# HORSESHOE LAKE MANAGEMENT COMMITTEE AGENDA

**5:00 P.M. - THURSDAY, NOVEMBER 8, 2012**
**Woodland Council Chambers**
**100 Davidson Avenue – Woodland, WA 98674**

I. Call to Order

II. Minute Approval - October 11, 2012

III. Continued Business
   a. Pump Update
   b. Water Quality and Sampling
   c. Decoys/Wildlife
   d. Budget
   e. Goals & Priorities
   f. Public Education

IV. New Business
   a. Grant Application - DOE Aquatic Weeds Management
   b. December 13, 2012 Meeting Location

V. Other
   a. Weed Harvesting

VI. Adjourn - Next Meeting December 13, 2012 at 5:00 P.M.

# CITY OF WOODLAND
## HORSESHOE LAKE COMMITTEE MINUTES
## OCTOBER 11, 2012

The regular meeting of the Horseshoe Lake Management Committee was held on the above date, at the Woodland City Hall Council Chambers, 100 Davidson Avenue, Woodland, WA 98674.

Chair Tom Golik called the meeting to order at approximately 5:00 p.m. Roll call found the following:

**COMMITTEE MEMBERS**:

Tom Golik, Chairman
Walt Church
Mike Curry (Absent)
Terry Jones
Francis Patnode (Absent)
Pat Rychel
Jeff Sullivan
Neil Van Horn

**MAYOR/COUNCIL:**

Grover Laseke, Mayor
Scott Perry, Councilmember

**STAFF:**

Jody Bartkowski, Secretary

DRAFT

**MINUTES**

The September 13, 2012 minutes were approved as corrected.

**CONTINUED BUSINESS**

1. **Lake Pump**. Public Works staff reported that the pump is still off due to low river levels. The Washington State Department (WSDOT) installed a float during their most recent maintenance and had an electrician looking at it last week, but no word has been received as to when it will be functioning.

   Discussion ensued regarding phosphorus levels in the river, pumping excess phosphorus to the Lake when river levels are low, use of non-consumptive wells, and the Tsugawa family's water rights.

   Tom Golik spoke regarding the acknowledgement of problems with Horseshoe Lake, the recent discussions with Cowlitz and Clark Counties, the need to decide which direction we want to go, and a plan to solve the problems. Great progress has been made by beginning water quality studies.

   Mayor Grover Laseke reported that the Lake tour was a success (three City Council members and representatives from both Clark and Cowlitz Counties attended), recommended that another tour be scheduled after the water level rises, reviewed his conversations with the Counties regarding funding assistance (they see the problems and are willing to contribute towards a solution), requested that we continue to include the Counties and possibly the Department of Ecology at a later date so that they can be a part of the decision making, and asked that the Committee give direction and make recommendations to the City Council

   Discussion was held regarding Cowlitz County Commissioner Misner attending in

November, inviting Clark County Clean Water Program Manager Ron Wierenga in December, Alan Melnick being the Public Health Department doctor for both counties, focusing efforts in Clark County due to staffing levels, details of sampling costs, WSDOT pump input at a City Council meeting earlier this year, WSDOT responsibility, and the relationship between WSDOT and WDFW.

*Motion was made to request Mayor Laseke make contact with WSDOT regarding pumping capacity and report back in November. Motion seconded and carried unanimously.* *M/S/C*

Further discussion was held regarding low water levels, possible leaks at the outlet structure, turning of the valve at the airport, and dye testing from the structure to the River.

2. **Water Quality & Sampling.** Stacie Kelsey, Washington Department of Fish and Wildlife (WDFW), presented lab reports and graphs showing August and September phosphorus levels. Discussion was held regarding testing from the WDFW boat next Thursday, how phosphorus levels in the river may be affecting the Lake, and sampling at the River pump and further upstream. Costs for sampling in the River will be covered by WDFW.

   Further discussion included plant growth, cut/fragmented weeds multiplying as they re-grow, limiting boats during low water events, keeping people out of weed infested areas, the use of grass carp vs. herbicide treatments, how many grass carp are needed to make a difference (we have purchased 350 and need a minimum of 850 present), grants for the purchase of carp, gathering additional information on Aquathol K, the need to make an educated decision to use carp or chemicals, and grant funding. There may be grants available for grass carp, but we are not ready to apply for water quality money until our baseline testing is completed.

3. **Decoys/Wildlife.** Discussion ensued regarding the hoards of geese camped at Horseshoe Lake Park and various ways to get rid of them.

4. **Budget.** The proposed 2012 budget for management of Horseshoe Lake is $1,200.

5. **Goals & Priorities.** The question was asked, "What do we want to do with our Lake?" Discussion was held regarding the gathering of comments from committee members, involving the public, ranking responses, scheduled attendance by Cowlitz and Clark Counties representatives, building a plan starting in January, documenting and presenting the plan to Council, an optional public hearing, creating a mission statement, and the City Council's 2013 goal regarding the Lake and Park.

   *Committee member Walt Church made a motion to change the regular meeting time to be on the second Thursday of each month beginning at 2:00 p.m. Jeff Sullivan seconded the motion.*

   Open discussion was held regarding changing to Fridays, collecting other entities input, Stacie Kelsey's availability, and changing in December or January.

   *Committee member Walt Church amended his motion to include*

DRAFT

*"beginning in December 2012". There was no second, motion failed.*

*The original motion was voted upon. Motion made, seconded, and failed.* *M/S/F*

Further discussion was held regarding agency participation.

6. **State Department Requests.** Staff reported that WSDOT responded to the I-5 runoff letter, stating, "Our records do not show any drainage systems that outlet into Horseshoe Lake from I-5. Discussion ensued regarding systems along Lakeshore, City systems, and the need to involve public works for action.
7. **Public Input.** Scott Perry reported that Pat Nelson will be writing articles for both the Lewis River Review and the Reflector.

## NEW BUSINESS

None

## OTHER

**Weed Harvesting** – Discussion was held regarding permits, machinery, using divers, weeds multiplying when they are cut, and high costs.

**Resident Concerns** – Bill Dunlap, S Pekin Road reported that he has lived on the Lake for the last 12-years and has never seen weeds like we have now. He finds the lake condition concerning, feels a source of urgency that something needs to be done now while the City Council is more receptive to ideas, believes that WSDOT needs to be held responsible for adequate pumping, and that e-coli testing needs to be done. The water is so low that the weeds are bent over, paddles can barely get through, and when they do, the weeds are broken off making the problem worse.

Open discussion was held regarding wells; how many would be needed, depth, and cost.

## ADJOURNMENT

The meeting was adjourned at approximately 7:10 p.m. The next regular meeting will be held Thursday, November 8, 2012, at 5:00 p.m. at the Woodland City Hall Council Chambers.

DRAFT

Tom Golik - Chairman _____ Date _____

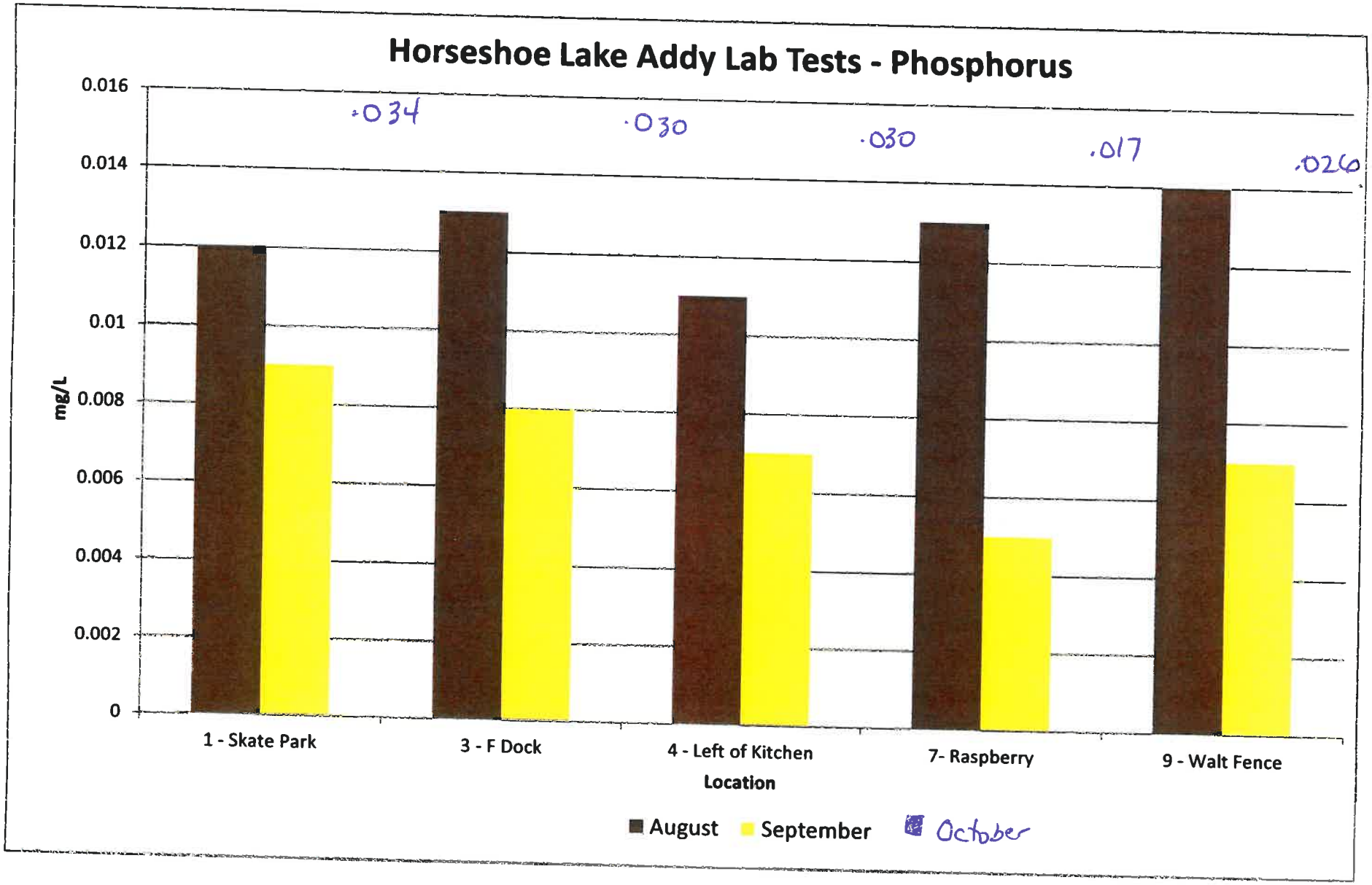
Jody Bartkowski - Secretary _____ Date _____

AKE PUMP MAINTENANCE LOG

| DATE | TIME | RIVER LEVEL (360) 225-1701 | GREASE BEARING (3 Shots Per Month) | OIL ADDED | OIL (5 Drops Per Min) | GPM | TOTAL GALLONS PUMPED | BY (Initials) | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|
| 8-3 | 2:45 pm | | ✗ | ✗ | ✗ | | 192237 | M.C. | Pump off |
| 8-10 | 10:AM | | ✓ | ✓ | ✓ | 3265 | 343406 | MC | |
| 8-13 | 2:45PM | | | ✓ | ✓ | 3385 | 459985 | M.C. | |
| 8-21 | 9:40AM | | | ✓ | ✓ | 3847 | 756087 | M.C | |
| 8-24 | 2:40AM | | | ✓ | ✓ | 2941 | 884444 | M.C | |
| 9-4 | 1:35PM | | ✓ | ✓ | ✓ | 2509 | 295091 | M.C. | |
| 9-10 | 10:54AM | | | ✓ | ✓ | [illegible] | [illegible] | M.C. | |
| 9-11 | 1:AM | | | [redacted] | | | | M.C | Cleaned screens |
| | | | Breaker was off, Turned it Back on for test A/10, back off! | | | | | | |
| 10-22 | [illegible] | | | ✓ | ✓ | [illegible] | [illegible] | [illegible] | |
| 10-26 | [illegible] | | | ✓ | ✓ | 3240 | 573748 | M.C. | |
| 10-29 | 10:30AM | | | ✓ | ✓ | 3250 | 790107 | M.C | |
| 11-2 | 11:15AM | | ✓ | ✓ | ✓ | 4143 | 969736 | M.C. | |
| 11-5 | 11:30 | | | ✓ | ✓ | — | 102146 | BD | |

# Lewis River Level
## As of 8:00 A.M.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1-Sep-12 | 8.14 | | 1-Oct-12 | 7.34 | | 1-Nov-12 | 13.52 |
| 2-Sep-12 | 8.09 | | 2-Oct-12 | 7.33 | | 2-Nov-12 | 13.12 |
| 3-Sep-12 | 7.80 | | 3-Oct-12 | 7.35 | | 3-Nov-12 | 12.93 |
| 4-Sep-12 | 7.76 | | 4-Oct-12 | 7.38 | | 4-Nov-12 | 12.87 |
| 5-Sep-12 | 7.92 | | 5-Oct-12 | 7.41 | | 5-Nov-12 | 11.27 |
| 6-Sep-12 | 8.34 | | 6-Oct-12 | 7.36 | | 6-Nov-12 | |
| 7-Sep-12 | 8.67 | | 7-Oct-12 | 7.38 | | 7-Nov-12 | |
| 8-Sep-12 | 8.42 | | 8-Oct-12 | 7.45 | | 8-Nov-12 | |
| 9-Sep-12 | 8.59 | | 9-Oct-12 | 7.68 | | 9-Nov-12 | |
| 10-Sep-12 | 8.33 | | 10-Oct-12 | 7.95 | | 10-Nov-12 | |
| 11-Sep-12 | 7.83 | Avg. | 11-Oct-12 | 8.02 | | 11-Nov-12 | |
| 12-Sep-12 | 7.83 | Avg. | 12-Oct-12 | 7.75 | | 12-Nov-12 | |
| 13-Sep-12 | 7.83 | Avg. | 13-Oct-12 | 7.32 | | 13-Nov-12 | |
| 14-Sep-12 | 7.83 | Avg. | 14-Oct-12 | 7.30 | | 14-Nov-12 | |
| 15-Sep-12 | 7.33 | | 15-Oct-12 | 7.33 | | 15-Nov-12 | |
| 16-Sep-12 | 7.46 | | 16-Oct-12 | 8.14 | | 16-Nov-12 | |
| 17-Sep-12 | 7.48 | | 17-Oct-12 | 8.34 | | 17-Nov-12 | |
| 18-Sep-12 | 7.59 | | 18-Oct-12 | 8.34 | | 18-Nov-12 | |
| 19-Sep-12 | 8.14 | | 19-Oct-12 | 8.48 | | 19-Nov-12 | |
| 20-Sep-12 | 8.51 | | 20-Oct-12 | 8.54 | | 20-Nov-12 | |
| 21-Sep-12 | 8.31 | | 21-Oct-12 | 8.70 | | 21-Nov-12 | |
| 22-Sep-12 | 8.38 | | 22-Oct-12 | 8.85 | | 22-Nov-12 | |
| 23-Sep-12 | 8.50 | | 23-Oct-12 | 9.26 | | 23-Nov-12 | |
| 24-Sep-12 | 8.77 | | 24-Oct-12 | 9.10 | | 24-Nov-12 | |
| 25-Sep-12 | 8.46 | | 25-Oct-12 | 8.89 | | 25-Nov-12 | |
| 26-Sep-12 | 8.26 | | 26-Oct-12 | 8.15 | | 26-Nov-12 | |
| 27-Sep-12 | 7.75 | | 27-Oct-12 | 8.99 | | 27-Nov-12 | |
| 28-Sep-12 | 8.38 | | 28-Oct-12 | 9.33 | | 28-Nov-12 | |
| 29-Sep-12 | 8.35 | | 29-Oct-12 | 12.55 | | 29-Nov-12 | |
| 30-Sep-12 | 7.37 | | 30-Oct-12 | 13.31 | | 30-Nov-12 | |
| | | | 31-Oct-12 | 13.42 | | | |


Horseshoe Lake Addy Lab Tests - Phosphorus
0.016
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
mg/L
.034
.030
.030
.017
.026
1 - Skate Park
3 - F Dock
4 - Left of Kitchen
7- Raspberry
9 - Walt Fence
Location
August
September
October

Avg.

AddyLab
2517 E. Evergreen Blvd.
Vancouver, WA. 98661

Phone: 360-750-0055
Fax: 360-750-0057
Email: reports@addylab.com

# INORGANIC CHEMICALS (IOC) REPORT FOR TOTAL PHOSPHORUS

Client Name WDFW

stacie.kelsey@dfw.wa.gov

System Name: WDFW
System ID Number:
DOH Source Number:
Multiple Sources
Sample Type: w
Sample Purpose Investigative
County: Clark

Reference Number: 12AL1218
Project: Horseshoe Lake
Group
Date Received: 8/20/12
Date Analyzed: 8/22/12, 8/28/12
Report Date: 8/29/12

Approved By:

| Lab Number | Date Collected | Site/Location | µg/L | Total Phosphorus mg/L | METHOD |
|---|---|---|---|---|---|
| 152-05001 | 8/20/12 | 1. Skate Pk | 12 | 0.012 | EPA 365.2 |
| 152-05002 | 8/20/12 | 3. F - Dock | 13 | 0.013 | EPA 365.2 |
| 152-05003 | 8/20/12 | 4. L of Kit. | 11 | 0.011 | EPA 365.2 |
| 152-05004 | 8/20/12 | 7. Rasberry | 13 | 0.013 | EPA 365.2 |
| 152-05005 | 8/20/12 | 9. Walt Fence | 14 | 0.014 | EPA 365.2 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

**MDL (method detection level):** the minimum measurable concentration of a substance that can be reported with 99% confidence as being greater than zero

**Trigger Level:** DOH Drinking Water response level. Systems with compounds detected at concentrations in excess of this level are required to take additional samples. Contact your regional DOH office for further information

**SRL (State Reporting Level):** indicates the minimum reporting level required by the Washington Department of Health (DOH).

**MCL (maximum contaminant level):** If the contaminant amount exceeds the MCL, immediately contact your regional DOH office.

**NA (Not Analyzed):** in the results column indicates this compound was not included in the current analysis.

**ND (Not Detected):** in the results column indicates this compound was analyzed and not detected at a level greater than or equal to the MDL

**< (0.001):** indicates the compound was not detected in the sample at or above the concentration indicated.

**J:** The result is an estimate as it is greater than the method detection limit but less than the practical reporting limit.

Test results for pH, anions except o-phosphorus, E.coli, coliform bacteria and turbidity conducted by AddyLab meet all the requirements of NELAC, unless otherwise stated in writing, and related only to these samples. If you have any questions regarding this report contact Thomas Newman, Quality Manger.

Sept.

AddyLab, LLC
2517 E. Evergreen Blvd.
Vancouver, WA 98661

AddyLab

Phone: 360 750-0055
Fax: 360 750-0057
Email: reports@addylab.com

# Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | WDFW | **Reference #:** | 12AL1284 |
| **Project:** | Horseshoe Lake | **Date Collected:** | 9/5/12 |
| **Sample Matrix:** | Water | **Date Received:** | 9/5/12 |
| **Report Date:** | 9/17/12 | **Collected By:** | -- |

| Sample | Lab # | Analyte | Result | Units | MRL | Method | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|---|
| Skate Park | L593783-01 | Total Phosphorus* | **9.2** | µg/L | 3.0 | EPA 365.1 | 9/14/12 | WG612035 |
| F Dock | L593783-02 | Total Phosphorus* | **8.3** | µg/L | 3.0 | EPA 365.1 | 9/14/12 | WG612035 |
| L of Kit | L593783-03 | Total Phosphorus* | **7.7** | µg/L | 3.0 | EPA 365.1 | 9/14/12 | WG612035 |
| Rasperry | L593783-04 | Total Phosphorus* | **5.7** | µg/L | 3.0 | EPA 365.1 | 9/14/12 | WG612035 |
| Walt Fence | L593783-05 | Total Phosphorus* | **7.6** | µg/L | 3.0 | EPA 365.1 | 9/14/12 | WG612035 |

Definitions:

| | |
|---|---|
| * | Total Phosphorus analyzed at ESC |
| µg/L | microgram per liter |
| MRL | Method Reporting Limit |
| ND | Analyte Not Detected at or above the Method Detection Level |
| J | An estimate that is less than the MRL but greater than or equal to the Method Detection Level. |
| MDL | Method Detection Level – the minimum measurable concentration of a substance that can be reported with 99% confidence as being greater than zero. |

Test results for pH, color, anions, except o-phosphorus, E. coli, coliform bacteria and turbidity conducted at AddyLab meet all the requirements of NELAC, unless otherwise stated in writing, and relate only to these samples. If you have questions regarding these results contact Thomas Newman, Quality Manager.

Reviewed By: TAN Date: 9/17/12

Oct.

AddyLab, LLC
2517 E. Evergreen Blvd.
Vancouver, WA 98661

AddyLab

Phone: 360 750-0055
Fax: 360 750-0057
Email: reports@addylab.com

# Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | WDFW | **Reference #:** | 12AL1595 |
| **Project:** | Horseshoe Lake | **Date Collected:** | 10/25/12 |
| **Sample Matrix:** | Water | **Date Received:** | 10/25/12 |
| **Report Date:** | 10/25/12 | **Collected By:** | Jody Bartkowski |

| Sample | Lab # | Analyte | Result | Units | MRL | Method | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|---|
| Skate Park | L602916-01 | Total Phosphorus* | **34** | µg/L | 3.0 | EPA 365.2 | 10/30/12 | WG619967 |
| F Dock | L602916-02 | Total Phosphorus* | **30** | µg/L | 3.0 | EPA 365.2 | 10/30/12 | WG619967 |
| L of Kit | L602916-03 | Total Phosphorus* | **30** | µg/L | 3.0 | EPA 365.2 | 10/30/12 | WG619967 |
| Rasperry | L602916-04 | Total Phosphorus* | **17** | µg/L | 3.0 | EPA 365.2 | 10/30/12 | WG619967 |
| Walt Fence | L602916-05 | Total Phosphorus* | **26** | µg/L | 3.0 | EPA 365.2 | 10/30/12 | WG619967 |

Definitions:

| | |
|---|---|
| * | Total Phosphorus analyzed at ESC |
| µg/L | microgram per liter |
| MRL | Method Reporting Limit |
| ND | Analyte Not Detected at or above the Method Detection Level |
| J | An estimate that is less than the MRL but greater than or equal to the Method Detection Level. |
| MDL | Method Detection Level – the minimum measurable concentration of a substance that can be reported with 99% confidence as being greater than zero. |

Test results for pH, color, anions, except o-phosphorus, E. coli, coliform bacteria and turbidity conducted at AddyLab meet all the requirements of NELAC, unless otherwise stated in writing, and relate only to these samples. If you have questions regarding these results contact Thomas Newman, Quality Manager.

Reviewed By: TN Date: 11/2/12

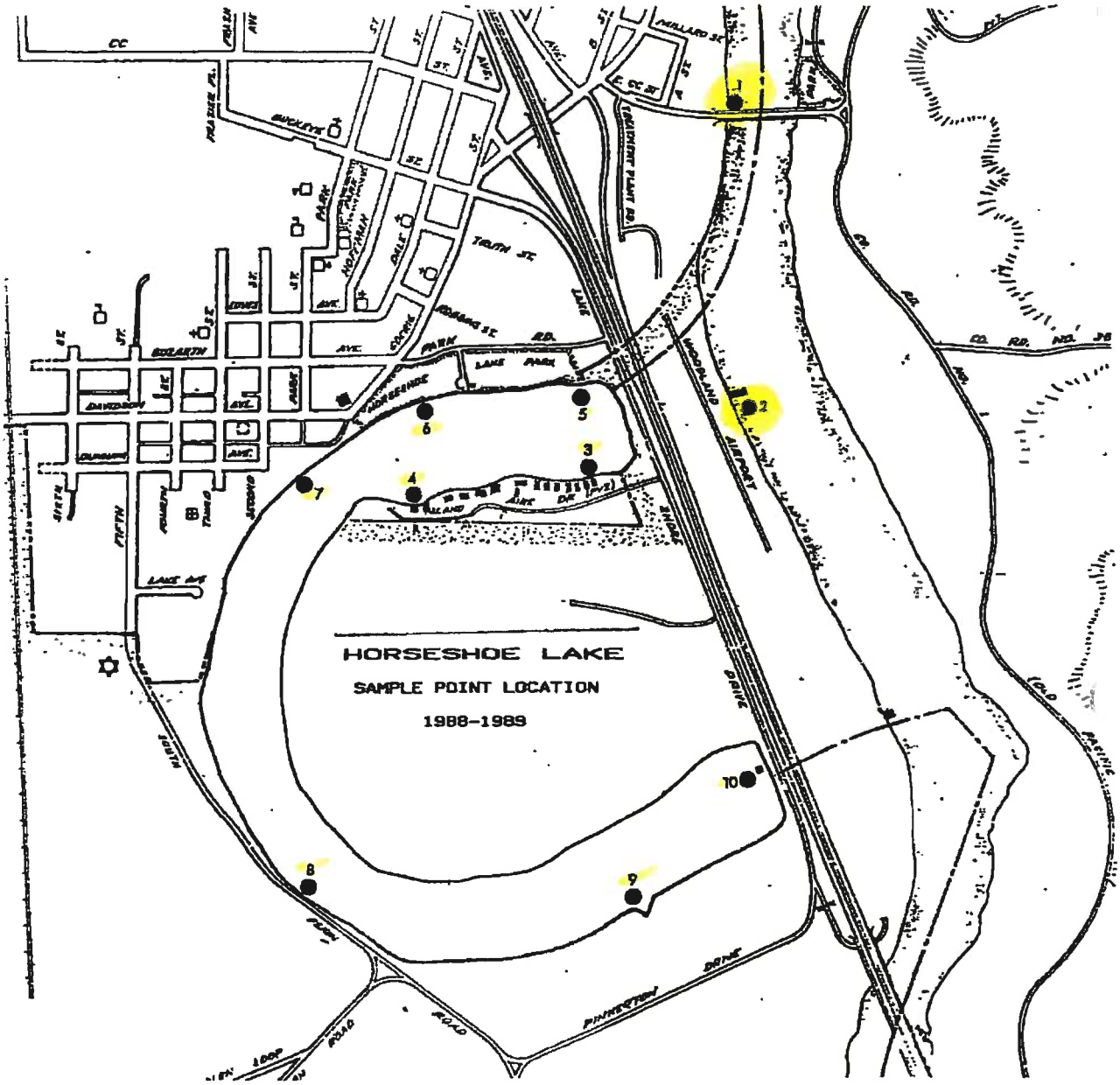



Figure 5-1. Sample point locations for 1988-1989 water quality survey of the Lewis River and Horseshoe Lake.

## TEMPERATURE AND pH

The air temperature, figure 5-12, greatly influences water temperature in streams and in the surface layer of lakes. The Lewis River averaged 10.6 degrees Centigrade and the lake averaged 13.8 degrees centigrade over the 11 months of the study. The temperature in the lake averaged 17 degrees centigrade when the pump was on and 7 degrees centigrade when the pump was off.

The pH of Horseshoe Lake, figure 5-11, averaged 8.3 for the eleven months that samples were collected. For the eight months that the pump was on the pH readings averaged 8.8 as opposed to 7.3 while the pump was off.

In 1975 the river had an averaged pH of 7.3 while Horseshoe Lake averaged 7.2 an increase of 1.1 pH units over the past fourteen years while the river pH has remained the same, indicating that the lake is becoming more basic. This change of 1.1 pH units may not seem like much but it could be enough to allow a new species of algae to gain a foothold.

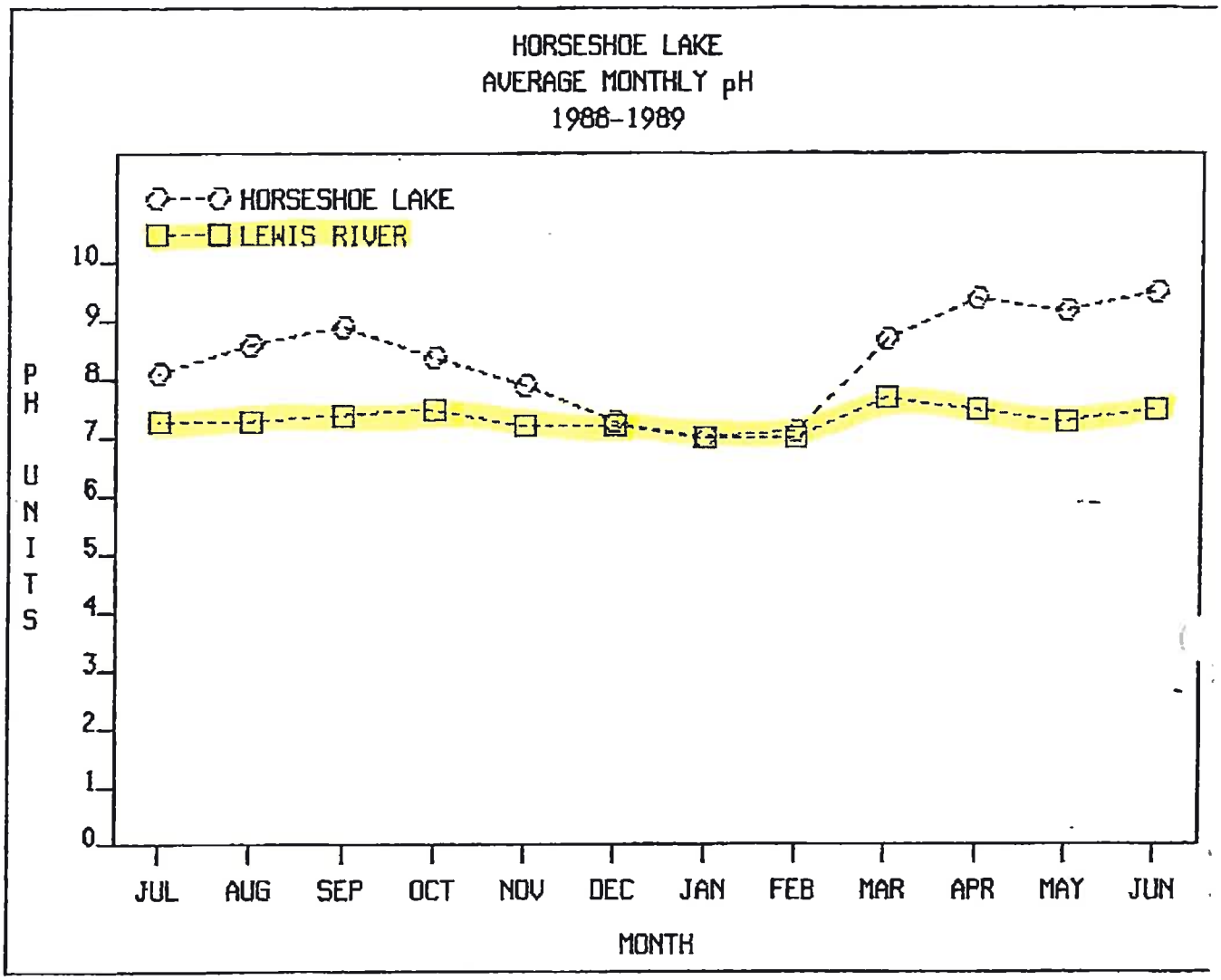



**Figure 5-11. Monthly pH readings recorded in Horseshoe Lake during the 1988 - 1989 survey.**

## Aquatic Weeds Management Fund Grants

Applications accepted
October 1 through 5:00 pm
November 15, 2012

### Contact information

Lizbeth Seebacher
360-407-6938
Lizbeth.Seebacher@ecy.wa.gov

### Special accommodations

To ask about the availability of this document in a version for the visually impaired, call the Water Quality Program at 360-407-6502

Persons with hearing loss, call 711 for Washington Relay Service. Persons with a speech disability, call 877-833-6341.

## Aquatic Weeds Grants

### Fiscal Year 2014 Funding Cycle

The Washington Department of Ecology (Ecology) will be accepting applications for Aquatic Weeds Management Fund (AWMF) grants for FY2014 beginning October 1, 2012. Ecology must receive all grant applications at its Olympia address by 5 p.m., November 15, 2012.

Ecology expects to have an estimated $400,000 in grant funds available for AWMF project work for FY2014 (July 1, 2013 through June 30, 2014).

### Aquatic Weeds Management Fund grants

The AWMF provides grants to counties, cities, state agencies, tribes, and special purpose districts to reduce the spread of freshwater weeds and manage the problems caused by these weeds. The types of activities funded include:

- Planning
- Education
- Monitoring
- Implementation of aquatic plant management plans
- Pilot projects (using innovative aquatic weed control technologies)
- Demonstration projects (using new, emerging, or accepted but unfamiliar aquatic weed control technologies)
- Mapping and surveillance

### Grant application requirements

Ecology requires grant applicants to provide a budget for their projects that identifies costs by state fiscal year. Projects are now limited to two years duration to fit within the current biennium. Grants specifically for monitoring will be available beginning in FY2015for those projects unable to complete treatment and monitoring in a two year time frame. Ecology will make grant awards based on the funds available by fiscal year—an approach that will make optimal use of the funds in the AWMF.

Ecology requires that grant applicants provide at least 25 percent of the eligible project costs as a match to state funds. Grant recipients can use these funds only for water bodies that have public boat launching facilities or are designated by the Washington Department of Fish and Wildlife as fly fishing-only lakes.

### Funding Limits

Ecology limits awards to $30,000 (state share) for planning grants, $50,000 (state share) for early infestation projects and $75,000 (state share) for other projects. Each applicant is limited to $75,000 each annual grant cycle and $75,000 for early infestation projects (a total amount of $150,000 per funding cycle).

Ecology will give funding priority to projects that deal with noxious aquatic invasive plants such as Eurasian watermilfoil, Brazilian elodea, and purple loosestrife. In water bodies with well-established populations of non-native invasive aquatic plants, applicants must develop an integrated aquatic plant management plan before Ecology can award grants for control projects. Applicants may apply for funding to develop integrated aquatic plant management plans.

### Evaluation and Grant Award Process

After the application deadline (November 15, 2012), Ecology staff will:

- Contact applicants if there are any questions about their application.
- Distribute the applications to the evaluation team members. Evaluators will review applications based on the criteria described in the *Aquatic Weeds Management Fund Grant Guidelines*.
- Conduct an evaluators' meeting to discuss the project proposals and develop an offer and applicant list.
- Publish the offer and applicant list; issue formal offer letters to applicants proposed for funding.

Typically, the offer and applicant list for the Aquatic Weeds Management Fund grants is available by mid-January. Applicants must develop a grant agreement with Ecology within six months of the date of the offer letter. Grants will be effective no earlier than July 1, 2013.

**For more information**

Applications for aquatic weed projects are available online at http://www.ecy.wa.gov/programs/wq/plants/grants/index.html.

Please contact Ecology if you have any questions. You can ask questions and obtain a grant application and guidelines from Lizbeth Seebacher at Lizbeth.Seebacher@ecy.wa.gov or by calling 360-407-6838.

This e-mail and related attachments and any response may be subject to public disclosure under state law.

Clark County - Ron Wierenga to submit

City - to submit

Need: letter of support from - WDFW
HSL Advisory Committee

# Aquatic Weeds Management Fund Grants Overview

## Background

Invasive, non-native aquatic plants are a serious threat to the health of lakes, rivers, and streams throughout the state. Excessive weed growth impairs fish and wildlife habitat and restricts recreational activities. Traditionally, residents and property owners have borne the high costs of controlling these plants.

In 1991, the legislature established the Freshwater Aquatic Weeds Account to provide financial and technical support to tackle the problem on a statewide level. This Account provides funding for technical assistance, public education and grants to help control aquatic weeds. Revenue for the Account comes from a $3 increase in annual license fees for boat trailers.

## What Kind of Projects are Eligible for Grants?

Grant projects must address prevention and/or control of freshwater, invasive, non-native aquatic plants. The types of activities funded include: Planning, education, monitoring, implementation, pilot/demonstration projects, surveillance and mapping projects.

## Who can Receive Funding?

Cities, counties, state agencies, tribes, and special purpose districts (does not include lake management districts) are eligible to receive grants. Lakes groups and other private organizations must work in conjunction with their local governments to receive funding for projects.

## When Can I Apply for Grants?

Grant applications are accepted from October 1 through November 15 of each year during a formal application process. Grant applications are evaluated by people experienced with aquatic plant management. Funds are offered to selected applicants in the winter. Generally about $300,000 is available during each annual funding cycle.

An additional $100,000 is available on a year-round basis for "early infestation" grants. The purpose of early infestation grants is to provide immediate financial assistance to local or state governments to eradicate or contain an invasion of a non-native aquatic plant.

## What are the Special Requirements of this Fund?

**Local Match**

Local sponsors are required to provide 25 percent of the eligible project costs as a match to state funds. However, in-kind services can be used for up to one-half of the local share. Grants of up to 87.5 percent of the eligible project costs can be provided for early infestation projects and for pilot projects.

**Planning Before Implementation**

In waterbodies with well-established populations of non-native, invasive aquatic plants, the development of an integrated aquatic plant management plan is required before grants can be awarded for implementation (control projects). However, grants are available for the development of integrated aquatic plant management plans.

**Public Boat Launching Facilities**

Funds awarded for projects to control aquatic weed growth can be used only for water bodies that have public boat launching facilities. Water bodies designated fly fishing only by the Department of Fish and Wildlife are also eligible for Aquatic Weeds financial assistance.

**Grant Ceiling Amounts**

Funds are limited to $30,000 (state share) for planning grants and $75,000 (state share) for other projects. Each public body is limited to $75,000 per annual grant cycle and $75,000 for early infestation. Early infestation projects are limited to $50,000 per project.

## What are the State Funding Priorities?

Projects dealing with the prevention or management of freshwater invasive submersed plants like Eurasian watermilfoil or Brazilian elodea receive funding priority over projects dealing with nuisance native plants. Projects that implement an approved integrated aquatic plant management plan receive the highest priority. Other factors considered when evaluating projects include the environmental and economic impacts of the problem plants on the ecosystem, the degree that the project will benefit the public, the likelihood of the problem plant to spread to other water bodies, the long-term interest and commitment to the project by the waterbody residents, and state wide significance of the project.

## For More Information

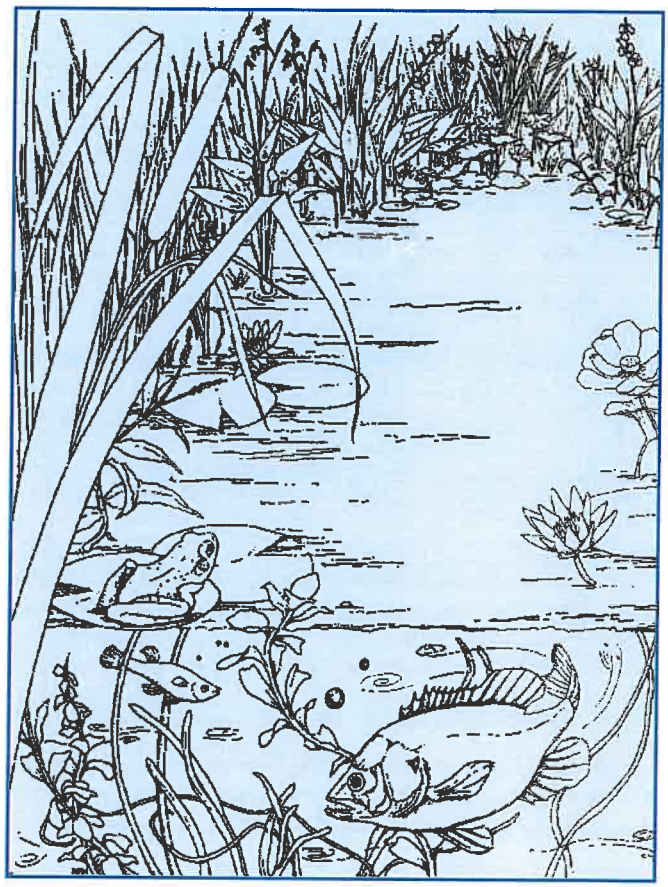
For more information about the Aquatic Weeds Management Fund or to find out how to apply for grant funds, contact:

Lizbeth Seebacher
Phone: (360) 407-6938
E-mail: Lizbeth.Seebacher@ecy.wa.gov

Mail:
Washington State Department of Ecology
Water Quality Program
Attn: Lizbeth Seebacher
Water Quality Program
P.O. Box 47600
Olympia WA 98504-7600

Copyright © Washington State Department of Ecology. See http://www.ecy.wa.gov/copyright.html.

# Aquatic Plants and Fish



publication #APF-1-98

# Hand Pulling, Raking and Cutting

Hand pulling is similar to pulling weeds out of a garden.

Rakes for aquatic plants usually have a rope attached to the handle to facilitate a longer swath of plant removal.

A nonmechanical weed cutter is two, single-sided stainless steel blades forming a "V" shape and connected to a handle which is tied to a rope. The cutter is then thrown out about 20 feet into the water. As the cutter is pulled through the water it cuts a 48-inch wide swath through the vegetation.

Raking shall not be conducted in Baker Lake and Lakes Osoyoos, Ozette, Pleasant, Quinault, Sammamish, Washington, or Wenatchee without prior authorization by WDFW, due to potential impact to sockeye spawning areas.

## Advantages

Site specific
Species specific (hand pulling)
Low impact to native plants (except raking)
Immediate plant removal
Low cost

## Disadvantages

Slow, labor intensive
Generates fragments
Not practical for large areas
Short-term turbidity increase

## Provisions

**The following provisions apply for both *aquatic noxious weed* and *beneficial plant* control or removal projects except where otherwise noted. This pamphlet serves as an HPA if all provisions listed below (in addition to the listed common technical provisions) are followed. If the intent of the project is to control aquatic beneficial plants the project must be done within the timing guidelines in Appendix F.**

**(page 54). Aquatic noxious weed control projects may be completed year-round. The pamphlet shall be on the job site at all times.**

- Common provisions 1, 2, 3, 4 and 5 (page 20).
- Due to potential impacts to sockeye spawning areas, prior authorization by the Department shall be required for raking in Baker Lake and Lakes Osoyoos, Ozette, Pleasant, Quinault, Sammamish, Washington, or Wenatchee. Authorization may or may not be given for raking, and if given may require mitigation through a written agreement between the applicant and the Department for impacts by raking to the spawning area.
- Work shall be restricted to the use of hand-pulling, hand-held tools or equipment, or equipment that is carried when used.
- Removal or control of aquatic beneficial plants to maintain an access for boating or swimming shall be allowed along a maximum length of 10 linear feet of the applicant's shoreline. Projects for boating and swimming which cover a larger area shall require prior authorization by the Department.
- Where possible, the entire plant shall be removed when using hand-pulling for aquatic noxious weeds.
- Existing fish habitat components such as logs, stumps, and large boulders shall not be removed or disturbed.

## Recommendations

Hand pulling is suitable primarily for small initial infestations and long-term maintenance projects. For noxious weed control it is most successful if you remove the entire plant, including the roots. Native plants should be left undisturbed as they will help control the growth of noxious weeds, and they provide benefits to fish and wildlife. Plant fragments generated during noxious weed removal must be carefully contained (using a net or similar device) and removed from the water to avoid re-rooting or drifting onshore. This technique is best conducted on calm days to minimize the movement of fragments offsite.

Use of hand cutters or rakes is also effective for small areas and for confined locations around docks and floats. Plant stems and fragments will float to the surface following cutting or raking and must be promptly removed from the water to avoid re-rooting at other locations. Use of these techniques should also be reserved for calm days to avoid plant

**stems and fragments from floating offsite during removal. Purple** loosestrife plant parts and roots must be removed from the site, however, permission is required to transport purple loosestrife. This is obtained by calling:

**Department of Agriculture**

Greg Haubrich
Weed Specialist
2015 South 1st St.
Yakima, WA 98903
(509) 576-3039, fax (509) 575-7858

For final disposal of purple loosestrife:

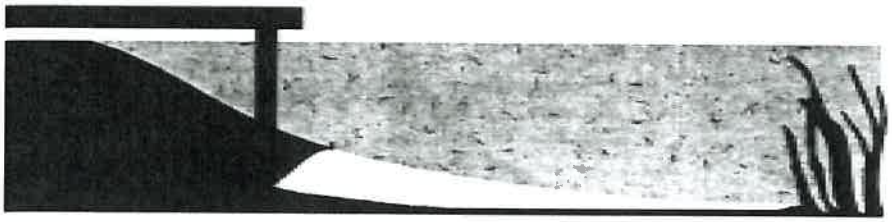
1. bag plant and roots,
2. allow plant material to dry and burn completely or,
3. deposit bagged material in landfill or other approved site.

To address long term plant management issues, the development of a VMP is recommended (page 7).

Hand pulling, raking and cutting is only allowed in small areas for beneficial plant control in recognitition of the spawning and rearing habitat they may provide for fish.

Because priority species of fish and/or wildlife may be present in the area of your proposed project, please refer to Appendix A: Priority Species on page 39, before you begin your project. You may also want to contact the WDFW Area Habitat Biologist for more information on priority species in your area.

# Bottom Barriers



A bottom barrier covers the sediment like a blanket. By blocking light, it reduces the growth of aquatic plants.

Note: Bottom barriers shall not be installed in Baker Lake, Lakes Osoyoos, Ozette, Pleasant, Quinault, Sammamish, Washington, or Wenatchee without prior authorization by WDFW, due to potential impact to sockeye spawning areas.

## Advantages

Immediate open water area

Site specific

Useful around obstructions

## Disadvantages

Not practical for large areas

Not species specific

May be damaged by boat anchors, fishing gear or harvesters

Fish spawning and benthic organism impacts

Maintenance required

Potentially hazardous to swimmers and boaters

## Provisions

**The following provisions apply for both *aquatic noxious weed* and *beneficial plant* control or removal projects except where otherwise noted. This pamphlet serves as an HPA if all provisions listed below (in addition to the listed common technical provisions) are followed. If the intent of the project is to control aquatic beneficial plants the project must be done within the timing guidelines in Appendix F (page 54). Aquatic noxious weed control projects may be completed year-round. The pamphlet shall be on the job site at all times.**

- Common provisions 4, 5, 6 and 8 (page 20).
- For removal and control of aquatic noxious weeds, bottom barrier or screen material shall not cover more than 50 percent of the length of the applicant's shoreline. Bottom barrier or screen projects covering a larger area shall require prior authorization by the Department. Bottom barrier or screen and anchor material consisting of biodegradable material may be left in place. Bottom barrier or screen and anchor material that is not biodegradable shall be completely removed within two years of placement to encourage recolonization of aquatic beneficial plants unless otherwise approved by the Department.
- To remove or control aquatic beneficial plants such that an access is maintained for boating or swimming, bottom barrier or screen and anchor material that is either biodegradable or non-biodegradable may be installed along a maximum length of 10 linear feet of the applicant's shoreline. Bottom barrier or screen projects for boating and swimming access which cover a larger area shall require prior authorization by the Department.
- Bottom barrier or screen material shall be securely anchored with pea-gravel filled bags, rock or similar mechanism to prevent billowing and movement offsite.
- Bottom barrier or screen and anchors shall be regularly maintained while in place to ensure the barrier or screen and anchors are functioning properly. Barriers or screens that have moved or are billowing shall immediately be securely reinstalled or removed from the watercourse.

## Recommendations

Use of bottom barriers is most appropriate for localized, small-scale or initial noxious aquatic weed infestations where control of all plants is desirable. Bottom barriers are recommended as a component of a weed control plan for early infestations of noxious weeds. This technique can be used in small, confined areas adjacent to docks or floats where mechanical control technologies may not be as effective.

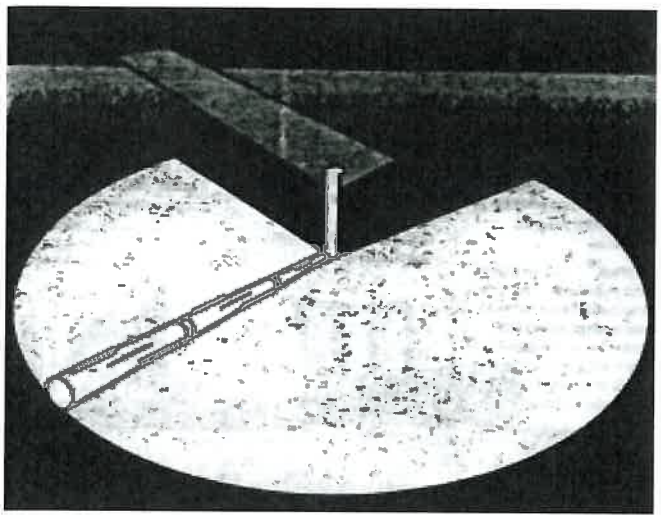
Barriers must be securely anchored to the bottom, using pea-gravel filled bags or rocks (not metal debris), and regularly maintained to prevent the creation of navigational hazards or danger to swimmers resulting from

billowing due to gas buildup. To address long term plant management issues, the development of a VMP is recommended (page 7).

Control of beneficial plants using bottom barriers is only allowed for small areas due to the use of aquatic vegetation for spawning and rearing by fish.

Because priority species of fish and/or wildlife may be present in the area of your proposed project, please refer to Appendix A: Priority Species on page 39 before you begin your project. You may also want to contact the WDFW Area Habitat Biologist for more information on priority species in your area.

# Weed Rollers



Weedrollers are useful for controlling beneficial plants only in a small defined area. This technique "wears down" weeds by frequent agitation. Weed rollers consist of a mechanically driven roller that sets on the lake bed and is moved across an arc up to 270 degrees by means of a small electrical power unit. Plants are detached from the soil or flattened (inhibiting growth) by the roller and attached fins.

Note: Weed rollers shall not be installed in Baker Lake, Lakes Osoyoos, Ozette, Pleasant, Quinault, Sammamish, Washington, or Wenatchee without prior authorization by WDFW, due to potential impact to sockeye spawning areas.

## Advantages

Site specific

Creates open area near dock

Low-cost operation (after initial purchase)

## Disadvantages

May interfere with fish spawning

Not species specific

Generates fragments

Short-term turbidity increase

Expensive to purchase

Requires maintenance

## Provisions

**The following provisions apply for both *aquatic noxious weed* and *beneficial plant* control or removal projects except where otherwise**

**noted. This pamphlet serves as an HPA if all provisions listed below (in addition to the listed common technical provisions) are followed and the project is conducted within the timing guidelines in Appendix F (page 54). The pamphlet shall be on the job site at all times.**

- Common provisions 1, 2, 3, 4, 5, 6 and 8 (page 20).
- Weed rollers shall not be used to remove an aquatic noxious weed early infestation. To remove or control all other infestation levels of aquatic noxious weeds, weed rollers shall not cover an area of more than 2,500 square feet. Weed roller projects covering a greater area shall require prior authorization by the Department.
- Where the intent is to remove or control aquatic beneficial plants, prior authorization by the Department shall be required.

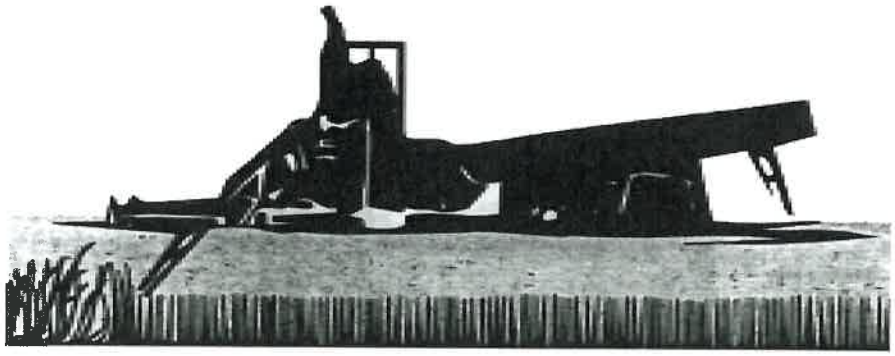
## Recommendations

Weed rollers are best used when control of all aquatic plants is desired. The area should be hand pulled before installing the weed roller. Following this, they may be used when necessary to maintain an area clear of plants. This pattern of use will minimize the production of plant fragments. Food grade oil is recommended to be used in the weed roller motor where possible.

To address long term plant management issues, the development of a VMP (page 7) is recommended. Prior authorization to use weed rollers for beneficial plant control is required due to the spawning and/or rearing habitat provided by this vegetation for fish.

Because priority species of fish and/or wildlife may be present in the area of your proposed project, please refer to Appendix A: Priority Species on page 39, before you begin your project. You may also want to contact the WDFW Area Habitat Biologist for more information on priority species in your area.

# Mechanical Harvesting and Cutting



**Mechanical harvesters** are large floating machines that cut and collect aquatic plants. **Mechanical weed cutters** cut aquatic plants several feet below the water's surface but do not collect the plants while the machinery operates. Mechanical harvesters and/or cutters are not appropriate techniques to address early infestations of aquatic noxious weeds.

## Advantages

Minimum bottom disturbance

Immediate plant removal to cutting depth

Materials may be composted

Reduces nutrient loading (if cut material is immediately removed from water)

## Disadvantages

Plant disposal problems

Generates plant fragments

Fish and invertebrate mortalities

Repeated treatments necessary (like lawn mowing)

Does not reduce plant density

Not species specific

## Provisions

**The following provisions apply for both *aquatic noxious weed* and *beneficial plant* control or removal projects except where otherwise noted. This pamphlet serves as an HPA if all provisions listed below (in addition to the listed common technical provisions) are followed and the project is conducted within the timing guidelines in Appendix F (page 54). The pamphlet shall be on the job site at all times.**

- Common provisions 1, 3, 4, 5, 6 and 7 (page 20).
- Mechanical harvesters and cutters shall not be used to remove an aquatic noxious weed early infestation.
- If the intent of the project is to remove aquatic beneficial plants, prior authorization by the Department shall be required.
- Mechanical harvester and cutter operations shall only be conducted in waters of sufficient depth to avoid bottom contact with the cutter blades.
- Mechanical harvesters and cutters shall be operated at all times to cause the least adverse impact to fish life.
- Mechanical harvesters and cutters shall be well-maintained and where practicable, food-grade oil in the hydraulic systems should be used.
- Fish life that may be entrained in the cut vegetation during mechanical harvester operations shall be immediately and safely returned to the watercourse.

## Recommendations

Mechanical cutters and harvesters are not recommended for control of early infestations of aquatic noxious weeds due to the high potential for rapid spreading of fragments to other areas of the water body.

Harvest operators should be properly trained to operate the equipment to be used. Operators should also carry and be trained in the use of containment equipment. Individuals hiring harvesters should request to see maintenance logs for decontamination of equipment. To address long term plant management issues, the development of a VMP is recommended (page 7).

Because priority species of fish and/or wildlife may be present in the area of your proposed project, please refer to Appendix A: Priority Species on page 39, before you begin your project. You may also want to contact the WDFW Area Habitat Biologist for more information on priority species in your area.

# Diver Dredging

Diver dredging utilizes a small barge or boat carrying portable dredges with suction heads that are operated by SCUBA divers to remove individual rooted plants (including roots) from the sediment. Divers physically dislodge plants with sharp tools. The plant/sediment slurry is then suctioned up and carried back to the barge through hoses operated by the diver. On the barge or boat, the plant parts are sieved out and disposed of off-site. The water sediment slurry is filtered and discharged back to the water or piped off-site for upland disposal.

Note: Diver dredging shall not be conducted in Baker Lake, Lakes Osoyoos, Ozette, Pleasant, Quinault, Sammamish, Washington, or Wenatchee without prior authorization by WDFW, due to potential impact to sockeye spawning areas.

## Advantages

Site specific

Species specific

No depth constraints

Used near obstacles

## Disadvantages

Labor intensive

Slow

Potential fragment production

Temporary bottom disturbance and increased turbidity

Expensive

## Provisions

**The following provisions apply for both *aquatic noxious weed* and *beneficial plant* control or removal projects except where otherwise noted. This pamphlet serves as an HPA if all provisions listed below (in addition to the listed common technical provisions) are followed. Aquatic noxious weed control projects may be completed year-round. Aquatic beneficial plant removal or control projects shall be completed within the timing guidelines in Appendix F (page 54). The pamphlet shall be on the job site at all times.**

- Common provisions 2, 3, 4, 5, 6, 7 and 8 (page 20).
- If the intent of the project is to remove or control aquatic beneficial plants, prior authorization from the Department shall be required.

- Dredging shall be conducted at all times with dredge types and methods that cause the least adverse impact to fish life.
- Dredges shall be well-maintained and where practicable, food-grade oil in the hydraulic system should be used.
- Upon completion of the dredging, the bed shall not contain pits, potholes, or large depressions to avoid stranding of fish.
- Removal of plants and plant fragments from the watercourse shall be as complete as possible. This is especially important when removing or controlling aquatic noxious weeds. Plants and plant fragments shall be removed from the dredge slurry prior to its return to the watercourse. Dredged bed materials, including detached plants and plant fragments, shall be disposed of at an upland disposal site so as not to reenter state waters.
- A hydraulic dredge shall only be operated with the intake at or below the surface of the material being removed. The intake shall only be raised a maximum of three feet above the bed for brief periods of purging or flushing the intake system.

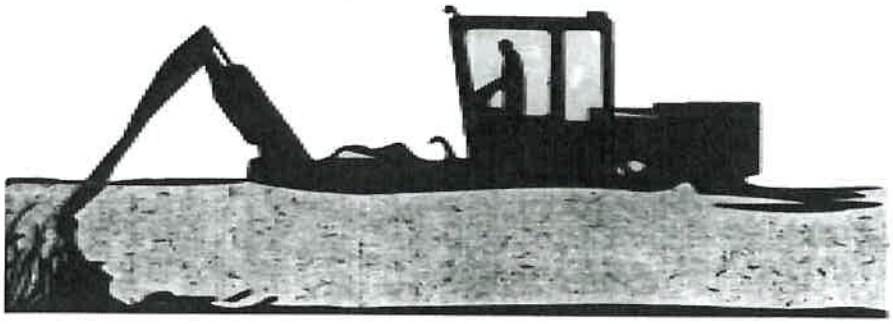
## Recommendations

Considered a selective technique, diver dredging is particularly well suited for low-level, early infestations of aquatic noxious weeds. It can also be used to assist in long term maintenance following herbicide treatments. Diver dredging is not recommended for use to control aquatic beneficial plants.

A temporary water quality modification permit from Ecology and a shoreline permit from your local jurisdiction (city or county) may be needed (page 17). A permit from the Corps of Engineers may also be required. To address long term plant management issues, the development of a VMP is recommended (page 7).

Because priority species of fish and/or wildlife may be present in the area of your proposed project, please refer to Appendix A: Priority Species on page 39, before you begin your project. You may also want to contact the WDFW Area Habitat Biologist for more information on priority species in your area.

# Rotovation



Rotovators are floating machines that use underwater rototiller-like blades to uproot aquatic plants. Rotovation is not an appropriate technique for addressing early infestations of aquatic noxious weeds.

## Advantages

Potentially removes entire plant

Generally reduces plant density

May increase growth of native species

## Disadvantages

Generates plant fragments

Not species specific

Fish and invertebrate mortalities

Bottom disturbance with increased turbidity

Bottom obstructions limit use

Potential release of toxic substances and nutrients from sediments

## Provisions

**An individual HPA is required for all rotovation projects.** Technical provisions for rotovation projects can be found in WAC 220-110-336.

## Recommendations

Rotovation is most suitable for use in larger lakes or in rivers due to the size of the equipment and the high cost. It may be conducted year-round depending upon location and fish species present, however, it is generally most effective when conducted in the winter and spring during reduced plant growth. Because rotovators "dig" into the sediments and may cause disruption to buried utility lines or water intake pipes,

it is recommended that all such utilities be located prior to beginning work. Rotovation should not be used in areas with early infestations of aquatic weeds due to the high potential for spreading of plant fragments. Individuals hiring rotovators should request to see maintenance logs for verification of decontamination of equipment.

To address long term plant management issues, the development of a VMP is recommended (page 7).

Because priority species of fish and/or wildlife may be present in the area of your proposed project, please refer to Appendix A: Priority Species on page 39, before you begin your project. You may also want to contact the WDFW Area Habitat Biologist for more information on priority species in your area.