disposal was simply to leave the fish in the lake to rot thus providing food in the food chain that eventually would feed the new fish that would be planted. The enforcement officers also told me that they would be going around and picking up what they could along the shore lines especially where there were homes.

Mr. White basically agreed to disagree and in the mean time the other officer found that the sprinkler was not coming from the lake but from the home next door and appeared to be from well water. He found a shut off and turned the water off. By that time Mr. Korth was on site and he continued to visit with Mr. White and we left and the applicators went back to work.

We then went around the rest of the perimeter of the lake and then started on the way back along the western shore. About half way back we saw someone pull off and start getting things set up in his truck and the officers wanted to make sure that he was not going to go fishing. When we got close enough we could see that he had set up a sign on the back of his truck. However, at that time another man pulled up and started yelling at us saying that we needed to stop the application and get the boats out of the water because we were in violation of the NPDS permit because the letters on the word of the posted signs were only  $\frac{3}{4}$ " tall instead of 1". We went back to the base and found that Mr. Korth had met the same individual and had decided to go ahead and stop the application. He called the Department of Ecology and they told him that it would be best to get the signs changed. So he drove into town and re copied all the signs and came back out and had his employees go out and replace them all. The application then started again.

In looking at the application I observed that everyone appeared to be using the proper PPE as had been explained to them. They also had placed a large blue plastic tarp down on the ground just outside of the end of the truck where the product was stored. There was about 15' to 20' of area between this and the boats where the product was loaded and the empty boxes unloaded. In this area I noticed a small amount of rotenone powder and I asked how that was taken care of. They explained that they simply clean up the powder the best they can and put it into the lake and then take a 5 gallon bucket and fill it with water and wash down the area where the product was until it was clean.

In reviewing the label for AK Cube Powder EPA Reg. # 6458-6 I found the following:  
The label shows the following:

**“AMOUNT OF PRODUCT NEEDED FOR TREATMENT:**

To determine the approximate number of pounds needed for treatment, find your “Type of Use” in the first column of the table below and then divide the corresponding numbers in the third column, “Number of Acre-Feet Covered by One Pound” into the number of acre-feet in your body of water. This will give you the number of pounds of cube powder containing 5% rotenone needed for treatment. To correct for the actual rotenone content of the Cube Powder use the following formula:

$$P = \frac{N \times \text{Actual Rotenone Content}}{0.05}$$

Where N= the number of pounds of cube powder containing 5% rotenone needed for treatment, P number of pounds of Cube Powder (actual concentration) needed for treatment.

L Adapted from Kinney, Edward. 1965. Rotenone in Fish Pond Management. USDI Washington, D.C. Leaflet FL- 576.”

After reviewing this formula several times and having Mike Firman, one of our WSDA Chemists review it with me, we determined that that it is incorrect and if one should use this formula it would result in using the product over the intended amount and possibly over the label rates.

We determined that to get the correct result you should use the following formula:

$$P = \frac{N \times 0.05}{\text{Actual Rotenone Content}}$$

Where N= the number of pounds of cube powder containing 5% rotenone needed for treatment, P number of pounds of Cube Powder (actual concentration) needed for treatment.

On 11/1/06 I called Mr. Korth and explained to him the problem I found on the label. He was using his own calculations and came up with the right amounts. However, I also told him that in looking at his calculations it looked like he was basing his formula on the premise that each box was about 55 pounds and the label states that the Net Content is 50 Kg. (about 110 pounds). Mr. Korth went and looked at the boxes and noted that there was a sticker on the side of the box that stated the Net Weight as 25 KG. (about 55 pounds).

I talked to Joel Kangiser, WSDA Case Review Officer, about this and he said that we should just document it and then refer it to EPA and let them decide if they want to take any further action.

Jeff Korth called back and said that they had been put on hold due to some complaints and the Pollution Control Board had to hear the case. Anyway he said they finally got the go-ahead to continue with their treatment of Park Lake and that he was planning on starting on Nov. 16, 2006 I told Mr. Korth that we would have someone present when they started.

I called Bruce Olson and asked if he could go up Thursday the 16<sup>th</sup> and that I would be up on Friday the 17<sup>th</sup>. He said he would go there before heading to the Tri-Cities for the Grape Growers Meeting.

11/16/06

Bruce went up and called me about 10 AM to tell me that they had not started the application yet due to the wind. He said there was some minor conflicts with Mr. Arlt and his sons' but that nothing happened other than them protesting and waving signs at passing cars.

I left Spokane about 1 PM and drove to Park Lake arriving about 3:30 PM. I met Bruce and we visited a little about how things were going. After a short time 2 park rangers drove up to the loading site so we went over to see what was going on and it was one of Mr. Arlt's sons who was driving a blue suburban with yellow signs all over the side of it. I didn't need to be there so I went to find Jeff Korth and let him know that I was there.

I observed the loading site and everything looked like it was going according to plans. Some time around 4 PM Mr. Korth received a message from one of his boat drivers who said that he had seen someone jump into the lake. He was also hearing that someone had placed a 911 call and that an ambulance was responding.

The driver of the boat came back and when asked what happened he said that while they were out making the application he was watching the home where Mr. Arlt lives and he saw someone come out dressed in a wet suite with some kind of mask and jumped into the lake. He tried to get his radio out to call and report the incident but by the time he did the person had jumped out of the water and ran back into the home.

Later, about 4:30 PM I noticed that the ambulance left the residence where I was told the incident occurred and watched it drive south with its lights on. I could not hear any sound of a siren. The decision was made to continue with the application because there was no one in the water.

I stayed until about 4:45 PM and then left for the day. I phoned Cliff Weed and informed him of the incident by leaving a message on his cell phone because I could not reach him in person.

11/17/06

I returned to Park Lake at about 7:30 Am. Applications were already being made when I arrived. At about 10:00 AM I drove up past Dry Falls to the corner mini mart. While there I saw the blue Suburban with all the posters on it so I got my camera and started taking pictures. A man came out of the store and introduced himself to me as Rich Arlt. I introduced myself and then I asked him about the incident that we had heard about, involving someone going in the water. He said it was not him. He did say that his father had called 911 because he thought that it was him that had gone in the water. He told me that about the time the ambulance got there that he was coming in from protesting along the road and that while he was out there the wind was blowing all the poison goes toward him and that he started to get burning eyes and a sore throat so they decided that he should go to the hospital. He told me that it was him that went to the hospital in the ambulance and that while he was there he had to have an I.V. to crash out his liver.

A little later I drove down the highway toward the south end of the lake and I saw the blue suburban parked with large protest signs on the side now. I stopped to see who it was and it was Mr. Rich Arlt. I visited again briefly with him and took photos of him with his signs. He said that his father had just left to find me and while we were talking his father came driving up. I introduced myself again and he remembered me and he started talking to me about several things he thought were wrong with the permit and so I explained again that I did not have any jurisdiction over that but gave him the name of Ken Merrill with Ecology and provided him his phone number if he wanted to complain about that. I then asked him about the alleged incident of someone going in the water and he said that his attorney had advised him not to talk to anyone about that so he would not say anything more about it. I offered to sample Mr. Arlt's home water supply if he wanted me to and he told me that they were already collecting samples themselves but that they were having trouble finding someone who could test it for them. He also said that his attorney told him that they should do all the testing themselves so he declined my offer to sample and said he would talk to his attorney about it and let me know.

At sometime around noon I talked to Cliff Weed on the phone and told him what had been going on. I suggested that we call someone in Dept. of Health to give them it heads up about the possible case. I also suggested to Cliff that we collect a couple of water samples and he agreed. I asked Cliff if he would call because I didn't have a contact number with me. Cliff called Barbara Morisey. Ms. Morisey called me at about 12:20 P.M. and I explained to her what had happened as far I was aware.

At about 3:00 PM Matt West arrived from Wenatchee and brought the 1-gallon sample jars. At about that same time Mr. Rich Arlt drove up and began swearing and yelling. I couldn't understand everything he was saying but it had something to do with one of the applicators in a yellow jacket. He began to yell for Jeff Korth and for him to bring the person in the yellow jacket so he could beat the crap out of him. Matt and I prepared our sampling equipment and then we asked if one of the enforcement officers could take us to collect our samples. We left with one of them and collected two water samples. The first we collected in the water near the dock of Mr. Arlt's property where the alleged person went in the water. The second sample we collected from somewhere in the middle of the lake. Both sample locations were marked with GPS coordinates and then we returned to the loading site.

[Just a note about the sampling; at the time of the alleged person going in the water the area to the east of the Arlt property had not been treated. It had just recently been treated just before we collected the sample.]

At that time there were several law enforcement officers there and they were talking with Walt Arlt regarding whatever alleged incident had occurred. Matt and I secured our samples and he took custody of the samples because they would not fit in my cooler so he took them back to Wenatchee and was going to place them in the refrigerator there until we could get them to the lab.

I left the site about 5:15 PM

11/21/06

I had previously spoken with Mr. Arlt and had offered to collect a water sample from his domestic well. He said he would think about it and talk to his family and attorney. He later called me back and asked if I would go ahead and collect the sample. So on 11/21/06 I drove to the summer home of Mr. Arlt and met Bruce Olson there and we proceeded to collect one water sample from Mr. Arlt's domestic well. The details and chain of custody of all the samples collected are shown below.

**Chain of Custody for Lab Samples**

11/17/06

Collected 2 water samples. The 1st one was taken from a location near the Arlt's property. I used 1-gallon amber jars provided by WSDA Lab. I put on previously unused sampling gloves and I rinsed out the jar with lake water and then filled by placing the jar in the water and allowed the water to run in then sealed the jar. The 2nd was taken in the same manner at a location in the center of the lake.

Matt West took custody of the samples and transported them to the Wenatchee office and placed them in the refrigerator that evening (11/17/06)

11/20/06

Bruce Olson, WSDA Investigator, took custody of the samples at about 8:30 AM and delivered the 2 samples to me at the Yakima WSDA office at about 10:45 AM

I delivered both samples to the WSDA Lab.

11/21/06

Collected a sample from the domestic well of Mr. Arlt. Bruce Olson was present while I took the sample. We examined his pump house and everything looked in order. There was a large (2") pipe that came from the well and just outside the pump house where there was a shutoff valve where the sample was collected. I used previously unused sample gloves and one, 1-gallon amber jar provided by the WSDA Lab. After the line was flushed for about 15 min. I collected about 1/2 gallon and then I split the sample with Mr. Arlt at his request by pouring about 4 ounces of water out of my jar into his jar which was an 8 ounce amber jar. I then finished filling my jar and placed the lid on and proceeded to label it and apply a WSDA sample sticker. The sample was place in a Styrofoam container with frozen cool packs around it and transported to the WSDA Lab (about 3 PM).

I asked the lab to test for Rotenone and the results of the analysis are shown in the table below.

**Lab Results**

Date Collected	Sample #	Description	Results
11/17/06	B002-2006-01	Water from Blue Lake near Arlt boat dock	0.0336 ug/ml = 0.6 ppm
11/17/06	B002-2006-02	Water from Blue Lake taken from middle of lake	0.0107 ug/ml = 0.2 ppm
11/21/06	B002-2006-03	Water sample taken from the domestic well of Mr. Arlt	None Detected

*1 ug/ml = 1 ppm  
0.000001 g / ml = 1 ppm*

*5% product distributed at 1 ppm = 0.05 ppm actual rotenone*

**Record Review**

I reviewed the application records sent to me by Mr. Korth and everything appears to be in order and the calculations correct.

In Blue Lake they calculated that they needed to apply 655 boxes or 36,069.65 pounds of the Cube Powder Rotenone to the lake to get 1 ppm. They actually applied 649 boxes or 35,695 pounds. However, they also applied 31 gallons of CFT Legumine liquid Rotenone which allowed them to cover an additional 93 acre feet of water which put them at approximately 1ppm concentration of Rotenone in the entire lake. These calculations are based on information showing that there are approximately 21,353 acre feet of water in Blue Lake.

In Park Lake they calculated that they needed to apply 427 boxes or 23,511.71 pounds of the Cube Powder to get to 1 ppm. They actually used 420 boxes or 23,100 pounds. They also applied 24 gallons of CFT Legumine liquid Rotenone which allowed them to cover an additional 72 acre feet of water which put them at approximately 1 ppm concentration of Rotenone in the entire lake. These calculations are based on information showing that there are approximately 13,049 acre feet of water in Park Lake.

Both labels allows for uses up to 5 ppm.

All safety precautions were followed and in some cases personal protective equipment exceeded what was called for on the label.

I checked the licensing status of those employees that were working on this project. The following is what I found:

**Licensing Information**

Name	License #	Description
Anderson, Jon	69999	Current
Donley, Chris	65173	Expired end of 2004
Jateff, Bob	?	No information found (not currently licensed)
Korth, Jeff	39429	Current
Vail, Curt	65368	Current

Mr. Korth told me that he tried to have one licensed individual in each boat. The teams of operators changed from time to time and I explained to Mr. Korth that when federal restricted use pesticides are being used that a licensed person has to be in direct supervision of an unlicensed person and further explained that the WSDA definition of direct supervision for public operators "means direct on-the-job supervision and shall require that the certified applicator be physically present at the application site and that the person making the application be in voice and visual contact with the certified applicator at all times during the application."

It appears that Mr. Jateff did not have a current license and that Mr. Donley needs to renew his.

From everything that I observed the application appeared to be made in accordance with the label and with state and federal laws within the jurisdiction of WSDA.

**SUMMARY (2 lines)**

Rotenone application made to 2 lakes in Grant County appeared to be made in accordance with the label and with state and federal laws within the jurisdiction of WSDA.

REVIEWER'S SIGNATURE \_\_\_\_\_

DATE \_\_\_\_\_

**Jon Anderson - lab results**

**From:** "Buckner, Gary (AGR)" <GBuckner@agr.wa.gov>  
**To:** <korthjwk@DFW.WA.GOV>  
**Date:** 11/30/2006 10:47 AM  
**Subject:** lab results

---

Jeff,

Here are the lab results:

Sample#	Description	Results
1	Taken from near Mr. Arlt's boat dock	0.0336 ug/MI
2	Taken from middle of lake	0.0107 ug/MI
3	Taken from Mr. Arlt's domestic well	ND

MDL 0.003 ug/MI

ND = None Detected

MDL = Minimum Detection Limit

I will also need to get the rest of your application records when you get a chance to send them or fax them to me

Thank you,

Gary R. Buckner  
Area Manager  
WSDA Pesticide Management Division  
21. N. 1<sup>st</sup> Ave. #236  
Yakima, WA 98902

Phone: 509-225-2647  
Toll Free: 1-877-301-4555  
e-mail: [gbuckner@agr.wa.gov](mailto:gbuckner@agr.wa.gov)  
Web Site: <http://agr.wa.gov/>



STATE OF WASHINGTON  
DEPARTMENT OF HEALTH  
Division of Environmental Health  
Office of Environmental Health Assessments

234 Israel Road S.E. Town Center 3, PO Box 47846, Olympia, Washington 98504-7846  
Tel: 360.236.3184 □ Toll Free: 1.877.485.7316 □ FAX: 360.236.2251  
□ TDD Relay Service: 1.800.833.6388

PESTICIDE INCIDENT SUMMARY REPORT – Case 060273

INCIDENT DATE: November 16, 2006      RESPONSE DATE: November 17, 2006  
CLOSING DATE: February 26, 2007      INVESTIGATOR: Barbara Morrissey  
PESTICIDES INVOLVED: Cube Powder Fish Toxicant (Rotenone)  
REPORTING AGENCIES: Poison Control Center, WSDA, Ecology

INCIDENT DESCRIPTION:

A 44 y/o male fell into water while protesting an application of pesticide to a lake by a government agency. He changed his clothing and rinsed his eyes but 30 minutes later developed burning in eyes and throat. He sought medical attention and was discharged the same day. Severity of medical outcome was mild and his symptoms resolved rapidly. Three agencies (Departments of Agriculture, Fish & Wildlife, and Ecology) were involved in the incident.

FINDINGS:

The Pesticide Investigation and Surveillance Section has completed an investigation of the above incident. The relationship of the exposure to the signs and symptoms found is determined according to the National Institute for Occupational Safety and Health Case Definition for Acute Pesticide Related Illness and Injury Case. The case is classified as follows:

<u>PATIENT</u>	<u>CLASSIFICATION</u>
1	Probable

A copy of the classifications and their definitions is attached.

**Pesticide Program: Illness Monitoring and Prevention (360) 236-3360**

## Abbreviated descriptions for case classification for acute pesticide-related illness or injury



Washington State Department of  
**Health**  
Division of Environmental Health  
Office of Environmental  
Health & Safety

When DOH receives a report of a suspected pesticide illness, it is reviewed and, if necessary, preliminary interviews are conducted to determine if it is a possible pesticide illness case that should be investigated. A case is investigated if:

- A pesticide exposure is suspected and reported,
- Symptoms are reported,
- The pesticide exposure occurred during the last three months,
- The pesticide exposure occurred in Washington State, and
- The pesticide exposure was not an intentional suicide gesture.

DOH investigators interview individuals, obtain pesticide application and medical records and, when indicated, conduct field visits and review results of samples that may be collected. Data from these procedures are used to classify a case as to the likelihood that the symptoms reported are related to a pesticide exposure.

**Classification of Investigated Cases.** The National Institute for Occupational Safety and Health (NIOSH) Case Classification System is used to distinguish between Definite, Probable, Possible, Suspicious, and Unlikely cases. This case classification system is used for any acute adverse illness resulting from exposure to a pesticide product, including health effects due to an unpleasant odor, injury from explosion of the product, and allergic reaction.

- Definite:** Objective evidence confirms both the exposure and the illness, and the temporally related illness is consistent with the known toxicology of the pesticide.
- Probable:** Objective evidence of either the exposure or the illness is available, and the temporally related illness is consistent with the known toxicology of the pesticide.
- Possible:** Only subjective evidence of exposure and illness is available, and the temporally related illness is consistent with the known toxicology of the pesticide.
- Suspicious:** Insufficient toxicological information available to determine whether a causal relationship exists between the pesticide exposure and the illness.
- Unlikely:** The relationship between the exposure and illness is not consistent with the known toxicology of the pesticide. Symptoms may be atypical, but cannot be ruled out as unrelated.
- Insufficient Information:** Insufficient documentation was obtained regarding the exposure or illness to determine whether the illness was related to a pesticide exposure.
- Not a case:** A case may have been reported to a state surveillance system due to an alleged exposure, but was asymptomatic; or the illness was related to a condition other than pesticide exposure.

## POST-REHABILITATION REPORT

### North Potholes (Westlake Ponds)

**WATER:** North Potholes Ponds (Upper Crab Creek Arm)

**LOCATION:** Grant Co.; Sections 35. & 36, T19N, R27E and Section 31, T19N, R28E; consisting of ponds in the northern portion of Potholes Reservoir.

**DATE(S) TREATED:** September 28, 2006

**PURPOSE:** Eliminate fish and bullfrog larvae from selected ponds in the Northern Leopard Frog Management Area within the Potholes Wildlife Area, and to enhance conditions for leopard frogs.

**LISENCED APPLICATOR:** Jeffrey W. Korth, WA Dept Fish and Wildlife (DFW), District 5 Fisheries Biologist, Pesticide License # 39429.

**LAKE DESCRIPTION:** At the time of treatment, the treatment area (TA) contained numerous small ponds; water level was at least 6 ft below high water marks:

Surface acres: 13.5

Depth: average 3 ft; maximum 6 ft

Volume: 40.6 acre-feet

Weight of Water: 11,035,664 lbs

Connectivity: subterranean flows; no surface inlets or outlets. A series of small dikes separate the surface water of ponds in the TA from the main body of Potholes Reservoir. 22 separate ponds were treated.

#### **TREATMENT DESCRIPTION:**

Toxicant/methods used: Rotenone; Liquid Prenfish EPA Reg # 655-422.

54 gal. liquid formulation, 5% equivalent

Total Concentration Applied: 4.0 ppm

All liquid sprayed by helicopter

Detoxification Procedures: None.

#### **PHYSICAL CHARACTERISTICS OF THE LAKE/WATER DURING TREATMENT:**

Weather - Sunny, 2-5 mph south-westerly wind, air temp = 70's °F.

**Pre-treatment water quality parameters** – Data was collected from 20 of the ponds (numbered groups are all connected (ie. B1a-e, A21's etc). All samples were surface water as most ponds were very shallow. Different instruments were used on the two dates of sampling, and this may account for some of the variation. No DO meter was available on 9/25/06.

Pond ID	Date	pH	DO	temp
B1a	09/25/07	9.05		18.0
B1a	09/27/07	7.99	14.8	21.3
B1b	09/27/07	7.8	11.2	20.0
B1c	09/27/07	7.8	12.3	19.6
B1d*	09/25/07	9.1		17.4
B1e	09/25/07	9.24		
B1e	09/27/07	7.9	12.4	24.0
B5	09/25/07	9.15		14.8
B6a	09/25/07	9.35		14.7
B7a	09/25/07	8.9		13.8
B8dN	09/25/07	9.3		14.3

A21a	09/25/07	8.82		24.0
A21a	09/27/07	7.06	8.3	17.8
A21b	09/25/07	9.3		20.0
A21b	09/27/07	7.45	8.99	16.8
A27	09/27/07	7.59	12.5	21.0
A23a	09/25/07	8.52		23.2
A23a	09/27/07	7.8	15.03	20.0
A19b	09/25/07	9.3		20.0
A19b	09/27/07	7.7	13.2	21.7

\* between B1b and B1c (still connected)

#### **SPECIES ERADICATED IN ORDER OF RELATIVE ABUNDANCE:**

- 1) Carp (hundreds, yearling to large, old adults);
- 2) Bullfrogs (hundreds, all tadpoles 1-2 yr old); and
- 3) Crappie (one individual);

**PRE- AND POST- TREATMENT MONITORING** (all monitoring conducted as outlined in DFW's NPDES permit WA0041009):

**Impact to non-targeted organisms** – Zooplankton were sampled for diversity and abundance just previous to treatment, six months post treatment, and will again be sampled 12 months post treatment. Samples were taken from pond B6a. Samples are currently being processed, and the results will be available by separate report.

**Liquid rotenone formulation longevity** – Water samples were taken at 24 hours and four weeks post treatment to check for residues related to the carriers present in the liquid formulation of rotenone. Water samples were taken from the large pond SSE of the parking lot/staging area (pond B6a). Samples were sent to an accredited lab for analyses per EPA methods. Naphthalene (130 µg/l), 2-methylnaphthalene (0.78 µg /l), and 1-methylnaphthalene (0.22 µg /l) were found in TA water sampled 24 hours after treatment. The amounts of 20 other compounds possibly present in liquid rotenone formulations, including benzene, toluene, phenol, xylene, acetone, acenaphthalene, fluorine, and derivatives of these compounds, were below detection limits in these same 24 hour samples. The amounts of all 23 volatile and semi-volatile organic compounds, including benzene, toluene, phenol, xylene, and derivatives of these compounds, were below detection limits (0.02-3.0 µg /l, variously) in the four week post treatment samples.

**Period of Toxicity** – The bioassay with rainbow trout in a live-box was not conducted until late May 2007, due to logistical considerations. Eight fingerling (~2") rainbow trout were placed in a live-box in Pond B6a at 5:00 p.m. Thursday May 24, and all fish were alive at 9:00 a.m. on Tuesday May 28, 2007. Given the relatively warm water temperature, shallow water, and high organic content of the ponds, rotenone longevity was probably less than one week, and certainly less than four weeks. Invertebrate life returned in spring. Fish stocking was not planned for these waters.

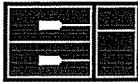
#### **DESCRIPTION OF TREATMENT AND OTHER COMMENTS:**

The fall 2006 treatment of the North Potholes Westlake Ponds was accomplished entirely with liquid rotenone. This "drainage" consists of the upper reaches of the Crab Creek Arm of Potholes Reservoir, which was at its lowest annual elevation at the time of treatment. Much of the area inundated earlier in the year was dry, and most ponds were quite small and shallow. A helicopter was used to spray 54 gallons of liquid rotenone over all open water in the TA on the day of treatment.

Beginning approx. 2 hours post-application, all ponds in the TA were surveyed by 8 people. The survey was completed in approx. 3 hours. Dead and dying carp were seen in most treated ponds. One dead black crappie was observed. No non-target animals were observed to be killed or affected, including Northern Leopard Frogs and other amphibians. On the 29<sup>th</sup> (one day post-treatment), the TA was surveyed again. Four people conducted the survey. Live, but dying, carp were still observed. A small number (approx. 100), less than expected, of dead bullfrog larvae were found. Some live larvae were also observed, particularly the smaller 1-year-old tadpoles. No other dead or impaired animals were observed. Live chorus frogs, leopard frogs, and tiger salamanders were observed during several days following the treatment, apparently unaffected by the treatment. No live fish were observed 4 weeks post treatment.

*Cost:* About 24 man-days (man-day = 8 hrs) were required to complete the rehabilitation of the Westlake Ponds, from pre-rehabilitation proposals to post-treatment reports (not including Fish Program planning, meetings, equipment procurement, etc common to all rehabilitations done this FY). Treatment alone required a crew of 8 people for most of one day. Total cost of the project (rotenone, helicopter, labor, travel, expendable equipment) was approximately \$15,000, including \$3,000 for rotenone (liquid @ \$55/gal) and \$3,100 for the helicopter application.

The TA will continue to be managed as fish-free to enhance conditions for leopard frogs.



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ANALYTICAL  
LABORATORIES, INC

CERTIFICATE OF ANALYSIS

CLIENT: WA DEPT. OF FISH & WILDLIFE  
MS: 43200 NRB 600 CAPITOL WAY NORTH  
OLYMPIA, WA 98501

DATE: 10/16/2006  
CCIL JOB #: 0610011  
DATE RECEIVED: 10/3/2006  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JIM TABOR  
CLIENT PROJECT ID: WEST LAKE AFTER TREATMENT  
CLIENT SAMPLE ID: 9/29/2006 AFTER TREATMENT  
CCIL SAMPLE #: -01

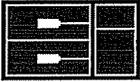
DATA RESULTS

ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
Benzene	EPA-8021	ND(<1)	UG/L	10/6/2006	GAP
Toluene	EPA-8021	ND(<1)	UG/L	10/6/2006	GAP
Ethylbenzene	EPA-8021	ND(<1)	UG/L	10/6/2006	GAP
Xylenes	EPA-8021	ND(<3)	UG/L	10/6/2006	GAP
Naphthalene	EPA-8270 SIM	130	UG/L	10/5/2006	RAL
1-Methylnaphthalene	EPA-8270 SIM	0.22	UG/L	10/5/2006	RAL
2-Methylnaphthalene	EPA-8270 SIM	0.78	UG/L	10/5/2006	RAL
Acenaphthylene	EPA-8270 SIM	ND(<0.02)	UG/L	10/5/2006	RAL
Acenaphthene	EPA-8270 SIM	ND(<0.02)	UG/L	10/5/2006	RAL
Fluorene	EPA-8270 SIM	ND(<0.02)	UG/L	10/5/2006	RAL
Phenanthrene	EPA-8270 SIM	ND(<0.02)	UG/L	10/5/2006	RAL
Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	10/5/2006	RAL
Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	10/5/2006	RAL
Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	10/5/2006	RAL
Benzo[A]Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	10/5/2006	RAL
Chrysene	EPA-8270 SIM	ND(<0.02)	UG/L	10/5/2006	RAL
Benzo[B]Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	10/5/2006	RAL
Benzo[K]Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	10/5/2006	RAL
Benzo(A)Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	10/5/2006	RAL
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	10/5/2006	RAL
Dibenz[A,H]Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	10/5/2006	RAL
Benzo[G,H,I]Perylene	EPA-8270 SIM	ND(<0.02)	UG/L	10/5/2006	RAL

\* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT. REPORTING LIMIT IS GIVEN IN PARENTHESES.

\*\* UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

APPROVED BY:



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ANALYTICAL  
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CLIENT: WA DEPT. OF FISH & WILDLIFE  
MS: 43200 NRB 600 CAPITOL WAY NORTH  
OLYMPIA, WA 98501

DATE: 10/16/2006  
CCIL JOB #: 0610011  
DATE RECEIVED: 10/3/2006  
WDOE ACCREDITATION #: C142

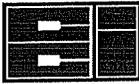
CLIENT CONTACT: JIM TABOR  
CLIENT PROJECT ID: WEST LAKE AFTER TREATMENT

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

CCIL SAMPLE ID	METHOD	SUR ID	% RECV
0610011-01	EPA-8021	TFT	99
0610011-01	EPA-8270 SIM	Terphenyl-d14	108
0610011-01 DILUTION	EPA-8270 SIM	Terphenyl-d14	106.

APPROVED BY:



CERTIFICATE OF ANALYSIS

CLIENT: WA DEPT. OF FISH & WILDLIFE  
MS: 43200 NRB 600 CAPITOL WAY NORTH  
OLYMPIA, WA 98501

DATE: 11/3/2006  
CCIL JOB #: 0610164  
DATE RECEIVED: 10/31/2006  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JIM TABOR  
CLIENT PROJECT ID: WESTLAKE (N. POTHOLES)  
CLIENT SAMPLE ID: 10/27/2006 13:50 WESTLAKE  
CCIL SAMPLE #: -01

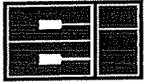
DATA RESULTS

ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
Benzene	EPA-8260	ND(<1)	UG/L	10/31/2006	MLC
Toluene	EPA-8260	ND(<1)	UG/L	10/31/2006	MLC
Ethylbenzene	EPA-8260	ND(<1)	UG/L	10/31/2006	MLC
o-Xylene	EPA-8260	ND(<1)	UG/L	10/31/2006	MLC
m,p-Xylene	EPA-8260	ND(<2)	UG/L	10/31/2006	MLC
Naphthalene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
2-Methylnaphthalene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
1-Methylnaphthalene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
Acenaphthylene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
Acenaphthene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
Fluorene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
Phenanthrene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
Anthracene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
Fluoranthene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
Pyrene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
Benzo[A]Anthracene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
Chrysene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
Benzo[B]Fluoranthene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
Benzo[K]Fluoranthene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
Benzo[A]Pyrene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
Indeno[1,2,3-Cd]Pyrene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
Dibenz[A,H]Anthracene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL
Benzo[G,H,I]Perylene	EPA-8270	ND(<2)	UG/L	11/1/2006	RAL

\*ND\* INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT. REPORTING LIMIT IS GIVEN IN PARENTHESES.

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MS: 43200 NRB 600 CAPITOL WAY NORTH  
OLYMPIA, WA 98501

DATE: 11/3/2006  
CCIL JOB #: 0610164  
DATE RECEIVED: 10/31/2006  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JIM TABOR  
CLIENT PROJECT ID: WESTLAKE (N. POTHOLES)

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

CCIL SAMPLE ID	METHOD	SUR ID	% RECV
0610164-01	EPA-8260	Toluene-d8	90
0610164-01	EPA-8270	Terphenyl-d14	81

APPROVED BY:

POST REHABILITATION FORM

1. Lake or Stream McDowell Lk County Stevens  
Section SE SE 6 Township 34N Range 41E
2. Lakes - surface acres 33 Miles of inlet .1
3. Maximum depth 20ft Average depth 5ft
4. Weight (pounds) of water treated 59,978,853 toxicant Rotenone
5. Amount used 210 gal.; 5% active ingredient
6. Concentration applied 4 P.P.M. Date treated 10/03/06

7. Man-hours expended in preparation, treatment & cleanup  
40 hours.

8. Conditions in the lake on date of treatment: Lake level was low. Water clarity was good at 8 ft.

<u>Depth in m</u>	<u>Temperature</u>	<u>PH</u>	<u>Dissolved oxygen</u>
Surface	14.9C	8.3	10.4
1	14.8	8.14	10.47
1.5	13.4	7.65	8.58
2	12.8	7.91	4.58
3	11.7	7.46	1.57

9. Species of fish eradicated in order of relative abundance:  
Tench 99.8%, Rainbow trout 0.2%

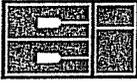
10. Possibility of a complete kill: 90%

11. Detoxicant used None

12. Period of toxicity ~8 weeks. Ice precluded a bioassay.

13. Description of treatment and other comments: Application by helicopter took ~1.5 hours. Spot treatment of standing water in the inlet took another 1-1.5 hours including rinsing empty barrels. No fish appeared until 24 hours later. Stressing tench continued to appear along the shoreline for 4 days. Tench are very resistant to rotenone and do not respond as rapidly as most other fish species.

Fishery Biologist / Curt Vail Date 1/10/07 Region 1



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CLIENT: WA DEPT. OF FISH & WILDLIFE  
MS: 43200 NRB 600 CAPITOL WAY NORTH  
OLYMPIA, WA 98501

DATE: 10/16/2006  
CCIL JOB #: 0610032  
DATE RECEIVED: 10/6/2006  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JIM UEHARA  
CLIENT PROJECT ID: MCDOWELL LK TREATMENT  
CLIENT SAMPLE ID: 10/4/2006 16:00 1  
CCIL SAMPLE #: -01

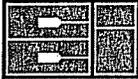
DATA RESULTS

ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
Benzene	EPA-8021	ND(<1)	UG/L	10/9/2006	GAP
Toluene	EPA-8021	ND(<1)	UG/L	10/9/2006	GAP
Ethylbenzene	EPA-8021	ND(<1)	UG/L	10/9/2006	GAP
Xylenes	EPA-8021	ND(<3)	UG/L	10/9/2006	GAP
Naphthalene	EPA-8270 SIM	69	UG/L	10/7/2006	RAL
1-Methylnaphthalene	EPA-8270 SIM	52	UG/L	10/7/2006	RAL
2-Methylnaphthalene	EPA-8270 SIM	89	UG/L	10/7/2006	RAL
Acenaphthylene	EPA-8270 SIM	0.42	UG/L	10/7/2006	RAL
Acenaphthene	EPA-8270 SIM	1.0	UG/L	10/7/2006	RAL
Fluorene	EPA-8270 SIM	1.3	UG/L	10/7/2006	RAL
Phenanthrene	EPA-8270 SIM	0.08	UG/L	10/7/2006	RAL
Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL
Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL
Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL
Benzo[A]Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL
Chrysene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL
Benzo[B]Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL
Benzo[K]Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL
Benzo(A)Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL
Dibenz[A,H]Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL
Benzo[G,H,I]Perylene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL

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APPROVED BY:



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CERTIFICATE OF ANALYSIS

CLIENT: WA DEPT. OF FISH & WILDLIFE  
MS: 43200 NRB 600 CAPITOL WAY NORTH  
OLYMPIA, WA 98501

DATE: 10/16/2006  
CCIL JOB #: 0610032  
DATE RECEIVED: 10/6/2006  
WDOE ACCREDITATION #: C142

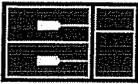
CLIENT CONTACT: JIM UEHARA  
CLIENT PROJECT ID: MCDOWELL LK TREATMENT

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

CCIL SAMPLE ID	METHOD	SUR ID	% RECV
0610032-01	EPA-8021	TFT	98
0610032-01	EPA-8270 SIM	Terphenyl-d14	117
0610032-01 DILUTION	EPA-8270 SIM	Terphenyl-d14	96

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CERTIFICATE OF ANALYSIS

CLIENT: WA DEPT. OF FISH & WILDLIFE  
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OLYMPIA, WA 98501

DATE: 10/16/2006  
CCIL JOB #: 0610032  
DATE RECEIVED: 10/6/2006  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JIM UEHARA  
CLIENT PROJECT ID: MCDOWELL LK TREATMENT  
CLIENT SAMPLE ID: 10/4/2006 16:00 1  
CCIL SAMPLE #: -01

DATA RESULTS

ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
Benzene	EPA-8021	ND(<1)	UG/L	10/9/2006	GAP
Toluene	EPA-8021	ND(<1)	UG/L	10/9/2006	GAP
Ethylbenzene	EPA-8021	ND(<1)	UG/L	10/9/2006	GAP
Xylenes	EPA-8021	ND(<3)	UG/L	10/9/2006	GAP
Naphthalene	EPA-8270 SIM	69	UG/L	10/7/2006	RAL
1-Methylnaphthalene	EPA-8270 SIM	52	UG/L	10/7/2006	RAL
2-Methylnaphthalene	EPA-8270 SIM	89	UG/L	10/7/2006	RAL
Acenaphthylene	EPA-8270 SIM	0.42	UG/L	10/7/2006	RAL
Acenaphthene	EPA-8270 SIM	1.0	UG/L	10/7/2006	RAL
Fluorene	EPA-8270 SIM	1.3	UG/L	10/7/2006	RAL
Phenanthrene	EPA-8270 SIM	0.08	UG/L	10/7/2006	RAL
Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL
Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL
Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL
Benzo[A]Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL
Chrysene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL
Benzo[B]Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL
Benzo[K]Fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL
Benzo(A)Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL
Dibenz[A,H]Anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL
Benzo[G,H,I]Perylene	EPA-8270 SIM	ND(<0.02)	UG/L	10/7/2006	RAL

\* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT. REPORTING LIMIT IS GIVEN IN PARENTHESES.

\*\* UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

APPROVED BY:





ANALYTE METHOD RESULTS\* UNITS\*\*  
 ANALYTE RESULTS IN µg/l  
 2006 Lake Analyses

	Blue Lake 10/27/2006	11/27/2006	Park Lake 11/20/2006	12/18/2006 (Creek)	12/18/2006 (Greggson's)	03/21/2007 (Creek)	Pearygin Lake 10/12/2006	11/08/2006	McDowell Lake 10/04/2006	11/02/2006	Westlake Ponds 09/29/2006	10/27/2006	Long Lake 10/03/2006	01/24/2007
EPA-8021 or 8260														
Benzene	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)
Toluene	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)
Ethylbenzene	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)
Xylenes	ND(<3)	ND(<3)	ND(<3)	ND(<3)	ND(<3)	ND(<3)	ND(<3)	ND(<3)	ND(<3)	ND(<3)	ND(<3)	ND(<3)	ND(<3)	ND(<3)
o-Xylene	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)	ND(<1)
m,p-Xylene	ND(<2)	ND(<2)	ND(<2)	ND(<2)	ND(<2)	ND(<2)	ND(<2)	ND(<2)	ND(<2)	ND(<2)	ND(<2)	ND(<2)	ND(<2)	ND(<2)
EPA-8270														
Naphthalene	ND(<2)	ND(<0.02)	13	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	69	3.4	130	ND(<2)	14	0.11
1-Methylnaphthalene	ND(<2)	ND(<0.02)	21	ND(<0.02)	0.03	ND(<0.02)	ND(<0.02)	ND(<0.02)	52	8.4	0.22	ND(<2)	23	0.07
2-Methylnaphthalene	ND(<2)	ND(<0.02)	43	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	89	11	0.78	ND(<2)	39	0.08
Acenaphthylene	ND(<2)	ND(<0.02)	ND(<2)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	0.42	0.08	ND(<0.02)	ND(<2)	0.18	ND(<0.02)
Acenaphthene	ND(<2)	ND(<0.02)	ND(<2)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	1.0	0.22	ND(<0.02)	ND(<2)	0.48	ND(<0.02)
Fluorene	ND(<2)	ND(<0.02)	ND(<2)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	1.3	0.35	ND(<0.02)	ND(<2)	0.59	ND(<0.02)
Phenanthrene	ND(<2)	ND(<0.02)	ND(<2)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	0.08	0.03	ND(<0.02)	ND(<2)	ND(<0.02)	ND(<0.02)
Anthracene	ND(<2)	ND(<0.02)	ND(<2)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<2)	ND(<0.02)	ND(<0.02)
Fluoranthene	ND(<2)	ND(<0.02)	ND(<2)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<2)	ND(<0.02)	ND(<0.02)
Pyrene	ND(<2)	ND(<0.02)	ND(<2)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<2)	ND(<0.02)	ND(<0.02)
Benzo[A]Anthracene	ND(<2)	ND(<0.02)	ND(<2)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<2)	ND(<0.02)	ND(<0.02)
Chrysene	ND(<2)	ND(<0.02)	ND(<2)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<2)	ND(<0.02)	ND(<0.02)
Benzo[B]Fluoranthene	ND(<2)	ND(<0.02)	ND(<2)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<2)	ND(<0.02)	ND(<0.02)
Benzo[K]Fluoranthene	ND(<2)	ND(<0.02)	ND(<2)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<2)	ND(<0.02)	ND(<0.02)
Benzo[A]Pyrene	ND(<2)	ND(<0.02)	ND(<2)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<2)	ND(<0.02)	ND(<0.02)
Indeno[1,2,3-cd]Pyrene	ND(<2)	ND(<0.02)	ND(<2)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<2)	ND(<0.02)	ND(<0.02)
Dibenzo[A,H]Anthracene	ND(<2)	ND(<0.02)	ND(<2)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<2)	ND(<0.02)	ND(<0.02)
Benzo[G,H,I]Perylene	ND(<2)	ND(<0.02)	ND(<2)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<0.02)	ND(<2)	ND(<0.02)	ND(<0.02)

Long Lake 01-24-07: Naphthalene observed in extraction blank at .03 µg/L. Sample may be biased high.