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CLEAR AND BEAVER LAKE

INTEGRATED AQUATIC VEGETATION

MANAGEMENT PLAN



Clear Lake, Washington



Beaver Lake, Washington



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MANAGEMENT PLAN

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Clear and Beaver Lake Communities

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EXECUTIVE SUMMARY

Clear and Beaver Lakes, located in the lower East Fork Nookachamps Watershed, are heavily infested with invasive aquatic plants, including Eurasian watermilfoil and Fragrant Water Lily. Citing a number of problems associated with the dense growth of aquatic plants, a group of lakeside residents from Clear Lake requested assistance from Skagit County Public Works to control Eurasian watermilfoil and Fragrant water lily to promote recreational, aesthetic, and environmental values of the lake. In 2005, the County received a Department of Ecology Aquatic Weed Management Fund grant to develop an Integrated Aquatic Vegetation Management Plan (IAVMP) for Clear and Beaver Lakes.

Eurasian watermilfoil (*Myriophyllum spicatum*), is a submersed aquatic noxious weed that proliferates to form dense surface mats of vegetation in the littoral zone of lakes and reservoirs. It reproduces by fragmentation and rhizomes, and is easily spread when fragments “hitch-hike” on boat props and trailers that move between lakes. Once introduced, *M. spicatum* can degrade the ecological integrity of a water body within a few growing seasons. Dense stands of milfoil crowd out native aquatic vegetation, which in turn alters predator-prey relationships among fish and other aquatic organisms. *M. spicatum* can also reduce dissolved oxygen concentrations by inhibiting mixing in areas where it grows. Oxygen levels are further depleted by bacteria that consume oxygen when the plant begins to decompose at the end of the growing season. Decomposing milfoil adds nutrients into the water that could potentially lead to increased algal growth and related water quality problems. Dense mats of *M. spicatum* can increase water temperatures by absorbing more sunlight, create mosquito breeding areas, and negatively affect recreation activities enjoyed by lake users including swimming, boating, and fishing.

Fragrant water lily (*Nymphaea odorata*) is a floating leaved, rooted aquatic plant that colonizes shallow areas of lakes, reservoirs, shallow ponds, and slow moving streams. *N. odorata* can be recognized by the fragrant white, pink to purple, flowers that float on the water surface and large round floating leaves that have a distinctive slit on one side. Although the roots, leaves, and seeds provide food for wildlife and waterfowl, *N. odorata* can be a nuisance in shallow lakes with a large littoral zone by decreasing water movement, increasing siltation rates, and impeding recreational opportunities for lake users.

This IAVMP is a comprehensive planning document that considers the best available information about the waterbody and watershed characteristics of Clear and Beaver Lakes prior to selecting and implementing a community-based integrated aquatic plant

control strategy. The IAVMP must be accepted by the Advisory Committee, then is presented to the Board of Skagit County Commissioners for formal adoption.

Once the communities have had a chance to review and comment on the IAVMP, the advisory committee will develop a rate structure to pay for the agreed upon implementation strategy that will extended for the next 10 years. For formation of a district, a vote by all landowners that would be affected by the assessment is held. The number of votes that each person receives is based upon the assessed value of his/ her property (ex. Assessed value of \$10,000 receives 10,000 votes). If a majority of the landowners vote in favor of formation everyone must pay the assessment.

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PROBLEM STATEMENT

Due to the prolific growth of the aquatic invasive species, Eurasian watermilfoil (*Myriophyllum spicatum*) and Fragrant water-lily (*Nymphaea odorata*), Clear and Beaver Lakes experience degraded aesthetic, recreational, and ecological qualities that are valued by the lakeside community and public users. The recent discovery of a pioneering colony of Brazilian elodea (*Egeria densa*) poses an additional threat to natural and recreational resources of both lakes and downstream waterbodies. Located within the 100-year Skagit River floodplain, these highly invasive aquatic plants could potentially impact downstream waterways that provide important habitat for fish and wildlife by crowding out native plant species and degrading water quality. Implementation of aquatic plant management efforts to control Fragrant water-lily and eradicate Eurasian watermilfoil and Brazilian elodea would benefit the lake community by restoring natural lake conditions, as well as prevent the spread of invasive species to other waterbodies throughout the region.

The lakes are clustered approximately 6 miles south of Sedro Woolley on Hwy 9 near the Town of Clear Lake. The lakes are situated within a sub-basin of the Nookachamps Creek watershed, the first important salmon-producing tributary in the Skagit River watershed, which provides significant habitat for successful wild Coho salmon stocks (Skagit County Dept. of Planning 1995). Land use around Clear Lake is a combination of urban and rural residential development with large areas of private forest land and extensive freshwater forested/shrub and emergent wetlands along the east shoreline. There are two public¹ recreation facilities on Clear Lake: a public boat ramp on the north side of the lake and a swimming area maintained and operated by Skagit County Parks and Recreation. Beaver Lake, on the other hand is largely undeveloped due to the presence of extensive intact freshwater forested/shrub and emergent wetlands that have been mapped by the National Wetland Inventory. Lakeside parcels are privately owned with the exception of the WDFW public boat ramp, which provides fishing, hunting, and wildlife viewing opportunities for public users. Property owners of lakeside property around Beaver Lake either live outside of the area or are significantly set back from the shoreline and have limited direct lake access for recreation.

Eurasian watermilfoil was first observed in Clear Lake in 1994 during an aquatic vegetation survey conducted by the Department of Ecology; however, it is unclear when the invasive species was introduced. Large patches of Eurasian watermilfoil are

present throughout the littoral zone in Clear Lake, especially at the fringes of the extensive bands of Fragrant water-lily that parallel the lake's shoreline.

Eurasian watermilfoil was first observed in Beaver Lake during an aquatic plant and milfoil weevil survey conducted in 1999 as part of the State-wide Lake Monitoring Program (Parsons 2005). The dense surface mats of milfoil at Beaver Lake are evenly distributed throughout the lake and inhibit boat access. A small pioneering colony of Brazilian elodea was discovered in a small cove along the northwest shoreline of Beaver Lake on September 8, 2005 by EnviroVision scientists conducting an aquatic vegetation survey of the lake. According to the survey, the patch of Brazilian elodea appears to be limited to less than a ¼ acre in size. Fragrant water-lily is not a significant management concern at Beaver Lake at this time. The extensive aquatic plant growth at Beaver Lake impedes recreational fishing opportunities.

A hardy, prolific plant species, Eurasian watermilfoil forms dense surface mats that crowd out native vegetation, reduce biodiversity, impair water quality, decrease valuable wildlife habitat, limit recreational access, and diminish aesthetics. Like Eurasian watermilfoil, Brazilian elodea is a prolific, non-native aquatic plant that forms monospecific stands that crowd out native aquatic plants, as well as inhibit recreational uses enjoyed by lake users and shoreline residents. Brazilian elodea is a highly adaptable plant that can grow in lakes, as well as slow moving streams. Infestations of Brazilian elodea are known to significantly increase plant biomass in lakes, alter water quality, limit water movement, and increase sedimentation rates. Eradication of Brazilian elodea is necessary to prevent its spread to other Skagit County lakes and waterways, as well as to restore the environmental quality of Beaver Lake. Left untreated, the infestation of Eurasian watermilfoil and Brazilian elodea will continue to significantly reduce the aesthetic, recreational, and ecological characteristics that are valued by lakeside residents and public users of the lakes.

As a group these invasive plants:

- ❖ Pose a safety hazard to swimmers and boaters by entanglement.
- ❖ Crowd out native plants, creating monocultures lacking in biodiversity.
- ❖ Impair water quality by decreasing dissolved oxygen and increasing temperature and pH.
- ❖ Significantly reduce fish and wildlife habitat important to the integrity of the lake ecosystem.

- ❖ Pose a threat to adjoining ecosystems.

The community at Clear Lake has expressed interest in restoring Clear and Beaver Lakes to their natural condition beginning with the eradication of noxious aquatic weeds, including Eurasian watermilfoil, Brazilian elodea, and Fragrant water-lily. As evidenced by the signing of a petition, the Clear Lake community is willing to explore the idea of forming a Lake Management District to finance the integrated control strategy identified in this Integrated Aquatic Vegetation Management Plan. Although Beaver Lake property owners are not opposed to the idea of eradicating Eurasian watermilfoil and Brazilian elodea in Beaver Lake, they do not benefit directly from the implementation of the project goals and are involved in the process to ensure that their community's values are considered in the development of this plan. The community recognizes the potential for re-infestation following the initial control efforts and is committed to developing an early detection and prevention program to prevent that occurrence.

MANAGEMENT GOALS

The overall management goal is to eradicate Eurasian watermilfoil (*Myriophyllum spicatum*) from Clear and Beaver Lakes and Brazilian elodea (*Egeria densa*) from Beaver Lake, to prevent the spread of the noxious weed to downstream waterbodies during flood events, as well as other lakes in Skagit County and Washington State, and to control Fragrant water-lily (*Nymphae odorata*) to facilitate increased access to the lake for recreational users. Implementation of this project will also allow native plant and animal communities to thrive, decrease negative impacts to water quality conditions, preserve the recreational opportunities provided by the lakes, and restore the aesthetic beauty of the lakes through the control and elimination of aquatic noxious weeds.

The five strategies identified below will ensure success in achieving the stated goal of the community:

1. Involve the community in the management process.
2. Use the best available science to identify and understand the likely effects of management actions on aquatic and terrestrial ecosystems prior to implementation.
3. Evaluate the effectiveness of management actions.
4. Amend the management strategy as necessary to achieve the stated goals of the community.
5. Provide information about lake stewardship and aquatic plants to the community to sustain the lakes valuable resources while facilitating the prevention and early detection of aquatic invasive species in Clear and Beaver Lakes.

Details associated with the implementation of the management objectives are provided in subsequent sections of this plan.

PROJECT HISTORY

Community Involvement

In the summer of 2004, a group of residents contacted Skagit County Commissioner, Ted Anderson, regarding problems associated with the prolific growth of Eurasian watermilfoil (*Myriophyllum spicatum*) and fragrant water lily (*Nymphaea odorata*) at Clear Lake. Lakeside residents and lake users noted that dense stands of milfoil and extensive bands of Fragrant water-lily hinder lake access for recreation and visual enjoyment. In response, the County met with a small representative group of local residents to discuss the problem and potential alternatives, including planning requirements and financing options associated with aquatic plant management. At this meeting, it was determined that, due to the hydrological connectivity of Clear and Beaver Lakes, any successful treatment strategy to eradicate invasive species in Clear Lake must address the infestation at Beaver Lake.

The lakeside residents at Clear Lake demonstrated willingness to plan for and implement an Integrated Aquatic Vegetation Management Plan (IAVMP) to control and/or eradicate noxious aquatic plants, as evidenced by the signing of a petition (Appendix I). Subsequently, Skagit County applied for and received a grant from the State's Aquatic Weed Management Fund that supports the Clear and Beaver Lakes IAVMP Development Project. An advisory committee composed of lakeside residents representing both lake communities was established to guide the development of the IAVMP.

Summaries of planning and public meetings held are provided below. The agendas, sign-in sheets, and minutes are provided in Appendix II.

Planning Meeting #1 – May 9, 2005

Property owners interested in aquatic plant management at Clear Lake met with Skagit County staff during this meeting to review the process for developing an IAVMP and forming an Advisory Committee.

County staff informed those present that the County successfully acquired grant funding for the IAVMP. To assist the community, the County would provide the required matching fund. Following a discussion regarding the process for developing

the IAVMP, several questions were raised about aquatic plant control techniques, as well as funding mechanisms for implementing the IAVMP once completed.

The next meeting was scheduled to take place on June 13th, 2005 at 2:00pm.

Planning Meeting #2 – June 13, 2005

The purpose of this meeting was to discuss progress made on forming an Advisory Committee and to draft a problem statement for the IAVMP.

The group decided that Advisory Committee representation should be diverse and include property owners from both lake groups at differing locations around each lake. This measure will help to ensure that all viewpoints will be represented during Advisory Committee meetings. The group decided to hold a community meeting at the Rita and Lee Johnson's residence to seek approval for members and address questions associated with aquatic plant management. It was decided that County staff would not be present at that meeting.

Members present participated in brainstorming ideas for the problem statement. The group listed several user groups and identified four categories that embody the main problems posed by noxious aquatic plants. Safety impairment due to dense stands of submerged and floating leaved plants was the most important issue identified. Ecology of the lakes was identified as an important issue for the group. Disruption of predator/prey relationships, water quality degradation, and habitat loss were among the specific ecological concerns referenced. Loss of recreation opportunities at Clear Lake represents a concern for the lake community because dense plant populations around the lake margins interferes with swimming, boating, and fishing activities enjoyed by lakeside residents and public users. At Beaver Lake, dense Eurasian milfoil growth throughout the lake prohibits public lake access for motorized boating and severely impairs fishing opportunities. Lakeside residents enjoy the aesthetic benefits of living near Beaver Lake; however, they do not have docks and do not utilize the lake for fishing or boating activities. Finally, Clear Lake residents complained about the unsightliness of fragrant water lily and Eurasian watermilfoil.

Following the discussion of problems faced by the lakes, the group discussed the long-term management goals for the lakes. At Clear Lake, there is interest in conducting a whole-lake restoration project that includes water quality and ecological improvements. Specific mention was given to removing the pilings remnant of the Georgia Pacific mill operation. These pilings are known to alter predator/prey relationships among fish.

Mention was also given to reducing nutrient inputs associated with lakeside development, especially leaky septic systems.

The meeting ended after the group decided to meet on July 18, 2005 to review the draft problem statement, solidify the management goals, and begin discussing the forum for the first public meeting.

Planning Meeting #3 – July 18, 2005

The purpose of this meeting was to discuss the results of the previous community meeting, review the draft problem statement, solidify the management goals, and discuss the forum for the first public meeting.

Due to the presence of new faces, a brief overview of the project history and the aquatic plant management process was provided. The individuals representing Beaver Lake expressed that they were not interested in providing financial support for aquatic plant management because they would not derive a direct benefit from such efforts. The process for Lake Management District (LMD) formation, according to RCW 36.61 was briefly reviewed, and it was explained that the community will have a good measure of flexibility in determining the LMD assessment rate structure if a LMD is approved.

During the review of the problem statement and management goals, Beaver Lake residents present requested that the language be modified to clearly show that the goals of the Beaver Lake community do not reflect those at Clear Lake. The residents from Beaver Lake expressed that they do not experience any problems associated with noxious weed growth and reiterated that they do not support any effort that would require their financial commitment.

The draft management goals were reviewed and everyone present agreed that the goals, as stated, would ensure the success of the IAVMP if implemented.

A date for the first public meeting was set for September 20, 2005 at 6:00 p.m. at the Clear Lake Covenant Church. The purpose of the public meeting would be to introduce the IAVMP planning progress and solicit feedback from the community.

Planning Meeting #4 – September 12, 2005

This meeting represented the first official meeting of the Advisory Committee. The meeting was called to update new members in the planning group to the progress made on the IAVMP to date, as well as to discuss changes to the problem statement due to the discovery of Brazilian elodea in Beaver Lake.

During the review of progress made on the IAVMP residents from Beaver Lake clearly stated that any benefit derived from the aquatic plant management efforts at Beaver Lake would be fish and wildlife habitat improvement and noxious weed re-infestation prevention for Clear Lake. When asked if the management goals should be explained differently for the IAVMP, the majority of the group indicated that the section should not be changed.

Beaver Lake residents also called into question the ownership of the lake. Due to the court's ruling in a 1964 lawsuit, one Beaver Lake resident indicated that the lake is privately owned, despite the presence of a WDFW public boat ramp. Copies of the lawsuit were distributed to Stephanie Woolett, Rob Janicki, Ron Walt, and Stan Buchanan.

The public meeting scheduled for September 20, 2005 was postponed due to problems with the venue and short advertising notice. The group suggested that it would be helpful to have a guest speaker from one of the Skagit LMDs to talk about the successes and challenges faced by his/her lake community. This would facilitate greater understanding of the process.

At the close of the meeting, Stephanie indicated that she will work with the County's GIS Department to develop a Beneficial Use Area map that shows spawning areas, shellfish beds, fishing grounds, and swimming areas.

Public Meeting #1 – November 3, 2005

The purpose of this meeting was to introduce the IAVMP Development project and to solicit community feedback regarding the Problem Statement and Management Goals. In total, there were 19 community members and County staff present.

The meeting began with the introduction of Stephanie Woolett, the Skagit County Water Resources Technician, primary author of the IAVMP.

Following a brief project history, Woolett delivered a presentation using PowerPoint to provide an overview of the local watershed and the pros and cons of managing the plant life within it. For clarification, she explained that the initial efforts began with goal of controlling invasive aquatic plants at Clear Lake; however, the hydrological connectivity of Clear & Beaver Lakes necessitates the inclusion of Beaver Lake in order to achieve success at Clear Lake.

Subsequent to describing the elements of an IAVMP and providing an overview of the Problem Statement and Management Goals, the community was provided the opportunity to ask questions and comment on the project.

A brief summary of questions and comments regarding the presentation are provided below:

- One citizen inquired about the timeline of the IAVMP. Woolett explained the process could take up to June 2006. Once the plan is completed, it will be reviewed by the Department of Ecology for the State's approval, and then be adopted by the Board of Skagit County Commissioners. Implementation of the plan is contingent upon a positive vote of the community to form a Lake Management District (LMD). An LMD is a self-taxing district established by the affected community that will provide the primary financing mechanism for aquatic plant control at the lakes. Additional funding for the IVAMP will be sought through state grant applications.
- A Beaver Lake resident raised the point that implementing an aquatic plant control strategy would need to be paid for by the community. Members should consider that not all lakeside property owners enjoy lake access, as is the case with Beaver Lake. In the event a LMD is formed, homeowners would be subject to penalties for not paying the tax on time, such as a lien. Woolett acknowledged the concern and indicated that these are considerations that the community should be mindful of when determining whether or not to support LMD formation.
- A Beaver Lake resident inquired about the lake's ownership and stated that Beaver Lake residents are not in agreement that plants should be managed. He expressed his belief that the lake is privately owned and that, according to a lawsuit brought forward in the early 1960's, aquatic plant management is not permissible. Woollett indicated that all surface waters are owned by the state and that she will look into the lawsuit.

- Another resident questioned the length of time it takes for an infestation to occur. Woollett replied that infestations of Eurasian watermilfoil and Brazilian elodea can be very rapid, possibly occurring within one growing season.

Marsha Flowers, the Advisory Committee chairperson for Lake Management District #3, spoke about the aquatic plant management efforts undertaken by the lakeside community at Lakes Erie and Campbell. The purpose of this presentation was to provide the audience with the opportunity to hear from someone who has been personally involved in lake management in her own community. She explained that like Clear and Beaver Lakes, Lakes Erie and Campbell are hydrologically connected by a small stream that is a conduit for plant fragment transport between the lakes. The lake community developed an IAVMP and implemented a treatment strategy that included herbicide treatments to remove the plants, as well as grass carp stocking to maintain a plant community that balances benefits to fish, wildlife, and recreation. The success of aquatic plant management efforts at Lakes Erie and Campbell is due to the community's willingness to stay involved. Volunteers hand out educational brochures, clean the fish screens, and hand-remove early infestations of weeds when observed.

To conclude the meeting, the Advisory Committee was introduced to the community. Everyone present was provided with a form for written comments to facilitate greater communication regarding the IAVMP Development project.

Public Meeting #2 – February 8, 2006

The main objective of this public forum was to present the control alternatives available to combat Eurasian watermilfoil, Brazilian elodea, and fragrant water lily. Community feedback provided during the meeting was used to develop the integrated control strategy to manage the problem plants.

During this meeting, several questions were raised by community members regarding the cost and environmental impacts of aquatic plant control alternatives. Due to the small size of the lakeside community, it is important that the control alternatives implemented to control noxious weeds are affordable. Furthermore, the lakeside property owners at Beaver Lake represented their view that aquatic plant management charges should only be assessed against properties at Clear Lake that enjoy lake access. Water use restrictions for the aquatic herbicides were another popular topic because of concerns relating to health and environmental effects of the chemicals.

Planning Meeting #5 – February 16, 2006

The purpose of the meeting was to review past business regarding the IAVMP status, finalize the Problem Statement and Management Goals, and review the control alternatives for noxious weed control for both Beaver and Clear Lakes. Lastly, the development process of a Lake Management District was discussed.

The first item discussed was Woolett's departure from the County. Ric Boge, Skagit County Public Works Surface Water Manager, explained that Chris Kowitz, Water Resources Technician, would be the interim contact.

Woolett provided an overview of the progress on the IAVMP and what's next in the process. She talked briefly about the public meeting held on February 8, 2006 regarding control alternatives. Each control alternative was discussed and then a verbal "yes" or "no" from the committee was recorded. No one was in favor of the 'no action' alternative; although, there was discussion and questions about what would happen if the committee did nothing. Everyone concurred that the 'preventative' alternative should be examined, but no implementation strategy was decided upon. The 'chemical' alternative was chosen as the main mechanism for controlling noxious plants in both lakes: Glyphosate, Sonar, and Diquat were the chemicals agreed upon. Manual control was discussed and will be used to control Brazilian Elodea in Beaver Lake. It was also decided that this may be used around docks and obstructions for water lilies. In the event new infestations of Eurasian milfoil or Brazilian elodea are discovered following the initial herbicide treatments, hand removal should be employed; however, care must be taken to collect and properly dispose of all plant fragments. The group decided to include the purchase of one hand-cutting device as part of the integrated strategy. This will be an experiment and more may be purchased depending on its success for localized lily control. Some interest was expressed in using the Mifoil Weevil as a biological control, especially if they are native to Northwest lakes. Stephen Burgess motioned to include the control methods listed above in the integrated strategy for the IAVMP, Brian Adams seconded it, and the motion carried with none opposed.

Woolett read the Management Goals and Problem Statement to the group and asked for feedback. It was suggested that an amendment be added to include common names for the noxious aquatic plants. Adams made a motion to accept the Management Goals and Problem Statement, Burgess seconded the motion, and it carried with none opposed. Boge then suggested that the group elect a Chairperson and note-taker. Mike Janicki was nominated for Chairperson by Adams, Gretchen Hunter seconded the

motion and it carried with none opposed. The group decided to table nominations for a note-taker until a later date.

Numerous issues were discussed throughout the meetings that were not directly related to the meeting's objectives. There were questions and discussions regarding lake ownership, liability and who actually owns the water and lake bottom. Ron Walt was under the impression that he did, in fact, own the lake bottom on his parcels around Beaver Lake. Adams said he would send Woolett an RCW regarding liability in water-bodies. Water rights versus water ownership were also discussed at length. Further clarification on these issues was requested by the Committee.

The Beaver Lake community members on the Committee once again reiterated the point that they do not feel like they should be taxed for this work. Some also thought the County should pick up some, if not all, of the cost associated with noxious weed removal. Janicki indicated that the group should agree that Beaver Lake residents, because they do not have docks for lake access, do not benefit from aquatic plant management and should not have to pay. Burgess voiced his disagreement, citing that removal of noxious weeds may increase property values and that this matter should be investigated prior to agreeing that Beaver Lake residents should not be included in the assessment pool for a proposed Lake Management District (LMD).

Lastly, Woolett passed out copies of RCW 36.61, the statute for Lake Management Districts. She asked the Advisory Committee to review these documents before the next meeting. The committee requested that a warm-water fisheries biologist from WDFW be present at the next meeting to answer questions about fisheries management at Clear & Beaver Lakes. Specific reference was given to warm water versus cold water fisheries management.

Planning Meeting #6 – May 18, 2006

The purpose of this meeting was to receive a presentation from the WDFW Inland Fish Biologist, review and approve the final draft IAVMP, and discuss the next step in the LMD formation process.

Mark Downen provided a presentation to the Advisory Committee on the warm water fish management of Clear and Beaver Lakes. Downen discussed past rehabilitation efforts at Clear Lake and the current fish populations. Regarding vegetation management, Downen emphasized that neither too much vegetation nor too little will

provide a healthy fish habitat. Following a brief description of the Clear and Beaver Lakes IAVMP by the Advisory Committee, Downen expressed support for the goal to eradicate noxious weeds like Eurasian Milfoil and Brazilian elodea.

Mike Janicki (Chair) asked the Committee if anyone had comments or questions regarding the final IAVMP draft comments that were submitted after the last meeting. With no questions from the members present, Janicki asked if there was a motion to skip the comment by comment review and to adopt the draft as written. Hunter made a motion to adopt the plan as written. Susan Swetman then seconded the motion. As a result, the final draft of the IAVMP was officially accepted by the Advisory Committee.

Planning Meeting #7 – June 8, 2006

The Clear & Beaver Lakes Advisory Committee meeting commenced at 2:25 p.m. at the Skagit County Public Works office. The purpose of this meeting was to review the draft funding scenarios for Clear and Beaver Lakes as compared to the existing three LMDs and to discuss available possibilities.

Matt Barrett, Surface Water Management Intern, prepared four possible funding scenarios for the treatment strategy outlined in the IAVMP. These four scenarios were based on the roll and rate structure for the existing three lake management districts. Barrett presented these scenarios to the Advisory Committee and answered related questions.

The Advisory Committee determined that the Lake Campbell/Erie (LMD#3) most closely matched the financial need for the proposed treatment strategy. The Advisory Committee made several modifications to the original LMD #3 scenario. The revised scenario includes the following information:

- a.) Residential and undeveloped parcels are assessed \$195 (\$195 x 1 unit)
- b.) Public and private parcels that provide access to the lakes are assessed \$390 (\$195 x 2 units)
- c.) Parcels zoned as “Open Space Farm and Agriculture” are assessed \$390 (\$195 x 2 units)
- d.) Commercial parcels are assessed \$975 (\$195 x 5 units)
- e.) Public boat launches are assessed \$3,900 (\$195 x 20 units)
- f.) Beaver Lake parcels, except WDFW are assessed \$0.

Janicki proposed that he be assessed for the number of zoned lots, not necessarily the number of parcels. This would result in Janicki (Cultus View, LLC) being assessed an additional 14 units for parcel #P23290. Furthermore, the Advisory Committee formally

determined that Beaver Lake parcels, with the exception of public boat launches and public access, will be assessed \$0.

Walt expressed his concern that he was not notified of the May 18, 2006 meeting in which the final draft IVAMP was approved by the Committee. Walt informed the Committee that he was disappointed to miss the speaker from WDFW and that his comments to the plan were not seriously reviewed. Janicki informed Walt that his concerns would be addressed at the public meeting and See stated that the draft comments would be included in the final IAVMP appendices.

Public Meeting #3 – June 14, 2006

The purpose of this meeting was to present the draft IAVMP and action strategy to the community for its concurrence. The goal was to solicit feedback and make amendments to the IAVMP in the event community feedback warrants changes. Approximately 17 individuals attended in which a slide show describing the plan was presented. Community members were informed of an upcoming community vote to show support for the plan. A question and answer period followed the presentation.

Public Meeting #4- July 12, 2006

The purpose of this meeting was to provide another opportunity to present the draft IAVMP and action strategy to the community. Approximately 18 individuals attended. A community vote was held to show support for the IAVMP goals and treatment strategy. Written ballots were handed out to everyone in attendance. When counted, all 16 ballots, that were submitted, were in support of the plan

Plan adoption by the Board of County Commissioners- T.B.D.

Following community consensus to approve the plan, it must be taken before the Board of Skagit County Commissioners for formal adoption. It must also be acknowledged that the plan implementation is contingent upon grants and/or dedicated funding for this purpose.

LAKE AND WATERSHED FEATURES

Lakes are complex ecosystems that include their entire drainage basin or watershed. A watershed consists of all the surrounding land and water areas that drain toward a central collector at a lower elevation, such as a river, stream or lake. Water inputs to lake ecosystems come from precipitation, surface water runoff, and ground water seepage. As water travels throughout the watershed it collects dissolved and suspended materials from the land that impact the water and habitat quality of a lake. Nutrients phosphorus and nitrogen are important because they are the primary nutrients that fuel aquatic plant and algae growth. Development in a watershed increases the likelihood that erosion and increased surface water runoff will add unwanted pollutants to downstream waterbodies like lakes. This section provides an overview of the known physical and biological characteristics of Clear and Beaver Lakes and their associated watersheds.

Set against the backdrop of Cultus Mountain and surrounding hills, Clear and Beaver Lakes are clustered in a low-lying area in the Nookachamps Creek watershed, in the Skagit River Basin (Township 34 North, Range 5 East, Section 7, W.M.). Small, shallow lakes of glacial origin, Clear and Beaver Lakes are hydrologically connected and drain into an unnamed stream that empties into Turner Creek, a tributary of East Fork Nookachamps Creek. The local climate is characteristically mild with wet, cool winters and dry, warm summers. According to the Western Regional Climate Center, the average annual rainfall recorded at Sedro Woolley, just north of Clear and Beaver Lakes, is 46.17 inches per year. Historically, the largest amounts of precipitation for the region typically occur during November and December while the driest months of the year are July and August (Western Regional Climate Center).

Clear and Beaver Lakes are infested with several state-listed noxious weeds, including Eurasian milfoil (*Myriophyllum spicatum*), Brazilian elodea (*Egeria densa*), Fragrant water-lily (*Nymphaea odorata*), and yellow-flag iris (*Iris pseudacorus*). Non-native or invasive aquatic plants can pose serious problems to lake ecosystems. Unlike their native counterparts, whose balance has been established through a long process of evolution, there are no diseases or insects to keep invasive aquatic plant growth in check (Ecology, 1994). As a result, invasive species like Eurasian watermilfoil can flourish, crowding out native plants that provide food, shelter, and nesting sites for fish, waterfowl, and other animals. Additionally, dense invasive aquatic plant growth can impair water quality, as well as limit access for recreation and other beneficial uses. Developing an understanding of basic lake and watershed dynamics will facilitate the identification

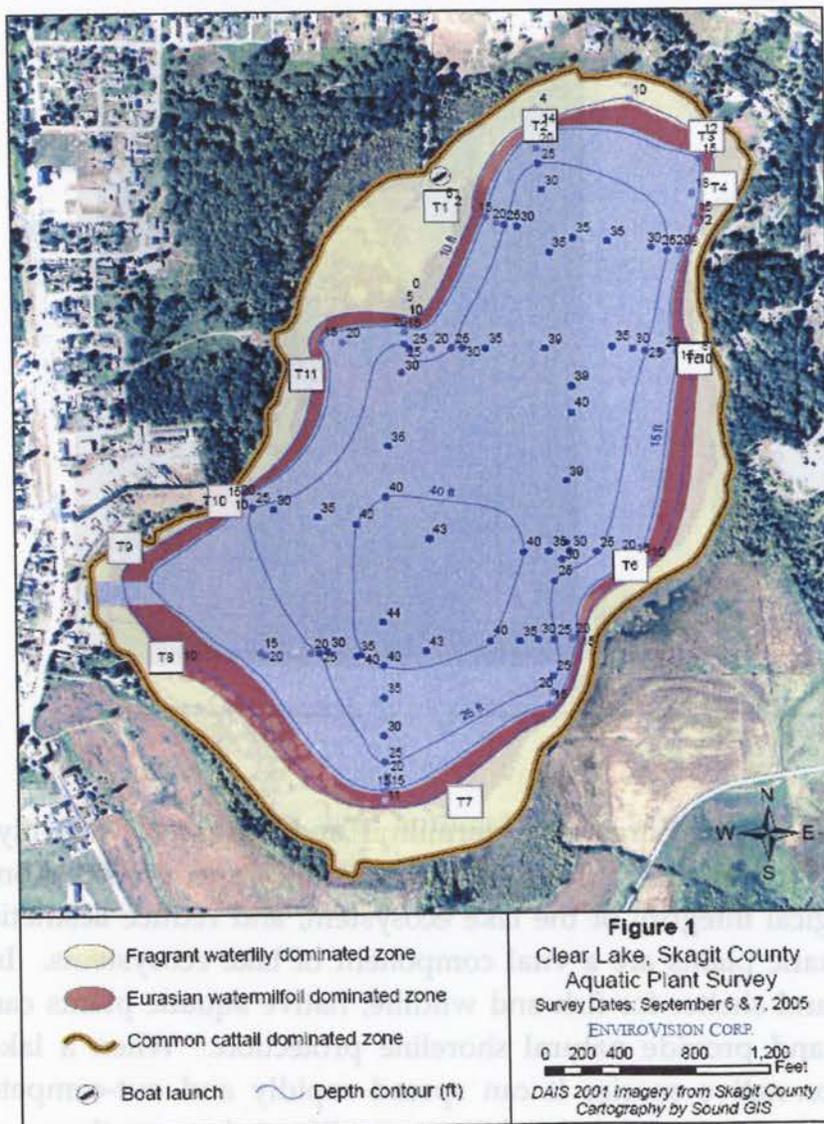
and implementation of the most efficient aquatic plant control strategy to successfully restore beneficial uses to Clear and Beaver Lakes.

CLEAR LAKE

Physical Description

Clear Lake is 200-acres with a mean depth of 23-feet and a maximum depth of 44-feet. The shoreline totals 2.4 miles in length and is regularly shaped with few coves or other shoreline irregularities. A seasonal stream enters the lake from the northeast and represents the only surface water body that feeds the lake. Lakeside residents have reported that groundwater seeps feed the lake; however, there are no records indicating

the extent and location of ground water inputs. The outlet located along the southern shoreline provides a connection to Beaver Lake and likely serves as a conduit that facilitates the spread of plant fragments between the lakes during rain and flood events. Extensive wetlands around the lake have been mapped by National Wetland Inventory (NWI) and provide valuable habitat for fish and wildlife.



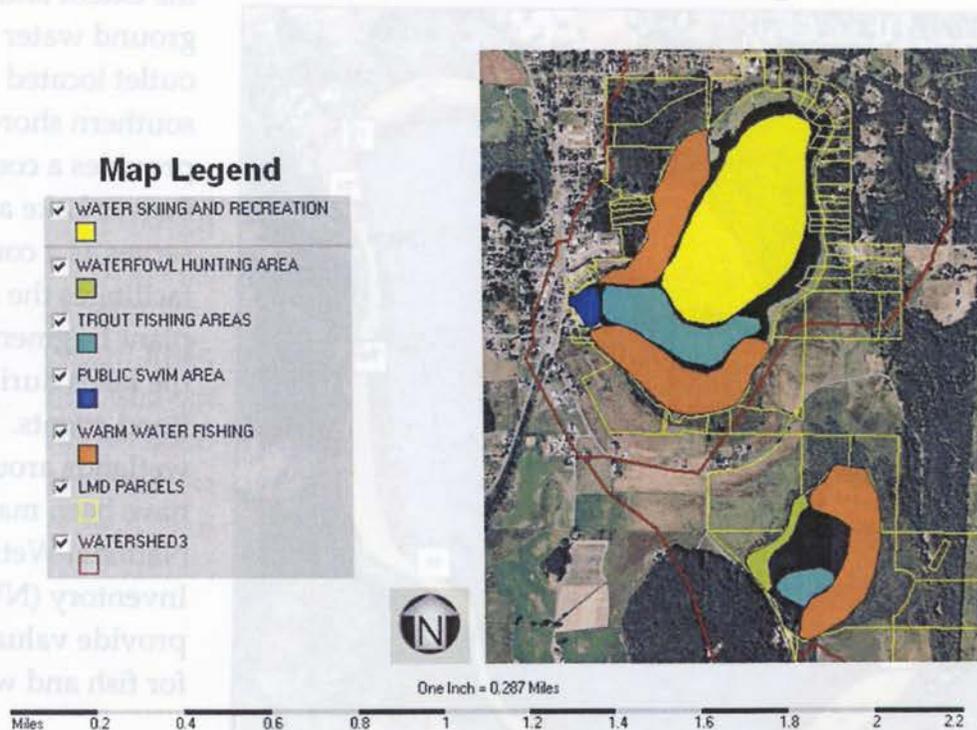
Land Use

The land adjacent to Clear Lake is rural in nature with low density development overall and low to moderate intensity uses that include

residential, commercial, agricultural, and recreational development (Skagit County Planning & Development Services). Due to wetland areas along the lake shoreline, the land use pattern around the lake consists of large tracts of open space with intermittent residential development. Most of the development around the lake occurs within the Clear Lake town limits, along the western shoreline, which supports low to moderate density residential development. A public boat launch on the lake provides access for fishing, waterskiing, boating, and wildlife viewing. A County-owned recreation facility provides lake access for swimmers.

Figure 3.

Beneficial Use Map



Aquatic Plants

Clear Lake is heavily infested with Eurasian watermilfoil and Fragrant water-lily. These plants are known to pose a significant safety hazard, impede recreation, negatively impact the ecological integrity of the lake ecosystem, and reduce aesthetic enjoyment of the lake. Aquatic plants are a vital component of lake ecosystems. In addition to providing food and shelter for fish and wildlife, native aquatic plants can help protect water quality and provide natural shoreline protection. When a lake becomes infested with a non-native species it can spread rapidly and out-compete native species. Non-indigenous species have the ability to proliferate because there are

no diseases or insects that keep their growth in check. The result can be a lake characterized by monospecific stands of invasive aquatic plants.

Eurasian watermilfoil

Eurasian watermilfoil is native to Europe, Asia, and North Africa and also occurs in Greenland (Washington State Noxious Weed Control Board 1995). Eurasian watermilfoil is among the worst aquatic pests in North America. *M. spicatum* is a submersed, perennial aquatic plant with feather-like leaves. It has 12 to 16 leaflets (usually more than 14) on each leaf arranged in whorls of 4 around the stem. Leaves near the surface may be reddish or brown. Sometimes there are emergent flower stalks during the summers that produce tiny leaves. In western Washington, Eurasian watermilfoil frequently over-winters in an evergreen form and may maintain considerable winter biomass (King County 2003). This plant forms dense mats of vegetation just below the water's surface. In late summer and fall, the plants break into fragments with attached roots that float with the currents, infesting new areas. Disturbed plants will also fragment at other times of the year, which may increase the extent of the infestation since a new plant can start from a tiny piece of a milfoil plant. *M. spicatum* was not previously thought to reproduce from seed in this region; however, aquatic plant experts are beginning to believe that milfoil seeds might be playing a bigger role in repopulating lakes than previously thought. Milfoil starts spring growth earlier than native aquatic plants, and thereby gets a "head start" on other plants. Eurasian watermilfoil can degrade the ecological integrity of a waterbody in just a few growing seasons.

Dense stands of milfoil crowd out native aquatic vegetation, which in turn alters predator-prey relationships among fish and other aquatic animals. Eurasian watermilfoil can also reduce dissolved oxygen – first by inhibiting water mixing in areas where it grows, and then from decomposition of dead plant material at the end of the growing season. Decomposition of *M. spicatum* also releases phosphorus and nitrogen nutrients into the water, which can increase algae growth. Additionally, dense mats of Eurasian watermilfoil can increase water temperature by absorbing sunlight, raise the pH, and create stagnant water mosquito breeding areas. Eurasian watermilfoil negatively impacts recreation, including swimming, boating, and fishing. The dense vegetation makes swimming dangerous, snags fish hooks, and inhibits boating by entangling propellers or paddles and slowing the movement of boats across the water.

Fragrant water-lily

Nymphaea odorata is a floating-leaved, rooted plant that occupies shallow areas of lakes, ponds, and slow moving streams. It is native to the eastern part of North America and is a popular gardening plant. As an introduced species, it can be problematic in lakes

with extensive shallow areas because it restricts water movement, impairs recreation, and increases siltation, temperature, and water loss through high evapotranspiration rates.

The Fragrant water-lily produces 6 to 12cm flowers with many white, pink, or purple petals that float on the water, and leaves that are large and round with a large notch on one side. The leaves can reach 30cm in diameter, have a thick and leathery texture, and often have red or purplish undersides with many veins. The floating leaves and flowers are attached to the plant roots by straight flexible stalks that are rooted to the lake bottom. Thick rhizomes that range from 2 to 3 cm in diameter make up the root system, which represents one of the plants reproductive pathways. Propagation also occurs by seeds. According to Joseph DiTomasi and Evelyn Healy, in their book, *Aquatic and Riparian Weeds of the West*, seed germination requires light and the presence of ethylene, a gas that is produced when plants are crowded together (DiTomasi and Healy 2003). Due to the requirement for light, lakes with extensive shallow areas, like Clear Lake, may be more susceptible to the proliferation of this species.

Clear Lake Aquatic Plant Community

Eurasian milfoil was initially documented in Clear Lake in 1994 when the Department of Ecology staff conducted an assessment of the water quality and aquatic plant community. No control efforts were implemented to address the lake-wide infestation; however, in 1994 Skagit County Parks and Recreation began a program of localized control at the public swimming area. Implementing a control program at this location was a proactive measure to prevent swimmers from becoming entangled in the dense aquatic weed growth (Adams, Personal Communication). Initially, the County utilized the bottom barrier as the primary control method. This proved problematic so the County elected to adopt the use of herbicides as the primary control strategy.

The aquatic plant community at Clear Lake is largely comprised of non-native species including Eurasian milfoil (*Myriophyllum spicatum*), Fragrant water-lily (*Nymphaea odorata*), yellow flag iris (*Iris pseudacorus*), and reed canary grass (*Phalaris arundinacia*); although several native species were observed during the aquatic vegetation survey conducted in September 2005 (See Table 1). The survey revealed two general plant distribution patterns: one that is dominated by Fragrant water-lily and one that is dominated by Eurasian watermilfoil. Characteristics of each generalized plant community are provided below (See Table 1).

The Fragrant water-lily plant community exists in a solid band around the lake and extends 300-feet from the shoreline in areas that lie within the 8 to 10-foot depth contours. This plant community encompasses approximately 53 surface acres of the

Table 1. Clear Lake Aquatic Plant & Macroalgae Species List

Common Name	Scientific Name
EMERGENT PLANTS	
Jewelweed	<i>Impatiens sp.</i>
Yellow flag iris	<i>Iris pseudacorus</i>
Reed canarygrass	<i>Phalaris arundinacia</i>
Water bulrush	<i>Scripus subterminalis</i>
Bulrush	<i>Scripus sp.</i>
Common cattail	<i>Typha latifolia</i>
FLOATING-LEAVED PLANTS	
Watershield	<i>Brasenia schreberi</i>
Yellow pondlily	<i>Nuphar polysepala</i>
Fragrant water-lily	<i>Nymphaea odorata</i>
SUBMERSED PLANTS	
Coontail; hornwort	<i>Ceratophyllum demersum</i>
Common elodea	<i>Elodea sp.</i>
Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Water-nymph	<i>Najas sp.</i>
Big-leaf pondweed	<i>Potamogeton amplifolius</i>
Grass-leaved pondweed	<i>Potamogeton gramineus</i>
Fernleaf pondweed	<i>Potamogeton robbinsii</i>
Thinleaf pondweed	<i>Potamogeton sp.</i>
Flat-stem pondweed	<i>Potamogeton zosteriformis</i>
Common bladderwort	<i>Utricularia vulgaris</i>
Water-celery	<i>Vallisneria americana</i>
ALGAE	
Nitella	<i>Nitella sp.</i>

lake, or 27% of the lake surface area. Recreational access, water circulation, and native plant habitat are impacted by the extensive surface mat of fragrant water lily.

The Eurasian milfoil plant community comprises 23 surface acres or 11% of the lake's total surface area. Plants in this zone grow between the 8 and 14-foot depth contours and produce dense surface mats when the plant flowers. An extensive milfoil patch was observed in the southwest corner of the lake. A large portion of this monoculture stand forms a surface mat, impacting navigational ability, while the rest remains just below the water surface. With the exception of two areas around the lake, dense milfoil stands colonize the lake. The areas characterized by low milfoil density are located near the Skagit County Parks and Recreation swimming area, as well as the area adjacent to the abandoned sawdust

burner, which is located along the west shoreline north of the swimming area and south of the public boat launch.

The southeastern shore is largely undeveloped and may provide beneficial habitat for fish and waterfowl, as evidenced by the presence of snags and coarse woody debris in the nearshore area. Because dense stands of Eurasian milfoil and Fragrant water-lily impede access by fish and waterfowl areas with low density milfoil and lily growth may provide some adequate habitat. Removal of noxious weeds in Clear Lake, especially along the southeast shoreline, may increase the amount of quality habitat available to support native plants and animals.

Water Quality

A 1976 study conducted by the United States Geological Survey (USGS) measured several water quality parameters and surveyed aquatic plants to characterize the lake and determine its trophic status. The study concluded that Clear Lake was an Oligo-mesotrophic lake. At that time, the secchi depth measured 15-feet and 0-10% of the lake surface was covered by floating and submerged aquatic plants. Another survey was conducted in September 2005 to map the distribution of aquatic plants and collect basic water quality data for several parameters, including dissolved oxygen, conductivity, salinity, temperature, and secchi depth. Although the measurements collected in 2005 provide a snapshot of the lake's condition at the time of the survey, insufficient information was gathered to make conclusions about the overall water quality and trophic status of the lake.

The secchi depths were taken at two locations, one at the midpoint of the littoral zone and the other at the center of the lake. The average visibility measured 7-feet and 4-inches, which is a reduction of about ½ the visibility that was recorded in 1976 (See Table 2: Comparison of Clear Lake Water Quality Measurements). Nutrient and fecal coliform data were not collected during the 2005 summer survey. Large quantities of filamentous algae and some cyanobacteria blooms were observed by the survey team.

Table 2. Clear Lake Water Quality Data: 1976 & 2005

Year	DO (% Sat)	DO (mg/L)	Specific Conductance (µs)	Temp (C)	Secchi Depth
1976	n/a	9.4	87.0	8.5	15' 0"
2005-T2	65.5	5.93	85.4	20.1	n/a
2005-T3	74.5	7.43	86.0	20.1	n/a
2005-T6	76.5	6.93	85.9	20.1	n/a
2005-T6	64.0	5.89	86.0	19.7	n/a
2005-T9	91.1	8.20	86.1	20.7	7' 1"
2005-Ctr	n/a	n/a	n/a	n/a	7' 7"

Water Rights

A search was performed to determine active surface and ground water rights and claims that are within the Clear Lake Watershed. In order to find this information, a search of the Washington Department of Ecology's Water Rights Applications Tracking System was performed. Ecology issues a disclaimer when providing this information that states "*Because of unauthorized changes or non-use, Ecology cannot guarantee the validity of Permits and Certificates.*" This search indicated only two certified and three uncertified claims for surface water rights listing Clear Lake as their source, see Appendix E (WDOE 2004). In addition to those listing Clear Lake as their source, there are an additional 29 claims that are located within the Clear and Beaver Lakes

watersheds. At this time it is unknown how many un-registered residents use the lake water for irrigation. However, all lakeside residences are notified prior to herbicide treatments as required by the State permit.

Watershed Features

Clear Lake's watershed is a small sub-basin within the Nookachamps Creek Watershed in the Skagit River Basin. The system of WRIs are frequently used by state resource agencies to refer to major watershed basins within Washington State. Clear Lake is located within Water Resource Inventory Area (WRIA) 3, the Lower Skagit-Samish combined watershed, and includes Lake McMurray, Big Lake, Beaver Lake, Nookachamps Creek, East Fork Nookachamps Creek, and the City of Mount Vernon.

Topographically, the Clear Lake watershed consists of low-elevation mountains, which are located to the north and east of the lake. Steep slopes adjoin the lake along the north eastern half of the lake, which is mapped as geological hazard associated with unstable slopes by the County's critical areas program. The shoreline in this area is largely undeveloped and characterized by coarse woody debris. Land to the south and west of Clear Lake is low-lying flat land, which is part of the Skagit River floodplain. The National Wetlands Inventory (NWI) maps extensive wetlands around the lake, which provide important habitat for fish and waterfowl. In addition, wetlands help filter pollutants and provide flood mitigation by acting as sponges that soak up excess water.

Land use in the Clear Lake watershed primarily consists of forestry, open-space, agriculture, rural, and residential development. The highest density of residential development within the drainage basin is located adjacent to the lake within the Clear Lake town limits (population: 942; 2000 census). The Skagit County Shoreline Master Program (SMP) divides the shoreline areas into two categories: Rural and Rural Residential. Rural shoreline areas are characterized by low density, and low to moderate intensity residential, agricultural, or outdoor recreational development (Skagit County Planning Dept. 1983).

Currently no public sewage treatment plant services the area, so all biological waste is treated by on-site septic systems. Leaky septic systems, impervious surface areas, sedimentation, and storm water runoff are factors that increase nutrient loading in waterbodies. Although much of the land within Clear Lake's watershed is used primarily for forest practices and rural residential development, increased nutrient input from sedimentation, storm water runoff, and leaky septic systems could contribute to an increased nutrient loading that could result in cultural eutrophication.

Fish & Wildlife

Visitors at Clear Lake enjoy a variety of activities, many of which are dependent on the lake's abundant fish and wildlife populations. Rainbow trout (*Oncorhynchus mykiss*), largemouth bass (*Micropterus salmoides*), yellow perch (*Perca flavescens*), cutthroat trout (*Oncorhynchus clarki*), and bullhead catfish (*Ameiurus nebulosus*) are common fish species caught from Clear Lake. In 2005, the Department of Fish and Wildlife planted over 1,000 triploid rainbow trout into Clear Lake. Triploid fish are not able to reproduce; however, they typically grow faster than diploid fish.

Other wildlife, especially the avian communities, brings large crowds of bird watchers to Clear Lake. The National Audubon Society submitted a survey of the bird community that can be found throughout the year (Appendix A).

Threatened or Endangered Plants and Animals

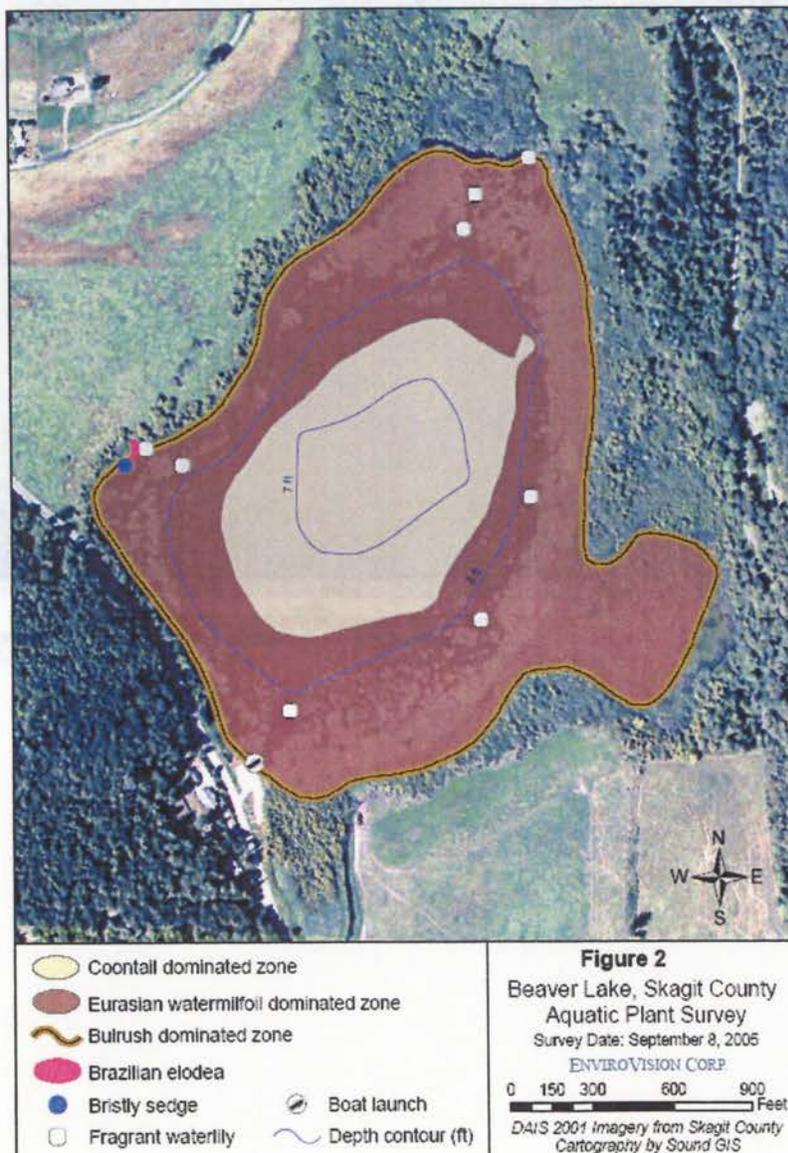
The Washington Natural Heritage Program (WNHP) was researched to determine if Clear Lake currently provides habitat for any state listed rare plant species (WDNR 2006). No rare plants were listed to be found in or adjacent to Clear Lake. In addition to the WNHP, the Washington Department of Fish and Wildlife Priority Habitat Database was searched to find information on rare, threatened or endangered animal species and priority habitats in or adjacent to Clear Lake. The results from the search indicated that the majority of shoreline surrounding Clear Lake is identified as breeding habitat for Bald eagles (*Haliaeetus leucocephalus*). In addition, the Southeast corner of Clear Lake's shoreline is designated as priority wetland habitat by WDFW (WDFW, 2006).

In addition, Coho Salmon (*Oncorhynchus kisutch*) are identified to show a healthy presence in Clear Lake. *O. kisutch* possibly use the lake as rearing habitat and may spawn in tributaries that feed Clear Lake. Currently *O. kisutch* are listed as a species of "Concern" with the Endangered Species Act (ESA) and as "Threatened" on the state ESA listing (WDOE 2007). As a result of the identification of these species, any future treatment plans will be subject to WDFW fish timing windows for aquatic herbicide treatments.

BEAVER LAKE

Physical Description

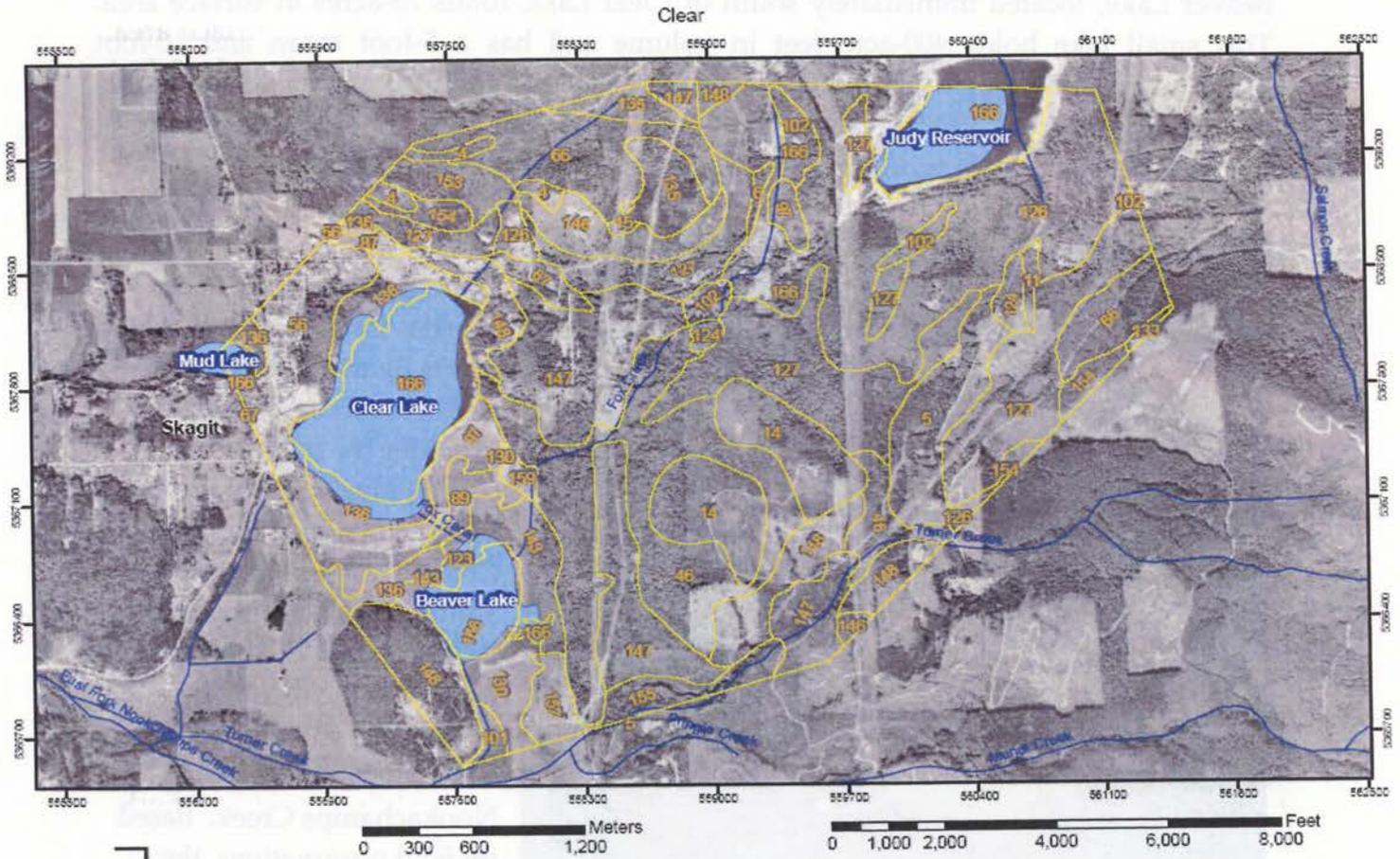
Beaver Lake, located immediately south of Clear Lake, totals 75-acres in surface area. This small lake holds 400-acre feet in volume and has a 5-foot mean and 10-foot maximum depth. Due to the shallow nature of the lake, the littoral zone encompasses the entire lake area. With the exception of a keyhole bay near the southeast corner of the lake, Beaver Lake is regularly shaped. The shoreline spans 1.5 miles.



Drainage from Clear Lake empties into Fox Creek, which enters Beaver Lake on the northeast shoreline and provides the only consolidated surface water input to Beaver Lake. Groundwater seeps provide additional water inputs at Beaver Lake. The outlet, located at the southwest end of the lake, connects to Turner Creek, a tributary of East Fork Nookachamps Creek. Based on field observations, the outlet allows constant drainage from Beaver Lake and could potentially transport noxious weed fragments downstream or potentially re-infest Beaver Lake and/or Clear Lake during flood events when the Nookachamps system backs up with Skagit River water.

Figure 4.

SOIL SURVEY OF SKAGIT COUNTY AREA, WASHINGTON



USDA Natural Resources Conservation Service

9/9/2005
Page 1 of 4

Table 3.

Map Unit Legend Summary

Skagit County Area, Washington

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
101	Nookachamps silt loam	9.6	0.3
102	Norma silt loam	43.1	1.2
11	Bellingham mucky silt loam	8.6	0.2
123	Skagit silt loam	10.4	0.3
124	Skipopa silt loam, 0 to 3 percent slopes	21.8	0.6
126	Skiyou gravelly silt loam, 3 to 15 percent slopes	514.0	14.3
127	Skiyou gravelly silt loam, 15 to 30 percent slopes	445.5	12.4
130	Snohomish silt loam	45.9	1.3
133	Sorensen very gravelly silt loam, 30 to 65 percent slopes	4.1	0.1
135	Squires very gravelly silt loam, 30 to 65 percent slopes	67.4	1.9
136	Sumas silt loam	127.9	3.6
14	Blethen very gravelly silt loam, 30 to 65 percent slopes	157.0	4.4
143	Ternic Medisaprists, 0 to 2 percent slopes	71.3	2.0
146	Tokul gravelly loam, 0 to 8 percent slopes	63.0	1.8
147	Tokul gravelly loam, 8 to 15 percent slopes	312.7	8.7
148	Tokul gravelly loam, 15 to 30 percent slopes	216.3	6.0
15	Borochemists, 0 to 3 percent slopes	4.0	0.1
153	Vanzandt very gravelly loam, 0 to 15 percent slopes	38.1	1.1
154	Vanzandt very gravelly loam, 15 to 30 percent slopes	42.7	1.2
155	Vanzandt very gravelly loam, 30 to 65 percent slopes	41.3	1.2
157	Wickersham silt loam, 0 to 8 percent slopes	29.9	0.8
159	Wiseman channery sandy loam, 0 to 8 percent slopes	8.2	0.2
166	Water	365.5	10.2

Soil Survey of Skagit County Area, Washington

Skagit County Area, Washington

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
4	Andic Xerochrepts, warm-Rock outcrop complex, 65 to 90 percent slopes	21.3	0.6
46	Dystric Xerochrepts, 45 to 70 percent slopes	346.8	9.7
5	Barneston gravelly loam, 0 to 8 percent slopes	100.0	2.8
56	Field silt loam	181.8	5.1
6	Barneston very gravelly sandy loam, 8 to 30 percent slopes	6.1	0.2
66	Heisler gravelly silt loam, 30 to 65 percent slopes	179.2	5.0
67	Hoogdal silt loam, 8 to 15 percent slopes	20.5	0.6
87	Larush fine sandy loam	9.5	0.3
89	Larush variant silt loam	24.6	0.7
97	Mukilteo muck	47.8	1.3

Land Use

Consistent with the land use designations established in the Skagit County Comprehensive Plan, open space, rural residential and agricultural developments are the primary uses immediately adjacent to the lake. The presence of extensive National Wetland Inventoried wetland areas precludes shoreline development, so the majority of the shoreline remains in a natural condition. According to the Skagit County Shoreline Master Program, the shoreline areas have "Conservancy" designation, which affords the area the highest level of environmental and resource protection. A boat launch owned and maintained by WDFW provides public access for recreational uses including fishing, hunting, and wildlife viewing.

Aquatic Plants

Beaver Lake is infested with the non-native aquatic plants Eurasian watermilfoil, Brazilian elodea, and fragrant water lily. These plants pose problems for fishing and hunting activities and are unsightly for wildlife viewers and other lake users.

Brazilian elodea

Native to South America, Brazilian elodea (*Egeria densa*) is a submersed freshwater perennial aquatic plant, which is generally found growing up to depths of 20-feet or drifting. Although it is most commonly found in lakes, ponds, and ditches, Brazilian elodea can also thrive in slow moving streams. It was first introduced worldwide through the aquarium trade and was commonly sold in Washington pet stores as an aquarium species under the name 'anacharis' until it was banned for sale in 1996 (WDOE 2003). Prevention and early detection of this species is important because of its prolific nature and the potential for it to negatively impact local waterways.

Table 4. Beaver Lake Aquatic Plant & Macroalgae Species List

Common Name	Scientific Name
EMERGENT PLANTS	
Bearded sedge	<i>Carex camosa</i>
Jewelweed	<i>Impatiens sp.</i>
Yellow flag iris	<i>Iris pseudoacorus</i>
Reed canary grass	<i>Phalaris arundinacea</i>
Common smartweed	<i>Polygonum hydropiperoides</i>
Marsh cinquefoil	<i>Potentilla palustris</i>
Hardstem bulrush	<i>Schoenoplectus acutus</i>
Softstem bulrush	<i>Schoenoplectus tabernaemontani</i>
Bulrush	<i>Scirpus sp.</i>
Bittersweet nightshade	<i>Solanum dulcamara</i>
Narrow leaf bur-reed	<i>Sparganium angustifolium</i>
Common cattail	<i>Typha latifolia</i>
Cattail	<i>Typha sp.</i>
FLOATING-LEAVED PLANTS	
Lesser duckweed	<i>Lemna minor</i>
Water purslane	<i>Ludwigia palustris</i>
Yellow pond-lily	<i>Nuphar polysepala</i>
Fragrant water-lily	<i>Nymphaea odorata</i>
Giant duckweed	<i>Spirodela polyrhiza</i>
Water-meal	<i>Wolffia sp.</i>
SUBMERSED PLANTS	
Coontail; hornwort	<i>Ceratophyllum demersum</i>
Brazilian elodea	<i>Egeria densa</i>
Common elodea	<i>Elodea sp.</i>
Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Big-leaf pondweed	<i>Potamogeton amplifolius</i>
Ribbonleaf pondweed	<i>Potamogeton epihydrus</i>
Grass-leaved pondweed	<i>Potamogeton gramineus</i>
Floating leaf pondweed	<i>Potamogeton natans</i>
Thinleaf pondweed	<i>Potamogeton sp.</i>
Flat-stem pondweed	<i>Potamogeton zosteriformis</i>
Sago pondweed	<i>Stuckenia pectinata</i>
Common bladderwort	<i>Utricularia vulgaris</i>
ALGAE	
Nitella	<i>Nitella sp.</i>

Brazilian elodea is robust, bright green, leafy submersed aquatic plant that grows to the surface and forms dense surface mats. The simple or branched cylindrical stem produces minutely serrated and linear leaves that are 1-8 cm long and up to 5 mm wide. The leaves are arranged in whorls of 4 to 8 around the stem and tend to become more densely organized around the stem toward the crown of the plant. Brazilian elodea produces small white flowers (approximately 18-25 mm) with three petals that float on or rise above the water's surface. Populations of Brazilian elodea in the United States consist of only male plants so propagation occurs when plant fragments consisting of double nodes are dispersed. These double node fragments are the only part of the plant that produce branches and roots. Brazilian elodea thrives in acidic to alkaline waters from 1m to 7m depth. The plant can tolerate high turbidity levels and grows best under low light conditions; however, Brazilian elodea can only survive short periods of time under ice and it is susceptible to iron deficiency. Although typically found in lakes, ditches, and ponds, elodea will infest slower moving waterways. Like other invasive submersed perennials, such as Eurasian milfoil, dense populations of Brazilian elodea will alter aquatic ecosystem dynamics and impair recreational uses.

In September 2005, a survey team from EnviroVision Corporation conducted an aquatic plant survey to characterize the native and non-native aquatic plant community. Emphasis was placed on determining the extent of the non-native species Eurasian watermilfoil (*Myriophyllum spicatum*) and Fragrant water-lily (*Nymphaea odorata*) to support the development of this IAVMP. The survey revealed that two general plant communities describe the aquatic plant community at Beaver Lake. One includes a plant community or zone that is dominated by Eurasian watermilfoil and another that is dominated by Coontail (*Ceratophyllum demersum*). A pioneering infestation of Brazilian elodea (*Egeria densa*) was discovered near a small cluster of rare bristly sedge plants (*Carex camosa*), which is a state-listed "sensitive" emergent species.

The two plant zones identified characterize the general aquatic plant distribution at Beaver Lake. The community dominated by Eurasian watermilfoil consists of 52 acres or 70% of the lake area and extends from the shoreline to the 6-foot depth contour (EnviroVision, 2005). Other species observed in this plant zone include but are not limited to coontail, common elodea, yellow pond-lily, fragrant water lily, common bladderwort. Coontail dominates the second plant zone, which occupies the remaining 28 acres of lake area (EnviroVision 2005).

Despite the high density of Eurasian watermilfoil throughout the lake, the survey revealed a diverse population of native aquatic plants (See Table 3). Of these, coontail was the most prevalent. Yellow pond lily (*Nuphar polysepala*), common elodea (*Elodea*

sp.), and common bladderwort (*Utricularia vulgaris*) were distributed in large patches throughout the lake as well (EnviroVision 2005).

The pioneering colony of Brazilian elodea is located in a small cove along the North West shoreline approximately 200 yards east of Beaver Lake Road. At the time the survey was conducted, the elodea population was limited to 0.03 acres of lake area; however, this is a hardy, productive species and is known to spread rapidly by fragments. The significance of this discovery is associated with the aggressive nature and high cost of controlling this non-native plant, as well as the increased potential for it to be spread to other waterways in Skagit County and Washington State. The County has received an early infestation grant from the Department of Ecology to fund removal of this plant before it proliferates and spreads to nearby waterways.

One challenge facing aquatic plant control efforts to control the Brazilian elodea infestation is the presence of Bottle-brush sedge (*Carex camosa*) plants along the shoreline adjacent to the Brazilian elodea colony. This species is a rare vascular plant recognized by the State as “sensitive.” Any control strategy must account for its presence and protection measures must be implemented.

Shoreline plant surveillance was not the goal of this aquatic plant survey; but the emergent plant zone consisted largely of reed canarygrass (*Phalaris arundinacia*) mixed with bulrush (*Schoenoplectus*) and cattails (*Typha sp.*) (EnviroVision 2005).

Water Quality

There is little water quality data available for Beaver Lake. In 1974 the USGS conducted a lake-specific study and sampled basic water quality parameters to determine the trophic status of the lake. The study reported that Beaver Lake was a meso-eutrophic lake at the time the survey was conducted. Although water quality data was not collected during the 2005 survey, the high density of aquatic plants observed, as well as the reduced water clarity may indicate that the lake has aged since the USGS study was conducted in the 1970’s (See Table 3).

Table 5. Beaver Lake Water Quality Data: 1974

Year	DO (% Sat)	DO (mg/L)	Specific Conductance (µs)	Temp (°C)	Secchi Depth
1974 (3')	n/a	9.7	92	18.5	> 7'
1974 (7')	n/a	9.6	92	18.5	> 7'
2005	n/a	n/a	n/a	n/a	2.8'

Adjacent agriculture fields currently used to pasture cows, forest practices, and inputs from Clear Lake may account for increased nutrient loading. Additional water quality monitoring would better quantify changes in trophic status.

Water Rights

A search was performed to determine active surface and ground water rights and claims that are within the Beaver Lake Watershed. In order to find this information, a search of the Washington Department of Ecology's Water Rights Applications Tracking System was performed. Ecology issues a disclaimer when providing this information that says "*Because of unauthorized changes or non-use, Ecology cannot guarantee the validity of Permits and Certificates.*" This search did not list any certified or uncertified claims that list Beaver Lake as their source, see Appendix E (WDOE 2004). This search revealed 5 claims listing Clear Lake as their source and 29 other claims that are located within the watersheds of Beaver and Clear Lakes. At this time it is unknown how many un-registered residents use the lake water for irrigation. However, all lakeside residences are notified prior to herbicide treatments as required by the State permit.

Watershed Features

The Beaver Lake watershed is a sub-basin in the Nookachamps watershed in the Skagit River basin. Sedro-Woolley is the closest incorporated area. Beaver Lake is located within WRIA 3, the Lower Skagit-Samish combined watershed and includes Clear Lake, Lake McMurray, Big Lake, Nookachamps Creek, East Fork Nookachamps Creek, and the City of Mount Vernon.

Beaver Lake's watershed ranges in size from 1,734-acres to 2,764-acres. This is due to the fact that Clear Lake drains into Beaver Lake seasonally when water levels are high. Most of the drainage basin is on low elevation mountains. The north east flanks of Cultus Mountain (elevation: 3993 feet), the highest of all the peaks within the watershed, drains into Beaver Lake via Fox Creek.

Land use in the immediate watershed is characterized by rural, agricultural, open space, and forestry. There is very little residential development surrounding Beaver Lake. Although, seasonal inputs from the Clear Lake watershed impact Beaver Lake when water levels facilitate drainage from Clear Lake.

Fish & Wildlife

Beaver Lake attracts people for different reasons than Clear Lake. Since Beaver Lake is shallower than Clear Lake, the fish and wildlife distributions differ. Beaver Lake is primarily a warm-water fishery containing a variety of species. In a 2001 stock assessment survey conducted by the Washington State Department of Fish and Wildlife, it was determined that Largescale suckers contributed nearly 90% of the fish biomass sampled in the lake. Largemouth bass (*Micropterus salmoides*), yellow perch (*Perca flavescens*), black crappie (*Pomoxis nigromaculatus*), and pumpkinseed (*Lepomis gibbosus*) are also resident species (WDFW 2002). Summertime water temperatures become nearly lethal to cold water species such as rainbow trout (*O. mykiss*), but they are still present in relatively small numbers.

Aquatic plants, both native and non-native, nearly cover the entire lake surface. If invasive aquatic plants are not eradicated or controlled, a viable fishery may not be sustainable at Beaver Lake. As previously mentioned, invasive plant species disrupt or accelerate many natural lake processes such as water chemistry, temperature, habitat structure, sediment transport, lake aging, predator-prey relationships, and others. As the lake ages, more of the lake will fill in and become a wetland, thus reducing habitat potential for aquatic organisms.

The National Audubon Society also submitted a copy of their avian population survey on Beaver Lake (Appendix B).

Threatened or Endangered Plants and Animals

The Washington Natural Heritage Program (WNHP) was researched to determine if Beaver Lake currently provides habitat for any state listed rare plant species (WDNR 2006). No rare plants were listed to be found in or adjacent to Clear Lake. The search results identified a small population of Bristly sedge (*Carex comosa*) along the Southwest corner of Beaver Lake. This plant was originally identified during the 2005 vegetation survey performed by Environvison for this project (Environvison 2005). Extreme care will be given when performing herbicidal treatment in this area. Because of this concern, the Southwest corner of Beaver Lake will be designated as an area of low level control to avoid indirect herbicide damage. If herbicide treatments are performed in the close proximity of *Carex comosa*, all efforts will be made to identify and protect the plants.

In addition to the WNHP, the Washington Department of Fish and Wildlife Priority Habitat Data was searched to find information on rare, threatened or endangered

animal species and priority habitats in or adjacent to Clear Lake. The results from the search indicated that the majority of shoreline surrounding Beaver Lake is identified as priority wetland habitat. In addition, breeding habitat for Bald eagles (*Haliaeetus leucocephalus*), was identified along the Southwest corner of Beaver Lake (WDFW 2006).

In addition, Coho Salmon (*Oncorhynchus kisutch*) are also identified to show a healthy presence in Beaver Lake. *O. kisutch* possibly use the lake as rearing habitat and may spawn in Fox Creek, a tributary that feeds Beaver Lake from the northeast. Currently *O. kisutch* are listed as a species of "Concern" with the Endangered Species Act (ESA) and as "Threatened" on the state ESA listing (Appendix I). In order to protect these species, any future treatment plans will be subject to WDFW fish timing windows for aquatic herbicide treatments.

AQUATIC PLANT CONTROL ALTERNATIVES

This section provides an outline of available methods used to control aquatic weeds. Much of the information in this section is quoted directly from the Washington Department of Ecology website:

<http://www.ecy.wa.gov/programs/wq/plants/management/index.html>

AQUATIC HERBICIDES

Description of Method

<http://www.ecy.wa.gov/programs/wq/plants/management/aqua028.html>

Aquatic herbicides are chemicals specifically formulated for use in water to kill or control aquatic plants. Herbicides approved for aquatic use by the United States Environmental Protection Agency (EPA) have been reviewed and are considered compatible with the aquatic environment when used according to label directions. However, some individual states, including Washington, also impose additional constraints on their use.

Aquatic herbicides are sprayed directly onto floating or emergent aquatic plants or are applied to the water in either a liquid or pellet form. Systemic herbicides are capable of killing the entire plant. Contact herbicides cause the parts of the plant in contact with the herbicide to die back, leaving the roots alive and able to re-grow. Non-selective, broad spectrum herbicides will generally affect all plants with which they come in contact. Selective herbicides will affect only some plants (often dicots - broad leafed plants like Eurasian watermilfoil (*Myriophyllum spicatum*) will be affected by selective herbicides whereas monocots like Brazilian elodea (*Egeria densa*) may not be affected). Most aquatic plants are monocots.

Because of environmental risks from improper application, aquatic herbicide application in Washington state waters is regulated and has the following restrictions:

- Applicators must be licensed by the Washington State Department of Agriculture.
- Because of a March 2001 court decision (federal 9th Circuit District Court), coverage under a discharge permit called a National Pollutant Discharge Elimination System (NPDES) permit must be obtained before aquatic herbicides can be applied to the waters of the state.
- Notifications and postings are required, and there may be additional mitigations proposed to protect rare plants or threatened and endangered species.

Washington DOE has developed a general NPDES permit for the management of noxious weeds growing in aquatic environments and a separate general permit for nuisance aquatic weeds (native plants) and algae control. For nuisance weeds (native species) and algae, applicators and the local sponsor of the project must obtain a NPDES permit from the Washington Department of Ecology before applying herbicides to Washington waterbodies. For noxious weed control, applicators and their sponsors can obtain coverage under the Washington Department of Agriculture NPDES permit for noxious weed control.

The Department of Ecology currently issues permits for seven aquatic herbicides (as of 2004 treatment season) for aquatic weed treatment for lakes, rivers, and streams. Weed control in irrigation canals is covered under another permit. The chemicals that are permitted for use in 2004 are:

Aquatic Herbicides

- **Glyphosate** - (Trade names for aquatic products with glyphosate as the active ingredient include: Rodeo®, AquaMaster®, and AquaPro®). This systemic broad spectrum herbicide is used to control floating-leaved plants like water-lilies and shoreline plants like purple loosestrife. It is generally applied as a liquid to the leaves. Glyphosate does not work on underwater plants such as Eurasian watermilfoil. Although glyphosate is a broad spectrum, non-selective herbicide, a good applicator can somewhat selectively remove targeted plants by focusing the spray only on the plants to be removed. Plants can take several weeks to die and a repeat application is often necessary to remove plants that were missed during the first application.
- **Fluridone** – (Trade names for fluridone products include: Sonar® and Avast!®). Fluridone is a slow-acting systemic herbicide used to control Eurasian watermilfoil and other underwater plants. It may be applied as a pellet or as a liquid. Fluridone can show good control of submersed plants where there is little water movement and an extended time for the treatment. Its use is most applicable to whole-lake or isolated bay treatments where dilution can be minimized. It is not effective for spot treatments of areas less than five acres. It is slow-acting and may take six to twelve weeks before the dying plants fall to the sediment and decompose. When used to manage Eurasian watermilfoil in Washington, fluridone is applied several times during the spring/summer to maintain a low, but consistent concentration in the water. Although fluridone is considered to be a broad spectrum herbicide, when used at very low concentrations, it can be used to selectively remove Eurasian watermilfoil. Some native aquatic plants, especially pondweeds, are minimally affected by low concentrations of fluridone.
- **2,4-D** – There are two formulations of 2,4-D approved for aquatic use. The granular formulation contains the low-volatile butoxy-ethyl-ester formulation of 2,4-D (Trade names include: AquaKleen® and Navigate®). The liquid formulation contains the dimethylamine salt of 2,4-D (Trade name - DMA*4IVM). 2,4-D is a relatively fast-acting, systemic, selective herbicide used for the control of Eurasian watermilfoil and other broad-leaved species. Both the granular and liquid formulations can be effective

for spot treatment of Eurasian watermilfoil. 2,4-D has been shown to be selective to Eurasian watermilfoil when used at the labeled rate, leaving native aquatic species relatively unaffected.

- **Endothall - Dipotassium Salt** – (Trade name Aquathol®) Endothall is a fast-acting non-selective contact herbicide which destroys the vegetative part of the plant but generally does not kill the roots. Endothall may be applied in a granular or liquid form. Typically endothall compounds are used primarily for short term (one season) control of a variety of aquatic plants. However, there has been some recent research that indicates that when used in low concentrations, endothall can selectively remove exotic weeds; leaving some native species unaffected. Because it is fast-acting, endothall can be used to treat smaller areas effectively. Endothall is not effective in controlling Canadian waterweed (*Elodea canadensis*) or Brazilian elodea.
- **Diquat** – (Trade name Reward®). Diquat is a fast-acting non-selective contact herbicide which destroys the vegetative part of the plant but does not kill the roots. It is applied as a liquid. Typically diquat is used primarily for short term (one season) control of a variety of submersed aquatic plants. It is very fast-acting and is suitable for spot treatment. However, turbid water or dense algal blooms can interfere with its effectiveness. Diquat was allowed for use in Washington in 2003 and Ecology collected information about its efficacy against Brazilian elodea in 2003. A littoral zone treatment in Battleground Lake in Clark County Washington resulted in nearly complete removal of Brazilian elodea in that water body.
- **Triclopyr** - (Trade name Renovate3 & Renovate OTF®). There are two formulations of triclopyr. It is the TEA formation of triclopyr that is registered for use in aquatic or riparian environments. Triclopyr, applied as a liquid, is a relatively fast-acting, systemic, selective herbicide used for the control of Eurasian watermilfoil and other broad-leaved species such as purple loosestrife. Triclopyr can be effective for spot treatment of Eurasian watermilfoil and is relatively selective to Eurasian watermilfoil when used at the labeled rate. Many native aquatic species are unaffected by triclopyr. Triclopyr is very useful for purple loosestrife control since native grasses and sedges are unaffected by this herbicide. When applied

directly to water, Washington DOE has imposed a 12-hour swimming restriction to minimize the possibility of eye irritation. Triclopyr received its aquatic registration from EPA in 2003 and was allowed for use in Washington in 2004.

- **Imazapyr** - (Trade name Habitat®). This systemic broad spectrum, slow-acting herbicide, applied as a liquid, is used to control emergent plants like spartina, reed canary grass, and phragmites and floating-leaved plants like water lilies. Imazapyr does not work on underwater plants such as Eurasian watermilfoil. Although imazapyr is a broad spectrum, non-selective herbicide, a good applicator can somewhat selectively remove targeted plants by focusing the spray only on the plants to be removed. Imazapyr was allowed for use in Washington in 2004.

Surfactants

- There are seven surfactants allowed for use under the NPDES permits. These include: R-11® , LI-700® , Agri-Dex® , Class Act Next Generation®, Competitor®, Dyne-Amic®, and Kinetic®.

Advantages

- Aquatic herbicide application can be less expensive than other aquatic plant control methods, especially when used in controlling wide-spread infestations of state-listed noxious aquatic weeds.
- Aquatic herbicides are easily applied around docks and underwater obstructions.
- Washington has had some success in eradicating Eurasian watermilfoil, a state listed noxious weed, from some smaller lakes (350 acres or less) using fluridone products.
- 2,4-D has been shown to be effective in controlling smaller infestations (not lake-wide) of Eurasian watermilfoil in Washington.

Disadvantages

- Some herbicides have swimming, drinking, fishing, irrigation, and water use restrictions (check the label and general permit).
- Herbicide use may have unwanted impacts to people who use the water and to the environment.
- Non-targeted plants as well as nuisance plants may be controlled or killed by some herbicides.
- Depending on the herbicide used, it may take several days to weeks or several treatments during a growing season before the herbicide controls or kills treated plants.
- Rapid-acting herbicides like endothall and diquat may cause low oxygen conditions to develop as plants decompose. Low oxygen can cause fish kills.
- To be most effective, generally herbicides must be applied to rapidly-growing plants.
- Some expertise in using herbicides is necessary in order to be successful and to avoid unwanted impacts.
- Many people have strong feelings against using chemicals in water. It is important to find out what your neighbors think about chemical use before deciding to treat your water plants with herbicides.
- Some cities or counties may have policies forbidding or discouraging the use of aquatic herbicides. Check before hiring an aquatic herbicide applicator.

Permits

A NPDES permit is needed to apply any aquatic pesticide (including herbicides) to waters of the state. Both the noxious aquatic weed and nuisance plant and algae NPDES permits require the development of integrated aquatic vegetation management plans before the third season of treatment. Additional plan guidance was developed in 2004 and this guidance can be seen at: <http://www.ecy.wa.gov/pubs/0410053.pdf>. Some herbicide residue monitoring may also be required.

Cost

Table 6: Cost Breakdown for Chemical Control

Herbicide	Cost Per Treated Acre
Systemic	
Glyphosate	\$250 to \$350
Fluridone	\$900 to \$1,100
2,4-D	\$275 to \$700
Triclopyr	\$1,700
Imazapyr	Unknown at this time
Contact	
Diquat	\$300 to \$400
Endothall	\$650

Suitability for Clear and Beaver Lakes

Due to the dense, prolific nature of the noxious weed infestations at Clear and Beaver Lakes, aquatic herbicide use will be a key component to any eradication/control strategy for Eurasian watermilfoil (*Myriophyllum spicatum*), Brazilian elodea (*Egeria densa*), and Fragrant water-lily (*Nymphaea odorata*). Use of aquatic herbicides is appropriate for these lakes for the following reasons:

- 1) Aquatic herbicides are the most cost effective measure for large scale infestations like at Clear & Beaver Lakes.
- 2) Northwest Washington lakes have experienced success in eradicating Eurasian milfoil with Sonar.
- 3) Due to the large extent of the Fragrant water-lily, control with Glyphosate would be the most time and cost effective in restoring beneficial uses.
- 4) Diquat has proven to be an effective control against Brazilian elodea. In the event that the pioneering infestation is not adequately controlled by hand removal, the community could use Diquat as a back up measure.
- 5) Aquatic herbicides have the highest potential in achieving long-term control and/or eradication of the aquatic noxious plants present in Clear and Beaver Lakes.

- 6) Compared to other control methods, aquatic herbicides will restore beneficial uses more quickly than if other methods were utilized as the primary control.

To control Eurasian watermilfoil, Sonar® is the most appropriate choice for eradication. Follow-up spot treatments for small scale re-infestations with 2,4-D is a cost effective contingency measure.

Diquat has proven successful in controlling Brazilian elodea; however, chemical control is not the preferred strategy against this plant at Beaver Lake due to the presence of three bristly sedge plants located near the pioneering infestation. In order to avoid non-target plant impacts to the rare bristly sedge, manual control alternatives will be implemented first. Use of diquat should be considered only as a contingency method or if the Brazilian elodea population proliferates and becomes a significant threat to adjacent waterways.

According to the survey report prepared by EnviroVision in 2005, there are 53 acres of Fragrant water-lily along the margins of Clear Lake. Due to the large scale infestation observed at Clear Lake, aquatic herbicides represent the most appropriate control method available for long-term control of fragrant water lily. To avoid the formation of peat islands, the community should develop a lakescape plan to remove the lilies in areas of high intensity use and then clear channels for fishing, recreational, and shoreline access.

Floating peat islands or tussocks can form when decomposing aquatic plants rooted in deep sediments float to the surface. Treatments with herbicides can expedite the formation of tussocks, which can form naturally as a lake ages and becomes more nutrient rich. In the event tussocks form at Clear & Beaver Lakes, they may prove to be more costly and problematic to treat than the existing bands of fragrant water lily.

MANUAL METHODS

Hand-Pulling

Hand-pulling aquatic plants is similar to pulling weeds out of a garden. It involves removing entire plants (leaves, stems, and roots) from the area of concern and disposing of them in an area away from the shoreline. In water less than three feet deep no

specialized equipment is required, although a spade, trowel, or long knife may be needed if the sediment is packed or heavy. In deeper water, hand pulling is best accomplished by divers with SCUBA equipment and mesh bags for the collection of plant fragments. Some sites may not be suitable for hand-pulling such as areas where deep flocculent sediments may cause a person hand-pulling to sink deeply into the sediment.

Cutting

Cutting differs from hand-pulling in that plants are cut and the roots are not removed. Cutting is performed by standing on a dock or on shore and throwing a cutting tool out into the water. A non mechanical aquatic weed cutter is commercially available. Two single-sided, razor sharp stainless steel blades forming a "V" shape are connected to a handle, which is tied to a long rope. The cutter can be thrown about 20-30 feet into the water. As the cutter is pulled through the water, it cuts a 48-inch wide swath. Cut plants rise to the surface where they can be removed. Washington State requires that cut plants be removed from the water. The stainless steel blades that form the "V" are extremely sharp and great care must be taken with this device. It should be stored in a secure area where children do not have access.

Raking

A sturdy rake makes a useful tool for removing aquatic plants. Attaching a rope to the rake allows removal of a greater area of weeds. Raking literally tears plants from the sediment, breaking some plants off and removing some roots as well. Specially designed aquatic plant rakes are available. Rakes can be equipped with floats to allow easier plant and fragment collection. The operator should pull toward the shore because a substantial amount of plant material can be collected in a short distance.

Cleanup

All of the manual control methods create plant fragments. It is important to remove all fragments from the water to prevent them from re-rooting or drifting onshore. Plants and fragments can be composed or added directly to a garden.

Advantages

- Manual methods are easy to use around docks and swimming areas.
- The equipment is inexpensive.
- Hand-pulling allows the flexibility to remove undesirable aquatic plants while leaving desirable plants.
- These methods are environmentally safe.
- Manual methods do not require expensive permits and can be performed on aquatic noxious weeds with Hydraulic Project Approval (HPA) obtained by reading and following the pamphlet *Aquatic Plants and Fish* (publication #APF-1-98) available from the Washington Department of Fish & Wildlife.

Disadvantages

- As plants re-grow or fragments re-colonize the cleared area, the treatment may need to be repeated several times each summer.
- Because these methods are labor intensive, they may not be practical for large areas or for thick weed beds.
- Even with the best containment efforts, it is difficult to collect all plant fragments, leading to re-colonization.
- Some plants, like water lilies, which have massive rhizomes, are difficult to remove by hand pulling.
- Pulling weeds and raking stirs up the sediment and makes it difficult to see remaining plants. Sediment re-suspension can also increase nutrient levels in lake water.

- Hand-pulling and raking impacts bottom-dwelling animals.
- The V-shaped cutting tool is extremely sharp and can be dangerous to use.

Permits

Permits are required for most types of manual projects in lakes and streams. The Washington State Department of Fish & Wildlife requires a *Hydraulic Project Approval* permit for all activities taking place in the water including hand-pulling, raking, and cutting of aquatic plants.

Costs

- Hand-pulling costs up to \$130 for the average waterfront lot for a hired commercial puller.
- A commercial grade weed cutter costs about \$130 with accessories. A commercial rake costs \$95 to \$125. A homemade weed rake costs about \$85 (asphalt rake is about \$75 and the rope costs 35-75 cents per foot).

Other Considerations

Does the community want to invest in weed rakes or other equipment?

Manual methods must include regularly scheduled surveys to determine the extent of the remaining weeds and/or the appearance of new plants after eradication has been attained.

Suitability for Clear and Beaver Lakes

The primary management goal at Clear & Beaver Lakes is to eradicate Eurasian watermilfoil and Brazilian elodea and to control the vast populations of fragrant water lily at Clear Lake. Due to the large extent of the noxious weed infestations at both lakes, sole use of manual controls is not an appropriate strategy to achieve the community's stated goal; however, hand removal, cutting, and raking are appropriate measures to

achieve localized control of water lilies and to remove pioneering re-infestations of fragrant water lily, as well as Eurasian milfoil and Brazilian elodea subsequent the initial treatments.

Diver Dredging

Diver dredging (suction dredging) is a method whereby SCUBA divers use hoses attached to small dredges (often dredges used by miners for mining gold from streams) to suck plant material from the sediment. The purpose of diver dredging is to remove all parts of the plant including the roots. A good operator can accurately remove target plants, like Eurasian watermilfoil, while leaving native species untouched. The suction hose pumps the plant material and the sediments to the surface where they are deposited into a screened basket. The water and sediment are returned back to the water column (if the permit allows this), and the plant material is retained. The turbid water is generally discharged to an area curtained off from the rest of the lake by a silt curtain. The plants are disposed of on shore. Removal rates vary from approximately 0.25 acres per day to one acre per day depending on plant density, sediment type, size of team, and diver efficiency. Diver dredging is more effective in areas where softer sediment allows easy removal of the entire plant; although, water turbidity is increased with softer sediments. Harder sediment may require the use of a knife or tool to help loosen sediment from around the roots. In very hard sediments, milfoil plants tend to break off leaving the roots behind, which defeats the purpose of diver dredging.

Diver dredging has been used in British Columbia, Washington, and Idaho to remove early infestations of Eurasian watermilfoil. In a large-scale operation in western Washington, two years of diver dredging reduced the population of milfoil by 80 percent (Silver Lake, Everett). Diver dredging is less effective on plants where seeds, turions, or tubers remain in the sediments to sprout the next growing season. For that reason, Eurasian watermilfoil is generally the target plant for removal during diver dredging operations.

Advantages

- Diver dredging can be a very selective technique for removing pioneering colonies of Eurasian watermilfoil.
- Divers can remove plants around docks and in other areas that are difficult to reach.
- Diver dredging can be used in situations in which herbicide use is not an option for aquatic plant management.

Disadvantages

- Diver dredging is very expensive.
- Dredging stirs up large amounts of sediment. This may lead to the release of nutrients or long-buried toxic materials into the water column.
- Only the tops of plants growing in rocky or hard sediments may be removed, leaving a viable root crown behind to initiate growth.
- In some states, acquisition of permits can take years.

Permits

Permits are required for most types of projects in lakes and streams. Diver dredging requires Hydraulic Project Approval from the Department of Fish & Wildlife. Lake communities should check with their city or county for any local requirements before proceeding with a diver-dredging project. Also diver dredging may require a Section 404 permit from the U.S. Army Corps of Engineers.

Costs

The cost for a diver dredging operation will vary depending on the density of the targeted plants due to variations in specific equipment used, number of divers needed, and disposal requirements necessary. A minimum of approximately \$1,500 to \$2,000 may be charged per day for diver dredging projects.

Other Considerations

Small diver dredging operations could serve as a feasible method for spot treatments when coordinated with a diver survey.

Suitability for Clear and Beaver Lakes

Diver dredging would not be an appropriate control method to achieve eradication of Eurasian milfoil or fragrant water lily in either lake because the nature of the infestations makes this alternative cost prohibitive. Use of this method to help remove the pioneering infestation at Beaver Lake, however, would be appropriate for the following reasons:

- 1) The infestation is less than half of an acre, so the labor costs would be reasonable.
- 2) Diver dredging removes the entire plant, so there is the potential for success in achieving eradication.
- 3) Based on site visits, it is apparent that Beaver Lake is composed of soft sediments in the area of infestation so the plants would likely release from the sediments with greater ease.

Bottom Screens

A bottom screen or benthic barrier covers the sediment like a blanket, compressing aquatic plants while reducing or blocking light. Materials such as burlap, plastics, perforated black Mylar, and woven synthetics can all be used as bottom screens. Some people report success using pond liner materials. There is also a commercial bottom screen fabric called Texel, a heavy, felt-like polyester material, which is specifically designed for aquatic plant control.

An ideal bottom screen is durable, heavier than water, reduce or block light, prevents plants from growing into and under the fabric, easy to install and maintain, and should readily allow gases produced by rotting weeds to escape without “ballooning” the fabric upwards.

Even the most porous materials, such as window screen, will billow due to gas buildup; therefore, it is very important to anchor the bottom barrier securely to the bottom. Unsecured screens can create navigation hazards and are dangerous to swimmers. Anchors must be effective in keeping the material down and must be checked regularly. Natural materials such as rocks or sandbags are preferred as anchors.

The duration of weed control depends on the rate that weeds can grow through or on top of the bottom screen, the rate that new sediment is deposited on the barrier, and the durability and longevity of the material. For example, burlap may rot within two years, and plants can grow through window screening material, as well as on top of felt-like Texel fabric. Regular maintenance is essential and can extend the life of most bottom barriers.

Bottom screens will control most aquatic plants. Freely-floating species such as the bladderworts or coontail will not be controlled by bottom screens. Plants like Eurasian watermilfoil will send out lateral surface shoots and may canopy over the area that has been screened giving less than adequate control.

In addition to controlling nuisance weeds around docks and in swimming beaches, bottom screening has become an important tool to help eradicate and contain early infestations of noxious weeds such as Eurasian milfoil and Brazilian elodea. Pioneering colonies that are too extensive to be hand pulled can sometimes be covered with bottom screening material. For these projects, burlap with rocks or burlap sandbags for anchors is suggested. By the time the material decomposes, the milfoil patches are dead as long as all plants were completely covered. Snohomish County staff reported native aquatic plants colonizing burlap areas that covered pioneering patches of Eurasian milfoil. When using this technique for Eurasian watermilfoil eradication projects, divers should recheck the screen within a few weeks to make sure that all milfoil plants remain covered and that no new fragments have taken root nearby.

Bottom screens can be installed by the homeowner or by a commercial plant control specialist. Installation is easier in winter or early spring when plants have died back. In the summer, cutting or hand-pulling the plants first will facilitate bottom screen installation. Research has shown that more gas is produced under bottom screens when installed over the top of aquatic plants. The less plant material that is present before

installing the screen, the more successful the screen will be in staying in place. Bottom screens may also be attached to frames rather than placed directly onto the sediment. The frames may then be moved for control of a larger area.

Advantages

- Bottom screen installation creates an immediate open area of water.
- Bottom screens are easily installed around docks and in swimming areas.
- Properly installed bottom screens can control up to 100 percent of aquatic plants.
- Screen materials are readily available and can be installed by homeowners or by divers.

Disadvantages

- Because bottom screens reduce habitat by covering the sediment, they are suitable for only localized control.
- For safety and performance reasons, bottom screens must be regularly inspected and maintained.
- Harvesters, rotovators, fishing gear, propeller backwash, or boat anchors may damage or dislodge bottom screens.
- Improperly anchored bottom screens may create safety hazards for boaters and swimmers.
- Swimmers may be injured by poorly maintained anchors used to pin bottom screens to the sediment.
- Some bottom screens are difficult to anchor on deep sediments.
- Bottom screens interfere with fish spawning and bottom-dwelling animals.
- Without regular maintenance, aquatic plants may quickly colonize the bottom screen.

Permits

Bottom screening in Washington requires Hydraulic Project Approval from the Washington Department of Fish & Wildlife. A shoreline substantial development permit is also required by Skagit County Planning & Development Services to install bottom barriers. In the event the Department of Fish & Wildlife considers the proposal a fish and wildlife enhancement project, the project can be processed as a shoreline exemption.

Costs

Barrier materials cost \$0.22 to \$1.25 per square foot. The cost of some commercial barriers includes an installation fee.

Commercial installation costs vary depending on sediment characteristics and the type of bottom screen selected. Installation of 1,000 square feet of bottom screen costs approximately \$750; in addition, maintenance costs for a waterfront lot are about \$120 per year.

Other Considerations

None.

Suitability for Clear and Beaver Lakes

Bottom barriers are not an appropriate method for achieving eradication of the invasive aquatic plants in Clear or Beaver Lakes. Localized control may be achieved with bottom barriers, except, this method would prove more costly and problematic due to the presence of coarse woody debris on the lake bottom.

Skagit County Parks and Recreation (SCPR) attempted to install a bottom barrier in the swimming area owned and operated by the County on the west side of Clear Lake. SCPR installed the device in 1994 or 1995 and had to replace portions of it in 2001. Herbicide treatments were required to provide adequate control of the plants for the safety of patrons using the site. There are reports that the bottom is irregular and has

large logs and debris, which would increase the failure rate and the maintenance costs of bottom barriers in the lakes.

Rotovation, Harvesting, and Cutting

Rotovation

Rotovators use underwater rototiller-like blades to uproot Eurasian watermilfoil plants. The rotating blades churn seven to nine inches deep into the lake or river bottom to dislodge plant root crowns that are generally buoyant. The plants and roots may then be removed from the water using a weed rake attachment to the rototiller head or by harvester or manual collection.

Harvesting

Mechanical harvesters are large machines that cut and collect aquatic plants. Cut plants are removed from the water by a conveyor belt system and stored on the harvester until disposal. A barge may be stationed near the harvesting site for temporary plant storage or the harvester carries the weeds to shore.

Cutting

Mechanical weed cutters cut aquatic plants several feet below the water's surface. Unlike harvesting, cut plants are not collected while the machinery operates.

Suitability for Clear and Beaver Lakes

Mechanical controls, including Rotovation, harvesting, and cutting are not suitable methods for eradication or localized control. Plant fragmentation could increase the risk of spreading Eurasian watermilfoil and Brazilian elodea to other areas of the lake and/or other waterways. In addition, these methods would have high capital costs and would be cost prohibitive for the small lakeside community.

BIOLOGICAL METHODS

General Overview

Many problematic aquatic plants in the Western United States are non-indigenous species. Plants like Eurasian watermilfoil, Brazilian elodea, and purple loosestrife have been introduced to North America from other continents. Here they grow extremely aggressively, forming monocultures that exclude native aquatic plants and degrade fish and wildlife habitat. Yet often these same species are not aggressive or invasive in their native range. This may be in part because their populations are kept under control by insects, diseases, or other factors not found in areas new to them.

The biological control of aquatic plants focuses on the selection and introduction of other organisms that have an impact on the growth or reproduction of a target plant, usually from their native ranges. Theoretically, by stocking an infested waterbody or wetland with these organisms, the target plant can be controlled and native plants can recover.

Classic biological control uses control agents that are host specific. These organisms attack only the species targeted for control. Generally, these biocontrol agents are found in the native range of the nuisance aquatic plants and, like the targeted plant, these biocontrol agents are also non-indigenous species. With classic biological control an exotic species is introduced to control another exotic species. Extensive research must be conducted before release to ensure that biological control agents are host specific and will not harm the environment in other ways. The authors of *Biological Control of Weeds – A World Catalogue of Agents and Their Target Weeds* state that after 100-years of using biocontrol agents, there are only eight examples, world-wide, of damage to non-target plants, “none of which has caused serious economic or environmental damage...”

Search for a classical biological control agent typically starts in the region of the world that is home to the nuisance aquatic plant. Researchers collect and rear insects and/or pathogens that appear to have an impact on the growth or reproduction of the target species. Those insects/pathogens that appear to be generalists (feeding or impacting other aquatic plant species) are rejected as biological control agents. Only insects that exclusively impact the target species, or very closely related species, are considered for release.

Once collected, these insects are reared and tested for host specificity and other parameters. Only extensively researched, host-specific organisms are cleared by the

United States for release. It generally takes a number of years of study and specific testing before a biological control agent is approved.

Even with an approved host-specific bio-control agent, control can be difficult to achieve. Some biological control organisms are very successful in controlling exotic species and others are of little value. A number of factors come into play. It is sometimes difficult to establish reproducing populations of a bio-control agent. The ease of collection of the bio-control and placement on the target species can also have a role in its effectiveness. Climate or other factors may prevent its establishment, with some species not proving capable of over-wintering in their new setting. Sometimes the bio-control insects become prey for native predator species and sometimes the impact of the insect on the target plant is not enough to control the growth and reproduction of the species.

Even when biological control works, a classic biological control does not completely eliminate all target plants. A predator-prey cycle establishes where increasing predator populations will reduce the targeted species. In response to decreased food supply (the target plant is the sole food source for the predator), the predator species will decline. The target plant species rebounds due to the decline of the predator species. The cycle continues with the predator populations building in response to an increased food supply.

Although a successful biological control agent rarely eradicates a problem species, it can reduce populations substantially, allowing native species to return. Used in an integrated approach with other control techniques, biological agents can stress target plants making them more susceptible to other control methods.

Another type of biological control uses general agents such as grass carp (see below) to manage problem plants. Unlike bio-control agents, these fish are not host specific and will not target specific species. Although grass carp do have food preferences, under some circumstances they can eliminate all submersed vegetation in a waterbody. Like classic biological control agents, grass carp are exotic species and originate from Asia. In Washington, all grass carp must be certified sterile before they can be imported into the state. There are many waterbodies in Washington (mostly smaller sites) where grass carp are used to control the growth of aquatic plants.

During the past decade a third type of control agent has emerged. In this case, a native insect that feeds and reproduces on northern milfoil (*Myriophyllum sibiricum*), which is native to North America, was found to also utilize the non-native Eurasian watermilfoil (*Myriophyllum spicatum*). Vermont government scientists first noticed that Eurasian

watermilfoil had declined in some lakes and brought this to the attention of researchers. It was discovered that a native watermilfoil weevil (*Euhrychiopsis lecontei*) feeding on Eurasian watermilfoil caused the stems to collapse. Because native milfoil has thicker stems than Eurasian watermilfoil, the mining activity of the larvae does not cause it the same kind of damage. A number of declines in Eurasian watermilfoil have been documented around the United States and researchers believe that weevils may be implicated in many of these declines.

Several researchers around the United States (Vermont, Minnesota, Wisconsin, Ohio, & Washington) have been working to determine the suitability of this insect as a bio-control agent. The University of Washington is conducting research into the suitability of the milfoil weevil for the biological control of milfoil in Washington lakes and rivers. Surveys have shown that in Washington the weevil is found more often in eastern Washington lakes and seems to prefer more alkaline waters. Despite this, though, it is also present in cooler, wetter western Washington. The most likely candidates for use as biological control are discussed in the following section.

Grass Carp

<http://www.ecy.wa.gov/programs/wq/plants/management/aqua024.html>

The grass carp (*Cteno pharynogodon*), also known as the white amur, is a vegetarian fish native to the Amur River in Asia. Because this fish feeds on aquatic plants, it can be used as a biological tool to control nuisance aquatic plant growth. In some situations, sterile (triploid) grass carp may be permitted for introduction into Washington waters.

Permits are most readily obtained if the lake or pond is privately owned, has no inlet or outlet, and is fairly small. The objective of using grass carp to control aquatic plant growth is to end up with a lake that has about 20 to 40 percent plant cover, not a lake devoid of plants. In practice, grass carp often fail to control the target plants, or in cases of overstocking, all the submersed plants are eliminated from the waterbody.

The Washington Department of Fish & Wildlife determines the appropriate stocking rate for each waterbody when they issue the grass-carp stocking permit. Stocking rates for Washington lakes generally range from 9 to 25 fish per vegetated acre. These fish are typically 8 to 11 inches long. The number of fish will depend on the density and type of plants in the lake as well as spring and summer water temperatures. To prevent

stocked grass carp from migrating out of the lake and into streams and rivers, all inlets and outlets to the pond or lake must be screened. For this reason, residents on waterbodies that support a salmon or steelhead run are rarely allowed to stock grass carp into these systems.

Once grass carp are stocked in a lake, it may take from two to five years for them to control nuisance plants. Survival rates of the fish will vary depending on factors like presence of otters, birds of prey, or fish disease. A lake will probably need restocking about every ten years.

Success with grass carp in Washington has been varied. Sometimes the same stocking rate results in no control, control, or even complete elimination of all underwater plants. Bonar *et. Al.* found that only 18 percent of 98 Washington lakes stocked with grass carp at a median level of 24 fish per vegetated acre had aquatic plants controlled to an intermediate level. In 39 percent of the lakes, all submersed plant species were eradicated. It has become the consensus among researchers and aquatic plant managers around the country that grass carp are an all or nothing control option. They should be stocked only in waterbodies where complete elimination of all submersed plant species can be tolerated.

Grass carp exhibit definite food preferences and some aquatic plant species will be consumed more readily than others. Pauley and Bonar performed experiments to evaluate the importance of 20 Pacific Northwest aquatic plant species as food items for grass carp. Grass carp did not remove plants in a preferred species-by-species sequence in multi-species plant communities. Instead they grazed simultaneously on palatable plants of similar preference before gradually switching to less preferred groups of plants. The relative preference of many plants was dependent upon other plants associated with them. The relative preference rank for the 20 aquatic plants tested was as follows: *Potamogeton crispus* (curly leaf pondweed) = *P. pectinatus* (sago pondweed) > *P. zosteriformes* (flat-stemmed pondweed) > *Chara* sp. (muskgrasses) = *Elodea canadensis* (American waterweed or common waterweed) = thin-leaved pondweeds *Potamogeton* spp. > ***Egeria densa* (Brazilian elodea) (large fish only)** > *P. praelongus* (white stemmed pondweed) = *Vallisneria Americana* (water celery) > ***Myriophyllum spicatum* (Eurasian watermilfoil)** > *Ceratophyllum demersum* (coontail) > *Utriculata vulgaris* (bladderwort) > *Polygonum amphibium* (water smartweed) > *P. natans* (floating leaved pondweed) > *P. amplifolius* (big leaf pondweed) > *Brasenia schreberi* (watershield) = *Juncus* sp. (rush) > ***Egeria densa* (Brazilian elodea) (fingerling fish only)** > *Nymphaea* sp. (fragrant water lily) > *Typha* sp. (cattail) > *Nuphar* sp. (spatterdock).

Generally, in Washington, grass carp do not consume emergent wetland vegetation or water lilies even when the waterbody is heavily stocked or over stocked. A heavy

stocking rate of triploid grass carp in Chambers Lake, Thurston County resulted in the loss of most submersed species, whereas the Fragrant water-lilies, bog bean, and spatterdock remained at pre-stocking levels. A stocking of 82,000 triploid grass carp into Silver Lake, Washington, resulted in the total eradication of all submersed species, including Eurasian watermilfoil, Brazilian elodea, and swollen bladderwort; however, the extensive wetlands surrounding Silver Lake have generally remained intact. In southern states, grass carp have been shown to consume some emergent vegetation (Washington State Department of Ecology 2002).

Grass carp stocked into Washington lakes must be certified disease free and sterile. Sterile fish, called triploids because they have an extra chromosome, are created when the fish eggs are subjected to a temperature or pressure shock. Fish are verified sterile by collecting and testing a blood sample. Triploid fish have slightly larger blood cells and can be differentiated from diploid (fertile) fish by this characteristic. Grass carp imported into Washington must be tested to ensure that they are sterile.

Because Washington does not allow fertile carp within the state, all grass carp are imported into Washington from out of state locations. Most grass carp farms are located in the southern United States where warmer weather allows for fast fish growth rates. Large shipments are transported in special trucks and small shipments arrive via air.

Provided below are some facts about grass carp:

- They are only distantly related to the undesirable European carp, and share few of its habits.
- Grass carp generally live for at least ten years and possibly much longer in Washington state waters.
- Grass carp will grow rapidly and reach at least ten pounds. They have been known to reach 40 pounds in the southern United States.
- They will not eat fish eggs, young fish or invertebrates; although baby grass carp are omnivorous.
- The grass carp eat from the top of the plant down so that mud is not stirred up; however, in ponds and lakes where grass carp have eliminated all submersed vegetation, the water becomes turbid because hungry fish will eat organic material out of the sediment.

- Grass carp have definite taste preferences. Plants like Eurasian watermilfoil and coontail are **not** preferred; water lilies are rarely consumed in Washington waters.
- During winter, grass carp become dormant. Intensive feeding starts when water temperatures reach 68°F.
- Grass carp prefer flowing water to still waters (original habitat is fluvial).
- Once released, grass carp are difficult to recapture.
- Grass carp may avoid feeding in swimming areas, docks, boating areas, or other sites where there is heavy human activity.

Advantages

- Grass carp are inexpensive compared to some other control methods and offer long-term control, but fish may need to be restocked at intervals.
- Grass carp offer a biological alternative to aquatic plant control.

Disadvantages

- Depending on plant densities and types, it may take several years to achieve plant control using grass carp and in many cases control may not occur.
- If the waterbody is overstocked, all submersed aquatic plants may be eliminated. Removing excess fish is difficult and expensive.
- The type of plants grass carp prefer may also be those most important for habitat and for waterfowl food.
- If not enough fish are stocked, less-favored plants, such as Eurasian milfoil, may take over the lake.
- Stocking grass carp may lead to algae blooms.
- All inlets and outlets to the lake or pond must be screened to prevent grass carp from escaping into streams, rivers, or other lakes.

Permits

Stocking grass carp requires a fish-stocking permit from the Washington Department of Fish & Wildlife. A Hydraulic Project Approval application must be completed for any necessary inlet/outlet screening projects.

Costs

In quantities of 10,000 or more, 8 to 12 inch sterile grass carp can be purchased for about \$5.00 each for truck delivery. The cost of small air freighted orders will vary and is estimated at \$8 to \$10 per fish.

Other Considerations

- Bio-control would not achieve immediate results, it takes time and is not guaranteed to work.
- The community may have concerns with introduced species.
- Bio-control agents could potentially damage the native aquatic plant communities, which could result in the establishment of other pioneering aggressive plant species.
- Fishermen may have concerns about grass carp.
- The initial investment is very expensive.
- Grass carp introduction has generally been discouraged by State agencies.

Suitability for Clear and Beaver Lakes

Biological control is desirable to maintain low levels of aquatic plants in nutrient rich waters; however, introducing triploid grass carp is not a feasible option for Clear & Beaver Lakes. This is true because grass carp cannot be introduced to waterways that cannot be adequately screened to prevent the fish from escaping into salmon bearing streams. Clear and Beaver Lakes are located within the Skagit River 100-year floodplain. During flood events, Skagit River water backing up in the Nookachamps Creek watershed causes increased water levels and backflow into Beaver Lake and Clear Lake. During these events, grass carp would have the opportunity to leave the lakes and negatively impact important salmon habitat.

Watermilfoil Weevil

The following information and citations on the watermilfoil weevil are taken from the Washington State Department of Ecology's website on Aquatic Plant Management. <http://www.ecy.wa.gov/programs/wq/plants/management/weevil.html>

The milfoil weevil, *Euhrychiopsis lecontei*, has been associated with declines of Eurasian watermilfoil (*Myriophyllum spicatum*) in the United States (e.g. Illinois, Minnesota, Vermont, and Wisconsin). Researchers in Vermont found that the milfoil weevil can negatively impact Eurasian watermilfoil by suppressing the plants growth and reducing its buoyancy (Creed and Sheldon 1995). In 1989 state biologists reported that Eurasian watermilfoil in Brownington Pond, Vermont had declined from approximately 10 hectares (in 1986) to less than 0.5 hectares. Researchers from Middlebury College, Vermont hypothesized that the milfoil weevil, which was present in Brownington Pond, played a role in reducing Eurasian watermilfoil (Creed and Sheldon 1995). From 1990 through 1992, researchers monitored the populations of Eurasian watermilfoil and the milfoil weevil in Brownington Pond. They found that by 1991 Eurasian watermilfoil cover had increased to approximately 2.5 hectares (approximately 55-65 g/m²) in 1992. Weevil abundance began increasing in 1990 and peaked in June of 1992, where 3-4 weevils (adults and larvae) per stem were detected (Creed and Sheldon 1995). These results supported the hypothesis that the milfoil weevil played a role in reducing Eurasian watermilfoil in Brownington Pond.

Another documented example where a crash of Eurasian watermilfoil has been attributed to the milfoil weevil is in Cenaiko Lake, Minnesota. Researchers from the

University of Minnesota reported a decline in the density of Eurasian watermilfoil from 123 g/m² in July of 1996 to 14 g/m² in September of 1996. Eurasian watermilfoil remained below 5 g/m² in 1997, then increased to 44 g/m² in June and July of 1998 and declined again to 12 g/m² in September of 1998 (Newman and Biesboer, in press). In contrast, researchers found that weevil abundance in Cenaiko Lake was 1.6 weevils (adults and larvae) per stem in July of 1996. Weevil abundance, however, decreased with declining densities of Eurasian watermilfoil in 1996 and by September 1997 weevils were undetectable. In September of 1998 weevil abundance had increased to >2 weevils per stem (Newman and Biesboer, in press). Based on observations made by researchers in Vermont, Ohio, and Wisconsin it seems that having 2 weevils (or more) per stem is adequate to control Eurasian watermilfoil; although, as indicated by the study conducted in Cenaiko Lake, Minnesota, an abundance of 1.5 weevils per stem may be sufficient in some cases (Newman and Biesboer, in press).

In Washington State, the milfoil weevil is present primarily in eastern Washington and occurs on both Eurasian and northern watermilfoil (*M. sibiricum*), the latter plant being native to the state (Tamayo et al. 1999). During the summer of 1999, researchers from the University of Washington determined the abundance of the milfoil weevil in 11 lakes in Washington. They found, that weevil abundance ranged from undetectable levels to 0.3 weevils (adults and larvae) per stem. Fan Lake, Pend Oreille County had the greatest density per stem of 0.6 weevils (adults, larvae, and eggs per stem). The weevils were present on northern watermilfoil. These abundant results are well below the recommendations made by other researchers in Minnesota, Ohio, Vermont, and Wisconsin of having at least 1.5 – 2.0 weevils per stem to control Eurasian watermilfoil.

To date, there have not been any documented declines of Eurasian watermilfoil in Washington State that can be attributed to the milfoil weevil; although, Creed speculated that declines of Eurasian watermilfoil in Lake Osoyoos and the Okanogan River may have been caused by the milfoil weevil. In Minnesota, Cenaiko Lake is the only lake in the state that has had a Eurasian watermilfoil crash due to the weevil; other weevil lakes are yet to show declines in Eurasian watermilfoil.

Researchers in Minnesota have suggested that sunfish predation may be limiting weevil densities in some lakes (Sutter and Newman 1997). The latter may be true for Washington State, as sunfish populations are present in many lakes in the state, including those with weevils. In addition, other environmental factors that may be keeping weevil populations in check in Washington, but have yet to be studied, include over-wintering survival and habitat quality and quantity (Jester et al. 1997; Tamayo et al., in press). Although the milfoil weevil shows potential as a biological control for Eurasian watermilfoil, more work is needed to determine the factors that limit weevil

densities, and which lakes are suitable candidates for weevil treatments in order to implement a cost and control effective program.

Advantages

- Milfoil weevils offer a biological alternative to aquatic plant control.
- They may be cheaper than other control strategies.
- Bio-controls enable weed control in hard-to-access areas and can become self-supporting in some systems.
- If they are capable of reaching a critical mass, bio-controls can decimate a weed population.

Disadvantages

- There are many uncertainties regarding the effectiveness of this bio-control in western Washington waters.
- There have not been any documented declines of Eurasian milfoil in Washington State that can be attributed to the milfoil weevil.
- Bio-controls often do not eradicate the target plant species. Population fluctuations can occur as the milfoil and weevil follow predator-prey cycles.

Permits

The milfoil weevil is native to Washington and is present in a number of lakes and rivers. It is found associated with both native northern milfoil and Eurasian watermilfoil. A company is selling milfoil weevils commercially. To import these out-of-state weevils into Washington requires a permit from the Washington Department of Agriculture. As of October 1, 2002 no permits have been issued for Washington.

Cost

The cost for researchers to locate, culture, and test bio-control agents is high. Once approved for use, insects can sell for \$1.00 or more per insect. Sometimes it is possible to establish nurseries where weed specialists can collect insects for reestablishment elsewhere.

Suitability for Clear and Beaver Lakes

This alternative is not appropriate for eradication of Eurasian watermilfoil. The potential for successful aquatic plant control using this alternative for control is unknown because milfoil weevils are still experimental. The success rate in western Washington's lakes is still highly variable. In the event this method becomes a viable alternative, it should be considered at the lakes because it is a low cost alternative that could provide long term control of Eurasian milfoil.

DRAWDOWN

Lowering the water level of a lake or reservoir can have a dramatic impact on some aquatic weed problems. Water level drawdown can be used where there is a water control structure that allows the managers of lakes or reservoirs to drop the water level in the waterbody for extended periods of time. Water level drawdown often occurs regularly in reservoirs for power generation, flood control, or irrigation. One benefit of drawdown is the control of some aquatic plant species. It should be noted that regular drawdowns can also make it difficult to establish native aquatic plants for fish, wildlife, and waterfowl habitat in some reservoirs.

Suitability for Clear and Beaver Lakes

Water level drawdown at these lakes is not a viable alternative. In 1964, landowners seeking reductions in water levels were denied their request by the Skagit County Superior Court. This alternative may also negatively impact native aquatic plant communities. This alternative is not likely to achieve success and the cost of exploring the idea of implementing this measure may prove costly and is not favored by the lakeside community, as evidenced by the opposition expressed in the 1964 lawsuit.

NUTRIENT REDUCTION

Nutrient Reduction Alternative

At lakes in watersheds with identifiable sources of excess nutrients, a program to reduce nutrients entering the lake could possibly be an effective method of controlling aquatic vegetation. Sources of excessive nutrients can include failing septic tanks, other accidental or planned wastewater effluent, or runoff from agricultural lands. If nutrient reduction were enacted as the primary method of weed control, extensive research would be necessary to determine the current nutrient budget for the lake and surrounding watershed. Nutrient reduction would result in invasive species eradication, and identifying and mitigating the natural and human-mediated nutrient sources.

Suitability for Clear and Beaver Lakes

Nutrient reduction is not a suitable control alternative to eradicate invasive aquatic plants at Clear and Beaver Lakes for the following reasons:

- 1) It is not an eradication method.
- 2) There is no evidence that there is significant point-source nutrient loading at Clear and Beaver Lakes.
- 3) There is no evidence that reducing nutrient loads to the water column would impact Eurasian watermilfoil, Brazilian elodea, and Fragrant water-lily growth.

Utilizing Best Management Practices to reduce non-point source nutrient loading within the watershed should be a practice to improve water quality and avoid increased aquatic plant growth rates over time. Implementation of a Lake Stewardship Program should be developed and implemented to promote the awareness of land use practices involved Best Available Science to reduce nutrient loading in Clear and Beaver Lakes.

NO ACTION ALTERNATIVE

No action to control or eradicate invasive aquatic plants could occur if the community is not successful in finding a financing mechanism to implement this IAVMP. Although, there would be no costs associated with surveys and treatments, invasive aquatic plants would continue to impair safety, recreation, environmental, and aesthetic qualities valued by lakeside residents and lake users. Additionally, the unchecked growth and continued use of the lakes by recreational boating and fishing increases the risk of spreading Eurasian watermilfoil, and Brazilian elodea to other waterways in Skagit County and Washington State.

Suitability for Clear and Beaver Lakes

Since the management goals for Clear Lake is to eradicate Eurasian watermilfoil and control fragrant water lily and because successful Eurasian watermilfoil eradication at Beaver Lake is necessary to achieve success at Clear Lake, the no action alternative is not suitable for these lakes.

INTEGRATED TREATMENT STRATEGY

Clear and Beaver Lakes, located in the lower East Fork of the Nookachamps Watershed, are heavily infested with noxious aquatic plants including Eurasian watermilfoil (*Myriophyllum spicatum*), Fragrant water-lily (*Nymphae odorata*), Brazilian elodea (*Egeria densa*). Due to the hydrological connectivity of Clear and Beaver Lakes, both water bodies must be treated simultaneously to achieve effective treatment.

Beaver Lake

Considering the infestation of *E. densa* is confined to a 0.5 acre patch in Beaver Lake, the treatment goal is complete eradication. Beginning in the spring/summer of 2007, an initial aquatic vegetation survey will be performed to re-assess the specific size of the infestation and to determine if the *E. densa* has spread to other locations in the lake. A detailed water quality analysis will be performed following the initial vegetation survey. Skagit County will obtain a contractor to perform site specific applications of Reward (Diquat) to identified populations of *E. densa*. Reward will be applied using weighted drip lines. By keeping the drip lines a minimum of 24" from any *Carex camosa* plant there will be little to no impact to any emergent sedges including *C. camosa* (Neatherland 2007) & (Syngenta 2007).

After the initial treatment for *E. densa* a whole lake Fluridone (Sonar) or liquid 2,4-D treatment will be performed on Beaver Lake to eradicate the lake wide infestation of Eurasian watermilfoil (*Myriophyllum spicatum*) and eliminate any surviving *E. densa* plants. A liquid form of Sonar will be applied at a rate of 8-10ppb. Detailed consultations with herbicide experts such as Dr. Mike Neatherland of the USACE and representatives of the SePRO Corporation (makers of Sonar) indicate that this treatment plan will have little to no impact on the emergent vegetation *C. camosa* (Neatherland 2007) & (SePRO 2007). Immediately following the lake wide treatment of Beaver Lake Skagit County will require the contractor to perform a detailed water quality analysis and herbicide residue sampling.

A second aquatic vegetation survey will be performed post treatment in the fall and continue during the first five years of this plan. During years 4-10 of this plan, only one detailed aquatic vegetation survey will be performed. If additional *E. densa* or *M. spicatum* are located, additional hand pulling and/or herbicide spot treatments using a liquid form of 2,4-D or Diquat will be performed. If any herbicide treatments are made, a post treatment vegetation survey will be conducted to determine the effectiveness.

The extensive bands of *Nymphae odorota* will be controlled gradually over a 5 year period by performing surface applications of Glyphosate. Control of *N. polysepalum* and *N. odorota* will focus primarily around developed docks, beaches, and boat access areas. Care will be taken on Beaver Lake to avoid surface Glyphosate applications within 300 feet of the identified *C. camosa* population.

Clear Lake

Beginning in the spring/summer of 2007 an initial aquatic vegetation survey will be performed by the selected contractor to determine the extent of the noxious weed infestation and provide an appropriate treatment recommendation to Skagit County Staff and the Clear and Beaver Lakes Advisory Committee.

Following the initial survey, Skagit County will select a contractor to perform a whole lake treatment to eradicate *M. spicatum* from Clear Lake. A liquid form of Sonar (Fluridone) or 2,4-D will be applied sub-surface using weighted drip lines and an application rate of 8-10ppb. More than one treatment may be applied since it will be necessary to keep low concentrations of the chemical in the lake. If needed, the contractor will perform follow up spot treatments in the second year of this plan. Following the initial lake wide herbicide treatment the selected contractor will be required to perform a detailed water quality analysis and herbicide residue sampling.

During the fall of years 1 & 2 of this plan, the selected contractor will be required to perform a second post treatment aquatic vegetation survey to determine the effectiveness of the previous treatments. During years 3-10 of this plan, annual spring vegetation surveys will be performed to identify the need for additional spot treatment. If *M. spicatum* is identified, a selected contractor will perform hand pulling or herbicide treatments as needed. In years where herbicide treatment is not needed, only one survey may need to be conducted

As in Beaver Lake, Clear Lake has extensive bands of *Nymphae odorata* surrounding the shoreline of the lakes. The goal is to control *N. odorata* gradually over years 1-5 of this plan focusing around developed docks, beaches, and boat access areas. The Clear and Beaver Lakes Advisory Committee has not determined Yellow flag iris (*Iris pseudocorus*) to be a problem and will not target it for control.

PLAN ELEMENTS, COSTS, AND FUNDING

Table 7: Summary of Estimated Costs for LAVMP Implementation

INTEGRATED STRATEGY	2007	2008	2009	2010	2011-2016	Total 10-Year
Ongoing Monitoring & Mapping						
Aquatic Plant Monitoring & Mapping	3,500	3,500	3,500	3,500	21,000	35,000
Primary Treatment Strategy						
Sonar Treatment – Eurasian milfoil - Clear Lake	33,000					33,000
Sonar Treatment – Eurasian milfoil - Beaver Lake	33,000					33,000
Glyphosate Spot Treatments – Fragrant Water Lily	5,000	-	5,000	-	15,000	25,000
Contingency Treatment Strategy						
Diquat Spot Treatments – Brazilian elodea	-	-	-	-	10,000	10,000
2,4-D Spot Treatments – Eurasian milfoil	-	-	10,000		20,000	30,000
Manual Control: Cutter, Weed Rake	150				300	450
Biological Control: Milfoil Weevil						???
Miscellaneous Treatment Costs						
Treatment Permits	350	350	350	350	2,100	3,500
Herbicide Residue Sampling	5,000		2,000		4,000	11,000
Education & Administration						
Signs/Training/Educational Materials	500	500	500	500	3,000	5,000
Brochures/mailing	500	500	500	500	3,000	5,000
Administrative Costs	5,000	5,000	5,000	5,000	30,000	50,000
Annual Total	86,000	9,850	26,850	9,850	108,400	240,950

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Appendix A: Clear Lake Bird List

Wood Warbler	Hummingbird	Red-winged Blackbird
Wilson's Warbler	Anna's Hummingbird	Grasshopper Sparrow
Woodpecker	Kinglet	Chickadee and Tit
Red-breasted Sapsucker	Golden-crowned Kinglet	Black-capped Chickadee
Downy Woodpecker	Long-tailed Tit	Common Nighthawk
Northern Flicker	Blair's	Double-crested Cormorant
Wren	Loon	Crow and Jay
Marsh Wren	Common Loon	Belted Jay
Water Wren	Old World Sparrow	American Crow
	House Sparrow	Dove, Green, Swain
	Quail	Trumpet Swan
	Quail	Canada Goose
	Pigeon and Dove	American Wigeon
	Rock Dove	Gull
	Kingbird	Green-winged Teal
	Belted Kingbird	Mallard
	Phoebe and Lavender	Northern Pintail
	Killdeer	Northern Shoveler
	Rail, Gallinule, Coot	Canvasback
	American Coot	Long-necked Duck
	Virginia Rail	Lesser Scaup
	Swallow	Common Goldeneye
	Tree Swallow	Bufflehead
	Violet-green Swallow	Hooded Merganser
	Barn Swallow	Common Merganser
	Belted, Cardinal, Albin	Redhead Duck
	Black-headed Grosbeak	Wood Duck
	Sandpiper	Falcon and Caracara
	Wilson's Pigeon	American Kestrel
	Sparrow, Towhee, Junco	Finch, Streak, Crossbill
	Song Sparrow	House Finch
	White-crowned Sparrow	American Goldfinch
	Hairy Sparrow	Pine Siskin
	Dark-eyed Junco	Grackle
	Starling	Red-billed Gull
	European Starling	Western Gull
	Thrasher	Gull
	Swainson's Thrush	Ring-billed Gull
	American Robin	Hawk, Eagle, Kite
	Varied Thrush	Bald Eagle
		Sharp-shinned Hawk
		Cook's Hawk
		Red-tailed Hawk
		Heron, Egret, Bittern
		Green Heron

Appendix A: Clear Lake Bird List

<p>Blackbirds, Orioles, Grackles Red-winged Blackbird Brewer's Blackbird</p> <p>Chickadees and Tits Black-capped Chickadee</p> <p>Cormorants Double-crested Cormorant</p> <p>Crows and Jays Steller's Jay American Crow</p> <p>Ducks, Geese, Swans Trumpeter Swan Canada Goose American Wigeon Gadwall Green-winged Teal Mallard Northern Pintail Northern Shoveler Canvasback Ring-necked Duck Lesser Scaup Common Goldeneye Bufflehead Hooded Merganser Common Merganser Redhead Ducks Wood Duck</p> <p>Falcons and Caracaras American Kestrel</p> <p>Finches, Siskins, Crossbills House Finch American Goldfinch Pine Siskin</p> <p>Grebes Pied-billed Grebe Western Grebe</p> <p>Gulls Ring-billed Gull</p> <p>Hawks, Eagles, Kites Bald Eagle Sharp-shinned Hawk Cooper's Hawk Red-tailed Hawk</p> <p>Hérons, Egrets, Bitterns Green Heron</p>	<p>Hummingbirds Anna's Hummingbird</p> <p>Kinglets Golden-crowned Kinglet</p> <p>Long-Tailed Tits Bushtit</p> <p>Loons Common Loon</p> <p>Old World Sparrows House Sparrow</p> <p>Osprey Osprey</p> <p>Pigeons and Doves Rock Dove Kingfishers Belted Kingfisher</p> <p>Plovers and Lapwings Killdeer</p> <p>Rails, Gallinules, Coots American Coot Virginia Rail</p> <p>Swallows Tree Swallow Violet-green Swallow Barn Swallow</p> <p>Saltators, Cardinals, Allies Black-headed Grosbeak</p> <p>Sandpipers Wilson's Pipe</p> <p>Sparrows, Towhees, Juncos Song Sparrow White-crowned Sparrow Harris's Sparrow Dark-eyed Junco</p> <p>Starlings European Starling</p> <p>Thrushes Swainson's Thrush American Robin Varied Thrush</p>	<p>Wood Warblers Wilson's Warbler</p> <p>Woodpeckers Red-breasted Sapsucker Downy Woodpecker Northern Flicker</p> <p>Wrens Marsh Wren Winter Wren</p>
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Appendix B: Beaver Lake Bird

<p>Blackbirds, Orioles, Grackles Red-winged Blackbird Brewer's Blackbird</p> <p>Chickadees and Tits Black-capped Chickadee</p> <p>Cormorants Double-crested Cormorant</p> <p>Crows and Jays Steller's Jay American Crow Common Raven</p> <p>Dippers American Dipper</p> <p>Ducks, Geese, Swans Trumpeter Swan Canada Goose American Wigeon Gadwall Green-winged Teal Mallard Northern Pintail Northern Shoveler Canvasback Ring-necked Duck Lesser Scaup Greater Scaup Common Goldeneye Barrow's Goldeneye Bufflehead Hooded Merganser Common Merganser Redhead Ducks Wood Duck Cinnamon Teal</p> <p>Falcons and Caracaras American Kestrel</p> <p>Finches, Siskins, Crossbills Purple Finch House Finch American Goldfinch Pine Siskin</p> <p>Grebes Pied-billed Grebe Western Grebe</p> <p>Gulls Ring-billed Gull</p>	<p>Hawks, Eagles, Kites Bald Eagle Northern Harrier Red-tailed Hawk</p> <p>Herons, Egrets, Bitterns Great Blue Heron Green Heron</p> <p>Hummingbirds Rufous Hummingbird</p> <p>Kingfishers Belted Kingfisher</p> <p>Kinglets Golden-crowned Kinglet Ruby-crowned Kinglet</p> <p>Long-Tailed Tits Bushtit</p> <p>Loons Common Loon</p> <p>New World Vultures Turkey Vulture</p> <p>Old World Sparrows House Sparrow</p> <p>Owls Northern Pygmy-Owl</p> <p>Pigeons and Doves Rock Pigeon</p> <p>Plovers and Lapwings Killdeer</p> <p>Rails, Gallinules, Coots American Coot Virginia Rail</p> <p>Sandpipers Whimbrel Dunlin</p> <p>Shrikes Northern Shrike</p>	<p>Sparrows, Towhees, Juncos Song Sparrow Spotted Towhee Dark-eyed Junco Savannah Sparrow White-crowned Sparrow Golden-crowned Sparrow</p> <p>Starlings European Starling</p> <p>Swallows Tree Swallow Violet-green Swallow Barn Swallow Violet-green Swallow Northern Rough-winged Swallow Cliff Swallow</p> <p>Thrushes Swainson's Thrush American Robin Varied Thrush</p> <p>Tyrant Flycatchers Willow Flycatcher</p> <p>Vireos and Allies Warbling Vireo</p> <p>Wagtails and Pipits American Pipit</p> <p>Waxwings Cedar Waxwing</p> <p>Wood Warblers Wilson's Warbler Yellow Warbler Yellow-rumped Warbler Common Yellowthroat</p> <p>Woodpeckers Red-breasted Sapsucker Downy Woodpecker Northern Flicker Williamson's Sapsucker Pleated Woodpecker</p> <p>Wrens Bewick's Wren Marsh Wren Winter Wren</p>
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Appendix C: Written Comments to Draft Plan

Sparrow Towhee, Junco Song Sparrow Spotted Towhee California Junco Savannah Sparrow White-crowned Sparrow Golden-crowned Sparrow Starling European Starling Swallow Tree Swallow Vireo Swallow Barn Swallow Vireo Swallow Northern Ring-billed Swallow Chipping Sparrow Thrasher Savannah Thrasher American Robin Field Sparrow Tyrant Flycatcher White Flycatcher Vireo and Ailce Yellow Vireo Warbler and Pipit American Pipit Waxwing Cedar Waxwing Wood Warbler Wilson's Warbler Yellow Warbler Yellow-rumped Warbler Common Yellowthroat Woodpecker Red-breasted Sapsucker Downy Woodpecker Northern Flicker Williamson's Sapsucker Pileated Woodpecker Wren Bewick's Wren Marsh Wren Winter Wren	House Eagle, Kestrel Red Eagle Northern Hawk Red-tailed Hawk Heron, Egret, Stilt Great Blue Heron Green Heron Hummingbird Rufous Hummingbird Kingfisher Belted Kingfisher Kinglet Golden-crowned Kinglet Ruby-crowned Kinglet Long-tailed Tit Blue Jay Loon Common Loon New World Nuthatch Turkey Vulture Old World Sparrow House Sparrow Oriole Northern Parula Pigeon and Dove Rock Pigeon Flourey and Lapwing Killdeer Rail, Gallinule, Coot American Coot Virginia Rail Sandpiper Winter Dunlin Grebe Northern Grebe	Blackbird, Chipping Sparrow Red-winged Blackbird Brewer's Blackbird Chickadee and Tit Black-capped Chickadee Comments Double-crested Cormorant Crow and Jay Downy Woodpecker American Crow Common Raven Dipper American Dipper Duck, Goose, Swan Trumpeter Swan Canada Goose American Wigeon Gadwall Green-winged Teal Mallard Northern Pintail Northern Shoveler Canvasback Ring-necked Duck Least Bunting Greater Bunting Common Goldeneye Greater Goldeneye Surf Scoter Hooded Merganser Common Noddy Red-tailed Duck Wood Duck Chimney Swift Falcon and Carrion American Kestrel Finch, Sparrow, Crossbill Purple Finch House Finch American Goldfinch Pine Siskin Grebe Pied-billed Grebe Western Grebe Gull Ring-billed Gull
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EXECUTIVE SUMMARY

Stephen Burgess
3508 96th Ave. S.E.
Mercer Island, WA 98040

To Chris Kowitz
Skagit County Public Works Department

Dear Chris:

My suggestion for a revision of the last paragraph on page 3 of the draft management plan would read as follows:

Prior to a final vote to form a Lake Management District and to adopt the IAVMP, a community meeting will be held at which the Advisory Committee will present a series of options for how the recommendations of the IAVMP will be financed. Who will participate in the financing, what their voting rights will be, and what equation will be used to determine the assessment of costs for each landowner will be decided at this meeting.

Yours,



RECEIVED

APR 13 2006

SKAGIT COUNTY
PUBLIC WORKS ADMIN

EXECUTIVE SUMMARY

Clear and Beaver Lakes, located in the lower East Fork Nookachamps Watershed, are heavily infested with invasive aquatic plants, including Eurasian watermilfoil and Fragrant Water Lily. Citing a number of problems associated with the dense growth of aquatic plants, a group of lakeside residents from Clear Lake requested assistance from Skagit County Public Works to control Eurasian watermilfoil and Fragrant water lily to promote recreational, aesthetic, and environmental values of the lake. In 2005, the County received a Department of Ecology Aquatic Weed Management Fund grant to develop an Integrated Aquatic Vegetation Management Plan (IAVMP) for Clear and Beaver Lakes.

Comment [M1]: Ron Walt: Not necessarily a Beaver Lake goal.

Eurasian watermilfoil (*Myriophyllum spicatum*), is a submersed aquatic noxious weed that proliferates to form dense surface mats of vegetation in the littoral zone of lakes and reservoirs. It reproduces by fragmentation and rhizomes, and is easily spread when fragments "hitch-hike" on boat props and trailers that move between lakes. Once introduced, *M. spicatum* can degrade the ecological integrity of a water body within a few growing seasons. Dense stands of milfoil crowd out native aquatic vegetation, which in turn alters predator-prey relationships among fish and other aquatic organisms. *M. spicatum* can also reduce dissolved oxygen concentrations by inhibiting mixing in areas where it grows. Oxygen levels are further depleted by bacteria that consume oxygen when the plant begins to decompose at the end of the growing season. Decomposing milfoil adds nutrients into the water that could potentially lead to increased algal growth and related water quality problems. Dense mats of *M. spicatum* can increase water temperatures by absorbing more sunlight, create mosquito breeding areas, and negatively affect recreation activities enjoyed by lake users including swimming, boating, and fishing.

Fragrant water lily (*Nymphaea odorata*) is a floating leaved, rooted aquatic plant that colonizes shallow areas of lakes, reservoirs, shallow ponds, and slow moving streams. *N. odorata* can be recognized by the fragrant white, pink to purple, flowers that float on the water surface and large round floating leaves that have a distinctive slit on one side. Although the roots, leaves, and seeds provide food for wildlife and waterfowl, *N. odorata* can be a nuisance in shallow lakes with a large littoral zone by decreasing water movement, increasing siltation rates, and impeding recreational opportunities for lake users.

Comment [M2]: Ron Walt: Good?

Comment [M3]: Ron Walt: Is this a Beaver Lake issue? Now mostly under state warm water management.

This IAVMP is a comprehensive planning document that considers the best available information about the waterbody and watershed characteristics of Clear and Beaver

Lakes prior to selecting and implementing a community-based integrated aquatic plant control strategy. The IAVMP must be accepted by the Advisory Committee, then is presented to the Board of County Commissioners for formal adoption.

Once the communities have had a chance to review and comment on the IAVMP, the advisory committee will develop a rate structure to pay for the agreed upon implementation strategy that will extend for the next 10 years. For formation of a district, a vote by all landowners that would be affected by the special assessment is held. The number of votes that each person receives is based upon the proposed annual assesment of his/ her property (ex. Proposed annual assessment of \$200 receives 200 votes). If a majority of the landowners vote in favor of formation everyone must pay the assessment.

Comment [M4]: Stephen Burgess suggested we change the last paragraph to: "Prior to a final vote to form a Lake Management District and to adopt the IAVMP, a community meeting will be held at which the Advisory Committee will present a series of options for how the recommendations of the IAVMP will be financed. Who will participate in the financing, what their voting rights will be, and what equation will be used to determine the assessment of costs for each landowner will be decided at this meeting."

Deleted: assessed value

Deleted: Assessed value of \$10,000 receives 10,000

Comment [M5]: Ron Walt: Not discussed or agreed upon.

PROBLEM STATEMENT

Due to the prolific growth of the aquatic invasive species, Eurasian watermilfoil (*Myriophyllum spicatum*) and fragrant water lily (*Nymphaea odorata*), Clear and Beaver Lakes experience degraded aesthetic, recreational, and ecological qualities that are valued by the lakeside community and public users. The recent discovery of a pioneering colony of Brazilian elodea (*Egeria densa*) poses an additional threat to natural and recreational resources of both lakes and downstream waterbodies. Located within the 100-year Skagit River floodplain, these highly invasive aquatic plants could potentially impact downstream waterways that provide important habitat for fish and wildlife by crowding out native plant species and degrading water quality. Implementation of aquatic plant management efforts to control fragrant water lily and eradicate Eurasian watermilfoil and Brazilian elodea would benefit the lake community by restoring natural lake conditions, as well as prevent the spread of invasive species to other waterbodies throughout the region.

The lakes are clustered approximately 6-miles south of Sedro Woolley on Hwy 9 near the town of Clear Lake and are situated within a sub-basin of the Nookachamps Creek watershed, the first important salmon-producing tributary in the Skagit River watershed, which provides significant habitat for successful wild Coho salmon stocks (Skagit County Dept. of Planning, 1995). Land use around Clear Lake is a combination of urban and rural residential development with large areas of private forest land and extensive freshwater forested/shrub and emergent wetlands along the east shoreline. There are two public¹ recreation facilities on Clear Lake: a public boat ramp on the north side of the lake and a swimming area maintained and operated by Skagit County Parks and Recreation. Beaver Lake, on the other hand, is largely undeveloped and is nearly surrounded by extensive freshwater forested/shrub emergent wetlands. These wetlands have been mapped and inventoried by the National Wetland Inventory. Lakeside parcels are privately owned with the exception of the WDFW public boat ramp, which provides fishing, hunting, and wildlife viewing opportunities for public users. Property owners of lakeside property around Beaver Lake either live outside of the area or are significantly set back from the shoreline and have limited direct lake access for recreation.

Comment [M6]: Ron Walt: This is a management issue and needs discussion, same true of Clear Lake South Shore.

Deleted: is largely undeveloped due to the presence of extensive intact freshwater forested/shrub and emergent wetlands that have been mapped by the National Wetland Inventory

Comment [M7]: Ron Walt: Not entirely true, whole North Shore is quite accessible but private.

Eurasian watermilfoil was first observed in Clear Lake in 1994 during an aquatic vegetation survey conducted by the Department of Ecology; however, it is unclear

¹ The boat launch is owned by Janicki Enterprises, but it operated by WDFW.

when the invasive species was introduced. Large patches of Eurasian watermilfoil are present throughout the littoral zone in Clear Lake, especially at the fringes of the extensive bands of Fragrant Water Lily that parallel the lake's shoreline.

Eurasian watermilfoil was first observed in Beaver Lake during an aquatic plant and milfoil weevil survey conducted in 1999 as part of the State-wide Lake Monitoring Program (Parsons, 2005). The dense surface mats of milfoil at Beaver Lake are evenly distributed throughout the lake and inhibit boat access. A small pioneering colony of Brazilian elodea was discovered in a small cove along the northwest shoreline of Beaver Lake on September 8, 2005 by EnviroVision scientists conducting an aquatic vegetation survey of the lake. According to the survey, the patch of Brazilian elodea appears to be limited to less than a ¼ acre in size. Fragrant water lily is not a significant management concern at Beaver Lake at this time. The extensive aquatic plant growth at Beaver Lake impedes recreational fishing opportunities.

A hardy, prolific plant species, Eurasian watermilfoil forms dense surface mats that crowd out native vegetation, reduce biodiversity, impair water quality, decrease valuable wildlife habitat, limit recreational access, and diminish aesthetics. Like Eurasian watermilfoil, Brazilian elodea is a prolific, non-native aquatic plant that forms monospecific stands that crowd out native aquatic plants, as well as inhibit recreational uses enjoyed by lake users and shoreline residents. Brazilian elodea is a highly adaptable plant that can grow in lakes, as well as slow moving streams. Infestations of Brazilian elodea are known to significantly increase plant biomass in lakes, alter water quality, limit water movement, and increase sedimentation rates. Eradication of Brazilian elodea is necessary to prevent its spread to other Skagit County lakes and waterways, as well as to restore the environmental quality of Beaver Lake. Left untreated, the infestation of Eurasian watermilfoil and Brazilian elodea will continue to significantly reduce the aesthetic, recreational, and ecological characteristics that are valued by lakeside residents and public users of the lakes.

Comment [M8]: Ron Walt: Depends on management goals. Wetlands? Warm water fishery?

As a group these invasive plants:

- Pose a safety hazard to swimmers and boaters by entanglement.
- Crowd out native plants, creating monocultures lacking in biodiversity.
- Impair water quality by decreasing dissolved oxygen and increasing temperature and pH.

- Significantly reduce fish and wildlife habitat important to the integrity of the lake ecosystem.
- Pose a threat to adjoining ecosystems.

Comment [M9]: Ron Walt: Not discussed.

The community at Clear Lake has expressed interest in restoring Clear and Beaver Lakes to their natural condition beginning with the eradication of noxious aquatic weeds, including Eurasian watermilfoil, Brazilian elodea, and Fragrant Water Lily. As evidenced by the signing of a petition, the Clear Lake community is willing to explore the idea of forming a Lake Management District to finance the integrated control strategy identified in this Integrated Aquatic Vegetation Management Plan. Although Beaver Lake property owners are not opposed to the idea of eradicating Eurasian watermilfoil and Brazilian elodea in Beaver Lake, they do not benefit directly from the implementation of the project goals and are involved in the process to ensure that their community's values are considered in the development of this plan. The community recognizes the potential for re-infestation following the initial control efforts are implemented and is committed to developing an early detection and prevention program to prevent that occurrence.

Comment [M10]: Ron Walt: I don't think so.

Comment [M11]: Ron Walt: Not necessarily true.

MANAGEMENT GOALS

The overall management goal is to eradicate Eurasian watermilfoil (*Myriophyllum spicatum*) from Clear and Beaver Lakes and Brazilian elodea (*Egeria densa*) from Beaver Lake, to prevent the spread of the noxious weed to downstream waterbodies during flood events, as well as other lakes in Skagit County and Washington State, and to control fragrant water lily (*Nymphae odorata*) to facilitate increased access to the lake for recreational users. Implementation of this project will also allow native plant and animal communities to thrive, decrease negative impacts to water quality conditions, preserve the recreational opportunities provided by the lakes, and restore the aesthetic beauty of the lakes through the control and elimination of aquatic noxious weeds.

The five strategies identified below will ensure success in achieving the stated goal of the community:

1. Involve the community in the management process.
2. Use the best available science to identify and understand the likely effects of management actions on aquatic and terrestrial ecosystems prior to implementation.
3. Evaluate the effectiveness of management actions.
4. Amend the management strategy as necessary to achieve the stated goals of the community.
5. Provide information about lake stewardship and aquatic plants to the community to sustain the lakes valuable resources while facilitating the prevention and early detection of aquatic invasive species in Clear and Beaver Lakes.

Details associated with the implementation of the management objectives are provided in subsequent sections of this plan.

Mention was also given to reducing nutrient inputs associated with lakeside development, especially leaky septic systems.

The meeting ended after the group decided to meet on July 18th to review the draft problem statement, solidify the management goals, and begin discussing the forum for the first public meeting.

Planning Meeting #3 – July 18, 2005

The purpose of this meeting was to discuss the results of the July 12th community meeting, review the draft problem statement, solidify the management goals, and discuss the forum for the first public meeting.

Due to the presence of new faces, a brief overview of the project history and the aquatic plant management process was provided. The individuals representing Beaver Lake expressed that they are not interested in providing financial support for aquatic plant management because they would not derive a direct benefit from such efforts. The process for Lake Management District (LMD) formation, according to RCW 36.61 was briefly reviewed, and it was explained that the community will have a good measure of flexibility in determining the LMD assessment rate structure if a LMD is approved.

During the review of the problem statement and management goals, Beaver Lake residents present requested that the language be modified to clearly show that the goals of the Beaver Lake community do not reflect those at Clear Lake. The residents from Beaver Lake expressed that they do not experience any problems associated with noxious weed growth and reiterated that they do not support any effort that would require their financial commitment.

Comment [M12]: Ron Wale: Not in the executive summary.

The draft management goals were reviewed and everyone present agreed that the goals, as stated, would ensure the success of the IAVMP if implemented.

A date for the first public meeting was set for September 20th at 6:00 pm at the Clear Lake Covenant Church. The purpose of the public meeting would be to introduce the IAVMP planning progress and solicit feedback from the community.

Planning Meeting #4 – September 12, 2005

This meeting represents the first official meeting of the Advisory Committee. The meeting was called to update new members in the planning group to the progress made on the IAVMP to date, as well as to discuss changes to the problem statement due to the discovery of Brazilian elodea in Beaver Lake.

During the review of progress made on the IAVMP residents from Beaver Lake clearly stated that any benefit derived from the aquatic plant management efforts at Beaver Lake would be fish and wildlife habitat improvement and noxious weed re-infestation prevention for Clear Lake. When asked if the management goals should be explained differently for the IAVMP, the majority of the group indicated that the section should not be changed.

Beaver Lake residents also called into question the ownership of the lake. Due to the court's ruling in a 1964 lawsuit, one Beaver Lake resident indicated that the lake is privately owned, despite the presence of a WDFW public boat ramp. Copies of the lawsuit were distributed to Stephanie Woolett, Rob Janicki, Ron Walt, and Stan Buchanan.

The public meeting scheduled for September 20th was postponed due to problems with the venue and short advertising notice. The group suggested that it would be helpful to have a guest speaker from one of the Skagit LMDs to talk about the successes and challenges faced by his/her lake community. This would facilitate greater understanding of the process.

At the close of the meeting, Stephanie indicated that she will work with the County's GIS Department to develop a Beneficial Use Area map that shows spawning areas, shellfish beds, fishing grounds, and swimming areas.

Public Meeting #1 – November 3, 2005

The purpose of this meeting was to introduce the IAVMP Development project and to solicit community feedback regarding the Problem Statement and Management Goals. In total, there were 19 community members present plus 3 County staff.

The meeting began with the introduction of Stephanie Woolett, the Skagit County Water Resources Technician, primary author of the IAVMP, by Advisory Committee member Lee Johnson.

BEAVER LAKE

Physical Description

Beaver Lake, located immediately south of Clear Lake, totals 75-acres in surface area. This small lake holds 400-acre feet in volume and has a 5-foot mean and 10-foot maximum depth. Due to the shallow nature of the lake, the littoral zone encompasses the entire lake area. With the exception of a keyhole bay near the southeast corner of the lake, Beaver Lake is regularly shaped. The shoreline spans 1.5 miles.

Drainage from Clear Lake empties into Fox Creek, which enters Beaver Lake on the northeast shoreline and provides the only consolidated surface water input to Beaver Lake. Groundwater seeps provide additional water inputs at Beaver Lake (WDFW). The outlet, located at the southwest end of the lake, connects to Turner Creek, a tributary of East Fork Nookachamps Creek. Based on field observations, the outlet allows constant drainage from Beaver Lake and could potentially transport noxious weed fragments downstream or potentially re-infest Beaver Lake and/ or Clear Lake during flood events when the Nookachamps system backs up with Skagit River water.

Land Use

Consistent with the land use designations established in the Skagit County Comprehensive Plan, open-space, rural residential, and agricultural development are the primary uses immediately adjacent to the lake. The presence of extensive NWI wetland areas limits shoreline development, so the majority of the shoreline remains in a natural condition. According to the Skagit County Shoreline Master Program, the shoreline areas around Beaver Lake have a "Conservancy" designation. A boat launch owned and maintained by WDFW provides public access for recreational uses including fishing, hunting, and wildlife viewing.

Deleted: precludes

Comment [M13]: Ron Walt: What is this?

Comment [M14]: Michael See:
This is a Skagit County Shoreline Designation that is the result of a 1976 review and analysis by the Skagit County Shoreline Citizen and Technical Advisory Committee.

Deleted: , which affords the area the highest level of environmental and resource protection

Comment [M15]: Ron Walt: Perhaps not if the goal is wetlands.

Aquatic Plants

Beaver Lake is infested with the non-native aquatic plants Eurasian watermilfoil, Brazilian elodea, and fragrant water lily. These plants pose problems for fishing and hunting activities and are unsightly for wildlife viewers and other lake users.

Brazilian elodea

Native to South America, Brazilian elodea (*Egeria densa*) is a submersed freshwater perennial aquatic plant, which is generally found growing up to depths of 20-feet or drifting. Although it is most commonly found in lakes, ponds, and ditches, Brazilian elodea can also thrive in slow moving streams. It was first introduced worldwide through the aquarium trade and was commonly sold in Washington pet stores as an aquarium species under the name 'anacharis' until it was banned for sale in 1996 (Washington State Department of Ecology, 2003). Prevention and early detection of this species is important because of its prolific nature and the potential for it to negatively impact local waterways.

Brazilian elodea is robust, bright green, leafy submersed aquatic plant that grows to the surface and forms dense surface mats. The simple or branched cylindrical stem produces minutely serrated and linear leaves that are 1-8 cm long and up to 5 mm wide. The leaves are arranged in whorls of 4 to 8 around the stem and tend to become more densely organized around the stem toward the crown of the plant. Brazilian elodea produces small white flowers (approximately 18-25 mm) with three petals that float on or rise above the water's surface. Populations of Brazilian

Table 3. Beaver Lake Aquatic Plant & Macroalgae Species List

Common Name	Scientific Name
EMERGENT PLANTS	
Bearded sedge	<i>Carex camosa</i>
Jewelweed	<i>Impatiens sp.</i>
Yellow flag iris	<i>Iris pseudoacorus</i>
Reed canary grass	<i>Phalaris arundinacea</i>
Common smartweed	<i>Polygonum hydropiperoides</i>
Marsh cinquefoil	<i>Potentilla palustris</i>
Hardstem bulrush	<i>Schoenoplectus acutus</i>
Softstem bulrush	<i>Schoenoplectus tabernaemontani</i>
Bulrush	<i>Scirpus sp.</i>
Bittersweet nightshade	<i>Solanum dulcamara</i>
Narrow leaf bur-reed	<i>Sparganium angustifolium</i>
Common cattail	<i>Typha latifolia</i>
Cattail	<i>Typha sp.</i>
FLOATING-LEAVED PLANTS	
Lesser duckweed	<i>Lemna minor</i>
Water purslane	<i>Ludwigia palustris</i>
Yellow pond-lily	<i>Nuphar polysepala</i>
Fragrant water lily	<i>Nymphaea odorata</i>
Giant duckweed	<i>Spirodela polyrhiza</i>
Water-meal	<i>Wolffia sp.</i>
SUBMERSED PLANTS	
Coontail; hornwort	<i>Ceratophyllum demersum</i>
Brazilian elodea	<i>Egeria densa</i>
Common elodea	<i>Elodea sp.</i>
Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Big-leaf pondweed	<i>Potamogeton amplifolius</i>
Ribbonleaf pondweed	<i>Potamogeton epihydrus</i>
Grass-leaved pondweed	<i>Potamogeton gramineus</i>
Floating leaf pondweed	<i>Potamogeton natans</i>
Thinleaf pondweed	<i>Potamogeton sp.</i>
Flat-stem pondweed	<i>Potamogeton zosteriformis</i>
Sago pondweed	<i>Stuckenia pectinata</i>
Common bladderwort	<i>Utricularia vulgaris</i>
ALGAE	
Nitella	<i>Nitella sp.</i>

Appendix D: Herbicide Product Labels



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Aqua-Kleen®

A SELECTIVE HERBICIDE

For Controlling Certain Unwanted Aquatic Plants

ACTIVE INGREDIENT:

Butoxyethyl Ester of 2,4-Dichlorophenoxyacetic Acid* 27.6%

OTHER INGREDIENTS: 72.4%

TOTAL 100.0%

*Isomer Specific AOAC Method,
Equivalent to 2,4-Dichlorophenoxyacetic Acid 19.0%

KEEP OUT OF REACH OF CHILDREN

CAUTION

FIRST AID	
IF SWALLOWED	<ul style="list-style-type: none"> • Call a poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by a poison control center or doctor. • Do not give anything by mouth to an unconscious person.
IF ON SKIN OR CLOTHING	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15 to 20 minutes. • Call a poison control center or doctor for treatment advice.
IF INHALED	<ul style="list-style-type: none"> • Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. • Call a poison control center or doctor for further treatment advice.
IF IN EYES	<ul style="list-style-type: none"> • Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
HOT LINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-877-325-1840 for emergency medical treatment information.	

EPA Registration No. 228-378-4581

EPA Establishment No. 228-IL-1

Net Contents _____

Distributed By:

Cerexagri, Inc.

630 Freedom Business Center, Suite 402, King of Prussia, PA 19406

1 800-438-6071 • www.cerexagri.com

**PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS**

CAUTION

Harmful if swallowed, absorbed through skin, or inhaled. Causes eye irritation. Avoid contact with skin, eyes or clothing. Avoid breathing dust. When handling this product, wear chemical-resistant gloves. Wash thoroughly with soap and water after handling. When mixing, loading, or applying this product or repairing or cleaning equipment used with this product, wear eye protection (face shield or safety glasses), chemical-resistant gloves, long-sleeved shirt, long pants, socks and shoes. It is recommended that safety glasses include front, brow and temple protection. Wash hands, face and arms with soap and water as soon as possible after mixing, loading, or applying this product. Wash hands, face and arms with soap and water before eating, smoking or drinking. Wash hands and arms before using toilet. After work, remove all clothing and shower using soap and water. Do not reuse clothing worn during the previous day's mixing and loading or application of this product without cleaning first. Clothing must be kept and washed separately from other household laundry. Remove saturated clothing as soon as possible and shower.

ENVIRONMENTAL HAZARDS

This product is toxic to fish. Drift or runoff may adversely affect fish and nontarget plants. Do not apply to water except as specified on this label. Do not contaminate water when disposing of equipment washwaters. Unless an approved assay indicates the 2,4-D concentration is 100 ppb (0.1 ppm) or less, or, only growing crops and noncrop areas labeled for direct treatment with 2,4-D will be affected, do not use water from treated areas for irrigating plants or mixing sprays for agricultural or ornamental plants.

Unless an approved assay indicates the 2,4-D concentration is 70 ppb (0.07 ppm) or less, do not use water from treated areas for potable water (drinking water).

Clean spreader equipment thoroughly before using it for any other purposes. Vapors from this product may injure susceptible plants.

Most cases of groundwater contamination involving phenoxy herbicides such as 2,4-D have been associated with mixing/loading and disposal sites. Caution should be exercised when handling 2,4-D pesticides at such sites to prevent contamination of groundwater supplies. Use of closed systems for mixing or transferring this pesticide will reduce the probability of spills. Placement of the mixing/loading equipment on an impervious pad to contain spills will help prevent groundwater contamination.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. READ ENTIRE LABEL BEFORE USING THIS PRODUCT. USE STRICTLY IN ACCORDANCE WITH LABEL PRECAUTIONARY STATEMENTS AND DIRECTIONS.

GENERAL PRECAUTIONS AND RESTRICTIONS

Do not use in or near a greenhouse.

OXYGEN RATIO

Fish breathe oxygen in the water and a water/oxygen ratio must be maintained. Decaying weeds use up oxygen, but during the period when this product should be used, the weed mass is fairly sparse and the weed decomposition rate is slow enough so that the water/oxygen ratio is not disturbed by treating the entire area at one time.

If treatments must be applied later in the season when the weed mass is dense and repeat treatments are needed, spread granules in lanes, leaving buffer strips which can then be treated when vegetation in treated lanes has disintegrated. During the growing season, weeds decompose in a 2 to 3 week period following treatment.

Buffer lanes should be 50 to 100 feet wide. Treated lanes should be as wide as the buffer strips (See illustration below).



WATER pH

Best results are generally obtained if the water to be treated has a pH less than 8. A pH of 8 or higher may reduce weed control. If regrowth occurs within a period of 6 to 8 weeks, a second application may be needed.

PERMIT TO USE CHEMICALS IN WATER

In many states, permits are required to control weeds by chemical means in public water. If permits are required, they may be obtained from the Chief, Fish Division, State Department of Conservation or the State Department of Public Health.

GENERAL INFORMATION

This product is formulated on special heat treated attaclay granules that resist rapid decomposition in water, sink quickly to lake or pond bottoms and release the weed killing chemical into the critical root zone area.

This product is designed to selectively control the weeds listed on the label. While certain other weeds may be suppressed, control may be incomplete. Reduced control may occur in lakes where water replacement comes from bottom springs.

WHEN TO APPLY

For best results, spread this product in the spring and early summer, during the time weeds start to grow. If desired, this timing can be checked by sampling the lake bottom in areas heavily infested with weeds the year before.

If treatments are delayed until weeds form a dense mat or reach the surface, two treatments may be necessary. Make the second treatment when weeds show signs of recovery. Treatments made after September may be less effective depending upon water temperatures and weed growth.

Occasionally, a second application will be necessary if heavy regrowth occurs or weeds reinfest from untreated areas.

HOW TO APPLY

FOR LARGE AREAS: Use a fertilizer spreader or mechanical seeder such as the Gerber or Gandy or other equipment capable of uniformly applying this product. Before spreading any chemical, calibrate your method of application to be sure of spreading the proper amount. When using boats and power equipment, you must determine the proper combination of (1) boat speed (2) rate of delivery from the spreader, and (3) width of swath covered by the granules.

FOR SMALL AREAS (Around Docks or Isolated Patches of Weeds): Use a portable spreader such as the Cyclone seeder or other equipment capable of uniformly applying this product. Estimate or measure out the area you want to treat. Weigh out the amount of material needed and spread this uniformly over the area. More uniform coverage is obtained by dividing the required amount in two and covering the area twice, applying the second half at right angles to the first.

Use the following formula to calibrate your spreader's delivery in pounds of this product per minute.

$$\frac{\text{Miles per hour} \times \text{spreader width} \times \text{pounds per acre}}{495}$$

Example: To apply 100 pounds of this product per acre using a spreader that covers a 20 foot swath from a boat traveling at 4 miles per hour, set the spreader to deliver 16 pounds of this product per minute.

$$\frac{4 \text{ mph} \times 20 \text{ feet} \times 100 \text{ lbs./A}}{495}$$

AMOUNTS TO USE

Rates of application vary with resistance of weed species to the chemical, density of weed mass at time of treatment, stage of growth, water depth, and rate of water flow through the treated area. Use the higher rate for dense weeds, when water is more than 8 feet deep and where there is a large volume turnover.

	POUNDS PER ACRE	POUNDS PER 2,000 SQ. FT.
SUSCEPTIBLE WEEDS Water milfoil (<i>Myriophyllum</i> spp.) Water stargrass (<i>Heteranthera dubia</i>)	100 to 200	5
SLIGHTLY TO MODERATELY RESISTANT WEEDS Bladderwort (<i>Utricularia</i> spp.) White water lily (<i>Nymphaea</i> spp.) Yellow water lily or (<i>Nuphar</i> spp.) spatterdock* Water shield (<i>Brasenia</i> spp.) Water chestnut (<i>Trapa natans</i>) Coontail* (<i>Ceratophyllum demersum</i>)	150 to 200	7.5 to 10

*Repeat treatments may be needed.

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

PESTICIDE STORAGE: Always use original container to store pesticides in a secured warehouse or storage building. Do not store near seeds, fertilizers, insecticides or fungicides. Do not stack more than two pallets high. It is recommended that a SARA Title III emergency response plan be created for storage facilities. Do not transport in the passenger compartment of any vehicle.

PESTICIDE DISPOSAL: Pesticide wastes are toxic. If container is damaged or if pesticide has leaked, clean up all spilled material. Improper disposal of excess pesticide, spray mixtures or rinsate is a violation of Federal law and may contaminate groundwater. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

CONTAINER DISPOSAL: Completely empty bag into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration, or if allowed by State and local authorities, by burning. If burned, stay away from smoke.

EMERGENCY TELEPHONE NUMBERS:

CHEMTREC: (800) 424-9300 • MEDICAL: (303) 623-5716

Rocky Mountain Poison Control Center

WARRANTY AND DISCLAIMER

Cerexagri, Inc. warrants that this material conforms to the chemical description on the label and is reasonably fit for the purposes referred to in the Directions for Use, subject to the risks referred to therein. CEREXAGRI MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS OR MERCHANTABILITY OR ANY OTHER EXPRESS OR IMPLIED WARRANTY. IN NO CASE SHALL CEREXAGRI OR SELLER BE LIABLE FOR CONSEQUENTIAL, SPECIAL OR INDIRECT DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS, BUSINESS REPUTATION, OR CUSTOMERS; LABOR COST; OR OTHER EXPENSES INCURRED IN PLANTING OR HARVESTING.

Cerexagri and seller offer this product and the buyer and user accept it subject to the foregoing conditions of sale and warranty which may be varied only by agreement in writing signed by a duly authorized representative of Cerexagri.

Cerexagri, Inc. is a wholly-owned subsidiary of Arkema Inc.

Aqua-Kleen® is a registered trademark of Nufarm, Inc.

228-378-4581(052305-1571)

Made and Printed in U.S.A.

POUNDS PER 2,500 SQ. FT.	POUNDS PER ACRE	
2	100 to 200	SUSCEPTIBLE WEEDS Water hickory (Myrica spp.) Water tupelo (Nyssa spp.)
7.5 to 10	150 to 200	SLIGHTLY TO MODERATELY RESISTANT WEEDS Bladderwort (Utricularia spp.) White water lily (Nymphaea spp.) Yellow water lily (Nymphaea spp.) Water shield (Brasenia spp.) Water chestnut (Trapa natans) Coontail (Ceratophyllum demersum)



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Aqua-Kleen (R) Aquatic Herbicide

Material Safety Data Sheet

Cerexagri, Inc.

1 PRODUCT AND COMPANY IDENTIFICATION

Agrichemicals Group

Cerexagri, Inc.
630 Freedom Business Center, Suite 402
King of Prussia, PA 19406

EMERGENCY PHONE NUMBERS:

Chemtrec: (800) 424-9300 (24hrs) or (703) 527-3887
Medical: Rocky Mountain Poison Control Center
(866) 767-5089 (24Hrs)

Information Telephone Numbers	Phone Number	Available Hrs
R&D Technical Service	610-878-6100	8:00am to 5:00pm EST
Customer Service	1-800-438-6071	8:00am - 5:00 pm EST

Product Name Aqua-Kleen (R) Aquatic Herbicide
 Product Synonym(s)
 Chemical Family 2,4-Dichlorophenoxyacetic acid, butoxyethyl ester
 Chemical Formula NA
 Chemical Name Acetic acid, (2,4-dichlorophenoxy)-, 2-butoxyethyl ester
 EPA Reg Num 228-378-4581
 Product Use Aquatic herbicide for controlling unwanted aquatic plants

2 COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient Name	CAS RegistryNumber	Typical Wt. %	OSHA
2-Butoxyethyl 2,4-dichlorophenoxy acetate	1929-73-3	27.6	Y
Quartz	14808-60-7	<15	Y

The substance(s) marked with a "Y" in the OSHA column, are identified as hazardous chemicals according to the criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200)

3 HAZARDS IDENTIFICATION

Emergency Overview

Tan granules, solid, phenolic odor.

CAUTION!

KEEP OUT OF REACH OF CHILDREN.

HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN.

CAUSES EYE IRRITATION.

Avoid contact with eyes, skin and clothing. Handle in accordance with good industrial hygiene and safety practices. These practices include avoiding unnecessary exposure and removal of material from eyes, skin and clothing. Avoid breathing dust. Wash thoroughly after handling.

CANCER HAZARD. CONTAINS CRYSTALLINE SILICA WHICH CAN CAUSE CANCER.

Repeated and prolonged inhalation of respirable particles can cause lung cancer and delayed lung damage (silicosis).

Potential Health Effects

Inhalation and skin contact are expected to be the primary routes of occupational exposure to this material. Based on its composition, it is anticipated to be slightly to moderately toxic if swallowed and slightly toxic if inhaled. Direct contact may be irritating to the eyes and skin. Inhalation may be irritating to the respiratory tract. Repeated and prolonged inhalation of crystalline silica may cause a disabling lung disease (commonly known as silicosis). Clinical signs and symptoms of silicosis include cough, shortness of breath, wheezing and impairment of lung function. Impairment of lung function may be progressive. In the usual case of silicosis, there is a slow deterioration of capacity for physical effort, decreased chest expansion, and an increased susceptibility to tuberculosis and other respiratory infections. Crystalline silica inhaled in the form of quartz is classified as carcinogenic to humans (Group 1) by the International



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Agency for Research on Cancer (IARC) and respirable forms of crystalline silica are listed as substances known to be a human carcinogen by the National Toxicology Program.

Short term, extremely heavy exposures to crystalline quartz dust (particularly small-sized particles) can result in acute silicosis. This disease is rapidly progressive with diffuse pulmonary involvement, which may develop within months of initial exposure. Individuals with acute silicosis may suffer an abrupt onset of violent coughing, labored breathing, and weight loss; death has been known to occur within one to two years.

4 FIRST AID MEASURES

IF IN EYES,

- Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.
- Call a poison control center or doctor for treatment advice.

IF ON SKIN, Wash with plenty of soap and water. Get medical attention if irritation persists.

IN CASE OF CONTACT, flush the area with plenty of water. Remove material from clothing. Wash clothing before reuse.

IF SWALLOWED,

- Call a poison control center or doctor immediately for treatment advice.
- Have person sip a glass of water if able to swallow.
- Do not induce vomiting unless told to do so by a poison control center or doctor.
- Do not give anything by mouth to an unconscious person.

IF INHALED,

- Move person to fresh air.
- If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.
- Call a poison control center or doctor for further treatment advice.

5 FIRE FIGHTING MEASURES

Fire and Explosive Properties

Auto-Ignition Temperature	NA	
Flash Point	NA	Flash Point Method
Flammable Limits- Upper	NA	
Lower	NA	

Extinguishing Media

dry chemical, carbon dioxide, foam, water spray

Fire Fighting Instructions

Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand NIOSH approved or equivalent). Fire fighting equipment should be thoroughly decontaminated after use.

Fire and Explosion Hazards

Avoid breathing fumes from fire exposed material. Irritating or toxic vapors

6 ACCIDENTAL RELEASE MEASURES



Aqua-Kleen (R) Aquatic Herbicide

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Cerexagri, Inc.

6 ACCIDENTAL RELEASE MEASURES

In Case of Spill or Leak

Contain spill. Sweep or scoop up and remove to suitable container. Flush with water. Prevent spilled product from entering sewers or natural water. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits.

7 HANDLING AND STORAGE

Handling

Handle in accordance with good industrial hygiene and safety practices. These practices include avoiding unnecessary exposure and removal of material from eyes, skin and clothing. Avoid breathing dust.

Storage

Store away from food and feed. Do not store in a manner where cross-contamination with pesticides, fertilizers, food or feed could occur. Store in a cool, dry place.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls

Investigate engineering techniques to reduce exposures below airborne exposure limits. Provide ventilation if necessary to control exposure levels below airborne exposure limits (see below). If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment.

Eye / Face Protection

Use good industrial practice to avoid eye contact.

Skin Protection

Wear appropriate chemical resistant protective clothing and chemical resistant gloves to prevent skin contact. gloves should be worn when handling this material. Rinse contaminated skin promptly. Wash contaminated clothing and clean protective equipment before reuse. Wash skin thoroughly after handling.

Respiratory Protection

Avoid breathing dust. When airborne exposure limits are exceeded (see below), use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. Consult respirator manufacturer to determine appropriate type equipment for given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where exposure limit may be significantly exceeded, use an approved full face positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Respiratory protection programs must comply with 29 CFR § 1910.134.

Airborne Exposure Guidelines for Ingredients

Exposure Limit		Value
Quartz		
ACGIH TWA	Respirable particle	0.05 mg/m3
2-Butoxyethyl 2,4-dichlorophenoxy acetate		
ACGIH TWA	-For 2,4-D	10 mg/m3
OSHA TWA PEL	-For 2,4-D	10 mg/m3

- Only those components with exposure limits are printed in this section.
- Skin contact limits designated with a "Y" above have skin contact effect. Air sampling alone is insufficient to accurately quantitate exposure. Measures to prevent significant cutaneous absorption may be required.
- ACGIH Sensitizer designator with a value of "Y" above means that exposure to this material may cause allergic reactions.
- WEEL-AIHA Sensitizer designator with a value of "Y" above means that exposure to this material may cause allergic skin reactions.



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9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance/Odor	Tan granules, solid, phenolic odor.
pH	NA
Specific Gravity	NA
Vapor Pressure	2.4 X 10 ⁻⁶ mm Hg(for ester)
Vapor Density	NA
Melting Point	NA
Freezing Point	NA
Boiling Point	156-162C@1 mmHg (ester)
Solubility In Water	Insoluble
Molecular Weight	321.2 (ester)

10 STABILITY AND REACTIVITY

Stability

This material is chemically stable under normal and anticipated storage and handling conditions.

Hazardous Polymerization

Does not occur.

Incompatibility

Strong oxidizing agents: bases, acids.

Hazardous Decomposition Products

Upon thermal decomposition may produce hydrogen chloride, oxides of sulfur

11 TOXICOLOGICAL INFORMATION

Toxicological Information

Data on this material and/or its components are summarized below.

Single exposure (acute) studies indicate:

Inhalation - Slightly Toxic to Rats (4-hr LC50 4.6 mg/l) 2-Butoxyethyl 2,4-dichlorophenoxy acetate

Birth defects have been observed in the offspring of rats exposed orally during pregnancy.

2,4-Dichlorophenoxyacetic acid

Single exposure (acute) studies indicate that this material is slightly to moderately toxic if swallowed (rat LD50 320-4,050 mg/kg), no more than slightly toxic if absorbed through skin (rabbit LD50 >2,000 mg/kg) and slightly irritating to rabbit eyes and skin. 2,4-Dichlorophenoxyacetic acid

Kidney effects were observed in rats and mice following repeated oral exposure. This material is classified as a Category D carcinogen (unclassifiable as to carcinogenicity) by the U.S. Environmental Protection Agency and chlorophenoxy herbicides are classified as "possibly carcinogenic to humans" (Group 2B) by the International Agency for Research on Cancer (IARC). The IARC listing is based on epidemiological studies suggesting an association between the development of certain types of cancer (soft-tissue sarcoma and non-Hodgkin's lymphoma) and exposure to chlorophenoxy herbicides. Two long-term oral studies in rats produced no evidence of tumors, although kidney effects were observed. No birth defects were observed in the offspring of rabbits exposed orally during pregnancy. Birth defects were observed in the offspring of rats exposed orally during pregnancy, but only at dosages which produced adverse effects on the mothers. Genetic changes were observed in tests using human cells, but not in tests using bacteria or animals. Both positive and negative results were observed in tests using animal cells.



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Aqua-Kleen (R) Aquatic Herbicide

Material Safety Data Sheet

Cerexagri, Inc.

11 TOXICOLOGICAL INFORMATION

The acid data are considered to be more representative for the granular formulation because the ester is essentially insoluble in water, it releases gradually from the granules and it is hydrolyzed rapidly to the acid. Thus, exposure of aquatic organisms is predominantly to the acid.

Quartz

Chronic inhalation of crystalline silica may cause a progressive pneumoconiosis (a disabling lung disease) called silicosis. Data from animal studies on crystalline forms of silica confirm the capacity of free crystalline silica to induce a fibrinogenic response in lungs. Studies on a variety of laboratory animals (rats, guinea pigs, rabbits, and monkeys) using inhalation as well as intratracheal routes of exposure indicate the ability of crystalline silica to produce silicosis similar to that seen in man. In addition, experiments in animals have confirmed human experience that the presence of crystalline silica in the lung increased susceptibility to tuberculosis and other lung infections. Crystalline silica inhaled in the form of quartz is classified as carcinogenic to humans (Group 1) by the International Agency for Research on Cancer (IARC), and respirable forms of crystalline silica are listed as substances known to be a human carcinogen by the National Toxicology Program. Epidemiology studies cited by IARC give indications of increased risk for lung cancer from inhaled crystalline silica (quartz) resulting from occupational exposure. Studies involving heavy industrial exposure to silica in granite and foundry workers, brick factories and sandblasting produced increased levels of protein and enzymes in urine, which is indicative of kidney damage.

12 ECOLOGICAL INFORMATION

Ecotoxicological Information

Data on this material and/or its components are summarized below.

2,4-Dichlorophenoxyacetic acid

This material is slightly toxic to Daphnia (48-hr EC50 36.4 mg/l). It is practically non-toxic to trout (96-hr LC50 358 mg/l) and bluegill (96-hr LC50 263 mg/l).

2-Butoxyethyl 2,4-dichlorophenoxy acetate

This material is moderately toxic to bleak (96-hr LC50 3.2-3.7 mg/l), Daphnia magna (48-hr EC50 7.2 mg/l) and coho salmon (96-hr LC50 1.5 mg/l). It is highly toxic to bluegill (96-hr LC50 0.61 mg/l), Chinook salmon (96-hr LC50 0.315 mg/l) and pink salmon (96-hr LC50 0.8 mg/l). It is moderately to highly toxic to rainbow trout (96-hr LC50 0.518-2.0 mg/l) and fathead minnow (96-hr LC50 0.95-2.5 mg/l). The oral LC50 for bobwhite quail, Japanese quail, ring-necked pheasant and mallard duck is >5,000 ppm.

Aqua-Kleen

The acid data are considered to be more representative for the granular formulation because the ester is essentially insoluble in water, it releases gradually from the granules and it is hydrolyzed rapidly to the acid. Thus, exposure of aquatic organisms is predominantly to the acid.

Chemical Fate Information

Data on this material and/or its components are summarized below.

Aqua-Kleen

In water, hydrolysis of the ester to the acid occurred with hours of release from granules (nondetectable later than 1 day after application). The typical half-life of the resultant acid ranged from a few days to a few weeks.



Aqua-Kleen (R) Aquatic Herbicide

Material Safety Data Sheet

Cerexagri, Inc.

13 DISPOSAL CONSIDERATIONS

Waste Disposal

Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance. Dispose of solid waste at properly permitted landfills observing all local, state and federal regulations. Contaminated liquids should be concentrated and incinerated at a properly permitted disposal site again observing all local, state and federal regulations.

14 TRANSPORT INFORMATION

DOT Name	NOT REGULATED
DOT Technical Name	Not regulated
DOT Hazard Class	NA
UN Number	NA
DOT Packing Group	PG NA
RQ	NA

15 REGULATORY INFORMATION

Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370)

Immediate (Acute) Health	Y	Fire	N
Delayed (Chronic) Health	Y	Reactive	N
		Sudden Release of Pressure	N

Ingredient Related Regulatory Information:

SARA Reportable Quantities	CERCLA RQ	SARA TPQ
Quartz	NE	
2-Butoxyethyl 2,4-dichlorophenoxy acetate	100 LBS	NE

SARA Title III, Section 313

This product does contain chemical(s) which are defined as toxic chemicals under and subject to the reporting requirements of, Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. See Section 2

2-Butoxyethyl 2,4-dichlorophenoxy acetate

SARA Title III, Section 302

This product does contain chemical(s), as indicated below, currently on the Extremely Hazardous Substance List, Section 302, SARA Title III. See Section 2 for further details regarding concentrations and registry numbers.

2-Butoxyethyl 2,4-dichlorophenoxy acetate

California Prop 65 - Carcinogen

This product does contain the following chemical(s), as indicated below, currently on the California list of Known Carcinogens.

Quartz

Massachusetts Right to Know

This product does contain the following chemical(s), as indicated below, currently on the Massachusetts Right to Know Substance List.

2-Butoxyethyl 2,4-dichlorophenoxy acetate

Quartz

New Jersey Right to Know

This product does contain the following chemical(s), as indicated below, currently on the New Jersey Right-to-Know Substances List.



Aqua-Kleen (R) Aquatic Herbicide

Material Safety Data Sheet

Cerexagri, Inc.

New Jersey Right to Know

This product does contain the following chemical(s), as indicated below, currently on the New Jersey Right-to-Know Substances List.

2-Butoxyethyl 2,4-dichlorophenoxy acetate

Quartz

Pennsylvania Environmental Hazard

This product does contain the following chemical(s), as indicated below, currently on the Pennsylvania Environmental Hazard List.

2-Butoxyethyl 2,4-dichlorophenoxy acetate

Pennsylvania Right to Know

This product does contain the following chemical(s), as indicated below, currently on the Pennsylvania Hazardous Substance List.

2-Butoxyethyl 2,4-dichlorophenoxy acetate

Quartz

16 OTHER INFORMATION

Revision Information

Revision Date 13 JAN 2005 Revision Number 10
Supersedes Revision Dated 15-OCT-2004

Revision Summary

Add trademark and reference to sections 1 & 16

Key

NE= Not Established NA= Not Applicable (R) = Registered Trademark

Miscellaneous

Aqua-Kleen (R) is a registered trademark of NuFarm, Inc.

Cerexagri, Inc. believes that the information and recommendations contained herein (including data and statements) are accurate as of the date hereof. NO WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, WARRANTY OF MERCHANTABILITY, OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, IS MADE CONCERNING THE INFORMATION PROVIDED HEREIN. The information provided herein relates only to the specific product designated and may not be valid where such product is used in combination with any other materials or in any process. Further, since the conditions and methods of use are beyond the control of Cerexagri, Inc., Cerexagri, Inc. expressly disclaims any and all liability as to any results obtained or arising from any use of the product or reliance on such information.

Specimen Label



Herbicide

A herbicide for management of aquatic vegetation in fresh water ponds, lakes, reservoirs, potable water sources, drainage canals, irrigation canals and rivers.

Active ingredient:

fluridone: 1-methyl-3-phenyl-5-[3-(trifluoromethyl) phenyl]-4(1H)-pyridinone5.0%
 Inert ingredients95.0%
 Total100.0%

(Contains 1.5 pounds active ingredient per 30-pound container.)

EPA Reg. No. 67690-12 EPA Est. No. 39578-TX-1
 FPL 091802 SPC-342142

Precautionary Statements

Hazards to Humans and Domestic Animals
Keep Out of Reach of Children

CAUTION PRECAUCION

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted no detalle. (If you do not understand this label, find someone to explain it to you in detail).

Harmful if Swallowed, Absorbed Through Skin, or if Inhaled

Avoid breathing of dust or contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

In case of emergency endangering health or the environment involving this product, call INFOTRAC at 1-800-535-5053.

Statement of Practical Treatments

First Aid	
If in eyes	<ul style="list-style-type: none"> • Hold eye open and rinse slowly and gently with water for 15 - 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call poison control center or doctor for treatment advice.
If on skin or clothing	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15 - 20 minutes. • Call a poison control center or doctor for treatment advice.
If swallowed	<ul style="list-style-type: none"> • Call a poison control center or doctor for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by a poison control center or doctor. • Do not give anything by mouth to an unconscious person.
If inhaled	<ul style="list-style-type: none"> • Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. • Call a poison control center or doctor for further treatment advice.
Have the product container or label with you when calling a poison control center or doctor, or going for treatment	

Notice Statement: Read entire label before using. Use only according to label directions.

Environmental Hazards

Follow use directions carefully so as to minimize adverse effects on nontarget organisms. In order to avoid impact on threatened or endangered aquatic plant or animal species, users must consult their State Fish and Game Agency or the U.S. Fish and Wildlife Service before making applications.

Do not contaminate untreated water when disposing of equipment washwaters. Trees and shrubs growing in water treated with Sonar PR Precision Release may occasionally develop chlorosis. Do not apply in tidewater/brackish water.

Lowest rates should be used in shallow areas where the water depth is considerably less than the average depth of the entire treatment site, for example, shallow shoreline areas.

*Trademark of SePRO Corporation
 SePRO Corporation • Carmel, IN 46032, U.S.A.

Sonar* PR Precision Release Herbicide

Directions for Use

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

Read all Directions Carefully Before Applying Sonar PR Precision Release.

Storage and Disposal

Do not contaminate water, food, or feed by storage or disposal.

Storage: Store in original container only. Do not store near feed or foodstuffs. In case of leak or spill, contain material and dispose as waste.

Pesticide Disposal: Wastes resulting from use of this product may be used according to label directions or disposed of at an approved waste disposal facility.

Container Disposal: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by incineration, or if allowed by State and Local authorities, by burning. If burned, stay out of smoke.

General Information

Sonar PR Precision Release herbicide is a selective systemic aquatic herbicide for management of aquatic vegetation in fresh water ponds, lakes, reservoirs, drainage canals, irrigation canals, and rivers. Sonar PR Precision Release is a pelleted formulation containing 5% fluridone. Sonar is absorbed from water by plant shoots and from hydrosol by the roots of aquatic vascular plants. It is important to maintain Sonar in contact with the target plants for as long as possible. Rapid water movement or any condition which results in rapid dilution of Sonar in treated water will reduce its effectiveness. In susceptible plants, Sonar inhibits the formation of carotene. In the absence of carotene, chlorophyll is rapidly degraded by sunlight. Herbicidal symptoms of Sonar appear in seven to ten days and appear as white (chlorotic) or pink growing points. Under optimum conditions 30 to 90 days are required before the desired level of aquatic weed management is achieved with Sonar. Species susceptibility to Sonar PR Precision Release may vary depending on time of year, stage of growth and water movement. For best results, apply Sonar PR Precision Release prior to initiation of weed growth or when weeds begin active growth. Application to mature target plants may require higher application rates and may take longer to control.

Sonar PR Precision Release is not corrosive to application equipment.

The label provides recommendations on the use of a chemical analysis for the active ingredient. SePRO Corporation recommends the use of an Enzyme-Linked Immunoassay (ELISA Test) for the determination of the active ingredient concentration in the water. Contact SePRO Corporation for the utilization of this test, known as FasTEST, for the incorporation of this analysis in your treatment program. Other proven chemical analyses for the active ingredient may also be used. The chemical analysis, FasTEST, is referenced in this label as the preferred method for the rapid determination of the concentration of the active ingredient in the water.

Application rates are provided in pounds of Sonar PR Precision Release to achieve a desired concentration of the active ingredient in part per billion (ppb). The maximum application rate or sum of all application rates is 90 ppb in ponds and 150 ppb in lakes and reservoirs per annual growth cycle. This maximum concentration is the amount of product calculated as the target application rate, NOT determined by testing the residues of the active ingredient in the treated water.

General Use Precautions

• **Obtain Required Permits:** Consult with appropriate state or local water authorities before applying this product. Permits may be required by state or local public agencies.

• **NEW YORK STATE:** Application of Sonar PR is not permitted in waters less than two (2) feet deep.

• **Hydroponic Farming:** Do not use Sonar PR treated water for hydroponic farming.

• **Greenhouse and Nursery Plants:** Do not use Sonar PR treated water for irrigating greenhouse or nursery plants. Use of an approved assay should confirm that residues are <1 ppb.

WATER USE RESTRICTIONS FOLLOWING APPLICATIONS WITH SONAR PR PRECISION RELEASE (DAYS)

Application Rate	Drinking [†]	Fishing	Swimming	Livestock/Pet Consumption	Irrigation ^{††}
Maximum Rate (150 ppb) or less	0	0	0	0	See irrigation instructions below

[†]Note below, under Potable Water Intakes, the information for application of Sonar PR within ¼ miles (1320) feet of a functioning potable water intake.

^{††}Note below, under Irrigation, specific time frames or fluridone residues that provide the widest safety margin for irrigating with fluridone treated water.

• **Potable Water Intakes:** Concentrations of the active ingredient fluridone up to 150 ppb are allowed in potable water sources; however, in lakes and reservoirs or other sources of potable water, DO NOT APPLY Sonar PR Precision Release at application rates greater than 20 ppb within one-fourth mile (1320 feet) of any functioning potable water intake. At application rates of 8-20 ppb, Sonar PR Precision Release MAY BE APPLIED where functioning potable water intakes are present. **Note: Existing potable water intakes which are no longer in use, such as those replaced by connections to potable water wells or a municipal water system, are not considered to be functioning potable water intakes.**

• **Irrigation:** Irrigation with Sonar PR Precision Release treated water may result in injury to the irrigated vegetation. SePRO Corporation recommends following these precautions and informing those who irrigate from areas treated with Sonar PR Precision Release of the irrigation time frames or water assay requirements presented in the table below. These time frames and assay recommendations are suggestions which should be followed to reduce the potential for injury to vegetation irrigated with water treated with Sonar PR Precision Release. Greater potential for crop injury occurs where Sonar PR Precision Release treated water is applied to crops grown on low organic and sandy soils.

Application Site	Days After Application		
	Established Tree Crops	Established Row Crops/Turf/Plants	Newly Seeded Crops/Seedbeds or Areas to be Planted Including Overseeded Golf Course Greens
[†] Ponds and Static Canals	7	30	Assay required
Canals	7	7	Assay required
Rivers	7	7	Assay required
^{††} Lakes and Reservoirs	7	7	Assay required

[†]For purposes of Sonar PR Precision Release labeling, a pond is

defined as a body of water 10 acres or less in size. A lake or reservoir is greater than 10 acres.

††In lakes and reservoirs where one-half or greater of the body of water is treated, use the pond and static canal irrigation precautions.

Where the use of Sonar PR Precision Release treated water is desired for irrigating crops prior to the time frames established above, the use of FasTEST assay is recommended to measure the concentration in the treated water. Where FasTEST has determined that concentrations are less than 10 parts per billion, there are no irrigation precautions for irrigating established tree crops, established row crops or turf. **For tobacco, tomatoes, peppers or other plants within the Solanaceae Family and newly seeded crops or newly seeded grasses such as overseeded golf course greens, do not use Sonar PR treated water if concentration are greater than 5 ppb. Furthermore, when rotating crops, do not plant members of the Solanaceae family in land that has been previously irrigated with fluridone concentrations in excess of 5 ppb. It is recommended that an aquatic specialist be consulted prior to commencing irrigation of these sites.**

Plant Control Information

Sonar PR Precision Release selectivity is dependent upon dosage, time of year, stage of growth, method of application, and water movement. The following categories, controlled, partially controlled, and not controlled are provided to describe expected efficacy under ideal treatment conditions using higher to maximum label rates. Use of lower rates will increase selectivity of some species listed as controlled or partially controlled. Additional aquatic plants may be controlled, partially controlled, or tolerant to Sonar PR Precision Release. Consult an aquatic specialist prior to application of Sonar PR Precision Release to determine a plant's susceptibility to Sonar PR Precision Release.

Vascular Aquatic Plants Controlled by Sonar PR Precision Release†

Submersed Plants:

bladderwort (*Utricularia* spp.)
common coontail (*Ceratophyllum demersum*)*
common Elodea (*Elodea canadensis*)*
egeria, Brazilian Elodea (*Egeria densa*)
fanwort, Cabomba (*Cabomba caroliniana*)
hydrilla (*Hydrilla verticillata*)
naiad (*Najas* spp.)*
pondweed (*Potamogeton* spp., except Illinois pondweed)*
watermilfoil (*Myriophyllum* spp. except variable-leaf milfoil)

Shoreline Grasses:

paragrass (*Urochloa mutica*)

†Species denoted by an asterisk are native plants that are often tolerant to Sonar at lower use rates. Please consult an aquatic specialist for recommended Sonar PR Precision Release use rates when selective control of exotic species is desired.

Vascular Aquatic Plants Partially Controlled by Sonar PR Precision Release:

Floating Plants:

Salvinia (*Salvinia* spp.)

Emersed Plants:

alligatorweed (*Alternanthera philoxeroides*)
American lotus (*Nelumbo lutea*)
cattail (*Typha* spp.)
creeping waterprimrose (*Ludwigia peploides*)

parrotfeather (*Myriophyllum aquaticum*)
smartweed (*Polygonum* spp.)
spatterdock (*Nuphar luteum*)
spikerush (*Eleocharis* spp.)
waterlily (*Nymphaea* spp.)
waterpurslane (*Ludwigia palustris*)
watershield (*Brasenia schreberi*)

Submersed Plants:

Illinois pondweed (*Potamogeton illinoensis*)
limnophila (*Limnophila sessiliflora*)
tapegrass, American eelgrass (*Vallisneria americana*)
watermilfoil--variable-leaf (*Myriophyllum heterophyllum*)

Shoreline Grasses:

barnyardgrass (*Echinochloa crusgalli*)
giant cutgrass (*Zizaniopsis miliacea*)
reed canarygrass (*Phalaris arundinaceae*)
southern watergrass (*Hydrochloa caroliniensis*)
torpedograss (*Panicum repens*)

Vascular Aquatic Plants Not Controlled by Sonar PR Precision Release:

Floating Plants:

floating waterhyacinth (*Eichhornia crassipes*)
waterlettuce (*Pistia stratiotes*)

Emersed Plants:

American frogbit (*Limnobium spongia*)
arrowhead (*Sagittaria* spp.)
bacopa (*Bacopa* spp.)
big floatingheart, banana lily (*Nymphoides aquatica*)
bulrush (*Scirpus* spp.)
pickerelweed, lanceleaf (*Pontederia* spp.)
rush (*Juncus* spp.)
water pennywort (*Hydrocotyle* spp.)

Shoreline Grasses:

maiden cane (*Panicum hemitomon*)

Note: algae (chara, nitella, and filamentous species are not controlled by Sonar PR Precision Release).

Application Directions

The aquatic plants present in the treatment site should be identified prior to application to determine their susceptibility to Sonar PR Precision Release. It is important to determine the area (acres) to be treated and the average depth in order to select the proper application rate. Do not exceed the maximum labeled rate for a given treatment site per annual growth cycle.

Application to Ponds

Sonar PR Precision Release may be applied to the entire surface area of a pond. For single applications, rates may be selected to provide 45 to 90 ppb to the treated water, although actual concentrations in treated water may be substantially lower at any point in time due to the slow-release formulation of this product. When treating for optimum selective control, lower rates may be applied for sensitive target species. Use the higher rate within the rate range where there is a dense weed mass, when treating more difficult to control species, and for ponds less than 5 acres in size with an average depth less than 4 feet. Application rates necessary to obtain these concentrations in treated water are shown in the following table. For additional application rate calculations, refer to page 5—Application Rate Calculations-Ponds, Lakes and Reservoirs. Split or multiple applications are recommended where dilution of treated water is anticipated; however, the sum of all applications should total 45 to 90 ppb and must not exceed a total of 90 ppb per annual growth cycle.

Average Water Depth of Treatment Site (feet)	Pounds of Sonar PR Precision Release per Treated Surface Acre	
	45 ppb	90 ppb
1	2.5	5
2	5	10
3	7.5	15
4	10	20
5	12.5	25
6	15	30
7	17	34
8	19.5	39
9	22	44
10	24.5	49

Application to Lakes and Reservoirs

The following treatments are recommended for treating both whole lakes or reservoirs and partial areas of lakes or reservoirs (bays, etc.). For best results in treating partial lakes and reservoirs, Sonar PR Precision Release treatment areas should be a minimum of 5 acres in size. Treatment of areas smaller than 5 acres or treatment of narrow strips such as boat lanes or shorelines may not produce satisfactory results due to dilution by untreated water. Rate ranges are provided as a guide to include a wide range of environmental factors, such as target species, plant susceptibility, selectivity and other aquatic plant management objectives. Application rates and methods should be selected to meet the specific lake/reservoir aquatic plant management goals.

A. Whole Lake or Reservoir Treatments (Limited or No Water Discharge)

1. Single Application to Whole Lakes or Reservoirs

Where single applications to whole lakes or reservoirs are desired, apply Sonar PR Precision Release at an application rate of 16 to 90 ppb. Application rates necessary to obtain these concentrations in treated water are shown in the following table. For additional rate calculations, refer to page 5—Application Rate Calculation-Ponds, Lakes and Reservoirs. Choose an application rate to meet the aquatic plant management objective. **Where greater plant selectivity is desired such as when controlling Eurasian watermilfoil and curlyleaf pondweed, choose an application rate lower in the rate range.** For other plant species, SePRO recommends contacting an aquatic specialist in determining when to choose application rates lower in the rate range to meet specific plant management goals. Use the higher rate within the rate range where there is a dense weed mass or when treating more difficult to control plant species or in the event of a heavy rainfall event where dilution has occurred. In these cases, a second application or more may be required; however, the sum of all applications cannot exceed 150 ppb per annual growth cycle. Refer to the following Section (No. 2) Split or Multiple Applications for guidelines and maximum rate allowed.

Average Water Depth of Treatment Site (feet)	Pounds of Sonar PR Precision Release Per Treated Surface Acre	
	16 ppb	90 ppb
1	0.9	5
2	1.7	10
3	2.6	15
4	3.5	20
5	4.3	25
6	5.2	30
7	6.0	34
8	6.9	39
9	7.8	44
10	8.6	49
11	9.5	54
12	10.4	59
13	11.2	64
14	12.1	68
15	13.0	73
16	13.8	78
17	14.7	83
18	15.6	88
19	16.4	93
20	17.3	98

2. Split or Multiple Applications to Whole Lakes or Reservoirs

To meet certain plant management objectives, split or multiple applications may be desired in making whole lake treatments. Split or multiple application programs are desirable when the objective is to use the minimum effective dose and to maintain this lower dose for the sufficient time to ensure efficacy and enhance selectivity. Under these situations, use the lower rates (16 to 75 ppb) within the rate range. **In controlling Eurasian watermilfoil and curlyleaf pondweed and where greater plant selectivity is desired, choose an application rate lower in the rate range.** For other plant species, SePRO recommends contacting an aquatic specialist in determining when to choose application rates lower in the rate range to meet specific plant management goals. For split or repeated applications, the sum of all applications must not exceed 150 ppb per annual growth cycle.

Note: In treating lakes or reservoirs that contain potable water intakes and the application requires treating within 1/4 mile of a potable water intake, no single application can exceed 20 ppb. Additionally, the sum of all applications cannot exceed 150 ppb per annual growth cycle.

B. Partial Lake or Reservoir Treatments

Where dilution of Sonar PR Precision Release with untreated water is anticipated, such as in partial lake or reservoir treatments, split or multiple applications may be used to extend the contact time to the target plants. The application rate and use frequency of Sonar PR Precision Release in a partial lake is highly dependent upon the treatment area. Higher application rates may be required and frequency of applications will vary depending upon the potential of untreated water diluting the Sonar PR Precision Release concentration in the treatment area. Use higher rates where greater dilution with untreated water is anticipated.

1. Application Sites Greater Than 1/4 Mile from a Functioning Potable Water Intake

For single applications, apply Sonar PR Precision Release at application rates from 45 to 150 ppb. Split or multiple applications may be made, however, the sum of all applications cannot

exceed 150 ppb per annual growth cycle. Split applications should be conducted to maintain a sufficient concentration in the target area for a period of 45 days or longer. The use of FasTEST is recommended to maintain the desired concentration in the target area over time.

2. Application Sites Within 1/4 Mile of a Functioning Potable Water Intake

In treatment areas that are within 1/4 mile of a potable water intake, no single application can exceed 20 ppb. When utilizing split or repeated applications of Sonar PR Precision Release for sites which contain a potable water intake, FasTEST is required to determine the actual concentration in the water. Additionally, the sum of all applications cannot exceed 150 ppb per annual growth cycle.

Application Rate Calculation - Ponds, Lakes and Reservoirs

The amount of Sonar PR Precision Release to be applied to provide the desired ppb concentration of active ingredient equivalents in treated water may be calculated as follows:

- Pounds of Sonar PR Precision Release required per treated acre = Average water depth of treatment site x Desired ppb concentration of active ingredient equivalents x 0.054

For example, the pounds per acre of Sonar PR Precision Release required to provide a concentration of 25 ppb of active ingredient equivalents in water with an average depth of 5 feet is calculated as follows:

$$5 \times 25 \times 0.054 = 6.75 \text{ pounds per treated surface acre.}$$

Note: Calculated rates should not exceed the maximum allowable rate in pounds per treated surface acre for the water depth listed in the application rate table for the site to be treated.

Application to Drainage Canals, Irrigation Canals and Rivers

Static Canals:

In static drainage and irrigation canals, Sonar PR Precision Release should be applied at the rate of 20 to 40 pounds per surface acre.

Moving Water Canals and Rivers:

The performance of Sonar PR Precision Release will be enhanced by restricting or reducing water flow. In slow moving bodies of water use an application technique that maintains a concentration of 10 to 40 ppb in the applied area for a minimum of 45 days. Sonar PR Precision Release can be applied by split or multiple broadcast applications or by metering in the product to provide a uniform concentration of the herbicide based upon the flow pattern. The use of FasTEST is recommended to maintain the desired concentration in the target area over time.

Static or Moving Water Canals or Rivers Containing a Functioning Potable Water Intake

In treating a static or moving water canal or river which contains a functioning potable water intake, applications of Sonar PR Precision Release greater than 20 ppb must be made more

than 1/4 mile from a functioning potable water intake. Applications less than 20 ppb may be applied within 1/4 mile from a functioning potable water intake; however, if applications of Sonar PR Precision Release are made within 1/4 mile from a functioning water intake, the FasTEST must be utilized to demonstrate that concentrations do not exceed 150 ppb at the potable water intake.

Application Rate Calculation – Drainage Canals, Irrigation Canals and Rivers

The amount of Sonar PR Precision Release to be applied through a metering system to provide the desired ppb concentration of active ingredient in treated water may be calculated as follows:

1. Average flow rate (feet per second) x average width (ft.) x average depth (ft.) x 0.9 = CFS (cubic feet per second)
2. CFS x 1.98 = acre feet per day (water movement)
3. Acre feet per day x desired ppb x 0.054 = pounds Sonar PR Precision Release required per day.

WARRANTY DISCLAIMER

SePRO Corporation warrants that the product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the label when used in strict accordance with the directions, subject to the inherent risks set forth below. SEPRO CORPORATION MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

INHERENT RISKS OF USE

It is impossible to eliminate all risks associated with use of this product. Plant injury, lack of performance, or other unintended consequences may result because of such factors as use of the product contrary to label instructions (including conditions noted on the label such as unfavorable temperatures, soil conditions, etc.), abnormal conditions (such as excessive rainfall, drought, tornadoes, hurricanes), presence of other materials, the manner of application, or other factors, all of which are beyond the control of SePRO Corporation as the seller. All such risks shall be assumed by buyer.

LIMITATION OF REMEDIES

The exclusive remedy for losses or damages resulting from this product (including claims based on contract, negligence, strict liability, or other legal theories) shall be limited to, at SePRO Corporation's election, one of the following:

- (1) Refund of purchase price paid by buyer or user for product bought, or
- (2) Replacement of amount of product used.

SePRO Corporation shall not be liable for losses or damages resulting from handling or use of this product unless SePRO Corporation is promptly notified of such losses or damages in writing. In no case shall SePRO Corporation be liable for consequential or incidental damages or losses.

The terms of the Warranty Disclaimer above and this Limitation of Remedies can not be varied by any written or verbal statements or agreements. No employee or sales agent of SePRO Corporation or the seller is authorized to vary or exceed the terms of the Warranty Disclaimer or Limitations of Remedies in any manner.



REWARD[®]

PULL HERE TO OPEN ►

Landscape and Aquatic Herbicide

TO PREVENT ACCIDENTAL POISONING, NEVER PUT INTO FOOD, DRINK, OR OTHER CONTAINERS, AND USE STRICTLY IN ACCORDANCE WITH ENTIRE LABEL.

DO NOT USE THIS PRODUCT FOR REFORMULATION.

Active Ingredient:

Diquat dibromide [6,7-dihydrodipyrdo (1,2-a:2',1'-c) pyrazinediium dibromide]	37.3%
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Other Ingredients:	62.7%
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Total:	100.0%
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Contains 2 lbs. diquat cation per gal. as 3.73 lbs. salt per gal.

KEEP OUT OF REACH OF CHILDREN.

WARNING/AVISO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

See additional precautionary statements and directions for use inside booklet.

EPA Reg. No. 100-1091

EPA Est. 100-TX-001

Product of United Kingdom

Formulated in the USA

SCP 1091A-L2A 0503

131537

2.5 gallons

Net Contents

Reward®

FIRST AID	
If swallowed	<ul style="list-style-type: none"> • Call a Poison Control Center or doctor immediately for treatment advice. • Immediately give water or milk to drink and induce vomiting by inserting finger in throat. • Do not induce vomiting or give anything by mouth to an unconscious person. • Take person and product container to the nearest hospital or physician fast. • PROMPT TREATMENT IS ESSENTIAL TO COUNTERACT POISONING and should be initiated before signs and symptoms of injury appear.
If on skin or clothing	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a Poison Control Center or doctor for treatment advice.
If in eyes	<ul style="list-style-type: none"> • Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a Poison Control Center or doctor for treatment advice.
If inhaled	<ul style="list-style-type: none"> • Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. • Call a Poison Control Center or doctor for further treatment advice.
NOTE TO PHYSICIAN	
<p>CALL SYNGENTA MEDICAL EMERGENCY ASSISTANCE 1-800-888-8372 at any hour to obtain toxicology information and a diquat analysis. To be effective, treatment for diquat poisoning must begin IMMEDIATELY. Treatment consists of binding diquat in the gut with suspensions of activated charcoal or bentonite clay, administration of cathartics to enhance elimination, and removal of diquat from the blood by charcoal hemoperfusion or continuous hemodialysis.</p>	
<p>Have the product container or label with you when calling a poison control center or doctor, or going for treatment.</p>	
HOT LINE NUMBER	
<p>For 24-Hour Medical Emergency Assistance (Human or Animal) or Chemical Emergency Assistance (Spill, Leak, Fire, or Accident), Call 1-800-888-8372</p>	

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

WARNING/AVISO

May be fatal if absorbed through skin. Harmful if swallowed or inhaled. Causes substantial, but temporary, eye injury. Causes skin irritation. Contact with irritated skin, or a cut, or repeated contact with intact skin may result in poisoning. Do not get in eyes, on skin, or on clothing. Avoid breathing vapor or spray mist. Do not feed forage from treated crops to livestock. Keep livestock and pets out of treated fields and crop areas.

Personal Protective Equipment (PPE)

Applicators and other handlers must wear:

- Coveralls over short-sleeved shirt and short pants or coveralls over long-sleeved shirt and long pants
- Waterproof gloves
- Chemical-resistant footwear plus socks
- Protective eyewear
- Chemical-resistant headgear for overhead exposure
- Chemical-resistant apron when cleaning equipment, mixing, or loading

Exception: After this product has been diluted with at least 50 gallons of water, applicators for AQUATIC SURFACE APPLICATIONS must, at a minimum, wear (Note – Mixers and Loaders for this application method must still wear the Personal Protective Equipment (PPE) as described in the above section):

- Long-sleeved shirt and long pants
- Shoes plus socks
- Waterproof gloves
- Protective eyewear

Exception: At a minimum, applicators for AQUATIC SUBSURFACE APPLICATIONS must wear (Note – Mixers and Loaders for this application method must still wear the Personal Protective Equipment (PPE) as described in the above section):

- Short-sleeved shirt and short pants
- Waterproof gloves
- Chemical-resistant footwear plus socks

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Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

Engineering Control Statements

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS. Mixers, loaders, and applicators using closed systems who meet these requirements may wear: long-sleeved shirt and long pants, protective eyewear, waterproof gloves, shoes plus socks, and a chemical-resistant apron when mixing, loading, or cleaning equipment. If handling tasks are performed from inside an enclosed cab or aircraft with enclosed cockpits that meet these requirements may wear: long-sleeved shirt, long pants, shoes and socks for the labeling-specified PPE. All labeling-specified PPE must be immediately available for use in an emergency. All applicable requirements as specified in 40 CFR 170.240(d)(4-6) must be followed.

User Safety Recommendations

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

Environmental Hazards (Terrestrial and Aquatic Uses)

This pesticide is toxic to aquatic invertebrates. For **Terrestrial Uses**, do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment wash waters. For **Aquatic Uses**, do not apply directly to water except as specified on this label. Treatment of dense weed areas may result in oxygen loss from decomposition of dead weeds. This loss of oxygen may cause fish suffocation. Therefore, treat only 1/3 to 1/2 of the water body area at one time, especially if dense areas of weeds and/or algae exist, and wait 14 days between treatments.

Necessary approval and/or permits should be obtained prior to application if required. Consult the responsible State Agencies (i.e., Fish and Game Agencies or Department of Natural Resources) before making applications to public waters.

CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY

NOTICE: Read the entire Directions for Use and Conditions of Sale and Limitation of Warranty and Liability before buying or using this product. If the terms are not acceptable, return the product at once, unopened, and the purchase price will be refunded.

The Directions for Use of this product should be followed carefully. It is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as manner of use or application, weather or crop conditions, presence of other materials or other influencing factors in the use of the product, which are beyond the control of SYNGENTA CROP PROTECTION, Inc. or Seller. All such risks shall be assumed by Buyer and User, and Buyer and User agree to hold SYNGENTA and Seller harmless for any claims relating to such factors.

SYNGENTA warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated in the Directions for Use, subject to the inherent risks referred to above, when used in accordance with directions under normal use conditions. This warranty does not extend to the use of the product contrary to label instructions, or under abnormal conditions or under conditions not reasonably foreseeable to or beyond the control of Seller or SYNGENTA, and Buyer and User assume the risk of any such use. SYNGENTA MAKES NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS STATED ABOVE.

In no event shall SYNGENTA or Seller be liable for any incidental, consequential or special damages resulting from the use or handling of this product. **THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE EXCLUSIVE LIABILITY OF SYNGENTA AND SELLER FOR ANY AND ALL CLAIMS, LOSSES, INJURIES OR DAMAGES (INCLUDING CLAIMS BASED ON BREACH OF WARRANTY, CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE) RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, SHALL BE THE RETURN OF THE PURCHASE PRICE OF THE PRODUCT OR, AT THE ELECTION OF SYNGENTA OR SELLER, THE REPLACEMENT OF THE PRODUCT.**

SYNGENTA and Seller offer this product, and Buyer and User accept it, subject to the foregoing Conditions of Sale and Limitation of Warranty and Liability, which may not be modified except by written agreement signed by a duly authorized representative of SYNGENTA.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

READ ENTIRE LABEL. USE STRICTLY IN ACCORDANCE WITH PRECAUTIONARY STATEMENTS AND DIRECTIONS, AND WITH APPLICABLE STATE AND FEDERAL REGULATIONS.

DO NOT APPLY THIS PRODUCT THROUGH ANY TYPE OF IRRIGATION SYSTEM.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 24 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water is:

- Coveralls over short-sleeved shirt and short pants, or coveralls over long-sleeved shirt and long pants
- Waterproof gloves
- Chemical-resistant footwear plus socks
- Protective eyewear
- Chemical-resistant headgear for overhead exposure

NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

Keep all unprotected persons out of operating areas or vicinity where there may be drift.

For terrestrial uses, do not enter or allow entry of maintenance workers into treated areas, or allow contact with treated vegetation wet with spray, dew, or rain, without appropriate protective clothing until spray has dried.

For aquatic uses, do not enter treated areas while treatments are in progress.

STORAGE AND DISPOSAL

Prohibitions

Do not contaminate water, food, or feed by storage, disposal, or cleaning of equipment. Open dumping is prohibited.

Storage

Keep pesticide in original container. Do not put concentrate or dilute into food or drink containers. Do not contaminate feed, foodstuffs, or drinking water. Do not store or transport near feed or food. Store at temperatures above 32°F. For help with any spill, leak, fire, or exposure involving this material, call 1-800-888-8372.

Pesticide Disposal

Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container Disposal

Do not reuse container. Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or if allowed by State and local authorities, by burning. If burned, stay out of smoke.

CONTAINER IS NOT SAFE FOR FOOD, FEED, OR DRINKING WATER!

SPECIFIC USE DIRECTIONS

Reward Landscape and Aquatic Herbicide is a nonvolatile herbicidal chemical for use as a general herbicide to control weeds in noncrop and aquatic areas. Absorption and herbicidal action is usually quite rapid with effects visible in a few days. Reward Landscape and Aquatic Herbicide controls weeds by interfering with photosynthesis within green plant tissue. Weed plants should be succulent and actively growing for best results. Rinse all spray equipment thoroughly with water after use. Avoid Spray Drift to crops, ornamentals, and other desirable plants during application, as injury may result. Application to muddy water may result in reduced control. Minimize creating muddy water during application. Use of dirty or muddy water for Reward Landscape and Aquatic Herbicide dilution may result in reduced herbicidal activity. Avoid applying under conditions of high wind, water flow, or wave action.

SPRAY DRIFT MANAGEMENT

Avoiding spray drift at the application site is the responsibility of the applicator and the grower.

The interaction of many equipment- and weather-related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions.

The following drift management requirements must be followed to avoid off-target movement from aerial applications to agricultural field crops. These requirements do not apply to forestry applications, public health uses, or to applications using dry formulations.

- The distance of the outermost nozzles on the boom must not exceed $\frac{3}{4}$ the length of the wingspan or rotor.
- Nozzles must always point backward parallel with the air stream and never be pointed downward more than 45 degrees.

Where states have more stringent regulations, they should be observed.

Droplet Size

The most effective way to reduce drift potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions (See **Wind, Temperature and Humidity, and Temperature Inversions**).

Controlling Droplet Size

- **Volume** – Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- **Pressure** – Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types, lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- **Number of Nozzles** – Use the minimum number of nozzles that provide uniform coverage.
- **Nozzle Orientation** – Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is the recommended practice. Significant deflection from horizontal will reduce droplet size and increase drift potential.
- **Nozzle Type** – Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift.

Boom Length

For some use patterns, reducing the effective boom length to less than $\frac{3}{4}$ of the wingspan or rotor length may further reduce drift without reducing swath width.

Application Height

Applications should not be made at a height greater than 10 ft. above the top of the target plants, unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces exposure of droplets to evaporation and wind.

Swath Adjustment

When applications are made with a crosswind, the swath will be displaced downwind. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance should increase with increasing drift potential (higher wind, smaller drops, etc.).

Wind

Drift potential is lowest between wind speeds of 2-10 mph. However, many factors, including droplet size and equipment type, determine drift potential at any given speed. Application should be avoided below 2 mph due to variable wind direction and high inversion potential.

Note: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

Temperature and Humidity

When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

Temperature Inversions

Applications should not occur during a temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

Sensitive Areas

The pesticide should only be applied when the wind is blowing away from adjacent sensitive areas (e.g., residential areas, bodies of water, known habitat for threatened or endangered species, non-target crops).

COMMERCIAL GREENHOUSES AND NURSERIES

For general weed control in commercial greenhouses (beneath benches), (field grown and container stock), and other similar areas, Reward Landscape and Aquatic Herbicide may be applied preplant or postplant preemergence in field grown ornamental nursery plantings or postemergence as a directed spray. Reward Landscape and Aquatic Herbicide may also be applied preemergence in ornamental seed crops (U.S., except CA). Avoid contact with desirable foliage as injury may occur. Do not use on food or feed crops.

Spot spray: 1-2 qts. Reward Landscape and Aquatic Herbicide plus the labeled rate of a 75% or greater nonionic surfactant per 100 gals. of water, or 0.75 oz. (22 mls.) Reward Landscape and Aquatic Herbicide plus the labeled rate of a 75% or greater nonionic surfactant per 1 gal. of water.

Broadcast: 1-2 pts. Reward Landscape and Aquatic Herbicide in a minimum of 15 gals. of water per acre. Add the labeled rate of a 75% or greater nonionic surfactant per 100 gals. of spray mixture. Use an adequate spray volume to insure good coverage.

ORNAMENTAL SEED CROPS (FLOWERS, BULBS, ETC.) U.S., EXCEPT CA

For preharvest desiccation of ornamental seed crops. NOT FOR FOOD OR FIBER CROPS.

Broadcast (Air or Ground): 1.5-2 pts. Reward Landscape and Aquatic Herbicide plus the labeled rate of a 75% or greater nonionic surfactant per acre in sufficient water (minimum of 5 gals. by air; 15 gals. by ground) for desiccation and weed burndown. Repeat as needed at no less than 5-day intervals up to three applications. Do not use seed, screenings, or waste as feed or for consumption.

DIRECTIONS FOR LANDSCAPE, INDUSTRIAL, RECREATIONAL, COMMERCIAL, RESIDENTIAL, AND PUBLIC AREAS

Reward Landscape and Aquatic Herbicide provides fast control of broadleaf and grassy weeds in industrial, recreational, golf course, commercial, residential, and public areas.

Reward Landscape and Aquatic Herbicide is a nonselective herbicide that rapidly kills undesirable above ground weed growth in 24-36 hours. Avoid application of Reward Landscape and Aquatic Herbicide to desirable plants.

Reward Landscape and Aquatic Herbicide is a contact/desiccant herbicide; it is essential to obtain complete coverage of the target weeds to get good control. Improper application technique and/or application to stressed weeds may result in unacceptable weed control. For best results, apply to actively growing, young weeds.

Difficult weeds (such as perennial or deeply-rooted weeds) can often be controlled by tank mixing Reward Landscape and Aquatic Herbicide with other systemic-type herbicides. Refer to other product labels for specific application directions.

For residual weed control, tank mix Reward Landscape and Aquatic Herbicide with a pre-emergent herbicide labeled for the intended use site. When mixing Reward Landscape and Aquatic Herbicide with another herbicide, it is recommended to mix just a small amount first to determine if the mixture is physically compatible before proceeding with larger volumes.

Syngenta has not tested all possible tank mixtures with other herbicides for compatibility, efficacy or other adverse effects. Before mixing with other herbicides Syngenta recommends you first consult your state experimental station, state university or extension agent.

Grounds maintenance weed control: Reward Landscape and Aquatic Herbicide can be used as a spot or broadcast spray to control weeds in public, commercial and residential landscapes, including landscape beds, lawns, golf courses and roadsides. Reward Landscape and Aquatic Herbicide can also be used for weed control around the edges and nonflooded portions of ponds, lakes and ditches.

Trim and edge weed control: Reward Landscape and Aquatic Herbicide can be used to eliminate undesired grass and broadleaf plant growth in a narrow band along driveways, walkways, patios, cart paths, fence lines, and around trees, ornamental gardens, buildings, other structures, and beneath noncommercial greenhouse benches. Vegetation control with Reward Landscape and Aquatic Herbicide is limited to the spray application width. Do not exceed the labeled rate of Reward Landscape and Aquatic Herbicide as excessive rates may result in staining of concrete-based materials.

Reward Landscape and Aquatic Herbicide, since it does not translocate systemically, can be used as an edging or pruning tool when precisely applied to select areas of grass or to undesirable growth on desirable ornamental bedding plants, ground covers, etc.

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Industrial weed control: Reward Landscape and Aquatic Herbicide can be used as a spot or broadcast spray either alone or in combination with other herbicides as a fast burndown or control weeds in rights-of-ways, railroad beds/yards, highways, roads, dividers and medians, parking lots, pipelines, pumping stations, public utility lines, transformer stations and substations, electric utilities, storage yards, and other noncrop areas.

Spot spray: 1-2 qts. of Reward Landscape and Aquatic Herbicide plus the labeled rate of a 75% or greater nonionic surfactant per 100 gals. of water, or 0.75 oz. (22 ml) Reward Landscape and Aquatic Herbicide plus the labeled rate of a 75% or greater nonionic surfactant per 1 gal. of water.

Broadcast: 1-2 pts. Reward Landscape and Aquatic Herbicide in a minimum of 15 gals. of water per acre. Add the labeled rate of 75% or greater nonionic surfactant per 100 gals. spray mixture. Use an adequate spray volume to insure good coverage. Greater water volumes are necessary if the target plants are tall and/or dense. It is recommended that 60 gals. or greater water volume be used to obtain good coverage of dense weeds.

Turf Renovation (All Turf Areas Except Commercial Sod Farms)

To desiccate golf course turf and other turf areas prior to renovation, apply 1-2 pts. of Reward Landscape and Aquatic Herbicide per acre plus the labeled rate of a 75% or greater nonionic surfactant in 20-100 gals. of water (4 teaspoons of Reward Landscape and Aquatic Herbicide plus the labeled rate of a 75% or greater nonionic surfactant per 1 gal. of water) using ground spray equipment. Apply for full coverage and thorough contact with the turfgrass. Apply only when the turf is dry, free from dew and incidental moisture. For enhanced turf desiccation, especially in the case of thick turfgrass, water volumes should approach 100 gals. of water per acre.

For **suppression** of regrowth and quick desiccation of treated turfgrass, Reward Landscape and Aquatic Herbicide may be mixed with other systemic nonselective or systemic postemergence grassy weed herbicides. Refer to other product labels for specific application directions and restrictions.

Avoid spray contact with, or spray drift to, foliage of ornamental plants or food crops.

Do not graze livestock on treated turf or feed treated thatch to livestock.

DORMANT ESTABLISHED TURFGRASS (BERMUDAGRASS, ZOYSIAGRASS), NONFOOD OR FEED CROP

For control of emerged annual broadleaf and grass weeds, including little barley*, annual bluegrass, Bromes including rescuegrass, sixweeks fescue, henbit, buttercup, and Carolina geranium in established dormant bermudagrass lawns, parks, golf courses, etc.

Apply 1-2 pts. Reward Landscape and Aquatic Herbicide per acre in 20-100 gals. of spray mix by ground as a broadcast application. Add the labeled rate of a 75% or greater nonionic surfactant per 100 gals. of spray mixture.

Bermudagrass must be dormant at application. Application to actively growing bermudagrass may cause delay or permanent injury. Users in the extreme Southern areas should be attentive to the extent of dormancy at the time of application.

*For control of little barley, apply Reward Landscape and Aquatic Herbicide prior to the mid-boot stage.

AQUATIC USE DIRECTIONS

New York – Not for Sale or Use in New York State without Supplemental Special Local Needs Labeling.

Necessary approval and/or permits should be obtained prior to application if required. Consult the responsible State Agencies (i.e., Fish and Game Agencies or Department of Natural Resources). Treatment of dense weed areas may result in oxygen loss from decomposition of dead weeds. This loss of oxygen may cause fish suffocation. Therefore, treat only $\frac{1}{3}$ to $\frac{1}{2}$ of the water body area at one time and wait 14 days between treatments.

For application only to **still water** (i.e. ponds, lakes, and drainage ditches) where there is minimal or no outflow to public waters.

and/or

For applications to **public waters** in ponds, lakes, reservoirs, marshes, bayous, drainage ditches, canals, streams, rivers, and other slow-moving or quiescent bodies of water for control of aquatic weeds. For use by:

- Corps of Engineers; or
- Federal or State Public Agencies (i.e., Water Management District personnel, municipal officials); or
- Applicators and/or Licensees (certified for aquatic pest control) that are authorized by the State or Local government.

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Treated water may be used according to the following table or until such time as an approved assay (example: PAM II Spectromatic Method) shows that the water does not contain more than the designated maximum contaminant level goal (MCLG) of 0.02 mg./l. (ppm) of diquat dibromide (calculated as the cation):

Water Use Restrictions Following Applications With Reward Landscape And Aquatic Herbicide (Days)

Application Rate	Drinking	Fishing and Swimming	Livestock Consumption	Spray Tank Applications** and Irrigation to Turf and Ornamentals	Spray Tank Applications** and Irrigation to Food Crops
2 gals./surface acre	3 days	0	1 day	3 days	5 days
1 gal./surface acre	2 days	0	1 day	2 days	5 days
0.75 gal./surface acre	2 days	0	1 day	2 days	5 days
0.50 gal./surface acre	1 day	0	1 day	1 day	5 days
Spot Spray* (< 0.5 gal./surface acre)	1 day	0	1 day	1 day	5 days

*Rates refer to total surface area.

**For preparing agricultural sprays for food crops, turf or ornamentals (to prevent phytotoxicity), do not use water treated with Reward Landscape and Aquatic Herbicide before the specified time period.

When the contents of more than one spray tank is necessary to complete a single aquatic application, no water holding restrictions apply between the consecutive spray tanks.

No applications are to be made in areas where commercial processing of fish, resulting in the production of fish protein concentrate or fish meal, is practiced. Before application, coordination and approval of local and/or State authorities must be obtained.

Apply Reward Landscape and Aquatic Herbicide in Accordance With the Following Table

Weed Species	Subsurface or Bottom Placement Gals./Surface Acre*	Surface Gals./Surface Acre*
Bladderwort (<i>Utricularia</i> spp.)	1-2	2
Coontail (<i>Ceratophyllum demersum</i>)	2	2
Elodea (<i>Elodea</i> spp.)	2	2
Naiad (<i>Najas</i> spp.)	1-2	2
Pondweeds ¹ (<i>Potamogeton</i> spp.)	2	2
Watermilfoils (<i>Myriophyllum</i> spp.)	1-2	2
Hydrilla (<i>Hydrilla verticillata</i>)	2	2
Waterlettuce ² (<i>Pistia stratiotes</i>)	NA	0.5 - 0.75
Waterhyacinth ² (<i>Eichhornia crassipes</i>)	NA	0.5 - 0.75
Pennywort ³ (<i>Hydrocotyle</i> spp.)	NA	0.5 - 0.75
Frog's Bit ⁶ (<i>Limnobium spongia</i>)	NA	0.5 - 0.75
Salvinia ² (<i>Salvinia</i> spp.)	NA	0.5 - 0.75
Duckweed ⁴ (<i>Lemna</i> spp.)	NA	1
Cattails ³ (<i>Typha</i> spp.)	NA	1-2
Algae ⁵ (<i>Spirogyra</i> spp. & <i>Pithophora</i> spp.)	1-2	2

*For water less than or equal to 2 ft. in average depth of treatment area, use a maximum of 1 gal. Reward Landscape and Aquatic Herbicide per surface acre. Lowest rates should be used in shallow areas where the water depth is considerably less than the average depth of the entire treatment area, for example, shallow shoreline areas. At water temperatures below 50°-60°F, efficacy and immediacy of results may be reduced.

¹Reward Landscape and Aquatic Herbicide controls *Potamogeton* species except Richardson's pondweed (*P. richardsonii*). For control of *P. robbinsii*, applications must be made when the plants are in the early stages of growth such as in Spring and early Summer.

²For salvinia, waterlettuce, and water hyacinth, use the labeled rate of Reward Landscape and Aquatic Herbicide in 75-200 gals. water plus the labeled rate of a 75% or greater nonionic surfactant per acre for surface sprays, and for aerial application for waterlettuce and water hyacinth control, apply the labeled rate of Reward Landscape and Aquatic Herbicide in 10-24 gals. of water plus the labeled rate of a 75% or greater nonionic surfactant per acre.

³For pennywort and cattail control, apply in 50-150 gals. of water plus the labeled rate of a 75% or greater nonionic surfactant per acre for full coverage and thorough weed contact. Repeat treatments may be necessary to control regrowth. For best results, apply before flowering (cattail).

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⁴For duckweed control, apply as an overall spray in 50-150 gals. of water plus the labeled rate of a 75% or greater nonionic surfactant per acre. Retreatment may be necessary for plants missed in previous applications and regrowth.

⁵For suppression of certain filamentous algae species including *Spirogyra* and *Pithophora*, apply according to the submersed use directions.

⁶Not for use in California.

Application: In mixed weed populations, use the high rate of application as indicated by weeds present.

Subsurface Applications: Where the submersed weed growth, especially hydrilla, has reached the water surface, apply either in a water carrier or an invert emulsion through boom trailing hoses carrying nozzle tips to apply the dilute spray below the water surface to insure adequate coverage.

Bottom Placement: Where the submersed weeds, especially hydrilla, bladderwort, and coontail growth, have reached the water surface or where water is slowly moving through the submersed weed growth that has reached the water surface, especially hydrilla, bladderwort, and coontail, control may be enhanced when applied in an invert emulsion carrier injecting diluted Reward Landscape and Aquatic Herbicide near the bottom with weighted hoses. The addition of a copper-based algaeicide will improve control. Where algae are present along with the submersed weeds, pretreatment with copper-based algaeicide at recommended rates is advised for best results.

Surface Application: For submerged aquatic weeds, apply Reward Landscape and Aquatic Herbicide either as concentrate slowly poured directly from the container in strips or as a spray in sufficient carrier. Applications should be made to ensure complete coverage of the weed areas. In mixed weed populations, use the high rate of application as indicated by weeds present.

If posting is required by your state or tribe – consult the agency responsible for pesticide regulations for specific details.

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For non-emergency (e.g., current product information), call
Syngenta Crop Protection at 1-800-334-9481.

Product of United Kingdom
Formulated in the USA

Syngenta Crop Protection, Inc.
Greensboro, North Carolina 27409
www.syngenta-us.com

**SCP 1091A-L2A 0503
131537**

syngenta

2.5 gallons
liters

Reward®



REWARD®

Landscape and Aquatic Herbicide

TO PREVENT ACCIDENTAL POISONING, NEVER PUT INTO FOOD, DRINK, OR OTHER CONTAINERS, AND USE STRICTLY IN ACCORDANCE WITH ENTIRE LABEL.

DO NOT USE THIS PRODUCT FOR REFORMULATION.

Active Ingredient:

Diquat dibromide [6,7-dihydrodipyrido (1,2-a:2',1'-c)pyrazinediium dibromide]	37.3%
Other Ingredients:	62.7%
Total:	100.0%

Contains 2 lbs. diquat cation per gal. as 3.73 lbs. salt per gal.

See directions for use in attached booklet.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. Refer to supplemental labeling under "Agricultural Use Requirements" in the Directions for Use section for information about this standard.

EPA Reg. No. 100-1091
EPA Est. 100-TX-001

Product of United Kingdom
Formulated in the USA

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Syngenta Crop Protection, Inc.
Greensboro, North Carolina 27409
www.syngenta-us.com

SCP 1091A-L2A 0503
131537

2.5 gallons
Net Contents

KEEP OUT OF REACH OF CHILDREN. WARNING/AVISO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

FIRST AID

If swallowed: Call a Poison Control Center or doctor immediately for treatment advice. Immediately give water or milk to drink and induce vomiting by inserting finger in throat. Do not induce vomiting or give anything by mouth to an unconscious person. Take person and product container to the nearest hospital or physician fast. **PROMPT TREATMENT IS ESSENTIAL TO COUNTERACT POISONING** and should be initiated before signs and symptoms of injury appear.

If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a Poison Control Center or doctor for treatment advice.

If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a Poison Control Center or doctor for treatment advice.

If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call a Poison Control Center or doctor for further treatment advice.

NOTE TO PHYSICIAN: CALL SYNGENTA MEDICAL EMERGENCY ASSISTANCE 1-800-888-8372 at any hour to obtain toxicology information and a diquat analysis. To be effective, treatment for diquat poisoning must begin **IMMEDIATELY**. Treatment consists of binding diquat in the gut with suspensions of activated charcoal or bentonite clay, administration of cathartics to enhance elimination, and removal of diquat from the blood by charcoal hemoperfusion or continuous hemodialysis.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

HOT LINE NUMBER: For 24-Hour Medical Emergency Assistance (Human or Animal) or Chemical Emergency Assistance (Spill, Leak, Fire, or Accident), Call 1-800-888-8372.

Precautionary Statements

Hazards to Humans and Domestic Animals

WARNING/AVISO

May be fatal if absorbed through skin. Harmful if swallowed or inhaled. Causes substantial, but temporary, eye injury. Causes skin irritation. Contact with irritated skin, or a cut, or repeated contact with intact skin may result in poisoning. Do not get in eyes, on skin, or on clothing. Avoid breathing vapor or spray mist. Do not feed forage from treated crops to livestock. Keep livestock and pets out of treated fields and crop areas.

Environmental Hazards (Terrestrial and Aquatic Uses)

This pesticide is toxic to aquatic invertebrates. For **Terrestrial Uses**, do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment wash waters. For **Aquatic Uses**, do not apply directly to water except as specified on this label. Treatment of dense weed areas may result in oxygen loss from decomposition of dead weeds. This loss of oxygen may cause fish suffocation. Therefore, treat only 1/3 to 1/2 of the water body area at one time, especially if dense areas of weeds and/or algae exist, and wait 14 days between treatments.

Necessary approval and/or permits should be obtained prior to application if required. Consult the responsible State Agencies (i.e., Fish and Game Agencies or Department of Natural Resources) before making applications to public waters.

STORAGE AND DISPOSAL

Prohibitions

Do not contaminate water, food, or feed by storage, disposal, or cleaning of equipment. Open dumping is prohibited.

Container Disposal

Do not reuse container. Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or if allowed by State and local authorities, by burning. If burned, stay out of smoke.

CONTAINER IS NOT SAFE FOR FOOD, FEED, OR DRINKING WATER!

syngenta

Specimen Label

Renovate® 3

Aquatic Herbicide



Aquatic Sites: For control of emerged, submersed and floating aquatic plants in aquatic sites such as ponds, lakes, reservoirs, non-irrigation canals, seasonal irrigation waters and ditches which have little or no continuous outflow, marshes, and wetlands, including broadleaf and woody vegetation on banks and shores within or adjacent to these and other aquatic sites.

For use in New York State, comply with Section 24(c) Special Local need labeling for Renovate® 3, SLN NY-060001.

Active Ingredient

triclopyr: 3,5,6-trichloro-2-pyridinyloxyacetic acid, triethylamine salt	44.4%
Other Ingredients	55.6%
TOTAL	100.0%

Acid equivalent: triclopyr - 31.8% - 3 lb/gal.

Keep Out of Reach of Children DANGER/PELIGRO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

Precautionary Statements

Hazards to Humans and Domestic Animals

Corrosive. Causes irreversible eye damage. Harmful if swallowed or absorbed through skin. Prolonged or frequently repeated skin contact may cause allergic reaction in some individuals.

Do not get in eyes or on skin or clothing.

Personal Protective Equipment (PPE)

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants;
- Shoes plus socks;
- Protective eyewear; and
- Chemical-resistant gloves (≥14 mils) such as butyl rubber, natural rubber, neoprene rubber or nitrile rubber.

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

First Aid

If in eyes	<ul style="list-style-type: none">• Hold eye open and rinse slowly and gently with water for 15 - 20 minutes.• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.• Call a poison control center or doctor for treatment advice.
If on skin or clothing	<ul style="list-style-type: none">• Take off contaminated clothing.• Rinse skin immediately with plenty of water for 15 - 20 minutes.• Call a poison control center or doctor for treatment advice.
If swallowed	<ul style="list-style-type: none">• Call a poison control center or doctor immediately for treatment advice.• Have person sip a glass of water if able to swallow.• Do not induce vomiting unless told to do so by a poison control center or doctor.• Do not give anything by mouth to an unconscious person.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. In case of emergency endangering health or the environment involving this product, call **INFOTRAC** at **1-800-535-5053**.

Note to Applicator: Allergic skin reaction is not expected from exposure to spray mixtures of Renovate® 3 herbicide when used as directed.

Note to Physician: Probable mucosal damage may contraindicate the use of gastric lavage.

Notice: Read the entire label. Use only according to label directions. **Before using this product, read "Warranty Disclaimer", "Inherent Risks of Use", and "Limitation of Remedies" at end of label booklet. If terms are unacceptable, return at once unopened.**

For product information, visit our web site at www.sepro.com.

Agricultural Chemical: Do not ship or store with food, feeds, drugs or clothing.

EPA Reg. No. 62719-37-67690
FPL061506

Renovate is a registered trademark of Dow AgroSciences LLC manufactured for:
SePRO Corporation Carmel, IN 46032 U.S.A.

Engineering Controls

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the WPS [(40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

User Safety Recommendations

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

Under certain conditions, treatment of aquatic weeds can result in oxygen depletion or loss due to decomposition of dead plants, which may contribute to fish suffocation. This loss can cause fish suffocation. Therefore, to minimize this hazard, do not treat more than one-third to one-half of the water area in a single operation and wait at least 10 to 14 days between treatments. Begin treatment along the shore and proceed outwards in bands to allow fish to move into untreated areas. Consult with the State agency for fish and game before applying to public water to determine if a permit is needed.

PHYSICAL OR CHEMICAL HAZARDS

Combustible. Do not use or store the product near heat or open flame.

Directions for Use

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Read all *Directions for Use* carefully before applying.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your state or tribe, consult the agency responsible for pesticide regulation.

Agricultural Use Requirements

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 48 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls;
- Shoes plus socks;
- Protective eyewear; and
- Chemical-resistant gloves (\geq 14 mils) such as butyl rubber, natural rubber, neoprene rubber or nitrile rubber.

Non-Agricultural Use Requirements

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for Agricultural Pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

Entry Restrictions for Non-WPS Uses: For applications to non-cropland areas, do not allow entry into areas until sprays have dried, unless applicator and other handler PPE is worn.

GENERAL INFORMATION FOR AQUATIC AND WETLAND SITES

Renovate® 3 herbicide is recommended for control of emerged, submersed and floating aquatic plants in aquatic sites such as ponds, lakes, reservoirs, non-irrigation canals, seasonal irrigation waters and ditches which have little or no continuous outflow, marshes and wetlands, including broadleaf and woody vegetation on banks and shores within or adjacent to these and other aquatic sites.

Obtain Required Permits: Consult with appropriate state or local water authorities before applying this product to public waters. State or local public agencies may require permits.

GENERAL USE PRECAUTIONS AND RESTRICTIONS

For use in New York State, comply with Section 24(c) Special Local need labeling for Renovate® 3, SLN NY-060001.

In Arizona: The state of Arizona has not approved Renovate® 3 for use on plants grown for commercial production, specifically forests grown for commercial timber production, or on designated grazing areas.

When applying this product in tank mix combination, follow all applicable use directions, precautions and limitations on each manufacturer's label.

Chemigation: Do not apply this product through any type of irrigation system.

Water treated with Renovate® 3 may not be used for irrigation purposes for 120 days after application or until Renovate® 3 residue levels are determined by laboratory analysis, or other appropriate means of analysis, to be 1.0 ppb or less.

Seasonal Irrigation Waters: Renovate® 3 may be applied during the off-season to surface waters that are used for irrigation on a seasonal basis, provided that there is a minimum of 120 days between Renovate® 3 application and the first use of treated water for irrigation purposes or until Renovate® 3 residue levels are determined by laboratory analysis, or other appropriate means of analysis, to be 1.0 ppb or less.

Irrigation Canals/Ditches: Do not apply Renovate® 3 to irrigation canals/ditches unless the 120 day restriction on irrigation water usage can be observed or Renovate residue levels are determined by laboratory analysis, or other appropriate means of analysis, to be 1.0 ppb or less.

Do not apply Renovate® 3 directly to, or otherwise permit it to come into direct contact with grapes, tobacco, vegetable crops, flowers, or other desirable broadleaf plants, and do not permit spray mists containing it to drift into them.

- Do not apply to salt water bays or estuaries.
- Do not apply directly to un-impounded rivers or streams.
- Do not apply on ditches or canals currently being used to transport irrigation water or that will be used for irrigation within 4 months following treatment. It is permissible to treat irrigation and non-irrigation ditch banks.
- Do not apply where runoff water may flow onto agricultural land as injury to crops may result.
- When making applications to control unwanted plants on banks or shorelines of moving water sites, minimize overspray to open water.
- The use of a mist blower is not recommended.

Grazing and Haying Restrictions

Except for lactating dairy animals, there are no grazing restrictions following application of this product.

- **Grazing Lactating Dairy Animals:** Do not allow lactating dairy animals to graze treated areas until the next growing season following application of this product.
- Do not harvest hay for 14 days after application.
- Grazed areas of non-cropland and forestry sites may be spot treated if they comprise no more than 10% of the total grazable area.

Slaughter Restrictions: During the season of application, withdraw livestock from grazing treated grass at least 3 days before slaughter.

AVOIDING INJURIOUS SPRAY DRIFT

Applications should be made only when there is little or no hazard from spray drift. Very small quantities of spray, which may not be visible, may seriously injure susceptible plants.

Do not spray when wind is blowing toward susceptible crops or ornamental plants near enough to be injured. It is suggested that a continuous smoke column at or near the spray site or a smoke generator on the spray equipment be used to detect air movement, lapse conditions, or temperature inversions (stable air). If the smoke layers or indicates a potential of hazardous spray drift, do not spray.

Aerial Application: For aerial application near susceptible crops, apply through a Microfoil® or Thru-Valve boom†, or use a drift control additive labeled for aquatic use. Other drift reducing systems or thickened sprays prepared by using high viscosity inverting systems may be used if they are made as drift-free as mixtures containing thickening agents labeled for use in aquatics or applications made with the Microfoil or Thru-Valve boom. Keep spray pressures low enough to provide coarse spray droplets. Spray boom should be no longer than 3/4 of the rotor length. Do not use a thickening agent with the Microfoil or Thru-Valve booms, or other systems that cannot accommodate thick sprays. Spray only when the wind velocity is low (follow state regulations). Avoid application during air inversions. If a spray thickening agent is used, follow all use recommendations and precautions on the product label.

†Reference within this label to a particular piece of equipment produced by or available from other parties is provided without consideration for use by the reader at its discretion and subject to the reader's independent circumstances, evaluation, and expertise. Such reference by SePRO Corporation is not intended as an endorsement of such equipment, shall not constitute a warranty (express or implied) of such equipment, and is not intended to imply that other equipment is not available and equally suitable. Any discussion of methods of use of such equipment does not imply that the reader should use the equipment other than is advised in directions available from the equipment's manufacturer. The reader is responsible for exercising its own judgment and expertise, or consulting with sources other than SePRO Corporation, in selecting and determining how to use its equipment.

Spray Drift Management

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment and weather related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions.

The following drift management requirements must be followed to avoid off-target drift movement from aerial applications:

1. The distance of the outer most operating nozzles on the boom must not exceed 3/4 the length of the rotor.
2. Nozzles must always point backward parallel with the air stream and never be pointed downwards more than 45 degrees.

Where states have more stringent regulations, they should be observed.

The applicator should be familiar with and take into account the information covered in the following *Aerial Drift Reduction Advisory*. [This information is advisory in nature and does not supersede mandatory label requirements.]

AERIAL DRIFT REDUCTION ADVISORY

Information on Droplet Size: The most effective way to reduce drift potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions (see *Wind, Temperature and Humidity, and Temperature Inversions*).

Controlling Droplet Size:

- **Volume** - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- **Pressure** - Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- **Number of Nozzles** - Use the minimum number of nozzles that provide uniform coverage.
- **Nozzle Orientation** - Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is the recommended practice. Significant deflection from horizontal will reduce droplet size and increase drift potential.
- **Nozzle Type** - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift.

Boom Length: For some use patterns, reducing the effective boom length to less than 3/4 of the wingspan or rotor length may further reduce drift without reducing swath width.

Application Height: Applications should not be made at a height greater than 10 feet above the top of the largest plants unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces exposure of droplets to evaporation and wind.

Swath Adjustment: When applications are made with a crosswind, the swath will be displaced downwind. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance should increase, with increasing drift potential (higher wind, smaller drops, etc.).

Wind: Drift potential is lowest between wind speeds of 2-10 mph. However, many factors, including droplet size and equipment type determine drift potential at any given speed. Application should be avoided below 2 mph due to variable wind direction and high inversion potential.

Note: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

Temperature and Humidity: When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

Temperature Inversions: Applications should not occur during a local, low level temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of the smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

Sensitive Areas: The pesticide should only be applied when the potential for drift to adjacent sensitive areas (e.g., residential areas, known habitat for threatened or endangered species, non-target crops) is minimal (e.g., when wind is blowing away from the sensitive areas).

Ground Equipment: To aid in reducing spray drift, Renovate® 3 should be used in thickened (high viscosity) spray mixtures using a labeled drift control additive, high viscosity invert system, or equivalent as directed by the manufacturer. With ground equipment, spray drift can be reduced by keeping the spray boom as low as possible; by applying 20 gallons or more of spray per acre; by keeping the operating spray pressures at the lower end of the manufacturer's recommended pressures for the specific nozzle type used (low pressure nozzles are available from spray equipment manufacturers); and by spraying when wind velocity is low (follow state regulations). In hand-gun applications, select the minimum spray pressure that will provide adequate plant coverage (without forming a mist). Do not apply with nozzles that produce a fine-droplet spray.

High Volume Leaf-Stem Treatment: To minimize spray drift, do not use pressure exceeding 50 psi at the spray nozzle and keep sprays no higher than brush tops. A labeled thickening agent may be used to reduce drift.

PLANTS CONTROLLED BY RENOVATE® 3

Woody Plant Species

alder	casara	maples
arrowwood	ceanothus	mulberry
ash	cherry	oaks
aspen	Chinese Tallow	poison ivy
bear clover (bearmat)	chinquapin	poison oak
beech	choke cherry	poplar
birch	cottonwood	salt-bush (<i>Baccharis</i> spp.)
blackberry	crataegus (hawthorn)	sweetgum
blackgum	locust	waxmyrtle
Brazilian pepper	Maleleuca (seedlings)	willow

Annual and Perennial Broadleaf Weeds

burdock	ligodium	tropical sodaapple
Canada thistle	plantain	vetch
curly dock	smartweed	wild lettuce
elephant ear	tansy ragwort	

Aquatic Weeds

alligatorweed	milfoil species	pickerelweed
American lotus	Nuphar (spatterdock)	purple loosestrife
American frogbit	parrotfeather†	waterhyacinth
aquatic sodaapple	pennywort	waterlily
Eurasian watermilfoil	Phragmites	watershield
		water primrose

†Retreatment may be needed to achieve desired level of control.

Application Methods

FLOATING AND EMERGED WEEDS

For control of waterhyacinth, alligatorweed (see specific directions below), and other susceptible emerged and floating herbaceous weeds and woody plants, apply 1 1/2 to 6 lb ae triclopyr (2 to 8 quarts of Renovate® 3) per acre as a foliar application using surface or aerial equipment. Use higher rates in the rate range when plants are mature, when the weed mass is dense, or for difficult to control species. Repeat as necessary to control regrowth and plants missed in the previous operation, but do not exceed a total of 6 lb ae triclopyr (8 quarts of Renovate® 3) per acre per annual growing season.

Use of a non-ionic surfactant in the spray mixture is recommended to improve control. Follow all directions and use precautions on the aquatic surfactant label.

Apply when plants are actively growing.

Surface Application

Use a spray boom, handgun or other similar suitable equipment mounted on a boat or vehicle. Thorough wetting of foliage is essential for maximum effectiveness. Use 20 to 200 gallons per acre of spray mixture. Special precautions such as the use of low spray pressure, large droplet producing nozzles or addition of a labeled thickening agent may minimize spray drift in areas near sensitive crops.

Aerial Application

Apply with a helicopter using a Microfoil or Thru-Valve boom, or a drift control additive in the spray solution. Apply in a minimum of 10 gallons of total spray mix per acre. Do not apply when weather conditions favor drift to sensitive areas. See label section on aerial application directions and precautions.

Waterhyacinth (*Eichhornia crassipes*)

Apply Renovate® 3 at 1 1/2 to 6 lb ae triclopyr (2 to 8 quarts of Renovate® 3) per acre to control waterhyacinth. Apply when plants are actively growing. Use the higher rate in the rate range when the weed mass is dense. It is important to thoroughly wet all foliage with the spray mixture. Use of a non-ionic surfactant in the spray mixture is recommended. A repeat treatment may be needed to control regrowth or plants missed in the previous treatment.

Alligatorweed (*Alternanthera philoxeroides*)

Apply Renovate® 3 at 2 to 6 lb ae triclopyr (3 to 8 quarts of Renovate® 3) per acre to control alligatorweed. It is important to thoroughly wet all foliage with the spray mixture. For best results, it is recommended that an approved non-ionic aquatic surfactant be added to the spray mixture. Alligatorweed growing

outside the margins of a body of water can be controlled with this treatment. However, alligatorweed growing in water will only be partially controlled. Top growth above the water will be controlled, but the plant will likely regrow from tissue below the water surface.

Precautions for Potable Water Intakes – Lakes, Reservoirs, Ponds:

For applications of Renovate® 3 to control floating and emerged weeds in lakes, reservoirs or ponds that contain a functioning potable water intake for human consumption, see chart below to determine the minimum setback distances of the application from the functioning potable water intakes.

Renovate® 3 Application Rate, qt/acre

Area Treated (acres)	Setback Distance (ft)			
	2 qt/acre	4 qt/acre	6 qt/acre	8 qt/acre
<4	0	200	400	500
>4 - 8	0	200	700	900
>8 - 16	0	200	700	1000
>16	0	200	900	1300

Note: Existing potable water intakes which are no longer in use, such as those replaced by potable water wells or connections to a municipal water system, are not considered to be functioning potable water intakes. These setback restrictions do not apply to terrestrial applications made adjacent to potable water intakes.

To apply Renovate® 3 around and within the distances noted above from a functioning potable water intake, the intake must be turned off until the triclopyr level in the intake water is determined to be 0.4 parts per million (ppm) or less by laboratory analysis or immunoassay.

- **Recreational Use of Water in Treatment Area:** There are no restrictions on use of water in the treatment area for recreational purposes, including swimming and fishing.
- **Livestock Use of Water from Treatment Area:** There are no restrictions on livestock consumption of water from the treatment area.

SUBMERGED WEEDS

For control of Eurasian watermilfoil (*Myriophyllum spicatum*) and other susceptible submerged weeds in ponds, lakes, reservoirs, and in non-irrigation canals or ditches that have little or no continuous outflow, apply Renovate® 3 as either a surface or subsurface application. Rates should be selected according to the rate chart below to provide a triclopyr concentration of 0.75 to 2.5 ppm ae in treated water. Higher rates in the rate range are recommended in areas of greater water exchange. These areas may require a repeat application. However, total application of Renovate® 3 must not exceed an application rate of 2.5 ppm triclopyr for the treatment area per annual growing season.

Apply in spring or early summer when Eurasian watermilfoil or other submersed weeds are actively growing.

Areas near susceptible crops or other desirable broadleaf plants may be treated by subsurface injection applied by boat to avoid spray drift.

Subsurface Application

Apply desired amount of Renovate® 3 per acre directly into the water through boat-mounted distribution systems. It is recommended that when treating target plants that are 6 feet below the surface of the water, trailing hoses are to be used along with an aquatic approved sinking agent. (Except California.)

Surface Application

Apply the desired amount of Renovate® 3 as either a concentrate or a spray mixture in water. However, use a minimum spray volume of 5 gallons per acre. Do not apply when weather conditions favor drift to sensitive areas.

Average water depth (feet) x 0.905 x target concentration (ppm) = gallons of Renovate® 3 per surface acre treated.

Example: to achieve a 2.0 ppm concentration of triclopyr in water averaging 4 feet deep

$4 \times 0.905 \times 2.0 \text{ ppm} = 7.2$ gallons of Renovate® 3/surface acre treated.

Concentration of Triclopyr Acid in Water (ppm ae)

Water Depth (ft)	Gallons of Renovate® 3 per Surface Acre at Specified Depth				
	0.75 ppm	1.0 ppm	1.5 ppm	2.0 ppm	2.5 ppm
1	0.7	0.9	1.4	1.8	2.3
2	1.4	1.8	2.7	3.6	4.6
3	2.1	2.7	4.1	5.4	6.8
4	2.7	3.6	5.4	7.2	9.1
5	3.4	4.5	6.8	9.0	11.3
6	4.1	5.4	8.1	10.9	13.6
7	4.8	6.3	9.5	12.7	15.8
8	5.5	7.2	10.9	14.5	18.1
9	6.1	8.1	12.2	16.3	20.4
10	6.8	9.0	13.6	18.1	22.6
15	10.2	13.6	20.4	27.2	33.9
20	13.6	18.1	27.2	36.2	45.3

Precautions for Potable Water Intakes –

Lakes, Reservoirs, Ponds:

For applications of Renovate® 3 to control submerged weeds in lakes, reservoirs or ponds that contain a functioning potable water intake for human consumption, see the chart below to determine the minimum setback distances of the application from the functioning potable water intakes.

Concentration of Triclopyr Acid in Water (ppm ae)

Area Treated (acres)	Required Setback Distance (ft) from Potable Water Intake				
	0.75 ppm	1.0 ppm	1.5 ppm	2.0 ppm	2.5 ppm
<4	300	400	600	800	1000
>4 - 8	420	560	840	1120	1400
>8 - 16	600	800	1200	1600	2000
>16 - 32	780	1040	1560	2080	2600
>32 acres, calculate a setback using the formula for the appropriate rate	Setback (ft) = $(800 \times \ln(\text{acres}) - 160) / 3.33$	Setback (ft) = $(800 \times \ln(\text{acres}) - 160) / 2.50$	Setback (ft) = $(800 \times \ln(\text{acres}) - 160) / 1.67$	Setback (ft) = $(800 \times \ln(\text{acres}) - 160) / 1.25$	Setback (ft) = $(800 \times \ln(\text{acres}) - 160)$

Example Calculation 1: to apply 2.5 ppm Renovate® 3 to 50 acres:

$$\begin{aligned} \text{Setback in feet} &= (800 \times \ln(50 \text{ acres}) - 160) \\ &= (800 \times 3.912) - 160 \\ &= 2970 \text{ feet} \end{aligned}$$

Example Calculation 2: to apply 0.75 ppm Renovate® 3 to 50 acres:

$$\begin{aligned} \text{Setback in feet} &= \frac{(800 \times \ln(50 \text{ acres}) - 160)}{3.33} \\ &= \frac{(800 \times 3.912) - 160}{3.33} \\ &= 892 \text{ feet} \end{aligned}$$

Note: Existing potable water intakes which are no longer in use, such as those replaced by potable water wells or connections to a municipal water system, are not considered to be functioning potable water intakes. These setback restrictions do not apply to terrestrial applications made adjacent to potable water intakes.

To apply Renovate® 3 around and within the distances noted above from a functioning potable water intake, the intake must be turned off until the triclopyr level in the intake water is determined to be 0.4 parts per million (ppm) or less by laboratory analysis or immunoassay.

- **Recreational Use of Water in Treatment Area:** There are no restrictions on use of water in the treatment area for recreational purposes, including swimming and fishing.
- **Livestock Use of Water from Treatment Area:** There are no restrictions on livestock consumption of water from the treatment area.

WETLAND SITES

Wetlands include flood plains, deltas, marshes, swamps, bogs, and transitional areas between upland and lowland sites. Wetlands may occur within forests, wildlife habitat restoration and management areas and similar sites as well as areas adjacent to or surrounding domestic water supply reservoirs, lakes and ponds.

For control of woody plants and broadleaf weeds in these sites, follow use directions and application methods on this label for terrestrial sites associated with wetland areas.

Use Precautions

Minimize overspray to open water when treating target vegetation in and around non-flowing, quiescent or transient water. When making applications to control unwanted plants on banks or shorelines of flowing water, minimize overspray to open water. **Note:** Consult local public water control authorities before applying this product in and around public water. Permits may be required to treat such areas.

Purple Loosestrife (*Lythrum salicaria*)

Purple loosestrife can be controlled with foliar applications of Renovate® 3. For broadcast applications, a minimum range of 4 1/2 to 6 lb ae triclopyr (6 to 8 quarts of Renovate® 3) per acre is recommended. Apply Renovate® 3 when purple loosestrife is at the bud to mid-flowering stage of growth. Follow-up applications for control of regrowth should be made the following year in order to achieve increased control of this weed species. For all applications, a non-ionic surfactant labeled for aquatics should be added to the spray mixture. Follow all directions and use precautions on the label of the surfactant. Thorough wetting of the foliage and stems is necessary to achieve satisfactory control. A minimum spray volume

of 50 gallons per acre is recommended for ground broadcast applications.

If using a backpack sprayer, a spray mixture containing 1% to 1.5% Renovate® 3 or 5.1 to 7.6 fl oz of Renovate® 3 per 4 gallons of water should be used. All purple loosestrife plants should be thoroughly wetted.

Phragmites (*Phragmites australis*)

Phragmites can be selectively controlled with foliar applications of Renovate® 3. For broadcast applications, a minimum of 2 1/4 lb ae triclopyr (3 quarts of Renovate® 3) per acre is recommended. For optimum control, apply Renovate® 3 when phragmites is the early stage of growth, 1/2 to 3 feet in height, prior to seed head development. Follow-up applications for control of regrowth may be made the following year in order to achieve increased control of this weed species. For all applications, a non-ionic surfactant labeled for aquatics should be added to the spray mixture. Follow all directions and use precautions on the label of the surfactant. Thorough wetting of the foliage and stems is necessary to achieve satisfactory control. A minimum spray volume of 50 gallons per acre is recommended for ground broadcast applications.

If using a backpack sprayer, a spray mixture containing 1% to 1.5% Renovate® 3 or 5 to 7.6 fl oz of Renovate® 3 per 4 gallons of water should be used. All Phragmites foliage should be thoroughly wetted.

Aerial application by helicopter may be needed when treating restoration sites that are inaccessible, remote, difficult to traverse, isolated, or otherwise unsuited to ground application, or in circumstances where invasive exotic weeds dominate native plant populations over extensive areas and efforts to restore native plant diversity are being conducted. By air, apply in a minimum spray volume of 30 gallons per acre using Thru-Valve or Microfoil boom only.

- **Recreational Use of Water in Treatment Area:** There are no restrictions on use of water in the treatment area for recreational purposes, including swimming and fishing.
- **Livestock Use of Water from Treatment Area:** There are no restrictions on livestock consumption of water from the treatment area.

TERRESTRIAL SITES ASSOCIATED WITH WETLAND AREAS

- Apply no more than 2 lb ae triclopyr (2/3 gallon of Renovate® 3) per acre per growing season on range and pasture sites, including rights-of-way, fence rows or any area where grazing or harvesting is allowed.
- On forestry sites, Renovate® 3 may be used at rates up to 6 lb ae of triclopyr (2 gallons of Renovate® 3) per acre per year.

Use Renovate® 3 at rates of 3/4 to 6 lb ae triclopyr (1/4 to 2 gallons of Renovate® 3) per acre to control broadleaf weeds and woody plants. In all cases use the amount specified in enough water to give uniform and complete coverage of the plants to be controlled. Use only water suitable for spraying. Use of a labeled non-ionic surfactant is recommended for all foliar applications. When using surfactants, follow the use directions and precautions listed on the

surfactant manufacturer's label. Use the higher recommended concentrations of surfactant in the spray mixture when applying lower spray volumes per acre. The recommended order of addition to the spray tank is water, spray thickening agent (if used), additional herbicide (if used), and Renovate® 3. A labeled aquatic surfactant should be added to the spray tank last or as recommended on the product label. If combined with emulsifiable concentrate herbicides, moderate continuous adequate agitation is required.

Before using any recommended tank mixtures, read the directions and all use precautions on both labels.

For best results, applications should be made when woody plants and weeds are actively growing. When hard to control species such as ash, blackgum, choke cherry, maples, or oaks are prevalent and during applications made in late summer when the plants are mature and during drought conditions, use the higher rates of Renovate® 3.

When using Renovate® 3 in combination with a 2,4-D herbicide approved for aquatic use, such as DMA 4 IVM, generally the higher rates should be used for satisfactory brush control.

Use the higher dosage rates when brush approaches an average of 15 feet in height or when the brush covers more than 60% of the area to be treated. If lower rates are used on hard to control species, resprouting may occur the year following treatment.

High Volume Foliage Treatment

For control of woody plants, use Renovate® 3 at the rate of 3 to 6 lb ae triclopyr (1 to 2 gallons of Renovate® 3) per 100 gallons of spray solution, or Renovate® 3 at 3/4 to 3 lb ae triclopyr (1 to 4 quarts of Renovate® 3) may be tank mixed with 1/4 to 1/2 gallons of 2,4-D 3.8 lb amine, like DMA 4 IVM, diluted to make 100 gallons of spray solution. Apply at a volume of 100 to 400 gallons of total spray per acre depending on size and density of woody plants. Coverage should be thorough to wet all leaves, stems, and root collars. (See General Use Precautions and Restrictions.) Do not exceed the maximum allowable use rate of 6 lb ae of triclopyr (2 gallons of Renovate® 3) per acre per growing season.

Low Volume Foliage Treatment

To control susceptible woody plants, apply up to 15 lb ae triclopyr (5 gallons of Renovate® 3) in 10 to 100 gallons of finished spray. The spray concentration of Renovate® 3 and total spray volume per acre may be adjusted according to the size and density of target woody plants and kind of spray equipment used. With low volume sprays, use sufficient spray volume to obtain uniform coverage of target plants including the surfaces of all foliage, stems, and root collars (see *General Use Precautions and Restrictions*). For best results, a labeled aquatic surfactant should be added to all spray mixtures. Match equipment and delivery rate of spray nozzles to height and density of woody plants. When treating tall, dense brush, a truck mounted spray gun with spray tips that deliver up to 2 gallons per minute at 40 to 60 psi may be required. Backpack or other types of specialized spray equipment with spray tips that deliver less than 1 gallon of spray per minute may be appropriate for short, low to moderate density brush.

Cut Surface Treatments (Woody Plants)

To control unwanted trees and other listed woody plants, apply Renovate® 3, either undiluted or diluted in a 1 to 1 ratio with water as directed below.

With Tree Injector Method

Applications should be made by injecting 1/2 milliliter of undiluted Renovate® 3 or 1 milliliter of the diluted solution through the bark at intervals of 3 to 4 inches between centers of the injector wound. The injections should completely surround the tree at any convenient height. **Note: No Worker Protection Standard worker entry restrictions or worker notification requirements apply when this product is injected directly into plants.**

With Hack and Squirt Method

Make cuts with a hatchet or similar equipment at intervals of 3 to 4 inches between centers at a convenient height around the tree trunk. Spray 1/2 milliliter of undiluted Renovate® 3 or 1 milliliter of the diluted solution into each cut.

With Frill or Girdle Method

Make a single girdle through the bark completely around the tree at a convenient height. Wet the cut surface with undiluted or diluted solution.

Both of the above methods may be used successfully at any season except during periods of heavy sap flow of certain species—for example, maples.

Stump Treatment

Spray or paint the cut surfaces of freshly cut stumps and stubs with undiluted Renovate® 3. The cambium area next to the bark is the most vital area to wet.

Storage and Disposal

Do not contaminate water, food, or feed by storage and disposal. Open dumping is prohibited.

PESTICIDE STORAGE: Store above 28°F or agitate before use.

PESTICIDE DISPOSAL: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL FOR REFILLABLE CONTAINERS:

Seal all openings which have been opened during use. Return the empty container to a collection site designated by SePRO Corporation. If the container has been damaged and cannot be returned according to the recommended procedures, contact SePRO Corporation at 1-800-419-7779 to obtain proper handling instructions.

CONTAINER DISPOSAL (METAL): Do not reuse container.

Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

CONTAINER DISPOSAL (Plastic): Do not reuse container.

Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

General: Consult federal, state, or local disposal authorities for approved alternative procedures.

Terms and Conditions of Use

If terms of the following Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies are not acceptable, return unopened package at once to the seller for a full refund of purchase price paid. Otherwise, use by the buyer or any other user constitutes acceptance of the terms under Warranty Disclaimer, Inherent Risks of Use and Limitations of Remedies.

Warranty Disclaimer

SePRO Corporation warrants that the product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the label when used in strict accordance with the directions, subject to the inherent risks set forth below. SEPRO CORPORATION MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

Inherent Risks Of Use

It is impossible to eliminate all risks associated with use of this product. Plant injury, lack of performance, or other unintended consequences may result because of such factors as use of the product contrary to label instructions (including conditions noted on the label such as unfavorable temperatures, soil conditions, etc.), abnormal conditions (such as excessive rainfall, drought, tornadoes, hurricanes), presence of other materials, the manner of application, or other factors, all of which are beyond the control of SePRO Corporation as the seller. All such risks shall be assumed by buyer.

Limitation of Remedies

To the fullest extent permitted by law, SePRO Corporation shall not be liable for losses or damages resulting from this product (including claims based on contract, negligence, strict liability, or other legal theories) shall be limited to, at SePRO Corporation's election, one of the following:

1. Refund of purchase price paid by buyer or user for product bought, or
2. Replacement of amount of product used.

SePRO Corporation shall not be liable for losses or damages resulting from handling or use of this product unless SePRO Corporation is promptly notified of such losses or damages in writing. In no case shall SePRO Corporation be liable for consequential or incidental damages or losses.

The terms of the "Warranty Disclaimer" above and this "Limitation of Remedies" cannot be varied by any written or verbal statements or agreements. No employee or sales agent of SePRO Corporation or the seller is authorized to vary or exceed the terms of the "Warranty Disclaimer" or "Limitations of Remedies" in any manner.

Specimen Label

Renovate[®] OTF

On Target Flakes



Aquatic Sites: For control of emersed, submersed and floating aquatic plants in the following aquatic sites: ponds; lakes; reservoirs; marshes; wetlands; impounded rivers, streams and other bodies of water that are quiescent; non-irrigation canals, seasonal irrigation waters and ditches which have little or no continuous outflow.

Active Ingredient:

triclopyr: 3,5,6-trichloro-2-pyridinyloxyacetic acid, triethylamine salt	14.0%
Other Ingredients	86.0%
TOTAL	100.0%

Acid equivalent: triclopyr - 10.0% - 1.6 ounces per pound.

Keep Out of Reach of Children

CAUTION/PRECAUCIÓN

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

Precautionary Statements

Hazards to Humans and Domestic Animals

Causes moderate eye irritation. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco.

ENVIRONMENTAL HAZARDS

Under certain conditions, treatment of aquatic weeds can result in oxygen depletion or loss due to decomposition of dead plants, which may contribute to fish suffocation. This loss can cause fish suffocation. Therefore, to minimize this hazard, do not treat more than one-third to one-half of the water area in a single operation and wait at least 10 to 14 days between treatments. Begin treatment along the shore and proceed outwards in bands to allow fish to move into untreated areas. Consult with the State agency for fish and game before applying to public water to determine if a permit is needed.

First Aid

If in eyes	<ul style="list-style-type: none">• Hold eye open and rinse slowly and gently with water for 15 - 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.• Call a poison control center or doctor for treatment advice.
If on skin or clothing	<ul style="list-style-type: none">• Take off contaminated clothing.• Rinse skin immediately with plenty of water for 15 - 20 minutes.• Call a poison control center or doctor for treatment advice.
If swallowed	<ul style="list-style-type: none">• Call a poison control center or doctor immediately for treatment advice.• Have person sip a glass of water if able to swallow.• Do not induce vomiting unless told to do so by a poison control center or doctor.• Do not give anything by mouth to an unconscious person.
If inhaled	<ul style="list-style-type: none">• Move person to fresh air.• If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.• Call a poison control center or doctor for further treatment advice.

EMERGENCY NUMBER

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. In case of emergency endangering health or the environment involving this product, call **INFOTRAC** at **1-800-535-5053**.

Agricultural Chemical: Do not ship or store with food, feeds, drugs or clothing.

Refer to label booklet for additional precautionary information and Directions for Use.

Notice: Read the entire label. Use only according to label directions. **Before using this product, read "Warranty Disclaimer", "Inherent Risks of Use", and "Limitation of Remedies" at end of label booklet. If terms are unacceptable, return at once unopened.**

If you wish to obtain additional product information, please visit our web site at www.sepro.com.

EPA Reg. No. 67690-42
FPL 103006

Renovate is a registered trademark of Dow AgroSciences LLC.
Manufactured by: **SePRO Corporation** Carmel, IN 46032 U.S.A.

Directions for Use

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Read all *Directions for Use* carefully before applying.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application.

For any requirements specific to your state or tribe, consult the agency responsible for pesticide regulation.

General Information

When applying this product follow all applicable use directions, precautions and limitations.

AQUATIC AND WETLAND SITES

Use Renovate® OTF herbicide for control of emerged, submersed and floating aquatic plants in the following aquatic sites: ponds; lakes; reservoirs; marshes; wetlands; impounded rivers, streams and other bodies of water that are quiescent; non-irrigation canals, seasonal irrigation waters and ditches which have little or no continuous outflow.

Obtain Required Permits: Consult with appropriate state or local water authorities before applying this product in and around public waters. State or local public agencies may require permits.

Recreational Use of Water in Treatment Area: There are no restrictions on use of water in the treatment area for recreational purposes, including swimming and fishing.

Livestock Use of Water from Treatment Area: There are no restrictions on livestock consumption of water from the treatment area.

GENERAL USE PRECAUTIONS AND RESTRICTIONS

Chemigation: Do not apply this product through any type of irrigation system.

Irrigation: Water treated with Renovate OTF may not be used for irrigation purposes for 120 days after application or until triclopyr residue levels are determined by laboratory analysis, or other appropriate means of analysis, to be 1.0 ppb or less.

Seasonal Irrigation Waters: Renovate OTF may be applied during the off-season to surface waters that are used for irrigation on a seasonal basis, provided that there is a minimum of 120 days between Renovate OTF application and the first use of treated water for irrigation purposes or until triclopyr residue levels are determined by laboratory analysis, or other appropriate means of analysis, to be 1.0 ppb or less.

Irrigation Canal/Ditches: DO NOT apply Renovate OTF to irrigation canals/ditches unless the 120 day restriction on irrigation water usage can be observed or triclopyr residue levels are determined by laboratory analysis, or other appropriate means of analysis, to be 1.0 ppb or less.

- **Do not** apply Renovate OTF directly to, or otherwise permit it to come into direct contact with grapes, tobacco, vegetable crops, flowers, or other desirable broadleaf plants, and do not permit granule dust to drift into them.
- **Do not** apply to salt water bays or estuaries.
- **Do not** apply directly to un-impounded rivers or streams.
- **Do not** apply on ditches or canals currently being used to transport irrigation water or that will be used for irrigation within 120 days following treatment or until triclopyr residue levels are determined to be 1.0 ppb or less.
- **Do not** apply where runoff water may flow onto agricultural land as injury to crops may result.

Grazing and Haying Restrictions:

Except for lactating dairy animals, there are no grazing restrictions following application of this product.

- **Grazing Lactating Dairy Animals:** Do not allow lactating dairy animals to graze treated areas until the next growing season following application of this product.
- **Do not** harvest hay for 14 days after application.
- Grazed areas of non-cropland and forestry sites may be spot treated if they comprise no more than 10% of the total grazable area.

Slaughter Restrictions: During the season of application, withdraw livestock from grazing treated grass at least 3 days before slaughter.

BEST MANAGEMENT PRACTICES FOR DRIFT MANAGEMENT

Equipment used in the application of Renovate OTF should be carefully calibrated before use and checked frequently during application to be sure it is working properly and delivering a uniform distribution pattern. To prevent increased Renovate OTF dosage above specified limits, do not overlap applications. Aerial application should be made only when the wind velocity is 2 to 10 mph.

Applications should be made only when there is little or no hazard for volatility or dust drift, and when application can maintain Renovate OTF placement in the intended area. Very small quantities of dust, which may not be visible, may seriously injure susceptible plants, and Renovate OTF may be blown outside of the intended treatment area under extreme conditions. Do not spread Renovate OTF when wind is blowing toward susceptible crops or ornamental plants that are near enough to be injured.

Avoiding drift at the application site is the responsibility of the applicator. The interaction of many equipment and weather related factors determine the potential for drift. The applicator is responsible for considering all these factors when making decisions.

Ground Application Equipment: To aid in reducing drift, Renovate OTF should be applied when wind velocity is low (follow state regulations; see Sensitive Area under *Aerial Drift Reduction Advisory* below).

AERIAL DRIFT REDUCTION ADVISORY

This section is advisory in nature and does not supersede the mandatory label requirements.

Application Height: Applications should not be made at a height greater than 10 feet above the top of the largest plants unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces drift potential.

Swath Adjustment: When applications are made with a crosswind, the swath will be displaced downwind. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance should increase, with increasing drift potential (e.g. higher wind).

Wind: Drift potential is lowest between wind speeds of 2 - 10 mph (follow state regulations). However, many factors, including equipment type, determine drift potential at any given speed. Application should be avoided below 2 mph due to variable wind direction and high inversion potential.

Note: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect drift.

Sensitive Areas: Renovate OTF should only be applied when the potential for drift to adjacent sensitive areas (e.g., residential areas, known habitat for threatened or endangered species, non-target crops) is minimal (e.g., when wind is blowing away from the sensitive areas).

AQUATIC WEEDS CONTROLLED BY RENOVATE OTF

- alligatorweed pennywort
- American lotus smartweed
- bladderwort water chestnut†
- Eurasian watermilfoil yellow water lily (*Nuphar* spp., spatterdock)
- milfoil species white water lily (*Nymphaea* spp.)
- parrotfeather†† water primrose (*Ludwigia* spp.)
- pickerelweed watershield (*Brasenia* spp.)

† Not for use in California.

†† Retreatment may be needed to achieve desired level of control.

Application Methods

SURFACE APPLICATION

Use a mechanical spreader such as a fertilizer spreader or mechanical seeder or similar equipment capable of uniformly applying Renovate OTF. Before spreading any product, carefully calibrate the application equipment. When using boats and power equipment, you must determine the proper combination of (1) boat speed (2) rate of delivery from the spreader, and (3) width of swath covered by the granules.

Use the following formula to calibrate the spreader's delivery in pounds of Renovate OTF per minute:

$$\frac{\text{Miles per hour} \times \text{spreader width (feet)}}{495} \times \text{pounds per acre} = \text{Pounds per minute}$$

AERIAL APPLICATION (HELICOPTER ONLY)

Ensure uniform application. All equipment should be properly calibrated using blanks with similar physical characteristics to Renovate OTF. To avoid streaked, uneven or overlapped application, use an appropriate tracking device (e.g. GPS). Refer to the *Aerial Drift Reduction Advisory* section of this label for additional precautions and instructions for aerial application.

Floating and Emerged Weeds

For control of water lily's (*Nymphaea* spp. and *Nuphar* spp.), watershield (*Brasenia* spp.), and other susceptible emerged and floating herbaceous weeds, apply 0.75 to 2.5 ppm triclopyr per acre. Apply when plants are actively growing.

Use higher rates in the rate range when plants are mature, when the weed mass is dense, or for difficult to control species. Repeat as necessary to control regrowth, but do not exceed a total of 2.5 ppm triclopyr for the treatment area per annual growing season.

Submersed Weeds

For control of Eurasian watermilfoil (*Myriophyllum spicatum*) and other susceptible submersed weeds in ponds, lakes, reservoirs, impounded rivers, streams and other bodies of water that are quiescent; non-irrigation canals, and seasonal irrigation waters, or ditches that have little or no continuous outflow, apply Renovate OTF using mechanical or portable granule spreading equipment. Rates should be selected according to the rate chart below to provide a triclopyr concentration of 0.75 to 2.5 ppm ae in treated water. Use of higher rates in the rate range is recommended in areas of greater water exchange or when treating target area of 1/2 acre or smaller. These areas may require a repeat application. However, total application of Renovate OTF must not exceed an application rate of 2.5 ppm ae triclopyr for the treatment area per annual growing season.

For optimal control, apply in spring or early summer when Eurasian watermilfoil or other submersed weeds are actively growing.

Concentration of Triclopyr Acid in Water (ppm a.e.)					
Avg. Water Depth (ft)	Pounds Renovate OTF / acre (10% a.e.)				
	0.75 ppm	1.0 ppm	1.5 ppm	2.0 ppm	2.5 ppm
1	20	27	41	54	68
2	41	54	81	108	135
3	61	81	122	162	203
4 feet or greater	81	108	164	216	270

Precautions for Potable Water Intakes:

For applications of Renovate OTF to control floating, emerged, and submersed weeds in sites that contain a functioning potable water intake for human consumption, see the chart on the next page to determine the minimum setback distances of the application from the functioning potable water intakes.

Concentration of Triclopyr Acid in Water (ppm a.e.)

Area Treated (acres)	Required Setback Distance (ft) from Potable Water Intake				
	0.75 ppm	1.0 ppm	1.5 ppm	2.0 ppm	2.5 ppm
< 4	300	400	600	800	1000
> 4 - 8	420	560	840	1120	1400
> 8 - 16	600	800	1200	1600	2000
> 16 - 32	780	1040	1560	2080	2600
> 32 acres, calculate a setback using the formula for the appropriate rate	Setback (ft) = $\frac{(800 \cdot \ln(\text{acres}) - 160)}{3.33}$	Setback (ft) = $\frac{(800 \cdot \ln(\text{acres}) - 160)}{2.50}$	Setback (ft) = $\frac{(800 \cdot \ln(\text{acres}) - 160)}{1.67}$	Setback (ft) = $\frac{(800 \cdot \ln(\text{acres}) - 160)}{1.25}$	Setback (ft) = $\frac{(800 \cdot \ln(\text{acres}) - 160)}{1.00}$

Note: ln = natural logarithm

Example Calculation 1:

to apply 2.5 ppm Renovate OTF to 50 acres:

$$\begin{aligned} \text{Setback in feet} &= (800 \times \ln(50 \text{ acres}) - 160) \\ &= (800 \times 3.912) - 160 \\ &= 2970 \text{ feet} \end{aligned}$$

Example Calculation 2:

to apply 0.75 ppm Renovate OTF to 50 acres:

$$\begin{aligned} \text{Setback in feet} &= \frac{(800 \times \ln(50 \text{ acres}) - 160)}{3.33} \\ &= \frac{(800 \times 3.912) - 160}{3.33} \\ &= 892 \text{ feet} \end{aligned}$$

Note: Existing potable water intakes which are no longer in use, such as those replaced by potable water wells or connections to a municipal water system, are not considered to be functioning potable water intakes.

To apply Renovate OTF around and within the distances noted above from a functioning potable water intake, the intake must be turned off until the triclopyr level in the intake water is determined to be 0.4 parts per million (ppm) or less by laboratory analysis or immunoassay.

WETLAND SITES

Wetlands include flood plains, deltas, marshes, swamps, bogs, and transitional areas between upland and lowland sites. Wetlands may occur within forests, wildlife habitat restoration and management areas and similar sites as well as areas adjacent to or surrounding domestic water supply reservoirs, lakes and ponds.

For control of emerged, floating or submersed aquatic weeds in wetland sites, follow use directions and application methods associated with the *Floating and Emerged Weeds* or *Submersed Weeds* sections on this label.

Use Precautions

Minimize unintentional application to open water when treating target vegetation in wetland sites. **Note:** Consult local public water control authorities before applying this product in and around public water. Permits may be required to treat such areas.

Terms and Conditions of Use

If terms of the following Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies are not acceptable, return unopened package at once to the seller for a full refund of purchase price paid. Otherwise, use by the buyer or any other user constitutes acceptance of the terms under Warranty Disclaimer, Inherent Risks of Use and Limitations of Remedies.

Warranty Disclaimer

SePRO Corporation warrants that the product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the label when used in strict accordance with the directions, subject to the inherent risks set forth below. SEPRO CORPORATION MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

Inherent Risks of Use

It is impossible to eliminate all risks associated with use of this product. Plant injury, lack of performance, or other unintended consequences may result because of such factors as use of the product contrary to label instructions (including conditions noted on the label such as unfavorable temperatures, soil conditions, etc.), abnormal conditions (such as excessive rainfall, drought, tornadoes, hurricanes), presence of other materials, the manner of application, or other factors, all of which are beyond the control of SePRO Corporation as the seller. To the extent permitted by applicable law all such risks shall be assumed by buyer.

Limitation of Remedies

To the fullest extent permitted by law, SePRO Corporation shall not be liable for losses or damages resulting from this product (including claims based on contract, negligence, strict liability, or other legal theories) shall be limited to, at SePRO Corporation's election, one of the following:

1. Refund of purchase price paid by buyer or user for product bought, or
2. Replacement of amount of product used.

SePRO Corporation shall not be liable for losses or damages resulting from handling or use of this product unless SePRO Corporation is promptly notified of such losses or damages in writing. In no case shall SePRO Corporation be liable for consequential or incidental damages or losses.

The terms of the "Warranty Disclaimer" above and this "Limitation of Remedies" cannot be varied by any written or verbal statements or agreements. No employee or sales agent of SePRO Corporation or the seller is authorized to vary or exceed the terms of the "Warranty Disclaimer" or "Limitations of Remedies" in any manner.

Storage and Disposal

Do not contaminate water, food, or feed by storage and disposal. Open dumping is prohibited.

Pesticide Storage: Store in original container. Do not store near food or feed. In case of leak or spill, contain material and dispose as waste.

Pesticide Disposal: Wastes resulting from the use of this product must be disposed of on site or at an approved waste disposal facility.

Container Disposal (Plastic Bags): Completely empty bag into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

Container Disposal (Plastic): Do not reuse container. Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

General: Consult federal, state, or local disposal authorities for approved alternative procedures.

Appendix E: Water Rights List

Water Right ID	Water Right Name	Priority	Volume (cfs)	Point of Diversion	Beneficial Use	Expiration Date	Agency	Notes
WR-001	General	1	100	...	...	...	...	...
WR-002	...	2	...	...	...	...	...	...
WR-003	...	3	...	...	...	...	...	...
WR-004	...	4	...	...	...	...	...	...
WR-005	...	5	...	...	...	...	...	...
WR-006	...	6	...	...	...	...	...	...
WR-007	...	7	...	...	...	...	...	...
WR-008	...	8	...	...	...	...	...	...
WR-009	...	9	...	...	...	...	...	...
WR-010	...	10	...	...	...	...	...	...
WR-011	...	11	...	...	...	...	...	...
WR-012	...	12	...	...	...	...	...	...
WR-013	...	13	...	...	...	...	...	...
WR-014	...	14	...	...	...	...	...	...
WR-015	...	15	...	...	...	...	...	...
WR-016	...	16	...	...	...	...	...	...
WR-017	...	17	...	...	...	...	...	...
WR-018	...	18	...	...	...	...	...	...
WR-019	...	19	...	...	...	...	...	...
WR-020	...	20	...	...	...	...	...	...
WR-021	...	21	...	...	...	...	...	...
WR-022	...	22	...	...	...	...	...	...
WR-023	...	23	...	...	...	...	...	...
WR-024	...	24	...	...	...	...	...	...
WR-025	...	25	...	...	...	...	...	...
WR-026	...	26	...	...	...	...	...	...
WR-027	...	27	...	...	...	...	...	...
WR-028	...	28	...	...	...	...	...	...
WR-029	...	29	...	...	...	...	...	...
WR-030	...	30	...	...	...	...	...	...
WR-031	...	31	...	...	...	...	...	...
WR-032	...	32	...	...	...	...	...	...
WR-033	...	33	...	...	...	...	...	...
WR-034	...	34	...	...	...	...	...	...
WR-035	...	35	...	...	...	...	...	...
WR-036	...	36	...	...	...	...	...	...
WR-037	...	37	...	...	...	...	...	...
WR-038	...	38	...	...	...	...	...	...
WR-039	...	39	...	...	...	...	...	...
WR-040	...	40	...	...	...	...	...	...
WR-041	...	41	...	...	...	...	...	...
WR-042	...	42	...	...	...	...	...	...
WR-043	...	43	...	...	...	...	...	...
WR-044	...	44	...	...	...	...	...	...
WR-045	...	45	...	...	...	...	...	...
WR-046	...	46	...	...	...	...	...	...
WR-047	...	47	...	...	...	...	...	...
WR-048	...	48	...	...	...	...	...	...
WR-049	...	49	...	...	...	...	...	...
WR-050	...	50	...	...	...	...	...	...

File #	Cert #	Person	Doc	Priority Dt	Purpose	Qi	UOM	Qa	Ir Acres	TRS	Q Src's	1stSrc
G1-000701CL		PHIPPS TROY L.	Claim L		ST,IR		GPM			34.0N 04.0E 12	1	
G1-013779CL		DENNHARDT WILLIAM R.	Claim L		DG		GPM			34.0N 04.0E 01	1	
G1-036731CL		CAMBY CLYDE P.	Claim S		DG		GPM			34.0N 04.0E 01	1	
G1-044641CL		WILCOX OAU L O.	Claim S		DG		GPM			34.0N 04.0E 12	1	
G1-048594CL		JOHNSON CLARENCE	Claim S		DG		GPM			34.0N 04.0E 01	1	
G1-048595CL		JOHNSON CLARENCE	Claim S		ST,DG		GPM			34.0N 04.0E 01	1	
G1-057603CL		WILCOX WILLIAM R.	Claim S		ST		GPM			34.0N 04.0E 12	1	
G1-063277CL		WILCOX PAUL B.	Claim S		DG		GPM			34.0N 04.0E 12	1	
G1-065756CL		REYES MARGUERITE	Claim S		DG		GPM			34.0N 04.0E 01	1	
G1-077652CL		BROWNING CARL	Claim S		DG		GPM			34.0N 05.0E 06	1	
G1-081500CL		SINCLAIR SR. JAMES F.	Claim S		DG		GPM			34.0N 05.0E 06	1	
G1-098038CL		BUCHANAN VIRGIL W	Claim S		IR,DG		GPM			34.0N 04.0E 12	1	
G1-098039CL		BUCHANANA VIRGIL W	Claim S		IR,DG		GPM			34.0N 05.0E 07	1	
G1-111254CL		STAKKELAND MELVIN	Claim L		ST,DG		GPM			34.0N 05.0E 07	1	WELL
G1-114441CL		GREEN LEWIS	Claim S		DG		GPM			34.0N 04.0E 01	1	
G1-114442CL		GREEN LEWIS	Claim S		ST,DG		GPM			34.0N 04.0E 01	1	
G1-117709CL		PRATHER WINNIFRED W	Claim L		DG		GPM			34.0N 04.0E 12	1	WELL
G1-121975CL		TEWALT CHARLES R	Claim L		ST,DG		GPM			34.0N 04.0E 12	1	POINT
G1-122737CL		MATTERAND A L	Claim S		ST,IR		GPM			34.0N 04.0E 12	1	
G1-164185CL		VAN SLAGEREN DOROTHY B	Claim L		ST,DG		GPM			34.0N 05.0E 07	1	WELL
R1-06856ABBCW/RS	08738A	Skagit Cnty PUD 1	Cert	1/16/1946	DM		CFS	1500		35.0N 05.0E 32	4	GILLIGAN CREEK
R1-17876C		Skagit Cnty PUD 1	Cert	4/24/1963	MU		CFS	4250		35.0N 05.0E 32	1	SKAGIT RIVER
S1-14661CW/RS	7395	BARCLAY C V	Cert	2/10/1958	IR,DS	0.03	CFS	4	2	34.0N 05.0E 06	1	UNNAMED STREAM
S1-00690CW/RS		GINGERICH RALPH L	Cert	4/4/1967	WL,FS	0.99	CFS			35.0N 05.0E 32	1	UNNAMED STREAM
S1-058163CL		HUNTER ROBERT B.	Claim S		ST,DG		CFS			34.0N 05.0E 06	1	CLEAR LAKE
S1-102330CL		ROGERS REX	Claim S		IR		CFS			34.0N 05.0E 06	1	CLEAR LAKE
S1-156597CL		AMANO RIAN T	Claim S		ST,IR		CFS			34.0N 04.0E 01	1	POND
S1-21696CW/RS		KASSLER THOMAS	Cert	5/22/1974	ST,DS	0.02	CFS	1.5	0.5	34.0N 05.0E 06	SE1	UNNAMED SPRING
S1-22127CW/RS		Georgia Pacific Corporation	Cert	10/7/1974	IR	0.01	CFS	1.67	0.25	34.0N 04.0E 01	1	CLEAR LAKE
S1-22421CW/RS		CASE ALICE D	Cert	1/28/1975	DS	0.02	CFS	1		34.0N 05.0E 06	1	CLEAR LAKE
S1-26615		SKEELS TRACY	Cert	6/11/1992	DS	0.06	CFS			35.0N 05.0E 31	NE1	UNNAMED SOURCE
S1-300874CL		VANSLAGEKEN BEVERLY	Claim		ST,DG		CFS			34.0N 05.0E 07	1	UNNAMED CREEK
S1-301967CL		DAVIS RON	Claim		IR		CFS			34.0N 05.0E 06	1	CLEAR LAKE
S1-302460CL		WALT RONALD	Claim		ST,IR		CFS			34.0N 05.0E 07	1	WALT CREEK

Appendix F: Petitions/Ballots of Support



PUBLIC WORKS DEPARTMENT

1800 Commodore Park, Moss Valley, WA 98222-5612
(509) 326-0400 FAX (509) 326-0470

**The Clear and Beaver Lakes Advisory Committee
Ballot Form**

The Clear and Beaver Lakes Advisory Committee is holding this vote on the final draft Integrated Aquatic Vegetation Management Plan for Clear and Beaver Lakes to show community support for the strategy to control aquatic weeds. This vote is not to implement the plan, but only to show community support.

Name: Stephan Buehler
Address: 5705 14th Ave S.E. Mercer Isl. OR 97039
Phone Number: 503-535-2600

Vote: Please circle yes or no.

I (the above named person) support the control strategy and goals described in the final draft Integrated Aquatic Vegetation Management Plan for Clear and Beaver Lakes.

No

Yes



SKAGIT COUNTY

PUBLIC WORKS DEPARTMENT

1800 Continental Place, Mount Vernon, WA 98273-5625
(360) 336-9400 FAX (360) 336-9478

The Clear and Beaver Lakes Advisory Committee Ballot Form

The Clear and Beaver Lakes Advisory Committee is holding this vote on the Final Draft Integrated Aquatic Vegetation Management Plan for Clear and Beaver Lakes to show community support for the strategy to control aquatic weeds. **This vote is not to implement the plan, but only to show community support.**

Name: *Stephen Bergson*
Address: *3508 96th Ave S.E. Mercer Is. WA 98040*
Phone Number: *206-232-2600*

Vote: Please circle yes or no.

I (*the above named person*) support the control strategy and goals described in the final draft Integrated Aquatic Vegetation Management Plan for Clear and Beaver Lakes.

Yes

No



SKAGIT COUNTY PUBLIC WORKS DEPARTMENT

1800 Continental Place, Mount Vernon, WA 98273-5625
(360) 336-9400 FAX (360) 336-9478

The Clear and Beaver Lakes Advisory Committee Ballot Form

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Name: *MIKE JANICK*
Address: *810 TALCOTT*
Phone Number: *360-855-0697*

Vote: Please circle yes or no.

I (*the above named person*) support the control strategy and goals described in the final draft Integrated Aquatic Vegetation Management Plan for Clear and Beaver Lakes.

Yes

No



SKAGIT COUNTY PUBLIC WORKS DEPARTMENT

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(360) 336-9400 FAX (360) 336-9478

The Clear and Beaver Lakes Advisory Committee Ballot Form

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Name: Kellie Long
Address: P.O. Box 27 - 12671 Sawyer Court
Phone Number: 856-2179

Vote: Please circle yes or no.

I (*the above named person*) support the control strategy and goals described in the final draft Integrated Aquatic Vegetation Management Plan for Clear and Beaver Lakes.

Yes

No



SKAGIT COUNTY PUBLIC WORKS DEPARTMENT

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(360) 336-9400 FAX (360) 336-9478

The Clear and Beaver Lakes Advisory Committee Ballot Form

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Name: Randy Long
Address: 12671 Sawyer Court P.O. Box 27
Phone Number: -360-856-2159

Vote: Please circle yes or no.

I (*the above named person*) support the control strategy and goals described in the final draft Integrated Aquatic Vegetation Management Plan for Clear and Beaver Lakes.

Yes

No



SKAGIT COUNTY PUBLIC WORKS DEPARTMENT

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(360) 336-9400 FAX (360) 336-9478

The Clear and Beaver Lakes Advisory Committee Ballot Form

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Name: Harriet Koscho (Beaver Lake)
Address: 5233 19th Ave NE Seattle, WA 98105
Phone Number: 206-528-7472

Vote: Please circle yes or no.

I (*the above named person*) support the control strategy and goals described in the final draft Integrated Aquatic Vegetation Management Plan for Clear and Beaver Lakes.

Yes

No



SKAGIT COUNTY PUBLIC WORKS DEPARTMENT

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Name:

Address:

Phone Number:

Don Wall
P.O. Box 297, Clear Lk WA 98235
360-856-1813

Vote: Please circle yes or no.

I (*the above named person*) support the control strategy and goals described in the final draft Integrated Aquatic Vegetation Management Plan for Clear and Beaver Lakes.

Yes

No



SKAGIT COUNTY PUBLIC WORKS DEPARTMENT

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Name:

Tom Buchanan

Address:

16852 70 W

Edmonds

Phone Number:

425-776-5011

Vote: Please circle yes or no.

I (*the above named person*) support the control strategy and goals described in the final draft Integrated Aquatic Vegetation Management Plan for Clear and Beaver Lakes.

Yes

No



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The Clear and Beaver Lakes Advisory Committee Ballot Form

The Clear and Beaver Lakes Advisory Committee is holding this vote on the Final Draft Integrated Aquatic Vegetation Management Plan for Clear and Beaver Lakes to show community support for the strategy to control aquatic weeds. **This vote is not to implement the plan, but only to show community support.**

Name: *Anna Davis*
Address: *12400 E Lake Dr. Clear Lake*
Phone Number: *856-6564*

Vote: Please circle *yes* or no.

I (*the above named person*) support the control strategy and goals described in the final draft Integrated Aquatic Vegetation Management Plan for Clear and Beaver Lakes.

Yes

No



SKAGIT COUNTY PUBLIC WORKS DEPARTMENT

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Name:

Address:

Phone Number:

Vote: Please circle yes or no.

I (*the above named person*) support the control strategy and goals described in the final draft Integrated Aquatic Vegetation Management Plan for Clear and Beaver Lakes.

Yes

No



SKAGIT COUNTY PUBLIC WORKS DEPARTMENT

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The Clear and Beaver Lakes Advisory Committee is holding this vote on the Final Draft Integrated Aquatic Vegetation Management Plan for Clear and Beaver Lakes to show community support for the strategy to control aquatic weeds. **This vote is not to implement the plan, but only to show community support.**

Name: MARK NILSON
Address: P.O. BOX 215 CLEAR LAKE, WA 98235
Phone Number: 854-9636

Vote: Please circle yes or no.

I (*the above named person*) support the control strategy and goals described in the final draft Integrated Aquatic Vegetation Management Plan for Clear and Beaver Lakes.

Yes

No



SKAGIT COUNTY PUBLIC WORKS DEPARTMENT

1800 Continental Place, Mount Vernon, WA 98273-5625
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The Clear and Beaver Lakes Advisory Committee Ballot Form

The Clear and Beaver Lakes Advisory Committee is holding this vote on the Final Draft Integrated Aquatic Vegetation Management Plan for Clear and Beaver Lakes to show community support for the strategy to control aquatic weeds. **This vote is not to implement the plan, but only to show community support.**

Name: BRIAN ADAMS ON BEHALF OF SKAGIT CO. PARKS DEPT.
Address: 315 S. THIRD ST. MV, WA 98273
Phone Number: 336-9414

Vote: Please circle yes or no.

I (*the above named person*) support the control strategy and goals described in the final draft Integrated Aquatic Vegetation Management Plan for Clear and Beaver Lakes.

Yes

No



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Name: *Burl Fox*
Address: *Mt Vernon*
Phone Number: *8561807*

Vote: Please circle yes or no.

I (*the above named person*) support the control strategy and goals described in the final draft Integrated Aquatic Vegetation Management Plan for Clear and Beaver Lakes.

Yes

No



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Name: Wilfrid Dow Sedro-woolley, WA 98284
Address: 12518 E. Lake Dr.
Phone Number: 360-856-2949

Vote: Please circle yes or no.

I (*the above named person*) support the control strategy and goals described in the final draft Integrated Aquatic Vegetation Management Plan for Clear and Beaver Lakes.

Yes

No



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Name: *Kathryn Lewalt*
Address: *133241 Austin Rd - Mt Vernon*
Phone Number: *856-665-0*

Vote: Please circle yes or no.

I (*the above named person*) support the control strategy and goals described in the final draft Integrated Aquatic Vegetation Management Plan for Clear and Beaver Lakes.

Yes

No



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The Clear and Beaver Lakes Advisory Committee is holding this vote on the Final Draft Integrated Aquatic Vegetation Management Plan for Clear and Beaver Lakes to show community support for the strategy to control aquatic weeds. **This vote is not to implement the plan, but only to show community support.**

Name: Robert Dow
Address: 21685 Francis Ln Mt. Vernon
Phone Number: 848-1373 or 770-1904

Vote: Please circle yes or no.

I (*the above named person*) support the control strategy and goals described in the final draft Integrated Aquatic Vegetation Management Plan for Clear and Beaver Lakes.

Yes

No



SKAGIT COUNTY PUBLIC WORKS DEPARTMENT

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Name:

RON DAVIS

Address:

Box 616 CLEARLAKE

Phone Number:

360 856 6566

Vote: Please circle yes or no.

I (*the above named person*) support the control strategy and goals described in the final draft Integrated Aquatic Vegetation Management Plan for Clear and Beaver Lakes.

Yes

No

PETITION TO SUPPORT NOXIOUS WEED MANAGEMENT IN CLEAR AND BEAVER LAKES



Fragrant Water Lily



Eurasian Milfoil

Clear and Beaver Lakes are heavily infested with State-listed noxious weeds, Eurasian milfoil and Fragrant Water Lily (above). These aquatic plants are known to negatively impact recreation and aesthetic values for lakeside residents and lake users. Some lakeside residents have expressed interest in forming a lake management district for Clear and Beaver Lakes, which would generate money needed to manage these noxious weeds. Currently there are 3 Lake Management Districts in Skagit County: Big Lake, Lake McMurray, and one for Lakes Erie and Campbell. **By signing this petition, you are telling the Board of County Commissioners that you are in support of exploring the idea of forming a lake management district for Clear and Beaver Lakes. Signing this petition does not result in the formation of a lake management district, nor does it commit you to supporting the ultimate formation of a lake management district.**

Print Name	Signature	E-mail/phone
RITA J. JOHNSON	<i>Rita J. Johnson</i>	LEEJOSC@msn.com 360-854-7664
William Lee Johnson	<i>William Lee Johnson</i>	LEEJOSC@msn.com 360-854-7664
Rob Janicki	<i>Rob Janicki</i>	rjanicki@janicki.com 360-856-3008
Stephen Burgess	<i>Stephen Burgess</i>	206-232-2606
MARK NILSON	<i>Mark R. Nilson</i>	360-540-5407
Gretchen E. Hunter	<i>Gretchen E Hunter</i>	360-856-6112
ANITA DAVIS	<i>Anita Davis</i>	360-856-6566
RONALD DAVIS	<i>Ronald Davis</i>	360-856-6566
Barbara Dow	<i>Barbara Dow</i>	barbdow@hotmail.com 360-856-2949

Appendix G: Priority Habitat Map



Clear and Beaver Lakes IAVMP

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

WATERWAYS DIVISION

1000 STATE STREET, ALBANY, NY 12243-1499

518-474-2200

WWW.DEC.NY.GOV



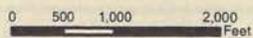


**CLEAR LAKE AND BEAVER LAKE
WDFW PRIORITY HABITAT DATA**

July 14, 2006

- Watershed Lines
- BALD EAGLE
- WATERFOWL CONCENTRATIONS
- RIPARIAN ZONES
- URBAN NATURAL OPEN SPACE
- WETLANDS

JDG321



SKAGIT COUNTY
PUBLIC WORKS DEPARTMENT
1800 Commercial Place, Mount Vernon, WA 98273-5433
(360) 336-6400 FAX (360) 336-9178



Clear & Beaver Lakes IAVMP Development Project
Planning Meeting #1

May 9, 2007
2:00p.m.
Public Works Bank Room

Agenda

- 1) Welcome
- 2) Department of Ecology Grant
 - a) The Project - Integrated Aquatic Vegetation Management Plan (IAVMP)
 - b) Funding bid received
 - c) Special conditions of the Grant
 - d) Advisory Committee
 - e) Consultant Considerations
- 3) IAVMP Development - Planning Strategy
 - a) A Citizen's Manual for Developing Integrated Aquatic Vegetation Management Plans
 - i) Form an Advisory Committee
 - ii) Develop a Problem Statement
 - iii) Identify Management Goals
 - iv) Involve the Public
 - v) Identify Water Body/Watershed Features
 - vi) Identify Beneficial Use Areas
 - vii) Map Aquatic Plants
 - viii) Investigate Control Alternatives
 - ix) Specify Control Intensity
 - x) Choose Integrated Treatment Scenario
 - xi) Develop Action Plan
 - b) Adoption by Skagit Board of County Commissioners (BOC)
- 4) Implementing the IAVMP - Funding Review
 - a) Lake Management District (LMD) Formation, RCW 36.01
 - i) Submit the question to the lake-side community
 - ii) If approved by a majority vote, establish a rate structure
 - b) Apply for AWMF implementation grant to supplement or offset implementation costs
- 5) Question/Discussion

Additional Lake Resources: <http://www.ecy.wa.gov/programs/water/plans.html>



SKAGIT COUNTY PUBLIC WORKS DEPARTMENT

1800 Continental Place, Mount Vernon, WA 98273-5625
(360) 336-9400 FAX (360) 336-9478

Clear & Beaver Lakes IAVMP Development Project Planning Meeting #1

May 9, 2005
2:00p.m.
Public Works Sauk Room

Agenda

- 1) Welcome
- 2) Department of Ecology Grant
 - a) The Project – Integrated Aquatic Vegetation Management Plan (IAVMP)
 - b) Funding did received
 - c) Special conditions of the Grant
 - i) Advisory Committee
 - ii) Consultant Considerations
- 3) IAVMP Development – Planning Strategy
 - a) *A Citizen's Manual for Developing Integrated Aquatic Vegetation Management Plans*
 - i) Form an Advisory Committee
 - ii) Develop a Problem Statement
 - iii) Identify Management Goals
 - iv) Involve the Public
 - v) Identify Water Body/Watershed Features
 - vi) Identify Beneficial Use Areas
 - vii) Map Aquatic Plants
 - viii) Investigate Control Alternatives
 - viii) Specify Control Intensity
 - x) Choose Integrated Treatment Scenario
 - xi) Develop Action Plan
 - c) Adoption by Skagit Board of County Commissioners (BCC)
- 4) Implementing the IAVMP – Finding Revenue
 - a) Lake Management District (LMD Formation, *RCW 36.61*)
 - i) Submit the question to the lakeside community
 - ii) If approved by a majority vote, establish a rate structure
 - b) Apply for AWMF implementation grant to supplement or offset implementation costs
- 5) Questions/Discussion

Additional Lake Resources: <http://www.ecy.wa.gov/programs/wq/links/plants.html>



SKAGIT COUNTY PUBLIC WORKS DEPARTMENT

1800 Continental Place, Mount Vernon, WA 98273-5625
(360) 336-9400 FAX (360) 336-9478

Clear & Beaver Lakes IAVMP Development Project Planning Meeting #1

May 9, 2005

2:00p.m.

Public Works Sauk Room

Meeting Minutes

Attendees: Brian Adams, George Bellos, Anita Davis, Ron Davis, Stephen Burgess, Ric Boge, Stephanie Woollett.

The first planning meeting for the Clear and Beaver Lakes Integrated Aquatic Vegetation Management Plan (IAVMP) Development project convened at 2:00 p.m. Stephanie, a Water Resources Technician for Public Works, began the meeting by welcoming the attendees and providing a brief overview of the Agenda, including review of the Aquatic Weed Management Fund (AWMF) Grant to develop an IAVMP for Clear and Beaver Lakes and to discuss the short and long term goals associated with this project.

Stephanie briefly explained that an IAVMP is a comprehensive planning document that helps communities develop effective strategies to combat aquatic weed infestations. She reviewed the AWMF grant language, including the project cost, breakdown of the matching requirements, special conditions, and the timeline for completing the project. The total cost of developing an IAVMP is estimated to cost \$30,000, of which the Department of Ecology is providing \$22,500. The County will provide the 25% match in the amount of \$7,500 cash or in-kind contributions for staff time to write the plan, host meetings, and conduct mailings. According to the grant language, the project must be completed no later than December 31, 2006.

The IAVMP will be developed following the steps outlined in the *Citizen's Manual for Developing Integrated Aquatic Vegetation Management Plans*. Ric Boge, the Surface Water Manager for Public Works, stated that Stephanie will take the lead on managing the project and writing the IAVMP. A consultant will be hired to conduct aquatic vegetation surveys and prepare maps to help characterize the aquatic plant community. Citizens present raised questions regarding aquatic plant treatment techniques employed by other lake communities facing similar problems to the one at Clear and Beaver Lakes. After explaining some of the different physical, chemical, and biological techniques available, Stephanie clarified that the IAVMP process is a comprehensive planning tool that will allow the community to become familiar with these techniques and other important lake issues.

The first step in developing an IAVMP, Stephanie explained, is to form an Advisory Committee that will be the main conduit between the County staff and the lakeside community. Stephanie emphasized that an active Advisory Committee is vital to the success of any lake management effort because the planning process requires that consensus building between members of the lake community regarding

the preferred management strategy. Once the Advisory Committee is formed, the project will be completed in two phases: Problem/Site Description and Control Strategy Development. Phase one consists of developing a problem statement, identifying management goals, identifying waterbody and watershed features, identifying beneficial use areas, and mapping and characterizing aquatic plants. Phase two consists of investigating control alternatives, specifying the control intensity, choosing an integrated treatment scenario, and developing an action plan. Each of these phases requires public involvement for successful completion.

Once the IAVMP is complete, the community will begin the process of exploring LMD formation to finance implementation of the Plan. Stephanie explained that LMDs are voluntary self-taxing districts that raise money to fund aquatic plant treatment. In addition, she explained that the enabling legislation, RCW 36.61, provides that LMDs can be formed to address other management concerns such as water levels and water quality. At this time, members of the lakeside community indicated concerns regarding the limited number of lakefront lots and potential difficulty for raising money for a Lake Management District (LMD), if approved by the lakeside community. Stephanie stated that the LMD, if formed, will be eligible to apply for an implementation grant from the Department of Ecology to offset treatment costs. Additionally, the Advisory Committee would have the ability to work with the community and County staff to establish a rate structure that best facilitates implementation of the IAVMP. Ric inquired as to the average annual assessment rate for residential lots in other Skagit LMDs. Stephanie reported that each LMD has a different rate structure but that the average rate for a residential lot is \$200 per year.

In closing, Stephanie suggested that the group develop some ideas for an informational letter or a flyer to promote awareness of the grant and IAVMP planning process, as well as solicit volunteers to serve on the Advisory Committee. Once there is a list of interested people with community support, it will be made official by obtaining approval from the BCC. Finally, the group decided it would be good to meet around the same time every month. The next meeting is scheduled take place on June 13, 2005 at 2:00pm in the Public Works Sauk Room.



SKAGIT COUNTY PUBLIC WORKS DEPARTMENT

1800 Continental Place, Mount Vernon, WA 98273-5625
(360) 336-9400 FAX (360) 336-9478

Clear & Beaver Lakes IAVMP Development Project Planning Meeting #2

June 13, 2005

2:00p.m.

Public Works Sauk Room

Agenda

- 1) Welcome
- 2) Advisory Committee Formation (Step 1)—Progress Report
 - a) Who are the candidates?
 - b) Is there community support for the candidates?
 - c) Does the planning group still need assistance drafting a letter to residents?
- 3) Problem Statement Development (Step 2)
 - a) List water body users.
 - b) Determine problems from the perspective of each user group.
 - c) Group the problem into categories.
 - d) Develop a draft Problem Statement.
- 4) Schedule July Meeting
 - a) Date/time
 - b) Purpose/goals
 - c) Preparation materials
- 5) Questions/Discussion



SKAGIT COUNTY PUBLIC WORKS DEPARTMENT

1800 Continental Place, Mount Vernon, WA 98273-5625
(360) 336-9400 FAX (360) 336-9478

Clear and Beaver Lakes Advisory Committee Meeting

June 13, 2005

2:00 p.m.

Public Works Sauk Room

Meeting Minutes

Attendees: Mike Janicki, Rob Janicki, Lee and Rita Johnson, Anita Davis, Gretchen Hunter, George Bellos, Mark Nilson, Stephanie Woolett (SCPW), and Meghan MacMullen (SCPW).

The meeting commenced at 2:00 p.m. in the Public Works Sauk Room. The purpose of the meeting was to discuss the formation of an Advisory Committee and draft a Problem Statement for the *Clear and Beaver Lakes Integrated Aquatic Vegetation Management Plan* (IAVMP).

After introductions, the group eagerly began to plan for the formation of an Advisory Committee for Clear and Beaver Lakes. The group unanimously decided the Committee's representation should be diverse, ranging from north end to south end residents, and consisting of no more than seven or nine members. To further accomplish this task, lakeside residents will be invited to join the dialogue at an informal public meeting. This meeting will be held at the Johnson residence, on Tuesday, July 12th at 7:00pm.

The next order of business was to begin brainstorming ideas for the Problem Statement for the IAVMP. The Problem Statement identifies various problems associated with invasive aquatic plant growth and potential impacts to people who have an interest the lakes. The group listed several groups that use the lakes for enjoyment in one form or another and identified 4 categories that embody the main issues faced by this lake community. The different categories and associated problems are listed below:

- First, *safety* was the most important issue. All user groups (swimmers, fishermen, wake boarders, and water skiers) find it difficult to move about in the water. Due to a large number of noxious weeds, people and their equipment may become entangled. Pilings from the old mill operation on Clear Lake also pose a hazard to boaters.
- Second, the *ecology* of the lakes is of concern to the group. The proliferation of invasive species alters the ecological balance of the lakes by impacting predator-prey relationships among fish. The group reported that a biologist from Washington Department of Fish and Wildlife observed predatory fish hiding behind old wood pilings in Clear Lake to hunt the native species, which gives the predatory fish an increased advantage. Water quality, including water clarity, dissolved oxygen, and nutrient levels is also of concern to this group because of the connections between nutrient levels, plant and algae growth, dissolved oxygen, and the health of fish and other aquatic organisms in the lakes. Decreased water quality due to the proliferation of invasive species and human inputs of

excess nutrients decrease the ecological and recreational values of the lakes by wildlife, fishermen, and people who enjoy the aesthetic value of the lakes.

- Third, *recreation* is hindered. Fishing is one of the primary recreational activities on Clear and Beaver lakes. Additionally, Beaver Lake is utilized by duck hunters during duck hunting season. Extensive growth of Eurasian milfoil in Beaver Lake hinders access to the water, which limits the ability of hunters to find their prey. Fishing ability in lakes with excessive plant growth is limited because boat props get wrapped up in weeds and cause motor failure due to clogging.
- Finally, the overall *aesthetics* of the area is in need of improvement. Residents at the meeting reported that Clear Lake was once clear, hence its name. Today, the water clarity is impaired and not as beautiful.

In addition to brainstorming ideas for the Problem Statement, the group also discussed management goals. As part of the group's long term management goals for the lakes, they would like to explore the possibility of conducting a whole-lake restoration project, of which aquatic plants are just one part. Water quality and ecological health were cited as concerns. The planning group would like to apply for grants and seek assistance to finance removal of the old mill pilings in Clear Lake, as well as continue education efforts to reduce nutrient inputs to the lakes from watershed residents. The overall aim of a lake restoration endeavor is to restore the natural balance of the lake ecosystem to enhance the ecological, recreational, and aesthetic value of the lakes for enjoyment by all user groups.

The next planning meeting was scheduled for Monday, July 18, at 2:00 p.m. in the Public Works Sauk Room. The purpose of the next meeting will be to review the draft Problem Statement, solidify the group's management goals, and plan the first community meeting to gain public input/support on the progress of the IAVMP.

The meeting adjourned at 3:20 p.m.



SKAGIT COUNTY PUBLIC WORKS DEPARTMENT

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Clear & Beaver Lakes IAVMP Development Project Planning Meeting #3

July 18, 2005

2:00p.m.

Public Works Sauk Room

Agenda

- 1) Welcome
- 2) Advisory Committee Formation (Step 1)—Progress Report
 - a) Who are the candidates?
 - b) Is there community support for the candidates?
 - c) Resolution to form an Advisory Committee.
- 3) Problem Statement (Step 2)
 - a) Present the draft to group members.
 - b) Review the draft for necessary changes.
- 4) Management Goals (Step 3)
 - a) Present the management goals section to the group.
 - b) Modify stated goals, if necessary.
- 5) Public Involvement (Step 4)
 - a) Schedule the first public meeting (August/September)
 - b) Discuss topics to be covered, potential locations for the meeting, etc.
- 6) Schedule the next Planning Meeting (August/September).
- 7) Questions/Discussion



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Clear and Beaver Lakes Advisory Committee Meeting #3

July 18, 2005

2:00 p.m.

Public Works Sauk Room

Meeting Minutes

Attendees: Rita Johnson, Stan Buchanan, Burl Fox, Stephen Burgess, Brian Adams, Susan Parker Swetman, Beverly Van Slageur, and Stephanie Woolett (SCPW).

The meeting commenced at 2:00 p.m. in the Public Works Sauk Room. The purpose of the meeting was to discuss the formation of an Advisory Committee and review the draft Problem Statement and Management Goals sections of the *Clear and Beaver Lakes Integrated Aquatic Vegetation Management Plan (IAVMP)*.

Due to the addition of new members to the planning group, Stephanie began the meeting with introductions and provided a brief history and overview of the aquatic plant management planning process. New members included lakefront property owners from Beaver Lake, including Stan Buchanan, Burl Fox, and Beverly Van Slageur, as well as Clear Lake property owner Susan Parker Swetman. Beaver Lake property owners expressed that they are not interested in providing financial support to lake management efforts due to the fact that they do not stand to benefit from aquatic plant control. This is largely in part because extensive wetland areas around the lake prohibit residential development and lake access. The only access point on Beaver Lake is the WDFW property on the west side of the lake. Stephanie explained that the Advisory Committee will largely determine the rate structure in the event a Lake Management District (LMD) is formed for the lakes. Additionally, the Advisory Committee can choose the criteria for assessment determination (i.e. lake frontage, benefit potential, development status, etc.).

Based on input from the community meeting held on July 12, 2005 at the Johnson residence, the planning group assembled a list of candidates to serve on the Advisory Committee. To formally recognize the Advisory Committee, a Resolution will be drafted and presented to the Board of County Commissioners by the next meeting date. Susan reported that she had not volunteered to serve on the Advisory Committee at the community meeting last week, but she indicated a willingness to help with the IAVMP in light of her experience as a Nookachamps Steward and a Stream Steward. Through those volunteer programs she has experience collecting and interpreting water quality and macro invertebrate data for the public. Following the meeting, Susan volunteered to serve as an active member of the Advisory Committee.

Stephanie presented a copy of the draft problem statement to everyone present at the meeting. Stan requested that the problem statement clearly states that Beaver Lake property owners did not express interest in aquatic plant management like the Clear Lake residents. They are

involved in the process to make sure Beaver Lake property owners are not unfairly assessed if a LMD is formed. Stephanie made note of the change to be included in the final document.

Following review of the Problem Statement, the group reviewed a draft copy of the management goals. All of the members present agreed on the stated management goals and the associated strategy to ensure the long-term success of the program, if implemented.

A date for the first public meeting was set for Tuesday, September 20, 2005 at 6:00pm. Burl volunteered to reserve a meeting space at the Clear Lake Covenant Church for the event. Stephanie explained that the purpose of this meeting will be to provide the community with an introduction the IAVMP planning process and solicit feedback on the progress made so far. The Advisory Committee should participate in this meeting so the community can see that this effort is community-lead. Finally, comment forms will be distributed at this meeting to ensure that people present are able to submit comments to the Advisory Committee and County for consideration in the Plan's development.

An Advisory Committee meeting may be held prior to the public meeting, but no date was established. Stephanie will contact members if a meeting is necessary.

The meeting adjourned at 3:00 p.m.



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Clear & Beaver Lakes IAVMP Development Project Advisory Committee Meeting #4

September 12, 2005

2:00p.m.

Public Works Sauk Room

Agenda

- 1) Welcome
- 2) IAVMP Update
 - a) Lake and Watershed Characteristics
 - b) Conduct Aquatic Plant Surveys of Clear & Beaver Lakes
 - b) Modify Problem Statement to include Brazilian elodea in the Beaver Lake species list
- 3) Brazilian elodea – Early Infestation Grant – Potential Funding Opportunity
- 4) Overview of upcoming Public Meeting
 - a) Purpose: *Introduce members of the lake community and interested public to the Clear & Beaver Lakes Integrated Aquatic Vegetation Management Plan (IAVMP) development project, which includes a brief description of the problem plants. Following presentation of the draft Problem Statement and Management Goals, solicit feedback from the community.*
 - b) Role of the Advisory Committee
 - c) Date of the meeting: ???
- 5) Beneficial Use Area Map
 - a) Beneficial uses are protected under Washington State statute (WAC 173-201). Beneficial uses include: fish/shellfish; spawning and harvesting; swimming; boating; navigation; irrigation; wildlife habitat; domestic, industrial, agricultural water supply
 - b) Beneficial use area map attempts to balance multiple uses.
 - i) Identify beneficial uses
 - ii) Develop lake usage map
- 6) Questions/Discussion



SKAGIT COUNTY PUBLIC WORKS DEPARTMENT

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Clear and Beaver Lakes Advisory Committee Planning Meeting #4

September 12, 2005
2:00 p.m.
Public Works Sauk Room

Meeting Minutes

Attendees: Lee Johnson, Rita Johnson, Stan Buchanan, Burl Fox, Ron Walt, George Bellos, Mike Janicki, Rob Janicki, Rick Van Pelt, Stephen Burgess, Brian Adams, Susan Parker Swetman, and Stephanie Woolett (SCPW).

The meeting commenced at 2:00 p.m. in the Planning & Development Services Samish Room. The purpose of the meeting was to provide an update on activities performed for the Integrated Aquatic Vegetation Management Plan (IAVMP) development project, discuss the potential funding opportunity to control a pioneering infestation of Brazilian elodea (*Egeria densa*) in Beaver Lake, and discuss the role of the Advisory Committee at the upcoming public meeting.

Stephanie began the meeting by providing an update of activities conducted for the IAVMP development project. To date, we have written the draft Problem Statement and Management Goals and conducted aquatic vegetation surveys of Clear and Beaver Lakes. Due to the discovery of Brazilian elodea in Beaver Lake, Stephanie is revising the Problem Statement to include the problems posed by this non-native species. Finally, Stephanie is writing the Lake and Watershed Characteristics section of the IAVMP, which aims to describe the existing conditions of each lake and its associated watershed. This task will allow the group to better understand the environmental constraints of the lakes while selecting the preferred strategy to address the noxious weed infestations in both lakes.

During the IAVMP update, Ron Walt raised the point that the overall management goals for the Beaver Lake community differ from those of the Clear Lake community due to the fact that lakeside landowners at Beaver Lake do not enjoy lake access and, therefore, do not directly experience the problems posed by invasive aquatic weeds. Any benefit derived from aquatic weed control efforts at Beaver Lake will be to improve environmental conditions for fish & wildlife, as well as to prevent re-introduction of invasive species to Clear Lake during flood events. When asked if the management goals should be explained differently for the IAVMP, the majority said that they should remain as they are written. Another concern raised by the Beaver Lake community regards conjecture that the lake is privately owned, despite the presence of a Washington Department of Fish & Wildlife (WDFW) public boat ramp. Burl Fox indicated that a 1964 lawsuit, which he had in hand, touched on this issue and made the determination that the lake is privately owned. Copies were made and distributed to Stephanie, Rob Janicki, Ron Walt, and Stan Buchanan.

Stephanie reported that the aquatic plant surveys revealed that Eurasian milfoil is distributed extensively throughout the littoral zone of Clear Lake. This coupled with the large quantity of fragrant water lily and the presence of Brazilian elodea in Beaver Lake, the cost of control efforts are likely to be higher than anticipated. To offset the cost of aquatic plant control, Stephanie is researching alternative funding sources, including Ecology's Aquatic Weed Management Fund, including an Early Infestation Grant to treat the Brazilian elodea in Beaver Lake, and the Centennial Clean Water Grant. In order to qualify for a lake restoration grant using Centennial Clean Water funds, the proposed project must demonstrate that it will benefit water quality in the lake and downstream waterbodies in the watershed. Due to the presence of a temperature TMDL on the East Fork Nookachamps Creek, this may be a possibility. County staff will continue to explore this opportunity.

Several questions and concerns were raised about potential control options. Although these will be studied in depth further along in the process, many present indicated favor toward physical control options including dredging and weed harvesting. Considerable discussion revolved around the use of aquatic herbicides, as well.

The public meeting originally scheduled for Tuesday, September 20th was canceled due to short advertising notice. The meeting will be scheduled for early October. The purpose of the public meeting is threefold:

1. Introduce the lakeside community & interested members of the public to the Clear & Beaver Lakes IAVMP development project;
2. Present the draft Problem Statement & Management Goals;
3. Solicit feedback from those present.

The group suggested that it might be helpful to have someone from another Lake Management District (LMD) present his/her experience working with the County and lake community to control aquatic invasive plants, as well as the success of those efforts. Although we haven't begun the process of forming a LMD for the lakes, people will have questions about implementation of the IAVMP, especially regarding the cost and how it will be funded. It would be best to address this matter at the meeting to dispel misunderstandings and reduce confusion. Stephen suggested that it would be helpful to provide visual aids, including a map that shows the amount of surface area that would be added if the community chooses to fund aquatic plant control. Finally, it was determined that it is vital that the Advisory Committee be visible, so there is no question that the project is community led and not mandated by the County. To that end, Lee and Rita Johnson will introduce Stephanie at the beginning of the meeting as a facilitator and technical resource for the community. Susan will help facilitate the meeting by laying the ground rules and ensuring that the comments stay on topic and orderly. The group also decided that it would be best to listen to comments, but not try to address all concerns at that time. Instead, thank everyone for their input and let them know that consideration will be given to each comment and incorporated as they apply to the project.

Before closing the meeting, Stephanie indicated that she will be working with the County's GIS Department to prepare a Beneficial Use Area Map to show fishing and spawning areas, shellfish beds, fishing grounds, and swimming areas. These beneficial uses are protected by State Statute per WAC 173-201.

The meeting adjourned at 3:30 p.m.



SKAGIT COUNTY PUBLIC WORKS DEPARTMENT

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Clear & Beaver Lakes IAVMP Development Project Advisory Committee Meeting #5

February 16, 2006
1:00p.m.

Public Works Sauk Room

Agenda

- 1) Welcome/Introductions
 - a.) Water Resources Technician, Chris Kowitz
 - b.) Surface Water Manager, Ric Boge
- 2) Old Business
 - a) IAVMP Update
 - i.) Review progress made to date
 - ii.) Funding Support – Brazilian elodea eradication project at Beaver Lake
 - b.) Questions/discussion about the Problem Statement & Management Goals
 - c.) Discuss any other concerns of the Advisory Committee about progress made to date
- 3) New Business
 - a) Control Alternatives
 - i.) Chemical
 - ii.) Manual/Mechanical
 - iii.) Biological
 - iv.) Preventative
 - v.) No Action
 - b) Develop Integrated Control Strategy
 - c) Explore Lake Management District Formation
- 4) Questions/Discussion



SKAGIT COUNTY PUBLIC WORKS DEPARTMENT

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Clear and Beaver Lakes Advisory Committee IAVMP Development Meeting #5

February 16, 2006

1:00 p.m.

Public Works Sauk Room

Meeting Minutes

Attendees: Stan Buchanan, Burl Fox, Ron Walt, Mike Janicki, Stephen Burgess, Brian Adams, Susan Parker Swetman, Gretchen Hunter, Ric Boge (SCPW), Chris Kowitz (SCPW), and Stephanie Woollett (SCPW).

The meeting commenced at 1:00pm in the Sauk Room at Public Works. The purpose of the meeting was to review past business regarding the IAVMP status, finalize the Problem Statement and Management Goals, and review the control alternatives for noxious weed control for both Beaver and Clear Lakes. Lastly, the development process of a Lake Management District was discussed.

The first item discussed was Stephanie's departure from the County. Ric Boge explained that Chris Kowitz would be the interim and that a posting for her job was already out. He hoped to have the position filled by mid- April at the latest.

Stephanie provided an overview of the progress on the IAVMP and what's next in the process. She talked briefly about the public meeting held on February 8th regarding control alternatives. Each control alternative was discussed and then a verbal yes or no from the committee was recorded. No one was in favor of the 'no action' alternative; although, there was discussion and questions about what would happen if the committee did nothing. Everyone appeared to concur that the 'preventative' alternative should be examined, but no implementation strategy was decided upon. The 'chemical' alternative was chosen as the main mechanism for controlling noxious plants in both lakes: Glyphosate, Sonar, and Diquat were the chemicals agreed upon. Manual control was discussed and will be used to control Brazilian Elodea in Beaver Lake. It was also decided upon that this may be used around docks and obstructions for water lilies. In the even new infestations of Eurasian milfoil or Brazilian elodea are discovered following the initial herbicide treatments, hand removal should be employed; however, care must be taken to collect and properly dispose of all plant fragments. The group decided to include the purchase of one hand-cutting devise as part of the integrated strategy. This will be an experiment and more may be purchased depending on its success for localized lily control. Some interest was expressed in using the Mifoil Weevil as a biological control, especially if they are native to Northwest lakes. Stephen motioned to include the control methods listed above in the integrated strategy for the IAVMP, Brian seconded it, and the motion carried with none opposed.

Stephanie read the Management Goals and Problem Statement to the group and asked for feedback. It was suggested that an amendment be added to include common names for the noxious aquatic plants. Brian motion to accept the Management Goals and Problem Statement, Stephen seconded and the motion carried with none opposed. Ric then suggested that the group elect a Chairperson and note-taker. Mike Janicki was nominated for Chairperson by Brian, Gretchen seconded the motion and it carried with none opposed. The group decided to table nominations for a note-taker until a later date.

Numerous issues were discussed throughout the meetings that weren't directly related to the meeting's objectives. There were questions and discussions regarding lake ownership, liability and who actually owns the water and lake bottom. Ron was under the impression that he did, in fact, own the lake bottom on his parcels around Beaver Lake. Brian said he would send Stephanie a RCW concerned liability in water-bodies. Water rights versus water ownership were also discussed at length. Further clarification on these issues was requested by the committee.

The Beaver Lake community members on the committee once again reiterated the point that they don't feel like they should be taxed for this work. Some also thought the County should pick up some, if not all, of the cost associated with noxious weed removal. Mike Janicki indicated that the group should agree that Beaver Lake residents, because they do not have docks for lake access, do not benefit from aquatic plant management and should not have to pay. Stephen Burgess voiced his disagreement, citing that removal of noxious weeds may increase property values and that this matter should be investigated prior to agreeing that Beaver Lake residents should not be included in the assessment pool for a proposed Lake Management District (LMD).

Lastly, Stephanie passed out copies of RCW 36.61, the statute for Lake Management Districts. She asked the Advisory committee to review these documents before the next meeting. The committee requested that a warm-water fisheries biologist from WDFW be present at the next meeting to answer questions about fisheries management at Clear & Beaver Lakes. Specific reference was given to warm water versus cold water fisheries management.

The meeting adjourned at 3:00pm.



SKAGIT COUNTY PUBLIC WORKS DEPARTMENT

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Clear & Beaver Lakes IAVMP Development Project Planning Meeting #6

May 18, 2006

2:00p.m.

Public Works Sauk Room

Agenda

- 1) Welcome
- 2) Guest Speaker from WDFW regarding Warm Water Fish Management
- 3) Review IAVMP draft comments
 - a) Review written comments submitted after the last meeting.
 - b) Amend the draft IAVMP as needed.
 - c) Vote on the adoption of the draft IAVMP
- 4) Discuss the next step in the process
 - a) Public Meeting
- 5) Questions/Discussion



SKAGIT COUNTY PUBLIC WORKS DEPARTMENT

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Clear & Beaver Lakes Advisory Committee Planning Meeting #6 Meeting Minutes May 18, 2006 2:15 p.m.

AC Members Present: George Bellos, Gretchen Hunter, Rita Johnson, Burl Fox, Mike Janicki, Brian Adams, Susan Swetman,

County Staff Present: Michael See, *Water Resources Technician*
Ric Boge, *Surface Water Manager*

Guest Speaker: Mark Downen, *Inland Fish Biologist*, Washington Department of Fish & Wildlife

Meeting Goals:

The Clear & Beaver Lakes Advisory Committee meeting commenced at 2:35 p.m. at the Skagit County Public Works office. The purpose of this meeting was to receive a presentation from the WDFW Inland Fish Biologist, review and approve the final draft IAVMP, and discuss the next step in the LMD formation process.

Guest Speaker:

Mark Downen provided a presentation to the advisory committee on the warm water fish management of Clear and Beaver Lakes. Mark discussed past rehabilitation efforts at Clear Lake and the current fish population. Currently Clear Lake has a strong Largemouth bass population and is consistently well stocked with triploid Rainbow trout. In regards to vegetation management, Mark emphasized that neither too much vegetation nor too little will provide for healthy fish habitat. Mark illustrated this point by explaining the need for vegetation by Black crappie populations. The biology of Black crappie requires them to disperse their eggs directly on vegetation. As a result of this dependence, Big Lake observed a decline in the Black crappie population immediately following the whole lake herbicide treatment for noxious weeds. Mark stated that Beaver Lake is an excellent lake to manage for Black crappie. Another observation that Mark made is that lakes managed for vegetation tend to have an increase in the average size of the fish and a decrease in the population quantity. This is due to the increased ability of predatory fish to catch forage fish in habitat with reduced vegetation. Following a brief description of the Clear and Beaver Lakes IAVMP by the advisory committee, Mark gave his endorsement of our goals & plan to eradicate noxious weeds like Eurasian Milfoil and Brazilian Elodea. Mark's take home point was that an intermediate level of vegetation is ideal for fish habitat. Mark mentioned that the 2001 Beaver Lake Survey (Publication #FPT 02-11) is available online at: <http://wdfw.wa.gov/fish/warmwater/reports.htm>. Lastly, Mark stated that Clear Lake is his first choice for a similar fish survey in the fall of 2007.



IAVMP Review:

Michael See informed the committee that several members had called prior to the meeting day to express their opinions and give notice that they will be unable to attend. The following individuals called:

- Stan Buchanan called and wanted to inform the advisory committee that he does not want the Beaver Lake residents to pay for any treatment. He does not oppose treating noxious weeds; however, he does not feel that Beaver Lake residents benefit from treatment.
- Stephen Burgess stopped by and stated that his vote is to adopt the draft IAVMP.
- Michelle Van Pelt called to inform the committee that she and her husband Rick will not be able to attend the meeting.

Mike Janicki asked the committee if anyone had comments or questions regarding the final IAVMP draft comments that were submitted after the last meeting. With no questions from the committee, Mike asked if there was a motion to skip the comment by comment review and to adopt the draft as written. Gretchen Hunter made a motion to adopt the plan as written. Susan Swetman then seconded the motion. As a result, the final draft of the IAVMP has been officially accepted by the Clear and Beaver Lakes Advisory Committee.

Next Step in the Process:

Michael See informed the committee that the next step in the LMD formation process will be to hold a public meeting to provide an overview of the adopted plan and answer questions. Prior to this meeting, he recommended the advisory committee have a preliminary meeting to discuss possible scenarios for roll and rate options. Consequently, an advisory meeting was scheduled for June 8th, 2:00 p.m. in the Sauk Room at the Skagit County Public Works office. In addition, a public meeting was scheduled for June 14th, 6:30-8:30 p.m. at the Clear Lake Covenant Church. Burl Fox offered to handle reserving the church for this meeting and Rita Johnson offered to distribute flyers. Michael See stated that he will produce flyers, issue a press release, and revise Stephanie's Power Point presentation for the public meeting. Lastly, the advisory committee agreed to hold a public vote to accept the IAVMP following the June 14th public meeting. The date and time of the public vote has not yet been determined; however, it will most likely be in mid July.

The meeting adjourned at 3:20 p.m.



SKAGIT COUNTY PUBLIC WORKS DEPARTMENT

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Clear & Beaver Lakes IAVMP Development Project Planning Meeting #7

June 8, 2006
2:00p.m.
Public Works Sauk Room

Agenda

- 1) Welcome
- 2) Review draft funding scenarios for Clear and Beaver Lakes as compared to the existing three LMD's
- 3) Discuss roll and rate possibilities for Clear and Beaver Lakes
- 4) Review agenda and presentation outline for June 14th public meeting
- 5) Determine date, location, and logistics for July community vote
- 6) Questions/Discussion



SKAGIT COUNTY PUBLIC WORKS DEPARTMENT

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Clear & Beaver Lakes Advisory Committee Planning Meeting #7

Meeting Minutes

June 8, 2006

2:00 p.m.

AC Members Present: George Bellos, Gretchen Hunter, Lee Johnson, Rita Johnson, Mike Janicki, Stan Buchanan, Stephen Burgess, Susan Swetman

County Staff Present: Michael See, *Water Resources Technician*
Ric Boge, *Surface Water Manager*

Meeting Goals:

The Clear & Beaver Lakes Advisory Committee meeting commenced at 2:25 p.m. at the Skagit County Public Works office. The purpose of this meeting was to review the draft funding scenarios for Clear and Beaver Lakes as compared to the existing three LMD's and to discuss available possibilities.

Review Draft Funding Scenarios:

Matt Barrett, Surface Water Management Intern, prepared four possible funding scenarios for the treatment strategy outlined in the IAVMP. These four scenarios were based off of the roll and rate structure for the existing three lake management districts. Matt presented these scenarios to the advisory committee and answered related questions.

The advisory committee determined that the Lake Campbell/Erie (LMD#3) most closely matched the financial need for the proposed treatment strategy. The advisory committee made several modifications to the original LMD #3 scenario. The revised scenario includes the following information:

- a.) Residential and undeveloped parcels are assessed \$195 (\$195 x 1 unit)
- b.) Public and private parcels that provide access to the lakes are assessed \$390 (\$195 x 2 units)
- c.) Parcels zoned as "Open Space Farm and Agriculture" are assessed \$390 (\$195 x 2 units)
- d.) Commercial parcels are assessed \$975 (\$195 x 5 units)
- e.) Public boat launches are assessed \$3,900 (\$195 x 20 units)
- f.) Beaver Lake parcels, except WDFW are assessed \$0.

Mike Janicki proposed that he be assessed for the number of zoned lots, not necessarily the number of parcels. This would result in Mike Janicki (Cultus View, LLC) being assessed an additional 14 units for parcel #P23290. Furthermore, the advisory committee formally determined that Beaver Lake parcels, with the exception of public boat launches and public access, will be assessed \$0. In addition, the advisory committee determined that parcel #P23382 (Phillip Delnagro) should be designated commercial. It was also determined that Skagit County Parks Department should also be assessed for one commercial parcel.

Review Agenda for June 14th Public Meeting:

Michael See presented a Power Point outline and agenda for the June 14th public meeting. Mike Janicki along with additional advisory committee members will assist in the presentation of the slide show. The meeting will be held at the Clear Lake Covenant Church at 6:30 p.m. The purpose of this meeting will be to provide an overview of the final draft IVAMP and present the recommended treatment strategies. A public vote to support the recommended strategies will occur on July 12th, 6:30 p.m., at the Clear Lake Covenant Church.

Questions and Items Not on the Agenda:

Ron Walt expressed his concern that he was not notified of the May 18th meeting in which the final draft IVAMP was approved by the committee. Ron informed the committee that he was disappointed to miss the speaker from WDFW and that his comments to the plan were not seriously reviewed. Mike Janicki informed Ron that his concerns would be addressed at the public meeting and Michael See stated that the draft comments would be included in the final IAVMP appendices. In addition, Susan Swetman suggested that the advisory committee look at the possibility of designating water skiing hours. Michael See stated that he would look into this process and determine if it falls within the scope of a lake management district.

The meeting adjourned at 4:10 p.m.



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Clear & Beaver Lakes IAVMP Development Project Public Meeting #1

November 3, 2005

6:00p.m.

Clear Lake Covenant Church

Agenda

- 1) Welcome
 - a) Purpose of this meeting: introduce the community led effort to control invasive aquatic plants.
 - b) Clarify Skagit County's role: facilitator and technical support.
 - c) Introduce Advisory Committee.

- 2) Clear & Beaver Lakes Integrated Aquatic Vegetation Management Plan (IAVMP) – Stephanie Woolett, Skagit County Water Resources Technician.
 - a) Aquatic Plant Management – What is an IAVMP?
 - b) The Watershed
 - c) Invasive Aquatic Plants
 - i.) Eurasian milfoil (Clear & Beaver Lakes)
 - ii.) Fragrant water lily (Clear & Beaver Lakes)
 - iii.) Brazilian elodea (Beaver Lake)
 - d) Management Goals
 - e) Control Options
 - i.) Physical
 - ii.) Biological
 - iii.) Chemical
 - f) The Road Ahead – Completing & Implementing the IAVMP

- 3) Aquatic Plant Management: Lakes Erie & Campbell – Marsha Flowers, LMD #3 Advisory Committee Chairperson.

- 4) Questions/Comments/Discussion



SKAGIT COUNTY PUBLIC WORKS DEPARTMENT

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Clear and Beaver Lakes Public Meeting

Thursday, November 3, 2005
6:00 p.m.
Clear Lake Covenant Church, WA

Minutes

Attendees: Clear and Beaver Lake community members, Clear and Beaver Lakes Advisory Board, Stephanie Woolett, Ric Boge, and Meghan MacMullen.

The meeting commenced at 6:05 p.m. in the Clear Lake Covenant Church. The purpose of the meeting was to introduce the community led effort to control invasive and aquatic plants in Clear and Beaver Lakes.

Lee Johnson, a member of the Clear and Beaver Lakes Advisory Board, began the meeting by providing a brief history of the aquatic plant management efforts at Clear & Beaver Lakes. He explained that he sought assistance from the County to remove the invasive aquatic plant Eurasian milfoil to improve the quality of Clear Lake. Commissioner Ted Anderson recognized his concerns and directed him to work with Stephanie Woolett, the Skagit County Lake Management Program coordinator.

Woolett began her presentation by clarifying her role in the program, as being the main facilitator and provider of technical support for the Clear & Beaver Lake community. Following a brief project history, she delivered a presentation using PowerPoint to provide an overview of the local watershed and the pros and cons of managing the plant life within it. For clarification, she explained that the initial efforts began with goal of controlling invasive aquatic plants at Clear Lake; however, the hydrological connectivity of Clear & Beaver Lakes necessitates the inclusion of Beaver Lake in order to achieve success at Clear Lake.

She continued by explaining that an Integrated Aquatic Vegetation Management Plan (IAVMP) is currently being developed. Its purpose is to guide the process of identifying and treating invasive aquatic plants to preserve beneficial uses of the lakes. Woolett shared pictures and described the three invasive aquatic plants observed in Clear and Beaver Lakes to familiarize the community with the problems associated with them. Eurasian milfoil and Brazilian elodea are class "B" plants on the state noxious weed list. Control for these species in areas that already have abundant infestations control programs are preferred to contain the infestation. Fragrant water lily is a class "C" noxious weed. Although control is encouraged for this classification of noxious weed, it is not mandated because this species is so widespread that eradication is not feasible.

Determining an integrated control strategy is one of the most important elements of the IAVMP. This element of the plan provides an outline of the best control option(s) and may include no action or a combination of physical, mechanical, chemical and biological methods. Each method has benefits and drawbacks. Woolett explained that these will be discussed in detail at the next public meeting, which will be scheduled to occur in early January of 2006. In this process it is important to recognize that all

stakeholders may have a different vision. While some community members may prefer to leave their lake as is, others may prefer restoration to improve water quality, aesthetic beauty, and recreation opportunities. Whatever the goals, the community should construct them together. It is also imperative that the IAVMP remain flexible, because each year can bring new changes.

Stephanie concluded her presentation by outlining ways that community members can stay involved in the IAVMP development project and she emphasized the importance of staying in contact with the Advisory Committee. Finally, handouts were provided to community members to write down comments regarding the IAVMP development project. These can be mailed to Stephanie for inclusion in the IAVMP.

A brief summary of questions and comments regarding the presentation are provided below:

- One citizen inquired about the timeline of the IAVMP. Woolett explained the process could take up to June 2006. Once the plan is completed, it will be reviewed for the Department of Ecology for the State's approval, then adopted by the Board of Skagit County Commissioners. Implementation of plan is contingent upon a positive vote of the community to form a Lake Management District (LMD). A LMD is a self-voluntary taxing district that will provide the primary financing mechanism for aquatic plant control at the lakes. Additional funding for the IVAMP will be sought through state grant Applications.
- Ron Walt, a Beaver Lake resident, raised the point that implementing an aquatic plant control strategy would need to be paid for by the community. Members should consider that not all lakeside property owners enjoy lake access, as is the case with Beaver Lake. In the event a LMD is formed, homeowners would be subject to penalties for not paying the tax on time, such as a lien. Stephanie acknowledged the concern and indicated that these are considerations that the community should be mindful of when determining whether or not to support LMD formation.
- One resident from Beaver Lake inquired about the lake's ownership & stated that Beaver Lake residents are not in agreement that plants should be managed. He expressed his belief that the lake is privately owned and that, according to a lawsuit brought forward in the early 1960's, aquatic plant management not permissible. Stephanie indicated that all surface waters are owned by the state and that she will look into the lawsuit and possibly seek a legal opinion to address his concerns regarding the legality of pursuing aquatic plant management.
- Another resident questioned the length of time it takes for an infestation to occur. Stephanie replied that infestations of Eurasian watermilfoil and Brazilian elodea can be very rapid, possibly occurring within one growing season.

Marsha Flowers, the Advisory Committee chairperson for Lake Management District #3, spoke about the aquatic plant management efforts undertaken by the lakeside community at Lakes Erie and Campbell. The purpose of this presentation was to provide the audience with the opportunity to hear from someone who has been personally involved in lake management in her own community. She explained that like Clear and Beaver Lakes, Lakes Erie and Campbell are hydrologically connected by a small stream that is a conduit for plant fragment transport between the lakes. The lake community developed an IAVMP and implemented a treatment strategy that included herbicide treatments to remove the plants, as well as grass carp stocking to maintain a plant community that balances benefits to fish, wildlife, and recreation.

Marsha mentioned that prior to initiating treatment strategy to control aquatic plants, both lakes had complete plant coverage. Since the initial treatment, Lake Campbell had a 35-acre re-infestation of Eurasian milfoil; however, a spot treatment was applied earlier this summer and today, 99% of the milfoil is gone. Occasional spot treatments for fragrant water lilies are conducted to facilitate access in impaired areas. The success of aquatic plant management efforts at Lakes Erie and Campbell has been the

community's willingness to stay involved. Volunteers hand out educational brochures, clean the fish screens, and hand-remove early infestations of weeds when observed.

To conclude the meeting, Stephanie introduced the Clear and Beaver Lakes Advisory Board members to community members.

The meeting adjourned at 7:25 p.m.

A brief summary of questions and comments regarding the presentation are provided below:

- One citizen inquired about the timeline of the IAVMP. Another explained the process could take up to four years. Once the plan is completed, it will be reviewed for the Department of Ecology for the State's approval. Then adopted by the Board of Strait County Commissioners. Implementation of plan is contingent upon a positive vote of the community to form a Lake Management District (LMD). A LMD is a self-governing taxing district that will provide the primary financing mechanism for aquatic plant control in the lake. Additional funding for the IAVMP will be sought through state grant applications.

- Ron Wall, a Beaver Lake resident, raised the point that implementing an aquatic plant control strategy would need to be paid for by the community. Members should consider that not all lake-side property owners enjoy lake access, as is the case with Beaver Lake. In the event a LMD is formed, homeowners would be subject to penalties for not paying the tax on time, such as a lien. Stephanie acknowledged the concern and indicated that there are considerations that the community should be mindful of when determining whether or not to support LMD formation.

- One resident from Beaver Lake inquired about the lake's ownership & stated that Beaver Lake residents are not in agreement that plants should be managed. The expert had believed that the lake is privately owned and that, according to a lawsuit brought forward in the early 1980's, aquatic plant management not possible. Stephanie indicated that all surface waters are owned by the state and that she will look into the lawsuit and possibly seek a legal opinion to address the concerns regarding the legitimacy of pursuing aquatic plant management.

- Another resident questioned the length of time it takes for an infestation to occur. Stephanie explained that infestation of Eurasian watermilfoil and fountain species can be very rapid, possibly occurring within one growing season.

Stephanie thanked the Advisory Committee chairperson for Lake Management District #7, spoke about the aquatic plant management efforts undertaken by the lake-side community at Lakes Erie and Campbell. The purpose of this presentation was to provide the audience with the opportunity to hear from someone who has been personally involved in lake management in her own community. She explained that Clear and Beaver Lakes, Lake Erie and Campbell are hydrologically connected by a small stream that is a conduit for plant fragment transport between the lakes. The lake community developed an IAVMP and implemented a treatment strategy that included herbicide treatments to remove the plants, as well as grass carp stocking to maintain a plant community that balances benefits to fish, wildlife, and recreation.

Stephanie mentioned that prior to initiating treatment strategy to control aquatic plants, both lakes had complete plant coverage. Since the initial treatment, Lake Campbell had a 33-acre re-infestation of Eurasian watermilfoil, however, a spot treatment was applied earlier this summer and today, 90% of the milfoil is gone. Grass carp treatment for fountain water lilies was conducted to facilitate access to impacted areas. The success of aquatic plant management efforts at Lakes Erie and Campbell has been the



SKAGIT COUNTY PUBLIC WORKS DEPARTMENT

1800 Continental Place, Mount Vernon, WA 98273-5625
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Clear & Beaver Lakes IAVMP Development Project Public Meeting #2

February 8, 2006

6:30p.m.

Clear Lake Covenant Church

Agenda

- 1) Welcome
 - a) Purpose of this meeting: present the available control alternatives for invasive aquatic plants.
 - b) Solicit community feedback regarding proposed eradication and control strategies.

- 2) Clear & Beaver Lakes Integrated Aquatic Vegetation Management Plan (IAVMP) – Stephanie Woollett, Skagit County Water Resources Technician.
 - a) Review the goals of aquatic plant management and the IAVMP
 - b) Benefits of Aquatic Plant Management
 - c) Survey Results
 - d) Control Alternatives
 - i.) No Action
 - ii.) Preventative
 - iii.) Chemical
 - iv.) Manual
 - v.) Mechanical
 - vi.) Biological
 - e.) Eradication/Control Strategy
 - i.) Eurasian watermilfoil
 - ii.) Brazilian elodea
 - iii.) Fragrant water lily
 - f.) Future of the Project
 - i.) Draft IAVMP
 - ii.) Finance the Plan's Implementation

- 3) Questions/Comments/Discussion



SKAGIT COUNTY PUBLIC WORKS DEPARTMENT

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Clear and Beaver Lakes Public Meeting

Wednesday, February 8, 2006
6:30 p.m.
Clear Lake Covenant Church, WA

Minutes

Attendees: Clear and Beaver Lake community members, Clear and Beaver Lakes Advisory Board, Stephanie Woollett, Ric Boge, Chris Kowitz, and Meghan MacMullen.

The meeting commenced at 6:33 p.m. at the Clear Lake Covenant Church. The purpose of the meeting was to introduce the treatment methods for the community led effort to control invasive aquatic plants in Clear and Beaver Lakes and to solicit community feedback regarding the available technologies and preferred control methods. This information will be used in the development of an integrated control strategy.

Stephanie Woollett provided a PowerPoint presentation to illustrate the advantages and disadvantages of the various control options available to help the community meet their goal of eradicating Eurasian watermilfoil and Brazilian elodea and controlling fragrant water lily. These included chemical, manual/mechanical, biological, preventative, and no action alternatives. Toward the end of the presentation, Stephanie reported that using the herbicide Sonar®, with the active ingredient fluridone, would be the best choice for eradicating Eurasian watermilfoil because of its high success rate seen in Pacific Northwest lakes. In addition, she indicated that hand removal of Brazilian elodea at Beaver Lake will be implemented with grant money received from the Department of Ecology's Aquatic Weed Management Fund. The County will provide the matching funds for the grant. Finally, Stephanie recommended that the community develop a lakescape plan for fragrant water lily control. This would involve removing the lilies in high use areas and clearing pathways through areas that receive less use. By avoiding complete removal of the lilies, the community will reduce the risk of releasing peat islands made up of the root masses and decomposing plant matter from the lilies.

Feedback and questions raised during the presentation are outlined below:

Question: After a treatment is done, will the native plants have to be replanted in the area?

Answer: Typically the native plants will revegetate the area; however, lakes that have been infested for a long time may not have a strong or diverse seed bank. In most lakes, the native species will repopulate the lake but it can take time for the plants to become established. The composition and rate of succeeding native plant communities will not be known until after the treatment.

Question: Was another invasive species discovered at Beaver Lake?

Answer: Yes, Brazilian elodea was discovered during aquatic vegetation surveys conducted this summer. It is a pioneering infestation that is limited to a small cove along the northwest shore of the lake.

Question: How did Brazilian elodea come to be in Beaver Lake?

Answer: Typically, invasive species are introduced when people empty aquariums into lakes, or the plants are spread when plant fragments are transported between lakes by boats. It was also suggested that the plant was introduced when a helicopter was taking water from the lake to fight a fire on Cultus Mountain a couple years ago. Prior to taking water from Beaver Lake, the helicopter

gathered water from Big Lake, which has a large infestation of Brazilian elodea. Stephanie indicated that, if that was the case, then it is possible that plant fragments hitch-hiked on the equipment used to transport the water. Another community member indicated that water was also taken from Clear Lake. Stephanie reported that no Brazilian elodea was observed at Clear Lake during the summer surveys.

Comment: A community member indicated that people have different ideas of which plants are good and bad. The management goals and control strategies that are preferred at Clear Lake may not be compatible with the goals or preferences of the Beaver Lake community. Stephanie acknowledged that this is the case; however, the management goals stated in the IAVMP take the differences between the two lake communities into account.

Comment: In response to the comment about Beaver Lake's management objectives, a member of the Clear Lake community stated that the "health" of both lakes is important because they are connected.

Response: Stephanie reported that Beaver Lake was included in the planning process because the lakes are hydrologically connected and the success of one management efforts at Clear Lake depends on the success at eradicating Eurasian milfoil and Brazilian elodea at Beaver Lake. This is true because the lakes are located in the Skagit River floodplain. During flood events, water from the Skagit River backs up in the Nookachamps system and can cause Beaver Lake water to backflow into Clear Lake.

Question: A resident questioned if the proposed strategy of treating lilies with glyphosate would completely remove the lilies in the lakes.

Answer: Stephanie responded that complete removal of the lilies at Clear Lake could result in the creation of peat islands that are composed of the root masses, decomposing plant matter, and sediments. These floating islands could pose hazards to boaters and swimmers, so eradication is not a preferred method.

Question: Has there been a survey to determine the amount of nitrogen in Clear Lake?

Answer: The USGS conducted a water quality survey to determine the trophic status of Clear Lake in the 1970's. Nitrogen levels were measured; however, no water quality studies have been conducted to date. At that time, the USGS reported that Clear Lake was an oligo-mesotrophic lake, which means that it was a relatively young lake at that time. A resident commented that it used to be pristine.

Question: How much would another survey cost today?

Answer: The cost of a survey would depend upon the purpose of the survey. If divers are required, then the cost increases. The surveys conducted this summer cost around \$13,000.

Question: Does the County test the water to ensure its safety for swimmers?

Answer: Stephanie reported that the County Health Department does that, but they are looking at the level of pathogens, like fecal coliform. Another concern is toxic algae called cyanobacteria. This can cause mild to severe health affects in people and small animals. Currently, cyanobacteria monitoring is not conducted routinely; however, if observed in large quantities the water should be tested. It looks like a slick of paint floating on the water's surface.

Comment: Algae blooms are red or green and happen near the shore.

Response: Generally this is true; however, cyanobacteria looks like a layer of paint on the surface of the water.

Question: Someone asked about the balance between algae blooms and aquatic plant growth.

Answer: Stephanie explained that nutrients like phosphorus and nitrogen fuel aquatic plant and algae growth. There is a balance between the level of aquatic plants and of algae. If too many plants

are removed, it is not uncommon to see an increase in algae growth. When treating the plants, this is something to keep in mind.

Question: A community member asked what glyphosate breaks down after it is applied.

Answer: Stephanie indicated that she was unaware of the chemical breakdown of the herbicide and would have to consult with someone who is an expert in application or the manufacturer of the product.

Question: What is the cost of Glyphosate chemical and application?

Answer: Treatments using glyphosate average between \$250 and \$350 per treated acre.

Question: There was a question about water rights and water ownership at the lakes.

Answer: Stephanie reported that Alice Case and Georgia Pacific were the only recorded water rights for the area and both are at Clear Lake. In response to some confusion about water ownership, Stephanie indicated that water is generally owned by the State and that water rights are required in order to use water for domestic, municipal, or agricultural purposes. Individuals may own shorelands in non-navigable waterways; however, water law is complex and a more specific answer could not be provided at that time.

Question: What is the drinking restriction after Glyphosate has been used?

Answer: Glyphosate is considered low in toxicity. There are no water use restrictions required if applied according to the specifications provided on the label.

Question: How much does 2, 4-D treatment cost?

Answer: Treatment costs approximately \$275 - \$700 per acre.

Question: Why did the Lake Campbell district choose 2,4-D instead of Sonar to control aquatic plants?

Answer: Lake Campbell chose to use 2,4-D because that herbicide was more cost effective than Sonar.

Question: What is the chemical in Sonar?

Answer: Fluridone is the active ingredient used in Sonar.

Question: Does Sonar affect the native plants?

Answer: Sonar can be used to selectively remove Eurasian milfoil; however, it has a minimal effect on pondweeds and other native plant species. Sonar is not an effective treatment option for Brazilian elodea.

Question: What is the exposure time or concentration of Sonar in the water?

Answer: Sonar must be applied several times during the growing season in order to maintain a low, consistent concentration. It is a slow acting herbicide taking from 6 to 12 weeks before the plants begin to die off. The Lake McMurray community conducted a treatment using Sonar and had tremendous success. Since their initial treatment, milfoil has not been observed at Lake McMurray.

Question: How much does Sonar cost?

Answer: Sonar is a more expensive herbicide and costs between \$900 and \$1,100 per treated acre.

Comment: A lakeside resident commented that since a consistent concentration of Sonar must be maintained, it is possible that the herbicide will drift into the middle of the lake and be less effective.

Response: Stephanie confirmed that maintaining the low, consistent concentration of Sonar is vital to the effectiveness for this herbicide. Although the residence time for Clear & Beaver Lakes is unknown, it appears that the rate of flow leaving Clear Lake is seasonal and slow moving. Due to the shallow nature of the lakes and seasonal drainage, it is possible that maintaining low concentrations of the chemical will not prove problematic. Stephanie reported that according to

one quote provide by an applicator, it would cost approximately \$33k per lake for the first year's treatment.

Question: What is the water use restriction for Triclopyr?

Answer: Swimming is restricted for twelve hours; low toxicity.

Question: When Diquat breaks down, what does it become?

Answer: Stephanie indicated that she did not know exactly what substances the ingredients in Diquat break down into.

Question: Someone asked if the bottom barrier installed at the swimming area owned and operated by the County Parks & Recreation department was effective.

Answer: Stephanie reported that Parks & Recreation had to remove the bottom barrier because they had problems with keeping it anchored. In lakes with large irregular bottoms or lots of coarse woody debris, bottom barriers would not be an optimal control alternative.

Question: How effective was the use of a harvester at Clear Lake?

Answer: The harvester created a temporary solution for Clear Lake. One of the cons of having a harvester was that all of the plant-life had to be hauled away by the owners. This was a difficult task to complete.

Question: What is the cost of using a harvester?

Answer: Stephanie indicated that employing the use of a harvester would involve large capital costs that include an hourly rate for someone to conduct the harvesting, as well as the cost for the machinery and associated maintenance.

Question: How much money is remaining in the fund for the Clear and Beaver Lakes Integrated Aquatic Vegetation Management Plan (IVAMP)?

Answer: The project is near completion and the funds allocated for the project are nearly exhausted.

Question: A member of the audience raised a question about the grant received by the Department of Ecology to treat Brazilian elodea.

Answer: Stephanie indicated that a grant was received and that Ecology is providing just under \$38k for a project to eradicate Brazilian elodea. The County will be funding the match for the grant. The primary method used to achieve this includes diver surveys and hand-pulling; however, spot treatments may be considered as a contingency plan in the future. Hand removal is the preferred alternative to eradicate Brazilian elodea due to the presence of a sensitive plant species located near the infestation. Surveys will be conducted twice a year for four years.

Question: Does Sonar eradicate Brazilian elodea?

Answer: No. Stephanie said that the literature states that Sonar is not an effective agent against Brazilian elodea.

Question: Are lilies difficult to control by hand?

Answer: If the goal is to remove them by the roots, then they are difficult to remove manually. Use of cutters and weed rakes might be effective for localized control around docks and obstructions; however, care must be taken to prevent seeds from disbursing.

Question: Someone inquired about the length of time it takes for lilies to proliferate to levels that impede beneficial uses.

Answer: Stephanie indicated that fragrant water lily does not necessarily grow at the same rate that Eurasian milfoil and Brazilian elodea do. Those two species can take over a lake within one growing season. Fragrant water lily reproduces by seeds and will probably spread at a slower rate.

- Question: Can homeowners apply herbicides themselves?
Answer: Stephanie indicated that in order to apply herbicides to waters of the State, the applicator must be licensed through the Department of Agriculture, and he or she must have a permit for the herbicide application from the Department of Ecology.
- Question: How much is the cost for Glyphosate treatments?
Answer: The total cost will depend on the number of acres treated; however, the chemical costs approximately \$250 to \$350 per treated acre.
- Question: In the event the community votes to form a Lake Management District, would County support still be required?
Answer: Stephanie reported that LMD formation requires the County's involvement to collect the assessments and manage the projects; however, LMD formation is determined solely by the community. If the community is not able to garner enough support to form a LMD, they can consider forming a private lake association to collect dues and implement portions of the IAVMP. This alternative would not require County involvement. The homeowners living on Lake Cavanaugh have elected to go this route; however, they are not currently in the business of controlling aquatic plants. Their group is primarily concerned with water quality and other lake issues.
- Question: If a Lake Management District were formed, could it receive an interest free loan from the County?
Answer: The district, if formed, might be eligible for a loan from the County. Other districts have received interest free loans to conduct initial aquatic plant treatments.
- Question: If the community decides to do nothing about the aquatic plant life in Clear and Beaver Lakes, will the lakes shrink over time?
Answer: Stephanie explained that nutrient loading and noxious weed growth can increase the rate at which a lake ages. The tendency of lakes is to become more nutrient rich over time and eventually become marsh like. Human inputs of nutrients can increase this process, which is called eutrophication.

Following the presentation and question and answer period, Stephanie requested feedback from the community members present regarding the control treatments that were introduced. Several responses from the community members present expressed preference for use of Glyphosate and Sonar as the primary treatment methods. Eradication using manual or mechanical methods was not preferred due to the high density and extent of the invasive aquatic plants.

There was some discussion regarding Lake Management District formation process. Many people wanted to know how their properties would be assessed. Woolett explained the assessment of properties would be determined by the community's Advisory Committee. Ric Boge spent a few minutes describing the process that took place at Lakes Erie and Campbell. Finally, Stephanie and Ric addressed concerns about the voting procedures that will ultimately allow the community to decide whether or not a LMD will be formed for Clear & Beaver Lakes.

Woolett reminded the group to provide written comments and feedback on the forms attached to the agenda. Written comments will be included in the IAVMP as an Appendix and any comments received would be considered by the Advisory Committee during the process of determining the preferred action plan. She closed by restating that she aimed to have the draft of the IAVMP completed by February 24th.

The meeting adjourned at 8:14 p.m.



SKAGIT COUNTY PUBLIC WORKS DEPARTMENT

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Clear & Beaver Lakes IAVMP Development Project Public Meeting #3

June 14, 2006

6:30 p.m.

Clear Lake Covenant Church

Agenda

1) Welcome

- a) Purpose of this meeting: An opportunity for the Advisory Committee to provide an overview of the final draft IAVMP to the community and answer questions.
- b) Clarify Skagit County's role: facilitator and technical support.
- c) Introduce Advisory Committee & County Staff

2) Clear & Beaver Lakes Integrated Aquatic Vegetation Management Plan (IAVMP) – Michael See, Skagit County Water Resources Technician

1. Slide Show Presentation

- Michael See
 - The Watershed
 - What is an IAVMP
 - Problem Statement
 - Why Manage Aquatic Plants?
 - Management Goals
 - Management Goals, cont.
- Mike Janicki (Committee Chair)
 - Integrated Treatment Strategy
 - Clear lake- fragrant water lilies
 - Clear lake- milfoil
 - Beaver lake- milfoil and elodea
 - Estimated Cost
 - Estimated Cost, cont.
 - Where do we go from here?
 - How to stay involved
- Ric Boge
 - LMD Formation Overview

3) Announce Public Meeting on July 12th at 6:30 p.m.

4) Questions/Comments/Discussion



SKAGIT COUNTY PUBLIC WORKS DEPARTMENT

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Clear & Beaver Lakes Advisory Committee Public Meeting #3 Meeting Minutes June 14, 2006; 6:30 p.m.

AC Members Present: Susan Swetman, Mike Janicki, Burl Fox, Stan Buchanan, George Bellos, Gretchen Hunter, Lee Johnson, Rita Johnson, Stephen Burgess, Lauren Woodmansee (Alternate)

Community Members Present: Randy Lorg, Stephanie Janicki, Mark Nilson, Two community members attended who did not sign in.

County Staff Present: Michael See, *Water Resources Technician*
Ric Boge, *Surface Water Manager*

Meeting Goals:

The Clear & Beaver Lakes Advisory Committee meeting commenced at 6:30 p.m. at the Clear Lake Covenant Church. The purpose of this meeting was to provide an opportunity for the Advisory Committee to give an overview of the final draft IAVMP to the community and answer questions.

Presentation:

Michael See began the presentation by introducing himself and other county staff and then asking advisory committee members to introduce themselves. Michael then began the presentation of a Power Point slide show (see attachment). Mike Janicki continued to present the second half of the presentation. The slide show provided community members with an overview of the final draft IAVMP and the options recommended by the advisory committee. Mike Janicki mentioned that he is willing to pay for an additional 14 units on a parcel that he plans on developing. This would help in reducing the cost per unit if a district is formed. Ric Boge supports this idea; however, he recommended to most efficiently and reliably implement this, 14 new parcel numbers should be acquired by the landowners prior to finalizing the tax roll. Michael See will investigate this process with the County Assessor's Office. Ric Boge ended the presentation by giving a general overview of the Lake Management District Formation Process as it is outlined in RCW 36.61.

There were several questions from the community members relating to the plan. The first question was: Has Fish and Wildlife expressed concern about the plan? Michael See answered this by informing the group that Washington Department of Fish and Wildlife (WDFW) has been notified and sent a copy of the plan. Furthermore, Mark Downen from WDFW gave a presentation at a recent Advisory Committee meeting in which he gave support for our recommended treatment strategy. The second question was: How will the votes for an LMD be rated. Ric Boge answered this question by explaining that the weight of each landowners vote is based on their proposed assessment amount.



SKAGIT COUNTY PUBLIC WORKS DEPARTMENT

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July 12, 2006

6:30 p.m.

Clear Lake Covenant Church

Public Meeting #4

Agenda

- **Welcome**

Purpose of this meeting: To hold a community vote on the Final Draft Integrated Aquatic Vegetation Management Plan for Clear & Beaver Lakes.

Clarify Skagit County's role: facilitator and technical support.

Introduce Advisory Committee & County Staff

- **Brief Overview of the IAVMP** – Michael See & Mike Janicki

- Michael See and Mike Janicki will present a brief overview of the IAVMP using the Power Point presentation
- Explain this is not a vote to implement the plan, but only to show community support for the strategy to control aquatic weeds
- Answer questions and concerns

- **Where do we go from here?**

- The LMD process and our next step (Mike See)
 - Advisory Committee Meeting to draft a Resolution of Intention and further refine the funding scenario
 - A **Resolution of Intention** will include the following:
 - The nature of the lake improvement activities
 - The amount of money to be raised by assessments
 - Whether the assessments will be annually collected
 - The number of years proposed
 - The proposed boundaries
 - The proposed district number
 - A date and time for a public hearing
 - 30-90 days after the adoption of the resolution
 - **Resolution to Send out Ballot**

- **Hold Vote**

- Ask if the group would like to vote by show of hands or written ballot
- Conduct vote and/or collect ballots

- **Determine date of next Advisory Committee meeting**

- a. **July 26th?**

- **Goal:** Next meeting the Advisory Committee will further refine the funding scenario and draft a "Resolution of Intention".
 - a. I will draft a "Resolution of Intention"



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Clear & Beaver Lakes Advisory Committee Public Meeting #4 Meeting Minutes July 12, 2006; 6:30 p.m.

AC Members Present: Mike Janicki (Chair), Burl Fox, Stan Buchanan, George Bellos, Gretchen Hunter, Stephen Burgess, Ron Walt, Brian Adams

Community Members Present: Wilfrid Dow, Robert Dow, Kathryn Tewalt, Ron Davis, Anita Davis, Mark Nilson, Randy Long, Kellee Long, Harriet Koscho.

County Staff Present: Michael See, *Water Resources Technician*
Rick Haley, *Water Quality Analyst*

Meeting Goals:

The Clear & Beaver Lakes Advisory Committee meeting commenced at 6:35 p.m. at the Clear Lake Covenant Church. The purpose of this meeting was to provide an opportunity for the Advisory Committee to give an overview of the final draft IAVMP, answer questions, and hold a community vote of support for the plan.

Presentation:

Michael See began the presentation by introducing himself and asking advisory committee members to introduce themselves. Michael then began the presentation of a Power Point slide show (see attachment) which Mike Janicki continued. The slide show provided community members with an overview of the final draft IAVMP and the options recommended by the advisory committee.

There was one question from the community members relating to the plan. The question was: Who will decide what lakefront parcels are treated for white water lily? Michael See answered this by informing the group that, if a LMD is formed, the Clear and Beaver Lake Advisory Committee will make a recommendation for treatment based on input from the community. Mike Janicki reassured the community member that his concerns will be addressed when a LMD is formed and it is time for treatment.

Vote:

With no further questions from the community, it was moved that a vote of people in attendance be performed to reflect the community's level of support for the Integrated Aquatic Vegetation Management Plan and its proposed treatment strategy. Written ballots were handed out to everyone in attendance of the meeting. When counted, all 16 ballots turned in voted to support the plan.

Next Meeting:

Michael See informed the group that another advisory committee meeting will be held on July 26th, 3:00 p.m., at the Skagit County Public Works Office in Mt. Vernon. The purpose of this meeting will be to further revise the draft funding scenario and review a draft Resolution of Intention. Submission of this resolution will mark the beginning of the legal process of forming a Lake Management District as specified in RCW 36.61. As noted in the RCW, A **Resolution of Intention** will include the following:

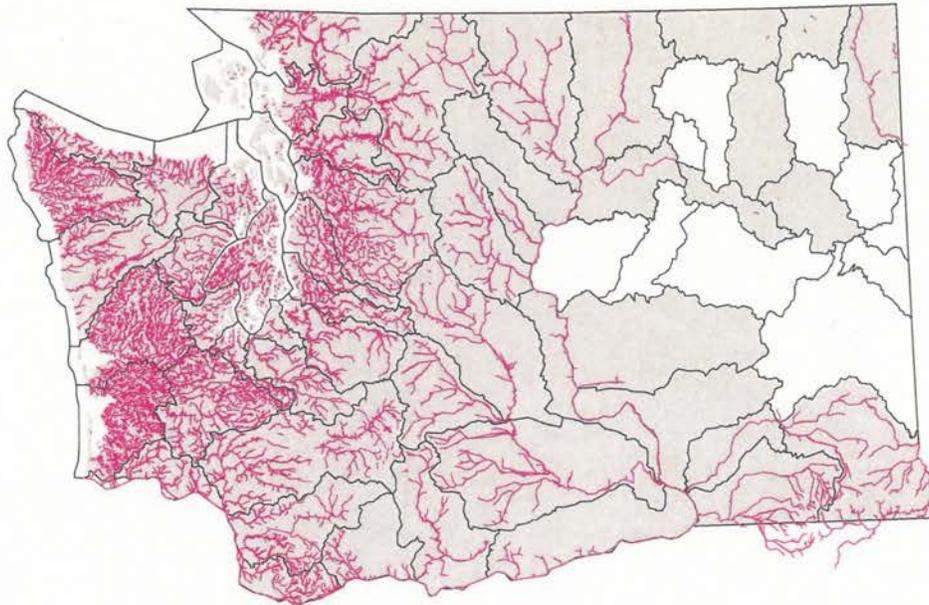
- The nature of the lake improvement activities
- The amount of money to be raised by assessments
- Whether the assessments will be annually collected
- The number of years proposed
- The proposed boundaries
- The proposed district number
- A date and time for a County Commissioner attended public hearing
 - 30-90 days after the adoption of the resolution

Advisory committee members should come to this meeting with any corrections, deletion, or changes to the draft funding scenario.

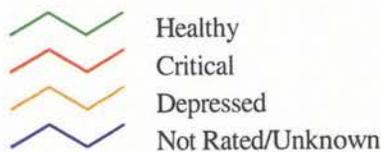
The meeting adjourned at 7:30 p.m.

Appendix I: Salmonid Stock Inventory

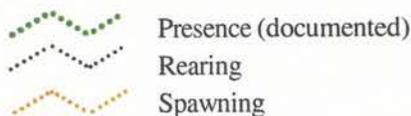
Salmonid Stock Inventory (SaSI) and Adadromous Fish Distribution Information Page



Adadromous Fish Stock Status:



Adadromous Fish Distribution Use Type:



Species CODE - Name:	COHO - Coho
CHFA - Fall Chinook	PINK - Pink
CHSP - Spring Chinook	SOCK - Sockeye
CHSU - Summer Chinook	STSU - Summer Steelhead
CHMF - Fall Chum	STWI - Winter Steelhead
CHMS - Summer Chum	CCT - Coastal Cutthroat Trout
CHMW - Winter Chum	DBT - Bull Trout

Species Migration Barrier

Barrier codes are as follows: first letter is either an 'I' for impassable to all species or a 'P' for designating passable to at least one. The next two letters are defined as:

B - Beaver Dam	G - Gate	SS - Soil Slump
D - Dam	L - Log Jam	T - Temperature
C - Cascades	I - Insufficient Flow	U - Unknown
CU - Culvert	O - Ford	WD - Water Diversion
F - Falls	S - Screens	W - Wier

WDFW Anadromous Fish Data:
Salmonid Stock Status Inventory (SaSI) 2007, 1:24,000
Fish Distribution 2007, 1:24,000
Barriers 2005, 1:24,000
Facilities 2005, 1:24,000

Base Hydrography and stream names - Ecology 2000 1:100k
Water Resource Inventory Areas - ECOLOGY 2002 1:24K
County Boundaries - WDNR/ECOLOGY 2002 1:24K

Notes on SaSI WRIA Maps:

Each Salmonid species has it's own map based on WRIA area. Not all WRIA areas have mapped SaSI distribution data.

Barriers (to upstream migration) and Facilities are shown on these maps by species and barrier coding.

Salmonid Facility locations are shown by species.

Please refer to Washington Dept. of Fish & Wildlife (WDFW) website <http://wdfw.wa.gov/fish/sassi/intro.htm> for more information or visit <http://wdfw.wa.gov/mapping/salmonscape> to view on-line mapping service. Ecology does not distribute WDFW GIS data.

Endangered Species Act (ESA) listing status for each species is show in RED for each map. For more information on ESA see: <http://www.nwr.noaa.gov/> or <http://wdfw.wa.gov/hab/phspage.htm>

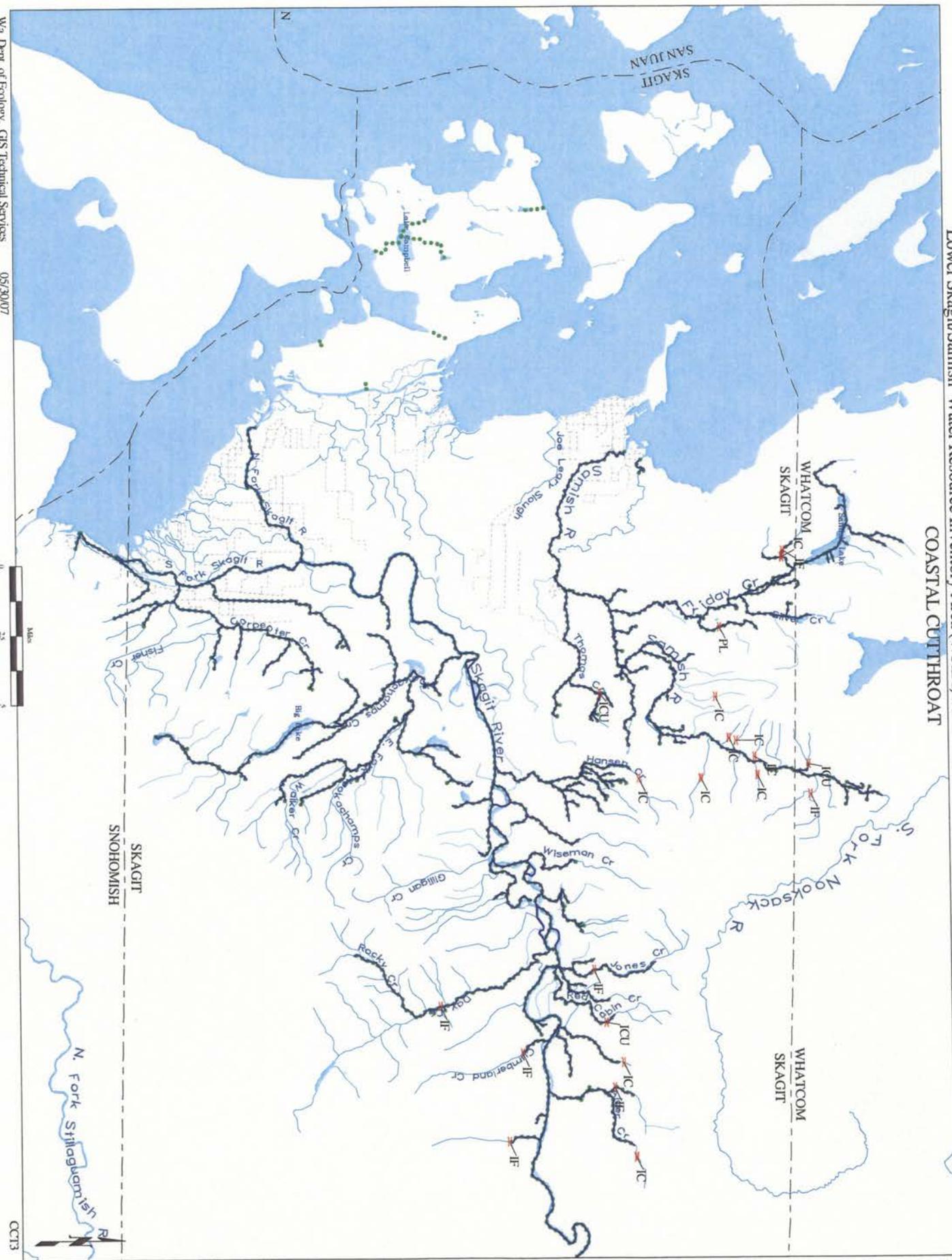


WASHINGTON STATE
DEPARTMENT OF
ECOLOGY

GIS Technical Services
05/30/07
species-info

Lower Skagit/Samish Water Resource Inventory Area (WRIA) #3 WDFW - Salmonid Stock Inventory

COASTAL CUTTHROAT



Lower Skagit/Samish Water Resource Inventory Area (WRIA) #3 WDFW - Salmonid Stock Inventory
CHUM SALMON

