

Aquatic Vegetation Management Plan

As required by the:

Department of Ecology Aquatic Plant and Algae Management General Permit



2020

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SECTION 1

Background

History

Consolidated Diking Improvement District Number 1 (CDID#1) is a special purpose district pursuant to Chapter 85.15 of the Revised Code of Washington, formed in 1923. Our mission is to "Protect life, property, and environment by providing comprehensive flood protection for the portions of the City of Longview, City of Kelso, and Cowlitz County that fall within our jurisdictional boundaries." We operate and maintain external flood protection levees and internal drainage ways to manage almost 12,000 acres in Cowlitz County. We are responsible for 19 miles of federal levee, and 35 miles of internal sloughs, ditches and drains – some natural, some improved and some man-made.

Use and Function of CDID#1 Ditches

CDID#1 drainage ways serve two purposes – they collect and convey stormwater to our pumping stations, and the provide storage for heavy rainfall events which can exceed our pumping capacity. Because so much of the stormwater we manage originates from outside the District, we can't always control the volume or velocity of stormwater in our ditches. Instead, we continuously strive to maintain and increase our ability to move water by keeping the ditches free of debris, removing vegetation, dredging excess sediment, and maintaining pump systems.

CDID #1 operates seven pump stations which represent a combined pumping capacity of roughly 700,000 gallons per minute. Our pump stations are located throughout Longview and are critical for removing stormwater and preventing flood. All of the water pumped out of the system eventually goes to the Columbia River.

Aquatic weeds severely impede the flow of water in the ditches, reduce storage volume, plug culverts, block trash racks, and can damage pumps. They also affect water quality, reduce dissolved oxygen levels, and promote habitat for mosquitos. To keep aquatic vegetation under control and ensure pumping operations are continuous and reliable, we use an integrated approach to keep aquatic vegetation under control. In addition to removal using mechanical means, submerged vegetation in some ditches is chemically treated.

The use of chemical products applied to aquatic nuisance plants, noxious weeds, quarantine-listed weeds, algae and phosphorous in fresh surface waters of the State of Washington is regulated by the Aquatic Plant and Algae Management General Permit (Permit) issued by the Washington State Department of Ecology. The Permit requires CDID#1 to submit annual reports, provide certain notifications, meet all applicable monitoring requirements and use applicators licensed in Washington State with an aquatic endorsement (WAC 16-228-1545 3(t)).

Types of Aquatic Vegetation

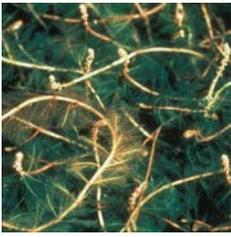
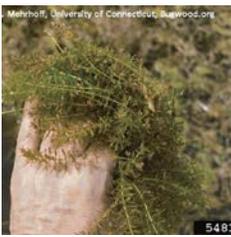
The general categories of aquatic plants that inhabit CDID#1 ditches are characterized as follows:

- Emergent macrophytes are rooted in the sediment and have stems submersed in water and plant tops extending into the air. Most emergent macrophytes are perennials, meaning part or all of the plant lives for more than one year. Emergent plants develop strong roots. Species can spread via seeds, expanding root systems, or expanding rhizome (underground stem) systems. Emergent macrophytes generally reside in the upper littoral zone, part of the shoreline that lies between the highest and lowest seasonal water levels.
- Free-floating macrophytes are not rooted in the sediment. They float on or just under the surface with their roots dangling in the water. These plants rely on nutrients in the water and can be controlled by decreasing the available nutrients. The presence of free-floating macrophytes in CDID#1 ditches has not been confirmed.
- Floating-leaved macrophytes are plants that are rooted in the sediment and have leaves that float. The floating leaves have a thick, waxy coating on top of the leaf, which can make the plant resilient to herbicides. These plants generally reside in the middle littoral zone, generally between three to nine feet deep. They spread via rhizomes and can exist with leaves submersed for a considerable time.
- Submersed macrophytes comprise a wide range of species that grow completely under the water, rooted in the sediment, with the tops of the plant below or at the water surface. Submersed plants can absorb nutrients from both the sediment and water. Plants in this group are comprised of 95% water and don't have a strong root system. They generally spread by breaking off after flowering. Drifting plant stems root into the sediment and create a new plant. Emergent and floating leaved plants tend to be confined to the water edge while submersed plants can extend deeper and farther out into deeper areas of the ditches, as long as there is sufficient light that photosynthesis can occur.

The plant species that can be found in CDID#1 ditches include but are not limited to:

- *Myriophyllum aquaticum* (parrotfeather milfoil)
- *Myriophyllum spicatum* (Eurasian milfoil)
- *Ludwigia hexapetala* (water primrose)
- *Ludwigia peploides* (floating primrose)
- *Hydrilla verticillate* (hydrilla)
- *Egeria densa* (Brazilian elodea)

Table 1. Summary of Aquatic Vegetation in CDID# 1 ditches

Type	Description	Photo
Parrot Feather Milfoil	An invasive aquatic perennial, herbaceous, rooted, submersed to emergent plant. Stems up to 5-feet long trail along the ground or water surface, becoming erect and leafy at the ends. Stems are stout and blue-green in color.	 A photograph showing a dense mat of Parrot Feather Milfoil floating on the surface of a body of water. The plant has small, bright green, feathery leaves.
Eurasian Milfoil	An invasive aquatic perennial, rhizomatous submersed to emergent plant. Slender stems up to 8-feet long with fine, soft herringbone leaves and wind pollinated flowers emerging above the water surface.	 A close-up photograph of Eurasian Milfoil, showing its characteristic herringbone-shaped leaves and thin, brownish stems.
Water Primrose	A creeping leafy perennial flowering plant that stands erect along the water edge but also forms long runners up to 16-feet that create large floating mats across the surface of the ditch. Distinctive yellow flower.	 A photograph of Water Primrose, showing a cluster of green leaves and a single bright yellow flower.
Floating Primrose	Dense, fast growing herbaceous perennial noxious weed with sprawling flowering stems up to 9-feet long that glow flat along the mud or float on the surface of the water. Bright yellow flowers, often confused with water primrose.	 A photograph of Floating Primrose, showing a cluster of green leaves and a single bright yellow flower.
Hydrilla	Submersed invasive winter hardy perennial. It roots to the bottom and can grow to the surface and form dense mats. Slender branched stems up to 25-feet long with small white flowers. Can grow in water inches deep, or more than 20 feet deep.	 A photograph of Hydrilla, showing a dense mat of green, branched stems floating on the surface of the water.
Brazilian Elodea	Submersed, dioecious, perennial plant with slender unbranched stems usually 1-2 feet long. Forms dense stands rooted in bottom sediment but can be found as free-floating mats. Often confused with hydrilla. White flowers up to 3/4-inch wide.	 A photograph of Brazilian Elodea, showing a dense mat of green, unbranched stems floating on the surface of the water.

SECTION 2

Physical Aquatic Plant Control Methods

A variety of methods for controlling the extent and density of aquatic vegetation are available. These methods can include mechanical removal, bottom barriers, mechanical harvesting, water level drawdown, and dredging. The methods employed by CDID#1 are discussed below.

MECHANICAL REMOVAL

Description of Technique

Excavating the vegetation by the roots: The entire plant including leaves, stem, and root crown, is removed and disposed of offsite. Equipment includes traditional excavation equipment (excavator or backhoe). In areas where the ditch is wide to reach the vegetation using our long-reach excavator, CDID#1 also uses an airboat to break root systems free from loose sediment and push weed pods to within reach of equipment staged along the ditch bank.

Raking the vegetation from the surface of the water body: The surface of the water is raked from trash racks and pump station forebays to remove any detached, floating vegetation. By removing only detached vegetation, no plants are pulled out by the roots and the sediment is not disturbed. Plants are raked into piles for offsite disposal.

Advantages and Disadvantages

The advantage of mechanical removal is it requires minimal capital investment and can be used in residential and commercial areas. It also removes the entire plant, minimizing the chance for re-growth. Raking free floating weeds does not disturb bottom sediment but excavation can entrain sediment into the water column. The disadvantages are removal is labor-intensive and aquatic vegetation can re-grow or colonize from plant fragments, requiring treatment on an ongoing basis. Containing all plant fragments during the removal process is virtually impossible and drifting fragments can cause the plants to colonize other areas of the ditch.

Long Term Effects and Impacts

No method will entirely remove aquatic vegetation from the ditches. The rate of reduction and the timeframe to achieve a desirable level of aquatic vegetation depends on several factors. These include, but are not limited to, the amount of vegetation currently present, the rate of colonization by drifting plant fragments, nutrient loading, temperature, and winter severity. Mechanical removal does reduce the impact of aquatic weeds on CDID#1 pumping operations, and is most applicable for short-term and small-scale control at trash racks and pump station forebays.

WATER LEVEL DRAWDOWN

Description of Technique

Water level drawdown involves lowering the water level to expose aquatic vegetation to ultraviolet light, freezing or desiccation. Water level drawdown has been successfully used by flood control and irrigation districts to minimize the extent of aquatic vegetation, especially in areas that experience little precipitation. Snow cover and rain help protect plants and thus counter the effectiveness of water-level drawdown. Drawdown is most commonly conducted during the winter months to take advantage of both drying and freezing of plants but winter drawdown is not possible for CDID#1 given the local climate, precipitation and need for stormwater conveyance and detention. Under winter drawdown conditions, frost can often "heave" the rhizomes out of the bottom sediment, which results in a thinning of dense stands of aquatic vegetation. Summertime drawdown can potentially aid the spread of emergent plants such as cattails along the ditch bank, and will allow more UV light to penetrate the water column to help thwart submersed plants. Water level drawdown requires a weir, outlet structure or pump station to control the level of water in the water body.

CDID#1 can raise/lower the weir on Ditch No. 5, and open/close the radial gate on Ditch No. 6 to manipulate water level. CDID#1 also controls water level using the Industrial Way Pump Station on Ditch No. 5, 48th Avenue Pump Station on Ditch No. 6, Main Pump Station on Ditch No. 10 and Reynolds Pump Station on Ditch No. 14.

Advantages and Disadvantages

This method has been effectively used to control water milfoil in other water bodies. Drawdown provides an opportunity to repair and improve culverts and other CDID#1 structures, and can allow loose sediments to consolidate. Water level drawdown has the added effects of oxidizing sediments and impacting resident sediment animal species. Finally, drawdown can be accomplished at minimal cost where a control structure is already in place. The disadvantages to drawdown are seasonal limitations. Winter drawdown is not possible due to the need for stormwater conveyance, detention capacity and flood control. Mild, wet summers may prevent heating and desiccating of exposed plant roots and rhizomes. And the public may object to the reduced aesthetics and possible odor from rotting plants.

Long Term Effects and Impacts

Water-level drawdown effects would most likely be short term, with plants re-propagating as soon as the water level is raised. The effect would only last as long as the water level was lowered.

SECTION 3

Chemical Aquatic Plant Control Methods

DIQUAT

Description of Technique

Diquat is commonly known by its trade names Reward®, Reglox®, Aquacide®, or Weedtrine-D®. It is a nonselective herbicide that destroys the vegetative part of submerged vegetation but does not harm the root systems. Diquat works well for spot treatment of submerged and floating vegetation, and filamentous algae.

Water treatments of diquat are generally applied by injecting it below the surface or by pouring it from the container while moving slowly over the intended area via boat. Floating weeds can be treated by applying the herbicide directly onto the intended foliage.

CDID#1 uses Diquat to control water primrose, elodea, milfoil and hydrilla.

Advantages and Disadvantages

Diquat works well for small, localized areas due to its fast-acting effectiveness.

A potential disadvantage is it only kills the vegetative part of the plant, and plants can re-propagate the following year. Additionally, turbidity interferes with the chemical's effectiveness because the chemical binds tightly to sediment. Its ability to bind to sediment means it may be persistent in the environment. Diquat is not selective and is known to work well for spot treatment.

Long-term Effects and Impacts

Health effects of diquat are not thought to be long lasting. Diquat is not known to bioaccumulate in fish and other aquatic life and degrades quickly from open water when applied properly. While diquat degrades relatively quickly from water and generally dissipates from the water column within 7 to 14 days, but can persist in the sediment for months. The effects of diquat on aquatic vegetation are relatively short term, and the treatment needs to be reapplied on an annual basis for consistent control.

FLURIDONE

Description of Technique

Fluridone is commonly known by its trade names, Sonar® and Avast!®. Fluridone is a slow acting, systemic, broad-spectrum herbicide used to control underwater plants such as milfoil. It can be applied to aquatic systems in pellet or liquid form. It is especially effective in CDID#1 ditches where water is calm with extended time for treatment and dosing, and in ditches which can be isolated to minimize dilution and increase contact time.

CDID#1 generally applies fluridone in pellet form physically broadcasted over the surface of the intended ditch area.

CDID#1 uses fluridone to control elodea, hydrilla and milfoil in large areas. It is not effective for spot treatments.

Advantages and Disadvantages

An advantage of fluridone is the amount and duration of control that can be achieved in one dose, especially in slowly moving water. This chemical can also be used to affect specific plants with numerous low concentration doses without substantially harming native aquatic species. The biggest disadvantage of fluridone is its limitation of only working well in areas larger than 10 acres. Another potential disadvantage is that fluridone is a slow-acting chemical, and it may take from 6 to 12 weeks before plants are completely dead and decomposing on the bottom sediment. Its slow-acting effect may have advantages in terms of dissolved oxygen impacts from decaying vegetation.

Long-Term Effects and Impacts

Fluridone has an estimated half-life of 20 days in water and 90 days in the hydrosol (Pesticide Management Education Program, 1986). As soon as entire amount of chemical has been removed from the system via photolysis, microbial degradation, or adsorption, the long-term effects should be minimal or nonexistent, if the chemical is used properly.

Fluridone does not bioaccumulate in aquatic life and is not known to affect algae (Schardt and Ludlow, 2004). Some of CDID#1 ditches are considered fish bearing but the assumed mortality rate through our pump stations is 100%. Fish present in the ditches are non-salmonid, non-native and limited to small numbers of bass, catfish and carp.

As with most herbicides, the effects of applying fluridone are likely to last only one growing season. The CDID#1 ditches need to be treated with this chemical annually to maintain adequate vegetation control.

IMAZAPYR

Description of Technique

Imazapyr is broad spectrum herbicide commonly known by its trade name Habitat®, a formulation which consists of the isopropylamine salt of imazapyr dissolved in aqueous solution. It acts as an enzyme inhibitor in plants, disrupting the protein synthesis of branched-chain aliphatic amino acids.

CDID#1 uses aquatically labeled imazapyr to treat noxious weeds along the ditch banks and riparian corridors. Imazapyr can be used to treat emerged parrot feather and water primrose but is not applied directly to the water surface to treat submerged aquatic vegetation. It is primarily included herein because of the potential to reach the ditch system due to overspray, drift and offsite movement via runoff.

CDID#1 applies imazapyr in liquid form to control a variety of grasses, broadleaf weeds, vines, Himalayan blackberry, bamboo and Japanese knotweed.

Advantages and Disadvantages

Imazapyr is extremely effective for both spot treatment and widespread application. Although it is toxic to plants, the mechanism for plant toxicity (interrupting protein synthesis) is not relevant to birds, mammals, fish and invertebrates because animals obtain aliphatic amino acids from their diet rather than biosynthesis.

It can be used in pre-emergent applications but is most effective when used as a post-emergent when vegetation is actively growing. It is not effective on plants that are completely submerged or have a majority of their foliage under water.

Long-Term Effects and Impacts

Imazapyr is generally persistent in soil, although its persistence and movement in the environment (particularly in soils) is complex and can be substantially different based on site-specific conditions.

Toxicity studies with imazapyr indicate it is relatively non-toxic and unlikely to adversely affect mammals, birds, fish, amphibians, and invertebrates (aquatic and terrestrial) at typical application rates.

Imazapyr is essentially stable to hydrolysis. The only identified route of degradation for imazapyr in the environment is through photolysis. In laboratory studies, imazapyr degraded through photolysis in water with half-lives ranging between 2.5 and 5.3 days.

Table 2. Summary of Aquatic Herbicide Treatments Used by CDID# 1

Herbicide	Description	Primrose	Elodea	Milfoil	Hydrilla	Estimated Cost
Diquat	Contact, non-selective herbicide used for submerged, floating and filamentous weeds. Diquat binds to sediment and is very persistent but its half-life in the water column in 1-7 days.	✓	✓	✓	✓	\$0.05 / SF
Fluridone	Selective herbicide used mainly for broad leaved submerged vegetation. Works well for large ditch treatments and should not be used for spot treatment. Half-life is 20-90 days.		✓	✓	✓	\$300 - \$500 / acre
Imazapyr	Broad spectrum herbicide used for emergent noxious weeds along ditch banks, riparian corridors and maintenance rights of way. Persistent in soil but its half-life in water is approximately 2-6 days.	✓		✓		NA

SECTION 4

Comparison of Methods

VEGETATION CONTROL METHODS

The vegetation control methods are assessed based on cost, applicability, and effectiveness in addressing site specific issues and meeting the goals of CDID#1. The suitability of these treatments for CDID#1 ditches and a cost analysis are discussed in the following sections. Other potentially suitable methods have been considered or tried in the past, but are no longer used due to effectiveness, cost, or permitting issues.

Physical Methods

Mechanical removal methods are inexpensive and appropriate for management of vegetation in small areas including trash racks, pump station forebays and ditches where sufficient CDID#1 easement or ownership is available for equipment access, working clearances and hauling. It is the method CDID#1 currently and traditionally employs.

Water level drawdown is being investigated during summer months to increase UV penetration and allow for maintenance activities, but is likely to increase turbidity and temperature and may lead to algae growth.

Chemical Control Methods

Fluridone is the only herbicide that can be used for treatment of whole ditches, and is recommended for areas larger than 10 acres. Diquat is nonselective and effective for small areas. Both chemical treatments are periodically and seasonally used by CDID#1 on an as needed basis.

Other Methods Not Being Used

Asian grass carp was tried in 2002 as a biological control option. 75 sterile white amur carp ranging from 12 to 20 inches long were planted in a 0.75 mile section of screened-off ditch. The \$10,000 trial was considered ineffective despite varied success amongst other Lower Columbia Region waterway users. Given the failed trial, ongoing water quality issues and 100% mortality rate through pump stations, biological control is not considered viable for CDID#1.

Bottom barriers have proven an effective control method in small lakes and ponds but fabric barriers would interfere with maintenance dredging to remove accumulations of sediment. CDID#1 may consider lining sections of certain primary ditches with concrete, but concrete paved bottom barriers are generally expected to be cost prohibitive.

Mechanical harvesting has also been successfully employed as a control option elsewhere, but is not practical in several of CDID#1 ditches that are either too narrow and too shallow for the equipment.

SECTION 5

Chemical Treatment Areas

CDID#1 is selective about which ditches are chemically treated, and when. There are no regulatory treatment windows that prohibit us from treating our ditches year-round but we prefer to time our application cycles to mitigate impacts to cavity nesting ducks and waterfowl. Timing is also given to other considerations involving water temperature, plant cycles, wind, precipitation, staff limitations and other District priorities.

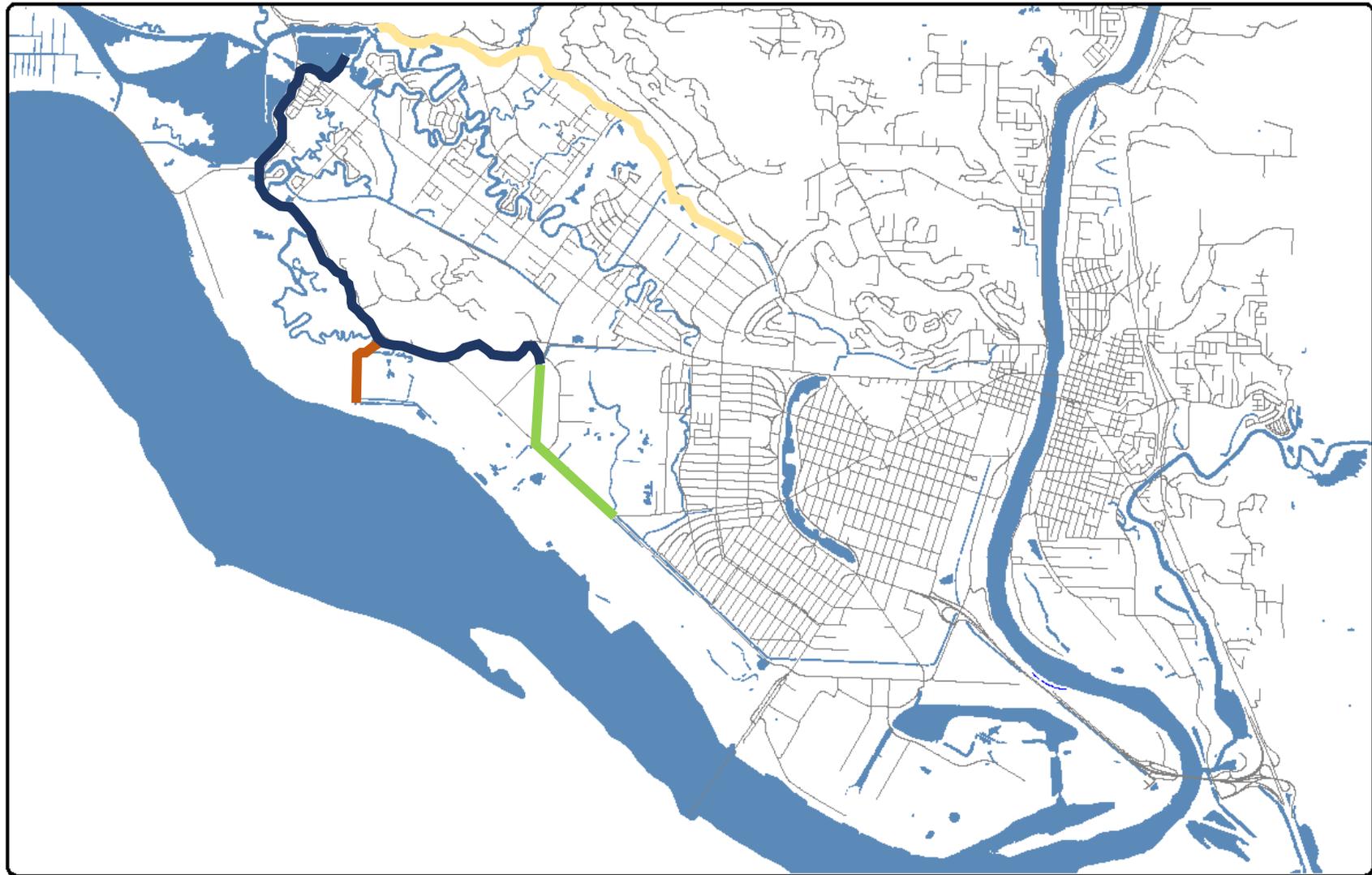
Not all CDID#1 ditches are chemically treated. Greater attention is given to larger primary ditches which contribute substantially to arterial flow in the system. Certain ditches also tend to be more problematic due to differences in nutrient load from phosphorous and ammonia introduced from agricultural, commercial and industrial activity. Since 2006, CDID#1 has chemically treated the following ditches on an annual basis:

- Ditch 5 from 38th Avenue to Industrial Way
- Ditch 6 from 30th Avenue to CDID#1 Main Pump Station
- Ditch 10 from CDID#1 Main Pump Station to 38th Avenue
- Ditch 14 from Industrial Way to Reynolds Pump Station

Table 3. Summary of Chemically Treated Ditch Sections and Volumes

CDID NO. 1 DITCH VOLUMES								
Ditch Section or Reach	Length (ft)	Average	Average	Maximum	Surface	Surface	Volume (ft ³)	
		Width (ft)	Depth (ft)	Depth (ft)	Area (ft ²)	Area (acres)		
DITCH 5								
Washington Way to Industrial Way Station	4,000	45	2	3	180,000	4.13	360,000	
Industrial Way Station to Weir	370	70	3	5	25,900	0.59	77,700	
Weir to 38th Ave.	2,500	88	3	5	220,000	5.05	660,000	
TOTALS:	6,870				425,900	9.78	1,097,700	
DITCH 6								
Terry Ave. to 30th Ave.	300	6	1	1	1,800	0.04	1,800	
30th Ave. to 32nd Ave.	1,800	20	1	3	36,000	0.83	36,000	
32nd Ave. to 38th Ave.	3,900	30	2	4	117,000	2.69	234,000	
38th Ave. to 42nd Ave.	2,700	40	3	4	108,000	2.48	324,000	
42nd Ave. to 48th Ave.	4,450	30	3	4	133,500	3.06	400,500	
48th Ave. to 2290 Dike Rd.	2,400	20	2	2	48,000	1.10	96,000	
2290 Dike Rd. to Main Pump Station	3,200	120	5	8	384,000	8.82	1,920,000	
TOTALS:	18,750				828,300	19.02	3,012,300	
DITCH 10								
38th Ave. to Industrial Way	4,000	80	2	3	320,000	7.35	640,000	
Industrial Way to Ditch No. 14	2,250	40	2	3	90,000	2.07	180,000	
Ditch No. 14 to Detention Pond	3,540	50	2	4	177,000	4.06	354,000	
Detention Pond to Mt. Solo Rd	2,700	70	3	4	189,000	4.34	567,000	
Mt. Solo Rd. to Willow Grove Rd.	1,550	85	4	5	131,750	3.02	527,000	
Willow Grove Rd. to Ocn. Beach Hwy.	4,100	70	4	4	287,000	6.59	1,148,000	
Ocn. Beach Hwy. to Cutoff Slough	2,500	80	4	4	200,000	4.59	800,000	
TOTALS:	20,640				1,394,750	32.02	4,216,000	
DITCH 14								
Ditch No. 10 to Reynolds Pump Station	3,100	25	2	4	77,500	1.78	155,000	
TOTALS FOR DITCHES 5, 6, 10, 14	49,360				2,726,450	63	8,481,000	

Figure 1. Map of Chemically Treated CDID#1 Ditches



DITCH 5 

DITCH 6 

DITCH 10 

DITCH 14 

SECTION 6

Notification Requirements

Regulatory Notifications

CDID#1 emails pre- and post-treatment information to the Washington State Department of Ecology (Ecology) during each week that treatment occurs. CDID#1 also immediately notifies Ecology of any spill, adverse incident or if any person exhibits any toxic or allergic response as a result of treatment.

Residential and Business Notifications

CDID#1 notifies all waterfront residences and business within one-quarter mile in each direction along or across the ditch being treated. Notices are typically mailed but can also be provided via newsletter, handbill or door hanger delivered directly to the residence or business. Notices are provided at least 10 days in advance and at most 42 days before the first treatment of the year. If multiple treatments are planned in any given year and the notice explains the application schedule for the entire treatment season, CDID#1 will not provide further notice unless it deviates from the published schedule.

CDID#1 does not provide residential and business notice for treatment applications made along limited access highways, fenced wetland mitigation sites, roadside applications and other facilities where no reasonable public access exists and there are no potable water intakes.

CDID#1 also posts signs at each public entrance to the walking trail along Ditch No. 6 that is within 400-feet of a treated area.

SECTION 7

Monitoring Requirements

Impaired Water Bodies

CDID#1 ditches are considered Water of the United States. The Clean Water Act requires all states to restore their waters as "fishable and swimmable." Section 303(d) of the Clean Water Act establishes a process to identify and clean up polluted waters. Ecology collects data to assess the quality of surface waters in Washington State and places them into one of five categories.

Waters whose beneficial use is impaired by pollutants are placed in the polluted water category (Category 5) of the water quality assessment. The 303(d) list is a list of those Category 5 waters.

CDID#1 Ditch No. 1, 3, 5 and 10 are on the 303(d) list for a variety of parameters including dissolved oxygen, turbidity and bacteria. In accordance with the requirements of the Aquatic Plant and Algae Management General Permit, CDID#1 is required to monitor pre- and post- dissolved oxygen levels before and after contact herbicides are used in water bodies which are on the 303(d) list for dissolved oxygen.

Pre- and Post- Treatment Sampling

CDID#1 Ditch No. 5 is a Category 5 water on the 303(d) list for dissolved oxygen and subject to monitoring requirements anytime contact herbicides are used in it.

Immediately before application of aquatic herbicides, CDID#1 collects a total of four (4) pre-treatment samples taken at the surface and at the bottom of the ditch, in the center and at the edge of the area being treated. One area is monitored per treatment event, and is considered representative of the entire length of ditch being treated.

CDID#1 collects post-treatment samples no earlier than seven (7) days and no later than fourteen (14) days after the treatment at the same time of day that pre-treatment sampling occurred and at the same sample sites and depths.

Sample results are submitted to Ecology no later than thirty (30) days after the post-treatment monitoring date.

Table 2. Summary of 303(d) and 305(b) Listing of CDID#1 ditches

CDID No. 1	Ecology List ID	Category	Parameter	Photo
Ditch 1	8762	2	Turbidity	
Ditch 3	7783	5	Dissolved Oxygen	
	10434	1	Bacteria	
	8757	2	Turbidity	
Ditch 5	7787	5	Dissolved Oxygen	
	8761	2	Turbidity	
	10437	2	Bacteria	
Ditch 10	6692	2	Bacteria	

Appendices

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Ecology Notification Template

EMAIL TO: apampreposttreat@ecy.wa.gov

FROM: PERMITTEE: CONSOLIDATED DIKING IMPROVEMENT DISTRICT NO. 1
CELL PHONE: 360.423.2493

PRE-TREATMENT NOTIFICATION

Week of Treatment: August 3-7, 2020

Waterbody Name and Permit No.	County	Location where treatment will begin	Chemicals / products proposed for use	Targeted plants and algae	Proposed date and treatment start time

Additional Information: _____

Business and Residential Notice

In Treatment Area In ¼ Mile Notification Area

Distribution Date: July 15, 2020

CDID#1 Ditch No. 6 will be treated with aquatic herbicide on or between August 3-14, 2020

Product(s) planned for use: Sonar PR

Active ingredient(s): Fluridone

Plants/Algae targeted: Fluridone pellets will be broadcasted over the surface of Ditch 6 between 30th and 48th Avenue to control elodea, hydrilla and milfoil. These invasive aquatic weeds restrict the flow of stormwater in the ditch, occupy detention volume that must be available during heavy rainfall events and severely restrict pumping operations.

Location of treatment(s): Ditch No. 6 between 30th Avenue and 48th Avenues.

Consolidate Diking Improvement District (CDID#1) will post signs in the treated and potentially affected areas no more than 48 hours prior to treatment. The signs will describe any water use restrictions or advisories.

If you are withdrawing water for potable or domestic water use, livestock watering, or irrigation, and have no alternate water source, please contact CDID#1 at 360.423.2493 or cdid1@cdid1.org to arrange an alternate water supply.

If you want additional notification prior to treatment, or have further questions, please contact CDID#1 using the information above.

This herbicide treatment is regulated under a permit issued by the Washington State Department of Ecology. Permit No. WAG994084.



Scan with QR reader to go to permit web page

Issuance Date: March 2, 2016
Effective Date: April 1, 2016
Expiration Date: March 31, 2021
Modified Date: June 5, 2019
Modified Effective Date: July 5, 2019

AQUATIC PLANT AND ALGAE MANAGEMENT GENERAL PERMIT

A National Pollutant Discharge Elimination System and
State Waste Discharge General Permit

State of Washington
Department of Ecology
Olympia, Washington

In compliance with the provisions of
Chapter 90.48 Revised Code of Washington
(State of Washington Water Pollution Control Act)
and
Title 33 United States Code, Section 1251 et seq.
The Federal Water Pollution Control Act (The Clean Water Act)

Until this Permit expires, is modified or revoked, Permittees that have properly obtained coverage under this General Permit are authorized to discharge in accordance with the special and general conditions that follow.



Heather R. Bartlett
Water Quality Program Manager
Washington State Department of Ecology

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SUMMARY OF PERMIT REPORT SUBMITTALS

Refer to the Special and General Conditions of this Permit for submittal requirements.

Table 1. Required Permit Submittals

Permit Section	Submittal	Frequency	Due Date(s)
S2	Application for New Coverage	As necessary	At least 38 days prior to the start of discharge
S2.D	Request for Modification	As necessary	As necessary
S2.E	Request for Transfer of Coverage	As necessary	As necessary
S3.F & S9	Plant Survey and Mitigation Measures	As necessary	As necessary
S5.A	Ecology Pre-and Post-Treatment Notice	Each week or as necessary during the treatment season	By 8:00 a.m. Monday of the first week of treatment each treatment season
S5.C	Business and Residential Notice	As necessary	No later than one business day following notification
S6.A	Dissolved Oxygen Data from 303(d) – Listed Water Bodies for Dissolved Oxygen When Using Contact Herbicides	As necessary	Within 30 days for the post-treatment monitoring date
S7.A	Annual Monitoring Report	Annually	December 31
S7.D	Noncompliance Notification	As necessary	As necessary
G22	Re-Application for Permit Coverage	Once per permit cycle	At least 180 days prior to the permit expiration date

The text of this Permit contains words or phrases in ***bold and italics***. These words or phrases are the first usage in the Permit and are defined in Appendix A.

SPECIAL PERMIT CONDITIONS

S1. PERMIT COVERAGE

The *Aquatic Plant and Algae Management General Permit* regulates the use of *pesticides* and other products applied to manage *aquatic nuisance plants, noxious weeds, quarantine-listed weeds, algae*, and phosphorus in fresh *surface waters of the State of Washington*.

A. Activities Covered Under This Permit

This General Permit covers aquatic plant and algae management activities that result in a discharge of *herbicides, algaecides, adjuvants, marker dyes, shading products, biological water clarifiers*, and *phosphorus inactivation products* (referred to hereafter as chemicals) into fresh water bodies of the state of Washington. The Permit also covers *shoreline* and roadside/ditch bank *emergent vegetation* management activities where chemicals may enter the water.

Aquatic plant and algae management activities are organized into four categories: Noxious Weed *Management*, Native Nuisance Plant Control, *Algae Control*, and phosphorus inactivation. The Permit has different requirements for each category.

1. Aquatic noxious weed management

Littoral zone limitations do not apply to control of noxious weeds or weeds on the quarantine list, but some *treatment* limitations may apply - see (b) below. The *Permittee* may *intentionally apply* herbicides to:

- a. 100 percent of noxious weeds if they are Class A weeds, Class B weeds in areas where they are designated for control, as identified in chapter 16-750 WAC, and Class C weeds where they are selected for control by a county Noxious Weed Control Board (RCW 17.10.080).
- b. 100 percent of any *submersed* noxious or quarantine-list weeds not covered under (a) if the Permittee conducts weed control using a *selective herbicide*. If a selective herbicide is not available for the noxious weed being controlled then 100 percent of submersed noxious or quarantine-list weeds may be treated with a non-selective herbicide.
- c. 100 percent of any *emergent* or *floating-leaved* noxious weeds and quarantine listed weeds.

2. Aquatic nuisance plant control

The Permittee may intentionally apply chemicals to: A percentage of a water body's littoral zone based on the littoral acres of the water body and the size of the water body. Direct herbicide application is limited to a percentage of the littoral zone for control treatments to preserve native plant habitat.

- a. The geographic area where the Permittee intentionally applies chemicals must remain the same for the entire length of the Permit coverage up to the maximum percentage of the littoral zone allowed for by water body size.
- b. All untreated littoral areas must include native vegetation from the shore to the edge of the littoral zone where the plants stop growing in deeper water.
- c. The cumulative percentage of the littoral zone where herbicides¹ may be intentionally applied must not exceed the amount allowed below:
 - (1) In water bodies up to 15 acres in size, the Permittee may intentionally apply herbicides to no more than 75 percent of the littoral zone.
 - (2) In water bodies over 15 acres and up to 50 acres in size, the Permittee may intentionally apply herbicides to no more than 60 percent of the littoral zone.
 - (3) In water bodies over 50 acres and up to 500 acres in size, the Permittee may intentionally apply herbicides to no more than 50 percent of the littoral zone.
 - (4) In water bodies over 500 acres in size, the Permittee may intentionally apply herbicides to no more than 30 percent of the littoral zone.
- d. **Individual lot** aquatic nuisance plant control
 - (1) No more than 25 feet on either side of a dock or no more than an area 50 feet wide per **lot** for **individual treatments** targeting **submersed plants** and **floating-leaved plants**. Treatment of the vegetated area may extend up to 25 feet beyond the end of the dock. On individual lots with no docks, treatment of the vegetated area can extend up to 50 feet from the shore.
 - (2) No more than 40 percent of emergent shoreline plants on individual lots for individual treatments.
- e. Roadside, ditch bank, and flood control structure plant control
 - (1) For activities conducted by state and local agencies, the Permittee may intentionally apply herbicides to 100 percent of the plants within the **right-of-way** and on **levees and dikes**.
 - (2) The Permittee may intentionally apply herbicides to no more than 40 percent of native vegetation of roadsides and ditches on privately owned individual lots, but may intentionally apply herbicide to 100 percent of any noxious or quarantine-listed weeds.

¹ Different littoral zone limitations apply to the herbicide fluridone. See Treatment Limitations in Table 3.

3. Algae control

- a. The Permittee may intentionally apply algaecides to filamentous green algae provided the treated areas do not exceed the maximum amount of littoral zone allowed for treatment in S1.A.2.c.
- b. The Permittee may intentionally apply algaecides to the entire water body or sections of the water body, as needed, when *cyanobacteria* or other potentially toxic or environmentally harmful algae species are in the water body.

4. Phosphorus inactivation

The Permittee may intentionally apply the phosphorus inactivation products and buffering agents listed in special condition S4.D, Table 4: *Approved Phosphorus Inactivation Products* to the entire water body or sections of the water body in accordance with Permit sections S4.D Table 4 and S6.B. Limited use of other phosphorus inactivation products is allowed under Permit section S4.C.2.

B. Geographic Area Covered

This Permit covers the activities listed in S1.A within the State of Washington. This Permit does not apply to:

1. Federal lands where a federal agency provided funding, made the decision to apply chemicals, or is the entity applying chemicals.
2. Indian Country and trust or restricted lands except portions of the Puyallup Reservation as noted below.
3. Puyallup Exception: Following the Puyallup Tribe of Indians Land Claims Settlement Act of 1989, 25 U.S.C. §1773; this Permit does apply to land within the Puyallup Reservation except for discharges to surface water on land held in trust by the federal government.

C. Activities Excluded from Coverage Under This Permit

Ecology will not require coverage under this Permit for the use of chemicals on the following sites; with the exception of locations identified as critical habitat for Oregon spotted frogs as defined by the U.S. Fish and Wildlife Services (<https://ecos.fws.gov/ecp0/profile/speciesProfile?sId=6633>).

1. Constructed *detention or retention ponds* designed specifically for wastewater or stormwater treatment that do not discharge to other water bodies during and for two weeks after treatment, or where Ecology regulates the discharge under another permit that allows chemical treatment.
2. Any *constructed water body* five acres or less in surface area with no discharge to other surface waters of the state during and for two weeks after treatment.

3. Any constructed water body ten acres or less in surface area under single ownership with no *public access* and no discharge to other surface waters of the state during and for two weeks after treatment.
4. *Farm ponds* with no discharge to other surface waters of the state during and for two weeks after treatment.
5. Treatment conducted on *seasonally dry land surfaces* (including seasonally dry *wetlands*) so long as the treatment occurs when the area is dry and the active ingredient is not biologically available when the water returns.
6. Research activities when applying chemicals or products to water bodies under a *State Experimental Use Permit* (See S4.C).

S2. APPLICATION FOR COVERAGE

Ecology may modify this Permit to require electronic submittal of the permit application, Annual Report, Monitoring Report, Transfer of Coverage, or Notice of Termination when an electronic reporting system becomes available.

A. Who May Obtain Permit Coverage

1. *Licensed pesticide applicators (applicators)*(WAC 16-228-1545) may apply for coverage. Applicators must be licensed in Washington State with an aquatic endorsement (WAC16-228-1545 3(t)).
 - a. Applicators must obtain separate permit coverage for each water body that they plan to treat. Each coverage requires a *sponsor*. Applicators may obtain a single permit coverage for multiple water bodies where a single, non-governmental sponsor has authority to treat more than one water body. The water bodies need not be hydraulically connected, but must be part of the same distinct community (e.g., ABC Homeowners Association).
 - b. In water bodies with multiple sponsors or multiple permit coverages, applicators must obtain separate permit coverages for each location within the water body (e.g., Lake Washington).
2. Dischargers are not required to be licensed pesticide applicator to apply phosphorus inactivation chemicals, because phosphorus inactivation products are not registered pesticides, EPA and WSDA do not regulate their use. For these projects, the discharger may apply for permit coverage. *Applicants* must have a sponsor for each phosphorus inactivation coverage.
3. Any state or local government entity may apply for coverage.
 - a. Government entities may obtain a single coverage that includes multiple water bodies under its jurisdiction. Government entities are considered sponsors.
 - b. Government entities must keep Ecology updated with a current list of its applicators, including license numbers and license expiration dates.

B. How to Apply for Coverage

Applicants that propose to begin aquatic plant or algae management activities that will result in a discharge to waters of the state on or after the effective date of this Permit must:

1. Complete the **Notice of Intent** (NOI) for the proposed activity online. The applicant must access Ecology's online data management system *SecureAccess Washington* (<http://secureaccess.wa.gov>), fill out the NOI online, print it, and sign it. Applicators must ensure that their sponsor(s) also sign the document.
 - a. The Permittee must submit a signed and dated Fluridone Vegetation Management Plan (Appendix C) to Ecology when applying for or updating a permit coverage that includes fluridone treatment of more than:
 - 50 percent of the littoral zone in lakes up to 50 acres **or**
 - 40 percent of the littoral zone in lakes from 50 - 500 acres.
2. If the product label has potable water use restrictions and the treatment occurs in water bodies with **municipal or community drinking water intakes**, the applicant must obtain and submit written consent to the treatment from the municipality or community.
3. Mail the complete NOI to:

Department of Ecology
Water Quality Program
Attn: Aquatic Pesticide Permit Manager
P.O. Box 47600
Olympia, WA 98504-7600
4. After the applicant has submitted the completed NOI to Ecology, they must fill out the Public Notice Template provided in the NOI. Publish the public notice twice, one week apart, in a local newspaper of general circulation (or a regional newspaper if a local newspaper is not available) that an application for permit coverage has been made. At the time the second notice is published, a 30-day comment period begins.
5. Mail or deliver the public notice to all potentially affected waterfront residents (those within one-quarter mile in each direction along the shoreline or across the water from proposed treatment areas) within one week of publishing the first newspaper notice.
6. Mail or deliver the public notice to the Washington State Department of Natural Resources (DNR) at: (Todd.Brownlee@dnr.wa.gov)
7. Mail or deliver the public notice for permit coverages in Water Resource Inventory Areas 7 (Snohomish), 8 (Cedar/Sammamish), and 9 (Duwamish/Green) (<https://ecology.wa.gov/Water-Shorelines/Water-supply/Water-availability/Watershed-look-up>) to Nancy.Rapin@muckleshoot.nsn.us and

Karen.Walter@muckleshoot.nsn.us. In the event that the email contacts become out-of-date Ecology will provide updated contact information.

At the end of the required 30-day public comment period, Ecology will consider comments about the applicability of this Permit to the proposed aquatic plant or algae management activity before issuing a decision on permit coverage.

C. Permit Coverage Timeline

1. If the applicant does not receive notification from Ecology, permit coverage automatically commences on whichever of the following dates occurs last:
 - a. The 31st day following receipt by Ecology of a completed application for coverage.
 - b. The 31st day following the end of a 30-day public comment period.
 - c. The effective date of the General Permit.
2. Ecology may need additional time to review the application:
 - a. If the application is incomplete.
 - b. If it requires additional site-specific information.
 - c. If the public requests a public hearing.
 - d. If members of the public file comments.
 - e. When more information is necessary to determine whether coverage under the General Permit is appropriate.

When Ecology needs additional time:

- a. Ecology will notify the applicant in writing before the 31st day following the end of the 30 day public comment period and identify the issues that the applicant must resolve before a decision can be reached.
- b. Ecology will submit the final decision to the applicant in writing. If Ecology approves the application for coverage, coverage begins the 31st day following approval, or the date the approval letter is issued, whichever is later.

D. How to Modify Permit Coverage

Entities that propose changes to the aquatic plant and algae control activities authorized by their original permit coverage, such as expanding the area covered, must revise and re-submit permit application materials in accordance with Special Condition S2.B.

E. How to Transfer Permit Coverage

A Permittee may transfer coverage to a new Permittee, in accordance with General Condition G7 of this Permit, using the Transfer of Coverage Form found here:

<https://fortress.wa.gov/ecy/publications/SummaryPages/ECY070348.html>.

Both the original Permittee and the new Permittee must sign the form and provide the date that the new Permittee will take responsibility for permit coverage. Once both parties have signed the form, the new Permittee becomes responsible for permit compliance and permit fees on the date indicated on the form. The original Permittee remains responsible for, and subject to, all permit conditions and permit fees until the transfer is effective.

F. How to Terminate Permit Coverage

When a Permittee no longer has or plans to discharge they may request termination of permit coverage by submitting a completed Notice of Termination (NOT) form found here: <https://fortress.wa.gov/ecy/publications/SummaryPages/ECY100300.html>.

The Permittee will continue to incur an annual permit fee unless it submits a NOT form even if no application of pesticides takes place. Once permit coverage is cancelled, the Permittee may no longer discharge to waters of the state unless it applies for, and gains coverage under this Permit again.

S3. DISCHARGE LIMITS

A. Compliance with Standards

1. The application of pesticides must not cause or contribute to a violation of the Water Quality Standards for Surface Waters of the State of Washington (chapter 173-201A WAC), Groundwater Quality Standards (chapter 173-200 WAC), Sediment Management Standards (chapter 173-204 WAC), and human health-based criteria in the National Toxics Rule (40 CRF 131.36). Ecology prohibits discharges that do not comply with these standards.
2. Permittees must use all known, available, and reasonable methods of pollution control, prevention, and treatment (AKART) when applying pesticides. Compliance with this Permit, the Washington Pesticide Control Act and the requirements of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) label constitute AKART.

B. Temporary Exceedance of Water Quality Standards

Short and long-term exceedance of water quality standards are allowed under this Permit provided the Permittee complies with the provisions of WAC 173-201A-410.

C. Application Requirements

The Permittee must comply with the FIFRA label when using pesticides. Permit requirements do not reduce the requirements on the FIFRA label. The Permittee must ensure that:

1. A licensed pesticide applicator, with the appropriate Washington State Department of Agriculture (WSDA) license and certification, has *direct supervision responsibilities* for the use of pesticides during application.
2. All applicators (either under the direct supervision of the licensed applicator for pesticides or under the supervision of the discharger for non-pesticides) have

current training in the use of the equipment necessary to apply chemicals correctly and that they use approved application techniques.

3. Appropriately trained personnel calibrate the application equipment for the chemical used.
4. Phosphorus inactivation products are not labeled as pesticides by FIFRA and dischargers are not required to be licensed pesticide applicators.

D. Impaired Water Bodies

1. The Permittee must not cause further permanent impairment of any *303(d)-listed* water body for any listed parameter.
2. The Permittee must prevent further permanent impairment of water bodies listed on the 303(d) list for dissolved oxygen as a result of treatment. It may do so by choosing appropriate chemicals such as a *systemic herbicide* instead of a *contact herbicide* and must implement one or more of the following mitigation measures:
 - a. Do not treat in the summer or when water temperatures are warm enough to contribute to low dissolved oxygen concentrations after treatment.
 - b. Limit the area treated each time that treatment occurs.
 - c. Remove decaying plants following treatment.
 - d. Aerate the water following treatments.
3. The Permittee must prevent further permanent impairment of water bodies listed on the 303(d) list for phosphorus as a result of treatment. It may do so by choosing appropriate chemicals to minimize release of phosphorus from non-target plants or algae and must implement at least one or more of the following mitigation measures:
 - a. When treating for a *floating plant* such as duckweed or for algae blooms ensure that a healthy population of native emergent, submersed, or floating-leaved plants remain in the water body after treatment.
 - b. Time treatment so that plant nutrients are not released during summer months.
 - c. Limit the area treated at any one time.
 - d. Remove decaying plants following treatment

E. Identified Wetlands

The Permittee may treat only *high use areas* to provide for safe *recreation* (e.g., *defined swimming corridors*) and boating (e.g., *defined navigation channels*) in *identified and/or emergent wetlands*. The Permittee must limit the treated area to protect native wetland vegetation.

F. Additional Requirements for Discharges to Water Bodies Where Sensitive, Threatened, or Endangered Plants Are Present

Before issuing permit coverage, Ecology will determine whether *sensitive, threatened, or endangered (rare) plants* are present in the proposed treatment area. If present, for *aquatic plant control* projects, the Permittee must submit a detailed plant survey and implement mitigation measures according to Special Condition S.9.

S4. THE APPLICATION OF PRODUCTS

A. Prohibited Discharges

Treatment that causes oxygen depletion to the point of stress or lethality to aquatic biota from plant or algae die-off, the mortality of aquatic vertebrates, or unintended impacts to water quality or biota are prohibited.

B. Authorized Discharges

1. Beginning on the effective date of this Permit and until Ecology modifies, reissues, or revokes this Permit; this Permit authorizes the Permittee to discharge the chemicals listed in the Permit into freshwaters of the state.
2. This Permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights.
3. The Permittee may apply the adjuvants listed in Table 2 and the active ingredients listed in Table 3 that are labeled for aquatic use, phosphorus inactivation products and approved buffering agents listed in Table 4, shading products, and water clarification products (including bacterial products) listed in Table 5.
4. The Permittee must comply with the specific restrictions/limitations listed in Tables 3-5.

Table 2: Listed Adjuvants

Adjuvant (Trade Name)/State Registration Number			
800 Plus/37686-18005	Agri-Dex™/5905-50094	AgriSolutions Inergy®/1381-13001	Antero-EA/2935-18001
Atmos™/1381-13006	Avor/9349-16011	Bond™/34704-04003	Brandt Magnify/48813-15003
Break-Thru SP 133/56630-15001	Breeze®/1381-13007	Bronc Max™/2935-03005	Bronc® Plus Dry/2935-12005
Bronc Plus Dry-EDT™/2935-03002	Chempro A-10/46059-16001	Choice Trio/34704-15003	Cide-Kick IIM®/99940/12001
Class Act NG™/1381-01004	Competitor™/2935-04001	Cut-Rate™/2935-06001	Cygnnet Plus™/105114-50001
Denali-EA™/2935-15006	DestinyHC™/1381-09002	Droplex™/1381-12001	Dyne-Amic™/5905-50071
Fast Break®/1381-50006	Forge/46661-15002	Fraction™/45989-06001	Glacier-EA/2935-16001
Hasten-EA™/2935-15003	Interlock™/1381-05004	Kinetic™/5905-11004	Level 7™/1381-05002
LI-700™/34704-04007	Liberate™/34704-04008	MSO Concentrate/34704-04009	MSO Concentrate with Leci-Tech/34704-07001
One-Ap XL™/45989-02001	Phase/34704-05007	Pro AMS Plus™/71058-50001	Rainier-EA™/2935-15001
Renegade-EA™/2935-15002	Sphere 7/73127-10008	Spray-Rite™/7001-09003	Spreader 90/34704-05002
Superb HC™/1381-06003	Syl-Tac-EA™/2935-15004	Tactic™/34704-05008	Trail Blazer/91327-15009
Trapline Pro/86806-16003	Tronic™/45989-06003	Turbulence®/1381-13008	Winfield Solutions Inergy®/1381-13002
Yardage™/52467-13001			

C. Experimental Use

1. The Permittee may apply chemicals not listed in this Permit on a limited basis in the context of a research and development effort under the jurisdiction of the Environmental Protection Agency (EPA) through the issuance of a federal experimental use permit (40 CFR 172) and the WSDA through the issuance of a state experimental use permit (EUP).
 - a. Project proponents must obtain coverage under this General Permit for any in-water projects conducted under a federal EUP (projects over one acre or more in size), unless the project is conducted at a site excluded from coverage under this Permit.
 - b. Ecology does not require coverage under this General Permit for research and development projects of one acre or less in size where the project proponent operates under a state EUP (issued by WSDA).
2. The Permittee may apply phosphorus inactivation products not listed in this Permit on a limited basis in the context of a research and development effort provided the Permittee develops an experimental phosphorus inactivation plan. The plan must be reviewed and approved by Ecology prior to treatment. Monitoring conducted as part of an experimental phosphorus inactivation application must conform to the requirements for sampling and analysis in Special Condition S6. The experimental phosphorus inactivation plan must include the following elements:
 - a. A public announcement of the project proposal must be made through newspaper notice, public meeting or through mailings to affected and interested parties. The public notice must be followed by a 30 day public comment period with all comments being submitted to Ecology.
 - b. A problem statement that clearly identifies the need for the use of an experimental phosphorus inactivation product and identifies potential effects on aquatic organisms.
 - c. A description of the project objectives and expected results.
 - d. A schedule for treatment, monitoring and reporting.
 - e. Proposal for the application of experimental phosphorus inactivation product(s).
 - f. Pre-treatment monitoring and water quality testing. Description of how the experimental phosphorus inactivation product(s) will be applied, including amount of chemical proposed for use and calculations used.
 - g. Monitoring of water quality parameters before, during and after the application of the experimental phosphorus inactivation product.
 - h. Reporting
 - i. Pounds of product used

- ii. Acreage treated
- iii. phosphorus reduction
- iv. Description of whether the objectives were achieved.
- v. Monitoring results, including any observed or measured, impacts or stress to aquatic organisms or wildlife.

D. General Application Restrictions

1. Treatments are prohibited with pesticides that have water use restrictions on the FIFRA label that restrict public water use during the opening week of fishing season or during tribal fisheries, WDFW Free Fishing Weekend, Memorial Day weekend, Independence Day weekend, and Labor Day weekend.
2. Permittees must minimize treatments that restrict public water use during weekends.
3. When there are potable water restrictions on the label and the treatment is within the setback distance listed on the product label, the Permittee must not apply any chemical until it has notified people who withdraw potable water from the water body. If requested by the affected water user(s), the Permittee must provide an alternative potable water supply until the intake water tests at or below the concentration specified for that pesticide in the product label for potable water. If requested by an affected water user, the Permittee must provide at least two weeks advance notice of pending treatments.
4. People withdrawing water under a legal water right or claim for irrigation or livestock watering purposes may request an alternate water supply during the treatment if the label has restrictions for those uses and the treatment is inside the setback distance listed on the product label. The Permittee must provide an alternative water supply until the intake water tests at or below the irrigation restriction concentration or livestock drinking water concentration on the label or until the time interval specified on the label has elapsed. If requested by an affected water user, the Permittee must provide at least two weeks advance notice of pending treatments.
5. The Permittee must not conduct treatments that adversely affect salmon or steelhead in hatcheries when applying treatments to areas upstream of a hatchery water intake. Ecology will coordinate with the Permittee, the Washington State Department of Fish and Wildlife (WDFW), and affected tribes to ensure treatments proposed upstream of a hatchery intake do not adversely affect hatchery fish or hatchery operations.
6. The Permittee must ensure that there is adequate contact time between the targeted vegetation and the selected herbicide when treating in reservoirs or in flowing water to avoid non-target downstream impacts.
7. The Permittee must comply with WDFW timing windows referenced in Tables 3 and 4 to protect salmon, steelhead, and bull trout populations and WDFW priority habitats and species. WDFW may periodically update this table as new information

becomes available or on request from Ecology. The timing table is available at: <https://ecology.wa.gov/Asset-Collections/Doc-Assets/Water-quality/Water-Quality-Permits/Aquatic-Pesticides-Permits/WDFW-timing-table>.

- a. Permittees conducting treatments subject to existing timing windows due to the presence of listed sensitive, threatened or endangered species, identified in Tables 3 and 4 as requiring consultation, must follow the guidance provided by WDFW during consultation.
 - i. For treatments where WDFW does not provide additional guidance the Permittee must follow the timing windows.
- b. Timing windows do not apply to nonnative fish such as bass. At their discretion, Permittees may choose to comply with the bass timing windows noted in the WDFW timing table.
- c. Timing windows do not apply to treatments conducted for emergent and shoreline plants.
- d. Timing windows do not apply to treatments conducted for roadside, ditch bank and flood control structure plant control (S1.A.2.e).
- e. Permittees may consult with Ecology and WDFW to develop alternate timing windows if necessary so long as the new treatment windows do not adversely impact priority species and habitats.

Requests for the development of an alternate timing window must be submitted to aquaticpesticideperm@ecy.wa.gov. When Ecology receives the request, staff will consult the WDFW for their determination on the appropriate work window for the waterbody where the alternate timing window was requested.

 - i. Where Permittees are directed to consult with WDFW in the timing window table, they must provide Ecology with a consultation letter from WDFW indicating the approved timing window for the treatment.
- f. The Permittee must follow the specific restrictions and advisories identified in Tables 3, 4 and 5. **Swimming restrictions**/advisories apply to primary contact activities such as swimming, wading, and water skiing. Drinking water restrictions apply to residents drinking lake water as their sole source of potable water or where they hold a water right for potable water.

Table 3: Specific Restrictions on the Application of Herbicides and Algaecides for Control Projects

Active Ingredient ¹¹	Subject to Timing	Restrictions/ Advisories	Treatment Limitations	Other Specific Restrictions
2, 4 – D (amine)	Yes for salmon, steelhead, bull trout – check timing table for other priority species	Swimming advisory during treatment, and for 24-hours post-treatment (in the treated area)	Control projects only: Do not apply within 400 feet of an outlet stream if there is an outflow.	Consult FIFRA product label for water use restrictions
2, 4 – D (ester)	See other specific restrictions – Yes for salmon, steelhead, bull trout – check timing table for other priority species	Swimming restriction during treatment, and for 24-hours post-treatment (in the treated area)	None	Do not use in salmon-bearing waters.
Aminopyralid	No for fish - check timing table for other priority species.	48-hour re-entry restriction post-treatment (in the treated area)	Do not apply: <ul style="list-style-type: none"> ➤ To emergent or shoreline vegetation along undeveloped areas of surface waterbodies. ➤ In habitats where native vegetation restoration is desired (e.g., mitigation sites, riparian areas, and natural corridors). 	If soil or dead plants in treated areas are being removed, consult the product label to determine appropriate soil and plant disposal methods.
Bispyribac-sodium	No for fish - check timing table for other priority species.	None	None.	None
Carfentrazone-ethyl	Yes for salmon, steelhead, bull trout – check timing table for other priority species	None	None	None

¹ The full chemical name for each active ingredient is included in Appendix A – Definitions.

Active Ingredient ¹¹	Subject to Timing	Restrictions/ Advisories	Treatment Limitations	Other Specific Restrictions
Diquat	Yes for salmon, steelhead, bull trout – check timing table for other priority species	Swimming advisory during treatment, and for 24-hours post-treatment (in the treated area)	<ul style="list-style-type: none"> ➤ Do not pour Diquat directly from the container into the water body. ➤ Do not apply to emergent shoreline vegetation (e.g., cattails, bulrush) 	Consult FIFRA product label for water use restrictions.
Endothall (dipotassium salt)	Yes for salmon, steelhead, bull trout – check timing table for other priority species	Swimming advisory during treatment, and for 24-hours post-treatment (in the treated area)	Do not apply within 400 ft of an outlet stream if there is an outflow.	Consult FIFRA product label for water use restrictions.
Endothall (mono salt)	Yes for salmon, steelhead, bull trout – check timing table for other priority species	Swimming advisory during and for 24-hours after treatment (in the entire water body)	<ul style="list-style-type: none"> ➤ Use for control of filamentous algae, cyanobacteria, or harmful algae only. See S1.A.2(b) ➤ Limit concentrations to 0.2-mg/L of active ingredient 	<ul style="list-style-type: none"> ➤ Treatment must occur from the shoreline outward into the water body. ➤ Consult FIFRA product label for water use restrictions.
Florpyrauxifen-benzyl	No for fish - check timing table for other priority species.	None	None	None
Flumioxazin	Yes for salmon, steelhead, bull trout – check timing table for other priority species	None	None	None
Fluridone	No for fish - check timing table for other priority species.	None	Unless operating under a Fluridone Vegetation Management Plan (Appendix C), Ecology further limits fluridone application to no more than 50 percent of the littoral zone in lakes up to 50 acres and no more than 40 percent of the littoral zone in lakes from 50 - 500 acres.	None
Glyphosate	No for fish - check timing table for other priority species.	None	None	None

Active Ingredient ¹¹	Subject to Timing	Restrictions/ Advisories	Treatment Limitations	Other Specific Restrictions
<i>Imazapyr</i>	No for fish - check timing table for other priority species.	None	None	None
<i>Imazamox</i>	No for fish - check timing table for other priority species.	None	None	None
<i>Penoxsulam</i>	No for fish - check timing table for other priority species.	None	None	None
<i>Peroxyacetic/Peracetic Acid plus Hydrogen Peroxide</i>	No for fish - check timing table for other priority species.	None	Do not treat plants growing on the shore.	None
<i>Sodium carbonate peroxyhydrate</i>	No for fish - check timing table for other priority species.	None	Do not treat plants growing on the shore.	None
<i>Topramezone</i>	No for fish - check timing table for other priority species.	None	None	None
<i>Triclopyr TEA</i>	No for fish - check timing table for other priority species.	Swimming advisory during treatment, and for 12-hours post-treatment (in the treated area)	Aerial applications are not allowed.	Consult FIFRA product label for water use restrictions.

Table 4: Specific Restrictions on Application of Products for Inactivation of Phosphorus

Phosphorus Inactivation Products	Subject to Timing	Restrictions/ Advisories	Treatment Limitations	Other Specific Restrictions
Alum (Aluminum sulfate and Sodium Aluminate)	<ul style="list-style-type: none"> ➤ No for fish - check timing table for other priority species. ➤ Timing should address aquatic plant biomass that may interfere with inactivation of sediment phosphorus (requiring early spring or fall treatment). 	None	<ul style="list-style-type: none"> ➤ Application must cease when wind speed is greater than 15 miles per hour ➤ Powdered alum must be mixed with water to form a slurry before applying to the water surface. ➤ The pH of lake water during treatment must remain between 6.0 and 8.5 based on lake average. ➤ Only aluminum compounds suitable for water treatment may be used. ➤ Buffering materials must be available for use. 	<ul style="list-style-type: none"> ➤ A jar test must be completed prior to whole lake treatments only if a buffer other than sodium aluminate is used or a ratio of liquid alum to liquid sodium aluminate differs from 2:1 by volume. ➤ An on-site storage facility is required for any treatment requiring 9,000 gallons of alum or more, or the project proponent must have a plan to store any unused alum or buffering products. ➤ Follow the monitoring requirements in S6.B.
Calcium Products (Calcium Hydroxide/Oxide and Calcium Carbonate)	No for fish - check timing table for other priority species.	None	The pH must remain between 6.0 and 9.0.	<ul style="list-style-type: none"> ➤ A jar test must be completed prior to treatment to identify proper dosing levels. This jar test needs to be conducted at least over a 24-hour period to ensure that the pH response is at equilibrium with water chemistry. ➤ Follow the monitoring requirements in S6.B.
Lanthanum-Modified Bentonite Clay	No for fish - check timing table for other priority species.	None	<ul style="list-style-type: none"> ➤ 	In waterbodies with low alkalinity (< 20 mg/L), a jar test must be completed prior to treatment to identify proper dosing levels.
Powdered Iron	No for fish - check timing table for other priority species.	None	<ul style="list-style-type: none"> ➤ Powdered iron must be applied to the water surface as a slurry. ➤ Do not apply where anoxic conditions (zero percent dissolved oxygen) may occur, including anoxic conditions created by applications of herbicide and algaecide. 	A jar test must be completed prior to treatment to identify proper dosing levels.

Note: The products listed above are not registered as pesticides through FIFRA. A licensed applicator is not needed for the application of any of these products to waters of the United States.

Table 5: Restrictions on Applications of Shading Products and Biological Water Clarifiers

Product	Restrictions
Shading products	Do not apply directly to rivers or streams or any lake that discharges to other surface waters of the state.
Biological Water Clarifiers	Use only in water bodies with no discharge to other surface waters of the state during and for two weeks after treatment.

Note: These restrictions are in addition to the federal FIFRA label requirements (when applicable).

S5. NOTIFICATION, INSPECTION, AND POSTING REQUIREMENTS

A. Ecology Notification Requirements

1. Pre- and post-treatment notification

The Permittee must email pre-and post-treatment information to Ecology, at apampreposttreat@ecy.wa.gov, each week that treatment occurs using the form in Appendix B. Ecology must receive the form no later than 8:00 am on each Monday. For unforeseen events, the Permittee may *occasionally* provide Ecology with less notice so long as pre-treatment notification occurs at least two days prior to the treatment.

2. Adverse incidents or spills

The Permittee must immediately call the appropriate Ecology regional contact and Ecology headquarters or 1-800-645-7911 when they are made aware of any of the following conditions occurring during or after a treatment:

- a. Any person(s) exhibiting or indicating any toxic and/or allergic response as a result of the treatment.
- b. Any fish or fauna exhibiting stress or dying inside or outside of the treatment area.
- c. Any spill of chemicals covered under this Permit that occurs into the water or onto land with a potential for entry into waters of the state.

B. Ecology Inspection Coordination Requirements

1. At Ecology's request, each Permittee must coordinate and schedule inspections with Ecology staff. The location and starting time for the scheduled inspection must be on record in writing at Ecology.
2. For scheduled inspections, the Permittee must not apply chemicals until Ecology staff is present, unless they do not arrive within 30 minutes of the scheduled start time.

C. Residential and Business Notification

1. Using the template on the permit webpage, the Permittee must provide Residential and Business Notice (notice) to all waterfront residences and businesses within one-quarter mile in each direction along the water body shoreline or across the water from proposed treatment areas.
2. The Permittee may provide the notice by mail, newsletter, or handbills delivered directly to the residences or businesses.
3. This Permit does not authorize trespass or damage to property as a result of providing business and residential notices.

4. Businesses and residents must receive the notice at least 10 days in advance and at most 42 days before the first treatment of each year. If the notice explains the **application schedule** for the entire treatment season and there is no deviation from that schedule (with an exception for cyanobacteria treatment), Ecology requires no further notice for the rest of the treatment season. On water bodies with a history of cyanobacterial blooms, the Permittee may explain in the notice that algae treatment may occasionally occur outside of the scheduled time periods without prior notice depending on bloom conditions. The Permittee must provide additional notification to any resident or business that specifically requests further notification of treatment dates.
5. Business and residential notices for permit coverages in Water Resource Inventory Areas 7 (Snohomish), 8 (Cedar/Sammamish), and 9 (Duwamish/Green) (<https://ecology.wa.gov/Water-Shorelines/Water-supply/Water-availability/Watershed-look-up>) must be sent to Nancy.Rapin@muckleshoot.nsn.us and Karen.Walter@muckleshoot.nsn.us. In the event that the email contacts become out-of-date Ecology will provide updated contact information.
6. The Permittee must email to Ecology, at apampreposttreat@ecy.wa.gov, a copy of the notice, the date of distribution, and a list of addresses that the notice was delivered to, no later than one business day following public distribution (also see General Condition G1). The Permittee must email a copy of the notice, including the date of distribution, to the Department of Natural Resources (DNR) at Todd.Brownlee@dnr.wa.gov no later than one business day following public distribution. The Permittee need not notify DNR for treatments occurring on privately-owned lakes with no public access.
7. Ecology does not require business and residential notice for applications made to limited access highways, fenced wetland mitigation sites, or other facilities where no **reasonable public access** exists and there are no potable water intakes. When applications are made to waters with no reasonable public access and no potable water intakes, Permittees must provide Ecology with a copy of the treatment notice as required in Special Condition S5.C.6.

D. Shoreline Recreational Facilities Notification Requirements

1. Permittees must notify the facility manager when a pesticide application will occur in or within 400 feet of a facility's swimming area or recreational area.
2. Notification must occur at least 10-42 days prior treatment.
3. Facility notification must include the name of the product being applied, the time period during which treatment will occur, any drinking, swimming or recreational advisories or restrictions, and Permittee contact information.
4. Notification to the shoreline recreational facility manager is not required when notification to the shoreline recreational facility manager was provided through the business and residential notice (S5.C).

E. Shoreline Posting Requirements

1. General Requirements for Posting Shorelines

The Permittee must:

- a. Use templates provided on the permit webpage.
- b. Post signs no more than 48 hours prior to treatment.
- c. Post signs so that they are secure from the normal effects of weather and water currents.
- d. Make best efforts to ensure that the signs remain in place and are legible until the end of the period of water use restrictions.
- e. Remove all old signs at the end of the period of water use restriction.

If applying more than one chemical in an area, the Permittee may list all chemicals on the sign, but must use the template and restrictions for the chemical with the most stringent water use restrictions.

If the majority of the affected community speaks a language other than English, the Permittee may use online translation websites to make signs for these communities.

For continuous injection treatments for phosphorus inactivation projects, the Permittee does not need to post the lake.

Ecology does not require shoreline posting in areas where public access is limited to boat only access and there are no private residents.

2. Posting *Privately or Publicly-Owned Shoreline* Areas (excluding *public access areas*) with 8 ½ by 11 Inch Signs

- a. The Permittee must post signs at each waterfront private residence or business property that is within 400 feet of a treated area.
- b. The Permittee must post the signs to face both the water and the shore and site them where they are most visible to residents (within approximately ten feet of the shoreline). The Permittee must post one sign for approximately every 100 feet of shoreline.
- c. If the shoreline is only accessible by entering through a gate, the Permittee may post a sign at each gate that allows access to, or is within 400 feet of a treated area. The Permittee does not need to post additional signs.

3. Posting Shoreline *Public Access Areas* with Two Foot by Three Foot Signs

- a. The Permittee must post signs at all public access areas on the water body that are within 400 feet of a treated area and at all *public boat launches* on the water body within one quarter mile of a treated area.
- b. The Permittee must site the signs so that they are clearly visible to people using the public access area, spacing the signs approximately every 100 feet

of shoreline and within approximately 25 feet of the shoreline. Signs must face both the water and the shore. At public boat launches, signs need only face the shore.

- c. If a public shoreline is only accessible by entering through a gate, the Permittee may post a sign at each gate that allows access to, or is within 400 feet of a treated area. The Permittee does not need to post additional signs.
- d. Signs must be a minimum size of two feet by three feet and constructed of durable weather-resistant material. The Permittee must attach an 8 ½ by 11 inch weather resistant map detailing the treatment areas for each chemical used. The map must identify the location(s) of the treatment site(s), identify addresses or parcels that represent the start and end points of the treatment area or provide gps coordinates that represents the corners of the treatment area polygon or identify a whole waterbody treatment and mark the reader's location. If the Permittee applies more than one chemical, it must mark each treated area and appropriate chemical on the map.

Signs must:

- i. Include the word "CAUTION" in bold black type at least two inches high.
- ii. Use a font at least ½ inch high for all other words.

4. Posting ***Public Pathways*** Along a Treated Water Body

- a. The Permittee must post two foot by three foot signs at ***public entrances*** to public pathways that allow reasonable direct access to the water body and that are within 400 feet of a treated area.
- b. The Permittee must post 8 ½ by 11 inch signs at approximately 100 foot intervals along the pathway along any treated areas and within 400 feet of any treated areas.

5. Posting for Roadside/Ditch Bank Aquatic Applications

- a. The Permittee does not need to post signs for roadside applications or applications to areas with no reasonable public access.
- b. For those sites with public access areas, the Permittee must:
 - i. Post signs no more than 48 hours before an application.
 - ii. Place signs at any boat launch within 1/4 mile of any treated area. Signs must be within 25 feet of the shoreline, facing both the water and shore.
- c. The Permittee is responsible for the removal of all signs at the end of each treatment season, but may use biodegradable sign material so that removal is not necessary.

6. This Permit does not authorize trespass or damage to property from posting of

shoreline signs or notices.

S6. MONITORING REQUIREMENTS

Sampling and analytical methods used to meet the monitoring requirements specified in this Permit must conform to the latest revision of the *Guidelines Establishing Test Procedures for the Analysis of Pollutants* contained in 40 CFR Part 136 (or as applicable in 40 CFR subchapters N [Parts 400–471] or O [Parts 501-503]) unless otherwise specified in this Permit. Ecology may only specify alternative methods for parameters without limits and for those parameters without an EPA approved test method in 40 CFR Part 136.

All samples must be analyzed by a laboratory registered or accredited under the provisions of *Accreditation of Environmental Laboratories*, Chapter 173-50 WAC. The following parameters need not be accredited or registered:

1. Flow
2. Temperature
3. Settleable solids
4. Conductivity, except that conductivity must be accredited if the laboratory must otherwise be registered or accredited.
5. pH, except that pH must be accredited if the laboratory must otherwise be registered or accredited.
6. Turbidity, except that turbidity must be accredited if the laboratory must otherwise be registered or accredited.
7. Parameters which are used solely for internal process control

Documentation of monitoring activities and results must include (if applicable):

1. The date, exact place, and time of sampling.
2. The date analyses were performed.
3. Who performed the analyses.
4. The analytical techniques/methods used (if any).
5. The results of such analyses.

A. Application of Herbicides and Algaecides

The Permittee must monitor dissolved oxygen levels pre- and post-treatment when contact herbicides are used in water bodies on the 303(d)-list for dissolved oxygen.

1. Immediately before treating, the Permittee must monitor surface and bottom dissolved oxygen concentrations at a sampling location in the center and at the edge of the proposed treatment area(s). The Permittee must select at least one representative treatment area to monitor each time the water body is treated.

2. The Permittee must monitor post-treatment surface and bottom dissolved oxygen concentrations no earlier than seven days and no later than 14 days after the treatment, at the *same time of day* that the pre-treatment monitoring occurred and at the same sites and depths.
3. The Permittee must submit these data to the Ecology permit manager no later than 30 days after the post-treatment monitoring date.

B. Application of Phosphorus Inactivation Product

1. Aluminum sulfate or sodium aluminate (alum).
 - a. The monitoring requirement for whole or partial lake treatments is:
 - i. One surface water pH measurement in the morning prior to any alum addition and one surface water pH measurement one hour after alum addition has stopped for that day.
 - ii. The Permittee must monitor pH for the duration of the treatment and for 24 hours following treatment completion. The monitoring location must be representative of water body-wide conditions. If the pH decreases to less than 6.2, the Permittee must stop the treatment, analyze for alkalinity, and take immediate steps to increase the pH.
 - b. For continuous injection treatments, the Permittee must measure pH at a minimum once every two weeks during the first month of continuous injection and thereafter once a month for the duration of the injection process. The Permittee must ensure that pH measurements represent water body-wide conditions, unless the injection system is in an isolated area in relation to the main water body (e.g., in a bay with a narrow channel to the main water body). For isolated areas of water bodies, the Permittee must measure pH at the end of the bay and in the main water body.
2. Calcium hydroxide/oxide or calcium carbonate treatment
 - a. The Permittee must measure pH once on the day before treatment, once in the morning prior to treatment and once in the afternoon after treatment has stopped for the day, for the duration of the treatment and for 24 hours following treatment. If the pH is above 9.0 due to the effects of the treatment (rather than through photosynthesis), the Permittee must stop treatment.
 - b. For continuous injection systems, the Permittee must measure pH at a minimum once every two weeks during the first month of continuous injection and thereafter once a month for the duration of the injection process. The Permittee must ensure that pH measurements represent water body-wide conditions, unless the injection system is in an isolated area in relation to the main water body (e.g., in a bay with a narrow channel to the main water body). For isolated areas of water bodies, the Permittee must measure pH at the end of the bay and in the main water body.

S7. REPORTING AND RECORDKEEPING REQUIREMENTS

Ecology is making changes to its online permit application and annual reporting system and, when complete, may modify this Permit to account for the changes.

The Permittee must submit pesticide/product application information in accordance with the following conditions.

A. Annual Treatment/Monitoring Reports

1. By December 31 of each year, the Permittee must submit its Annual Treatment and Monitoring Report electronically through Ecology's online data management system (SecureAccess Washington at <https://secureaccess.wa.gov>). A signed and dated copy of the report must be mailed to:

Department of Ecology
Water Quality Program
Attn: Aquatic Pesticide Permit Manager
P.O. Box 47600
Olympia, WA 98504-7600

2. The Permittee must submit an annual treatment/monitoring report regardless of whether a treatment or monitoring occurred. The report must include: Water body name, chemicals used, amount of active ingredient applied in pounds, acreage treated, monitoring results, and the plant species targeted.
3. The Permittee must submit any dissolved oxygen monitoring data to the Aquatic Pesticide Permit Manager and the appropriate regional contact, no later than 30 days after the post-treatment monitoring date.

B. Records Retention

1. The Permittee must retain records of all permitting and monitoring information for a minimum of five (5) years. Such information must include copies of all reports required by this Permit, plant surveys, and records of all data used to complete the application for this Permit.
2. The Permittee must keep records longer in the event of any unresolved litigation regarding the discharge of pollutants by the Permittee or when requested by Ecology.
3. The Permittee must make the records, reports, surveys, plans, public notices (including a list of locations or addresses to which they were delivered), and other information required by this Permit available to Ecology upon request.

C. Recording of Results

For each measurement or sample taken, the Permittee must follow the recording provisions outlined in WAC 173-226-090 (2).

D. Noncompliance Notification

Compliance with the requirements of this special condition does not relieve the Permittee from responsibility to maintain continuous compliance with the terms and conditions of this Permit or the resulting liability for failing to comply.

In the event the Permittee is unable to or does not comply with any part of this Permit, which may threaten human health or the environment, the Permittee must:

1. Immediately take action to minimize potential pollution or otherwise stop the noncompliance and correct the problem.
2. Immediately notify the appropriate Ecology regional office and the aquatic pesticides permit manager of the failure to comply via the regional spills telephone hotline and the aquatic pesticides permit manager’s phone number below.

Central (CRO) -----	509-575-2490
Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, and Yakima counties	
<hr/>	
Eastern (ERO) -----	509-329-3400
Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, and Whitman counties	
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Northwest (NWRO) -----	425-649-7000
Island, King, Kitsap, San Juan, Skagit, Snohomish, and Whatcom counties	
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Southwest (SWRO) -----	360-407-6300
Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Mason, Lewis, Pacific, Pierce, Skamania, Thurston, and Wahkiakum counties	
<hr/>	
Aquatic Pesticide Permit Manager -----	(360) 407-6600

3. The Permittee must provide a written report to Ecology within five (5) days of the time that the Permittee becomes aware of any permit non-compliance unless Ecology requests and earlier submission. The report must contain a description of the noncompliance and its cause, the exact date(s), time(s), place(s), and duration(s) of the noncompliance, whether the noncompliance has been corrected and, if not, when the noncompliance will be corrected, and the steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

Upon request of the permittee, Ecology may waive or extend the requirement for a written report on a case-by-case basis, if the immediate notification (S7.D.2) is received by Ecology within 24 hours.

4. The Permittee must submit noncompliance notifications to:

Washington State Department of Ecology
Water Quality Program
Attn: Aquatic Pesticide Permit Manager
PO Box 47696
Olympia, WA 98504-7696

S8. SPILL PREVENTION AND CONTROL

A. Spill Prevention

The Permittee must:

1. Handle, store, and use all oil, fuel, chemicals, or products authorized under this Permit in a manner that prevents spills.
2. Ensure that it maintains all mobile equipment to prevent leaks or spills of petroleum products.
3. Have absorbent materials available for cleanup or the spill containment materials recommended in the Material Safety Data Sheet for that product, including appropriate cleanup materials for a spill of the products being applied.

B. Spill Notification Requirements

The Permittee must immediately report spills to Ecology by calling 1-800-645-7911. See <https://ecology.wa.gov/About-us/Get-involved/Report-an-environmental-issue/Report-a-spill> for more environmental reporting information.

C. Spill Cleanup Requirements

1. In the event of a spill, the Permittee must begin immediate containment and cleanup using appropriate materials. Cleanup takes precedent over normal work.
2. Cleanup includes proper disposal of any spilled materials and used cleanup materials.

S9. MITIGATION FOR PROTECTION OF SENSITIVE, THREATENED, OR ENDANGERED PLANTS

A. Survey Requirements

If Ecology notifies the Permittee that a rare plant species (rare plant) is reported to be present in a proposed treatment area, the Permittee must conduct a detailed plant survey (unless Ecology waives this requirement).

1. The survey must be performed by a *botanist*. The person conducting the survey must not have a financial or personal interest in the treatment.

2. The botanist must survey when plants are present and can be positively identified, but no earlier than three months before treatment. Ecology may waive the three month requirement if the plant cannot be positively identified during that time frame.
3. The survey must cover 100% of the waterbody habitat that is identified as suitable for the rare plant of concern.
4. The Permittee must survey each year before treatment for rare submersed, floating, or floating-leaved plants and once every five years for rare emergent shoreline plants.
5. The Permittee must submit the survey data to Ecology no later than thirty days before treatment. Permittees must submit a map of the location of the rare plant(s) if the survey identifies rare plants. Ecology may modify or suspend the annual survey requirement if it determines that the treatment(s) have had no adverse effect on the rare plant population.

B. Mitigation

1. When a rare plant is not found, as a result of the plant survey, in the treatment area; the permittee must use the lowest effective concentration of herbicide for the target plant and use a selective herbicide (if applicable) or an herbicide demonstrated to have little effect on the rare plant.
2. When a rare plant is found in the treatment area, the Permittee must apply prescribed buffers (where required) and select one or more mitigation choices listed below to minimize treatment impacts to the rare plant. Monitoring the vitality of rare plant populations after treatment may be required by Ecology. The Permittee must not allow treatment to affect the viability of the rare plant population.
3. Mitigation measures for:
 - a. Submersed, floating, or floating-leaved plants: If the rare plant is submersed, floating, or floating-leaved and the herbicide application is intended to control submersed species, the Permittee must maintain a no-treatment buffer around the rare plants. The Permittee must maintain a 100-foot buffer when using contact herbicides and must consult with Ecology when using systemic herbicides to determine appropriate buffer distances. If the Permittee has difficulty maintaining a buffer from the majority of the rare plant population, it must consult with Ecology for other options (e.g., physically relocating the plants).

In addition to the buffer, the Permittee must choose one or more mitigation measures below:

- i. Use a selective herbicide (if applicable) or an herbicide demonstrated to have little effect on the rare plant.

- ii. Use the lowest effective concentration of herbicide for the target plant if the Permittee can demonstrate that the rare plant is tolerant to the herbicide at that concentration.
 - iii. Use barriers or containment structures (e.g. silt curtains) to protect the rare plant.
 - iv. For floating rare plants, temporarily relocate the plants to an untreated area.
 - v. Time the treatment during the growing season to prevent impacts to the rare plant.
- b. Emergent plants: If the rare plant is emergent or floating-leaved and the targeted plants are being treated above the water (i.e., target plants are emergent), the Permittee must maintain a no treatment buffer of 10 feet from the rare plant and choose one or more of the following mitigation measures:
- i. Use a selective herbicide (if applicable) or an herbicide demonstrated to have little effect on the rare plant.
 - ii. Select an application technique designed to cause less non-target damage (e.g., low-drift nozzle heads, wiper applications, sponge bars, temporarily covering the rare species, etc.).
 - iii. Time the treatment during the growing season to prevent impacts to the rare plant.

S10. APPENDICES

The attached appendices are incorporated by reference into this Permit.

APPENDIX A - Definitions

APPENDIX B - Ecology Notification Template

APPENDIX C - Fluridone Vegetation Management Plan

GENERAL CONDITIONS

G1. SIGNATORY REQUIREMENTS

All applications, reports, or information submitted to Ecology must be signed and certified.

- A. In the case of corporations, by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:
 - 1. A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision making functions for the corporation, or
 - 2. The manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
- B. In the case of a partnership, by a general partner.
- C. In the case of sole proprietorship, by the proprietor.
- D. In the case of a municipal, state, or other public facility, by either a principal executive officer or ranking elected official.
- E. All reports required by this Permit and other information requested by Ecology must be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:
 - 1. The authorization is made in writing by the person described above and is submitted to Ecology at the time of authorization, and
 - 2. The authorization specifies either a named individual or any individual occupying a named position.
- F. Changes to authorization. If an authorization under paragraph E above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization must be submitted to Ecology prior to or together with any reports, information, or applications to be signed by an authorized representative.

G. Any person signing a document under this section must make the following certification:

“I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

G2. RIGHT OF ENTRY AND INSPECTION

Representatives of Ecology must have the right to enter at all reasonable times in or upon any property, public or private, for the purpose of inspecting and investigating conditions relating to the pollution or the possible pollution of any waters of the state.

Reasonable times include normal business hours; hours during which production, treatment, or discharge occurs; or times when Ecology suspects a violation requiring immediate inspection.

Representatives of Ecology must be allowed to have access to, and copy at reasonable cost, any records required to be kept under terms and conditions of the Permit; to inspect any monitoring equipment or method required in the Permit; and to sample any discharge, waste treatment processes, or internal waste streams.

G3. PERMIT ACTIONS

This Permit may be modified, revoked and reissued, or terminated either at the request of any interested person (including the Permittee) or upon Ecology’s initiative. However, the Permit may only be modified, revoked and reissued, or terminated for the reasons specified in 40 CFR 122.62, 122.64 or WAC 173-220-150 according to the procedures of 40 CFR 124.5.

- A. The following are causes for terminating permit coverage during its term, or for denying a permit renewal application:
1. Violation of any permit term or condition.
 2. Obtaining a Permit by misrepresentation or failure to disclose all relevant facts.
 3. A material change in quantity or type of waste disposal.
 4. A determination that the permitted activity endangers human health or the environment or contributes to water quality standards violations and can only be regulated to acceptable levels by permit modification or termination [40 CFR part 122.64(3)].

5. A change in any condition that requires either a temporary or permanent reduction or elimination of any discharge or sludge use or disposal practice controlled by the Permit [40 CFR part 122.64(4)].
 6. Nonpayment of fees assessed pursuant to RCW 90.48.465.
 7. Failure or refusal of the Permittee to allow entry as required in RCW 90.48.090.
- B. The following are causes for modification but not revocation and reissuance except when the Permittee requests or agrees:
1. A material change in the condition of the waters of the state.
 2. New information not available at the time of permit issuance that would have justified the application of different permit conditions.
 3. Material and substantial alterations or additions to the permitted facility or activities which occurred after this permit issuance.
 4. Promulgation of new or amended standards or regulations having a direct bearing upon permit conditions, or requiring permit revision.
 5. The Permittee has requested a modification based on other rationale meeting the criteria of 40 CFR Part 122.62.
 6. Ecology has determined that good cause exists for modification of a compliance schedule, and the modification will not violate statutory deadlines.
 7. Incorporation of an approved local pre-treatment program into a municipality's permit.
- C. The following are causes for modification or alternatively revocation and reissuance:
1. Cause exists for termination for reasons listed in A1 through A7, of this section, and Ecology determines that modification or revocation and reissuance is appropriate.
 2. Ecology has received notification of a proposed transfer of the Permit. A Permit may also be modified to reflect a transfer after the effective date of an automatic transfer but will not be revoked and reissued after the effective date of the transfer except upon the request of the new Permittee.

G4. REPORTING PLANNED CHANGES, CAUSE FOR MODIFICATION

The Permittee must, as soon as possible, but no later than sixty (60) days prior to the proposed changes, give notice to Ecology of planned physical alterations or additions to the permitted facility, production increases, or process modification which will result in:

- A. The permitted facility being determined to be a new source pursuant to 40 CFR 122.29(b).
- B. A significant change in the nature or an increase in quantity of pollutants discharged.

C. A significant change in the Permittee's sludge use or disposal practices.

Following such notice, and the submittal of a new application or supplement to the existing application, along with required engineering plans and reports, this Permit may be modified, or revoked and reissued pursuant to 40 CFR 122.62(a) to specify and limit any pollutants not previously limited. Until such modification is effective, any new or increased discharge in excess of permit limits or not specifically authorized by this Permit constitutes a violation.

G5. PLAN REVIEW REQUIRED

Prior to constructing or modifying any wastewater control facilities, an engineering report and detailed plans and specifications must be submitted to Ecology for approval in accordance with WAC 173-240. Engineering reports, plans, and specifications must be submitted at least one hundred eighty (180) days prior to the planned start of construction unless a shorter time is approved by Ecology. Facilities must be constructed and operated in accordance with the approved plans.

G6. COMPLIANCE WITH OTHER LAWS AND STATUTES

Nothing in this Permit must be construed as excusing the Permittee from compliance with any applicable federal, state, or local statutes, ordinances, or regulations.

G7. TRANSFER OF THIS PERMIT

In the event of any change in control or ownership of facilities from which the authorized discharge emanate, the Permittee must notify the succeeding owner or controller of the existence of this Permit by letter, a copy of which must be forwarded to Ecology. This Permit is automatically transferred to a new owner or operator if:

- A. A written agreement between the old and new owner or operator containing a specific date for transfer of permit responsibility, coverage, and liability is submitted to Ecology;
- B. A copy of the Permit is provided to the new owner and;
- C. Ecology does not notify the Permittee of the need to modify the Permit.

Unless this Permit is automatically transferred according to section A, above, this Permit may be transferred only if it is modified to identify the new Permittee and to incorporate such other requirements as determined necessary by Ecology.

G8. REDUCED PRODUCTION FOR COMPLIANCE

The Permittee, in order to maintain compliance with its Permit, must control production and/or all discharges upon reduction, loss, failure, or bypass of the treatment facility until the facility is restored or an alternative method of treatment is provided. This requirement applies in the situation where, among other things, the primary source of power of the treatment facility is reduced, lost, or fails.

G9. REMOVED SUBSTANCES

Collected screenings, grit, solids, sludge, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters must not be resuspended or reintroduced to the final effluent stream for discharge to state waters.

G10. DUTY TO PROVIDE INFORMATION

The Permittee must submit to Ecology, within a reasonable time, all information which Ecology may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Permit or to determine compliance with this Permit. The Permittee must also submit to Ecology upon request, copies of records required to be kept by this Permit.

G11. OTHER REQUIREMENTS OF 40 CFR

All other requirements of 40 CFR 122.41 and 122.42 are incorporated in this Permit by reference.

G12. ADDITIONAL MONITORING

Ecology may establish specific monitoring requirements in addition to those contained in this Permit by administrative order or permit modification.

G13. PAYMENT OF FEES

The Permittee must submit payment of fees associated with this Permit as assessed by Ecology. Ecology may revoke this Permit if the permit fees established under WAC 173-224 are not paid.

G14. PENALTIES FOR VIOLATING PERMIT CONDITIONS

Any person who is found guilty of willfully violating the terms and conditions of this Permit is deemed guilty of a crime, and upon conviction thereof will be punished by a fine of up to ten thousand dollars (\$10,000) and costs of prosecution, or by imprisonment in the discretion of the court. Each day upon which a willful violation occurs is a separate and additional violation. Any person who violates the terms and conditions of a waste discharge permit incurs, in addition to any other penalty as provided by law, a civil penalty in the amount of up to ten thousand dollars (\$10,000) for every such violation. Each and every such violation is a separate and distinct offense, and in case of a continuing violation, every day's continuance is deemed to be a separate and distinct violation.

G15. UPSET

Definition – “Upset” means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limits because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limits if the requirements of the following paragraph are

met. A Permittee who wishes to establish the affirmative defense of upset must demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that: 1) an upset occurred and that the Permittee can identify the cause(s) of the upset; 2) the permitted facility was being properly operated at the time of the upset; 3) the Permittee submitted notice of the upset as required in condition S5.A; and 4) the Permittee complied with any remedial measures required under S9.D of this Permit. In any enforcement proceedings the Permittee seeking to establish the occurrence of an upset has the burden of proof.

G16. PROPERTY RIGHTS

This Permit does not convey any property rights of any sort, or any exclusive privilege.

G17. DUTY TO COMPLY

The Permittee must comply with all conditions of this Permit. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

G18. TOXIC POLLUTANTS

The Permittee must comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if this Permit has not yet been modified to incorporate the requirement.

G19. PENALTIES FOR TAMPERING

The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this Permit will, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than two years per violation, or by both. If a conviction of a person is for a violation committed after a first conviction of such person under this Condition, punishment will be a fine of not more than \$20,000 per day of violation, or by imprisonment of not more than four (4) years, or by both.

G20. COMPLIANCE SCHEDULES

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Permit must be submitted no later than fourteen (14) days following each schedule date.

G21. REPORTING ANTICIPATED NON-COMPLIANCE

The Permittee shall give advance notice to Ecology by submission of a new application, or supplement to the existing application, at least 45 days prior to commencement of such discharges, of any facility expansions, production increases, or other planned changes, such as process modifications, in the permitted facility or activity which may result in noncompliance with permit limits or conditions. Any maintenance of facilities, which might necessitate unavoidable interruption of operation and degradation of effluent quality, shall

be scheduled during non-critical water quality periods and carried out in a manner approved by Ecology.

G22. DUTY TO REAPPLY

The Permittee must reapply for coverage under this General Permit at least one hundred and eighty (180) days prior to the specified expiration date of this General Permit. An expired General Permit and coverage under the Permit continues in force and effect until Ecology issues a new General Permit or until Ecology cancels it. Only those Permittees that reapply for coverage are covered under the continued Permit.

APPENDIX A – DEFINITIONS

All definitions listed below are for use in the context of this Permit only.

303(d): Section 303(d) of the federal Clean Water Act requires states to develop a list of polluted water bodies every two years. For each of those water bodies, the law requires states to develop Total Maximum Daily Loads (TMDLs). A TMDL is the amount of pollutant loading that can occur in a given water body (river, marine water, wetland, stream, or lake) and still meet water quality standards.

2,4-D Ester: 2,4-Dichlorophenoxyacetic acid, butoxyethyl ester.

2,4-D Amine: 2,4-Dichlorophenoxyacetic acid, dimethylamine salt.

Adjuvant: An additive, such as a surfactant, that enhances the effectiveness of the primary chemical (active ingredient).

Algae: Primitive, chiefly aquatic, one-celled, or multicellular plant-like organisms that lack true stems, roots, and leaves but usually contain chlorophyll.

Algaecide: A chemical compound that kills or reduces the growth of algae or cyanobacteria.

Algae Control: Applying algaecide products to kill or suppress the growth of cyanobacteria, filamentous algae, or any algal species that have the potential to affect human or environmental health.

All Known, Available, and Reasonable methods of prevention, control, and Treatment

(AKART): A technology-based approach to limiting pollutants from discharges.

Described in chapters 90.48 and 90.54 RCW and chapters 173-201A, 173-204, 173-216 and 173-220 WAC.

Aminopyralid: 4-amino, 3,6-dichloropyridine-2-carboxylic acid.

Applicant: The licensed pesticide applicator or state or local government entity choosing to get coverage under this Permit. For phosphorus inactivation projects the applicant does not need to be a licensed applicator but may be a government entity or the person that discharges the product.

Application Schedule: The proposed treatment date(s) for a specific water body or specific area within a water body during one treatment season.

Applicator: The person that discharges the chemical to a water body. Applicators are required to be licensed to apply registered pesticides. Some chemicals such as alum are not registered or used as pesticides and therefore the applicator does not, by state law, have to be licensed.

Aquatic Nuisance Plants: Any non-noxious aquatic plants that are at a density and location so as to substantially interfere with or eliminate some beneficial uses of the water body. Typically these beneficial uses include activities such as boating, swimming, fishing, or waterskiing.

Aquatic Plant Control: The partial removal of aquatic plants within a water body or along a shoreline to allow for the protection of beneficial uses of the water body.

Biological Water Clarifiers: Products sold for the purpose of water clarification, removal of organic materials from sediment, and reduction of nutrients (as claimed by manufacturers).

Bispyribac-Sodium: Sodium, 2,6-bis [(4,6-dimethoxy-pyrimidin-2-yl)oxy] benzoate.

Blooms: A high density or rapid increase in abundance of algae (cyanobacteria).

Botanist: A scientist that specializes in the study and identification of plants, or an individual with education and experience in the identification of plant species.

Carfentrazone-ethyl: Ethyl a,2-dichloro-5-[4-(difluoromethyl)-4,5-dihydro-3-methyl-5-oxo-1H-1,2,4-triazol-1-yl]-4-fluorobenzenepropanoate.

Constructed Water Body: A man-made water body created in an area that was not part of a previously existing watercourse, such as a pond, stream, wetland, etc.

Contact Herbicide: An herbicide that typically affects only the part of the plant that the herbicide is applied to. Contact herbicides often act as chemical mowers, leaving roots available for re-growth. Contact herbicides are fast-acting, but tend to result in temporary removal of the targeted plants.

Control: The partial removal of native plants, non-native non-noxious plants, algae, and noxious or quarantine-list weeds (that are not being eradicated lake-wide) from a water body. The purpose of control activities is to protect some of the beneficial uses of a water body such as swimming, boating, water skiing, fishing access, etc. The goal is to maintain some native aquatic vegetation for habitat while allowing some removal for beneficial use protection.

Cyanobacteria: A group of usually unicellular photosynthetic organisms without a well-defined nucleus; sometimes called "blue-green algae" although they are not actually algae. Some genera of cyanobacteria produce potent liver or nerve toxins.

Defined Navigation Channels: Clearly delineated areas that are intended to provide safe access to different sections of the water body by boat.

Detention or Retention Ponds: Man-made water bodies specifically constructed to manage stormwater. Detention ponds are generally dry until a significant storm event. Retention (wet) ponds are designed to have a permanent pool of water and gradually release stormwater through an outlet.

Diquat: Dibromide salt of 6,7-dihydrodipyrido (1,2-a:2',1''-c) pyrazinediium.

Direct Supervision Responsibilities: Licensed certified applicators may directly supervise unlicensed applicators. Direct supervision by aquatic certified applicators means direct on-the-job supervision and requires that the certified applicator be physically present at the application

site and that the person making the application be in voice and visual contact with the certified applicator at all times during the application (RCW 17.21).

Emergent Vegetation: Aquatic plants that generally have their roots in the water, but the rest of the plant is above water (e.g., cattails, bulrush).

Endothall Dipotassium Salt: Dipotassium salt of 7-oxabicyclo[2.2.1]heptane-2,3dicarboxylic acid.

Eradication: The permanent removal of all individuals of a plant species from a water body or along a shoreline.

Endothall Mono Salt: mono(N,N-dimethylalkylamine) salt of 7-oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid.

Farm Pond: Private farm ponds created from upland sites that did not incorporate natural water bodies (WAC 173-201A-260(3)(f)).

Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA): A set of EPA regulations that establishes uniform pesticide product labeling, use restrictions, and review and labeling of new pesticides.

Filamentous Algae: Typically green algae species that grow in long strings or form cloud-like mats in water. Filamentous algae do not produce toxins.

Floating-Leaved Plants: Plants that are rooted in the sediment but have leaves floating on the water's surface (e.g., water lilies).

Florpyrauxifen-benzyl: 2-pyridinecarboxylic acid, 4-amino-3-chloro-6-(4-chloro-2-fluoro-3-methoxyphenyl)- 5-fluoro-, phenyl methyl ester.

Flumioxazin: 2-[7-fluoro-3,4-dihydro-3-oxo-4-(2-propynyl)-2H-1,4-benzoxazin-6-yl]-4,5,6,7-tetrahydro-1H-isoindole-1,3(2H)-dione.

Fluridone: 1-methyl-3-phenyl-5-[3-(trifluoromethyl)phenyl]-4(1H)-pyridinone.

Glyphosate: N-(phosphonomethyl)glycine, isopropylamine salt.

Herbicide: Any substance or mixture of substances intended to prevent, destroy, repel, or mitigate any weed or other higher plant (see chapter 17.21.020 RCW).

High Use Areas: Any areas that get a high level of human use. Examples include community and public boat launches, marinas, public or community swim beaches, and canals.

Identified and/or Emergent Wetlands: Identified wetlands are those identified by either local, state, or federal agencies as being important wetlands. Emergent wetlands (marshes) are characterized by plants growing with their roots underwater and leaves extending above the water (emergent plants).

Imazamox: 2-[4,5-dihydro-4-methyl-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-5-(methoxymethyl)-3-pyridinecarboxylic acid.

Imazapyr: 2-(4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl)-3-pyridinecarboxylic acid.

Indian Country: Means as defined in 18 USC 1151: “Except as otherwise provided in sections 1154 and 1156 of this title, the term “Indian country”, as used in this chapter, means (a) all land within the limits of any Indian reservation under the jurisdiction of the United States Government, notwithstanding the issuance of any patent, and, including rights-of-way running through the reservation, (b) all dependent Indian communities within the borders of the United States whether within the original or subsequently acquired territory thereof, and whether within or without the limits of a state, and (c) all Indian allotments, the Indian titles to which have not been extinguished, including rights-of-way running through the same.”

Individual Treatments: Treatments done at the request of an individual owner under a permit coverage specific to that property only.

Intentionally Apply: The Permit allows the applicator to directly discharge an herbicide, algaecide, or other product identified in this Permit into areas designated for treatment (e.g., via hoses, granular pellets, etc.). Note that products applied directly to the water may disperse outside of the boundaries of the treated area.

Levees and Dikes: Typically earth structures (dams) that keep elevated water levels from flooding interior lowlands.

Licensed Pesticide Applicator: Any individual who is licensed as a commercial pesticide applicator, commercial pesticide operator, public operator, private-commercial applicator, demonstration and research applicator, or certified private applicator, or any other individual who is certified by the director of WSDA to use or supervise the use of any pesticide which is classified by the EPA as a restricted use pesticide or by the state as restricted to use by certified applicators only. WSDA classifies aquatic herbicides as restricted use pesticides.

Littoral Zone: The vegetated area from the water body’s edge to the maximum water depth where plant growth occurs. The littoral zone varies between water bodies depending on bathymetry, water clarity, water quality, and other environmental conditions.

Lot: A parcel of land having fixed boundaries.

Management: the control or eradication of aquatic plants.

Marker Dyes: Colorants that are sprayed onto the targeted weed along with the herbicide. Marker dyes allow better targeting of herbicide sprays since treated and untreated areas are more clearly seen by the applicator.

Municipal or Community Drinking Water Intakes: A drinking water intake that supplies water to a city, town, or a community.

Notice of Intent: An application to obtain coverage under an NPDES permit.

Noxious Weed: Means a plant that when established is highly destructive, competitive, or difficult to control by cultural or chemical practices (RCW 17.10.010(1)). The Washington State Noxious Weed Control Board maintains the list of noxious weeds in WAC 16-750-005, 16-750-011, and 16-750-015. Noxious weeds may also include: Plants listed on the quarantine list as identified in chapter 16-752-610 WAC. Non-native and potentially invasive plants not listed on the above lists, as determined by the Washington State Noxious Weed Control Board, the Washington State Department of Agriculture (WSDA), or the Washington State Department of Ecology (Ecology).

Occasionally: No more than a few times (1-3) per treatment season and only for unforeseen events (e.g., disruption with product deliveries or severe adverse weather conditions).

Penoxsulam: 2-(2,2-difluoroethoxy)--6-(trifluoromethyl-N-(5,8-dimethoxy[1,2,4] triazolo[1,5-c]pyrimidin-2-yl)) benzenesulfonamide.

Permittee: The licensed applicator or government entities that have obtained coverage under the Permit. For phosphorus inactivation projects, the Permittee may be the discharger that most closely resembles a licensed applicator.

Peroxyacetic Acid/Peracetic Acid (PAA): CH₃CO₃H

Pesticide: WAC 15.58.030 (31) "Pesticide" means, but is not limited to:

- a) Any substance or mixture of substances intended to prevent, destroy, control, repel, or mitigate any insect, rodent, snail, slug, fungus, weed, and any other form of plant or animal life or virus, except virus on or in a living person or other animal which is normally considered to be a pest or which the director may declare to be a pest;
- b) Any substance or mixture of substances intended to be used as a plant regulator, defoliant or desiccant; and
- c) Any spray adjuvant.

Phosphorus Inactivation Products: Products used to inactivate nutrients in the sediments such as aluminum sulfate or sodium aluminate (alum) and calcium hydroxide.

Private Property: Any property owned by a single person or multiple persons or business that provides no public access to a water body.

Priority Habitats and Species: Habitats and species that WDFW considers priorities for conservation and management in Washington. Priority species require protective measures for their survival due to their population status, sensitivity to habitat alternation, and/or recreational, commercial or tribal importance. Priority habitats are habitat types or elements with unique or significant value to a diverse assemblage of species.

Privately or Publicly-Owned Shoreline: Any shoreline area **without public access**, owned by an individual, business, or a public entity.

Public Access: Identified legal passage to any of the public waters of the State, assuring that members of the public have access to and use of public waters for recreational purposes. Public access areas include public- or community-provided swimming beaches, picnic areas, docks, marinas, and boat launches at state or local parks and private resorts.

Public Access Areas: These areas include public- or community-provided swimming beaches, picnic areas, docks, marinas, and boat launches at state or local parks and private resorts.

Public Boat Launch: A public- or community-provided location on a water body that is designated for the purpose of launching or placing a boat in the water, usually for recreational purposes. Boat launches also include sites used as put-ins and take-outs for small watercraft such as canoes or kayaks.

Public Entrance: A location where people typically access a public pathway.

Public Pathway: A trail along a water body that allows access to the water body by the public.

Quarantine-Listed Weeds: Plants listed on the WSDA Quarantine list as identified in chapter 16.750 WAC.

Reasonable Public Access: Identified legal passage to any of the public waters of the State, or areas where it is apparent that the public have been accessing the water (well-worn pathways or other indications of recent human usage of the site).

Recreation: Water skiing, boating, swimming, wading, fishing, and other such water-related activities.

Right-of-Way: A strip of land that is granted, through an easement or other mechanism, for transportation or other typically public uses. Right of way locations may include roadsides and/or highways, railroads, power lines and irrigation ditches.

Same Time of Day: The same two-hour time window for pre- and post-treatment monitoring on any given day (applies to pH and dissolved oxygen monitoring).

Selective Herbicide: An herbicide that kills or affects specific plant species, sparing other less-susceptible species. Selectivity occurs through different types of toxic action or by the manner in which the material is used (its formulation, dosage, timing, placement, etc.).

Sensitive, Threatened, or Endangered Plants:

Sensitive: Any species that is vulnerable or declining and could become endangered or threatened in the state without active management or removal of threats.

Threatened: Any species likely to become endangered in Washington within the foreseeable future if factors contributing to its population decline or habitat degradation or loss continue.

Endangered: Any species in danger of becoming extinct or extirpated from Washington within the foreseeable future if factors contributing to its decline continue. Populations of

these species are at critically low levels or their habitats have been degraded or depleted to a significant degree.

Shading Products: These compounds are usually non-toxic dyes and are designed to reduce the amount of light penetrating the surface of a water body, thereby reducing plant and algae growth.

Shoreline: The area where water and land meet.

Shoreline Recreational Facilities: Means facilities located along a waterbody that provide water contact activities as part of an organized camp (e.g. children's camp through YMCA or other organization) and facilities where water contact activities are expected such as marinas, resorts, parks or other facilities actively managed for water contact recreation.

Sodium Carbonate Peroxyhydrate: $2\text{Na}_2\text{CO}_3 \cdot 3\text{H}_2\text{O}_2$.

Sponsor: A private or public entity or a private individual with a vested or financial interest in the treatment. Typically the sponsor contracts with a licensed applicator to apply pesticides for aquatic plant or algae management. A sponsor is an individual or an entity that has authority to administer common areas of the water body or locations within the water body for the purposes of aquatic plant and algae management. Entities with this authority include Lake Management Districts formed under chapter 36.61 RCW, Special Purpose Districts formed under Title 57 RCW, Homeowners Associations formed under chapter 64.38 RCW, and groups operating under the provisions of chapter 90.24 RCW. There may be other entities with the authority to manage common areas in public or private water bodies. For treatment on individual lots, the sponsor must have the authority to contract for aquatic plant and algae management within the lot boundaries.

State Experimental Use Permit: A permit issued by WSDA allowing use of pesticides that are not registered, or for experiments involving uses not allowed by the pesticide label. Aquatic applications are limited to one acre or less in size.

Submersed Plants: Underwater. Submersed plants generally always remain under water, although many submersed species produce above-water flowers (e.g., pondweeds, milfoil).

Surface Waters of the State of Washington: All waters defined as "waters of the United States" in 40 CRF 122.2 within the geographic boundaries of the state of Washington. All waters defined in RCW 90.48.020. This includes lakes, rivers, ponds, streams, inland waters, and all other fresh or brackish surface waters and water courses within the jurisdiction of the state of Washington. Also includes drainages to surface waters.

Swimming Advisory: Information required to be posted on all public signs advising people not to swim in the treated area for a number of hours after treatment. An advisory is a recommendation rather than a restriction.

Swimming Restriction: Information required to be posted on all public signs stating that no swimming must occur in the treatment area for a number of hours after treatment.

Systemic Herbicide: A chemical that moves (translocates) throughout the plant and kills both the roots and the top part of the plant. Systemic herbicides are generally slower-acting than contact herbicides, but tend to result in permanent removal of the targeted plants.

Topramezone: [3-(4,5-dihydro-isoxazol-3-yl)-4-methylsulfonyl-2-methylphenyl] (5-hydroxy-1-methyl-1H-pyrazol-4-yl)methanone.

Treatment: The application of an aquatic herbicide, algaecide, or control product to the water or directly to vegetation to control vegetation, algae, or remove or inactivate phosphorus.

Treated Area: The area where pesticide is applied and where the concentration of the pesticide is sufficient to cause the intended effect on aquatic plants or algae.

Triclopyr TEA: Triethylamine salt of 3,5,6-trichloro-2-pyridyloxyacetic acid.

Trust or Restricted Lands: Means as defined in 25 USC 2201(4): “(i) “trust or restricted lands” means lands, title to which is held by the United States in trust for an Indian tribe or individual, or which is held by an Indian tribe or individual subject to a restriction by the United States against alienation; and (ii) “trust or restricted interest in land” or “trust or restricted interest in a parcel of land” means an interest in land, the title to which interest is held in trust by the United States for an Indian tribe or individual, or which is held by an Indian tribe or individual subject to a restriction by the United States against alienation.”

Washington Pesticide Control Act: Chapter 15.58 RCW.

Water Right: A water right is a legal authorization to use a predefined quantity of public water for a designated use. The purpose must qualify as a beneficial use such as irrigation, domestic water supply, etc. Any use of surface water which began after the state water code was enacted in 1917 requires a water-right permit or certificate.

Wetland: Any area inundated with water sometime during the growing season, and identified as a wetland by a local, state, or federal agency.

In the absence of other definitions set forth herein, the definitions set forth in 40 CFR Part 403.3 or in chapter 90.48 RCW apply.

APPENDIX B – ECOLOGY NOTIFICATION TEMPLATE

See Special Condition S5.A for instructions on providing notification to Ecology.

Email Form

Email to: apampreposttreat@ecy.wa.gov

From: **Permittee or Applicator:** (name)
Cell Phone No: (contact number for the applicator)

Pre-Treatment Notification

Week of Treatment:

Water body name & permit no.	County	Location where treatment will begin	Chemicals/products proposed for use	Targeted plants & algae	Proposed date & treatment start time

Additional Information: _____

Post-Treatment Notification

Week of Treatment:

Waterbody name & permit no.	County	Chemicals or products used	Targeted plants/ algae	Acres treated	Amount of active ingredient applied (lbs.)	Treatment date

Additional Information: _____

Knowingly submitting false information will result in permit termination.

Permittee may add additional rows if needed

APPENDIX C - FLURIDONE VEGETATION MANAGEMENT PLAN

The following elements are minimum requirements for a Fluridone Vegetation Management Plan. The applicant must prepare a Fluridone Vegetation Management Plan and submit it to Ecology for review and approval prior to conducting fluridone treatments of more than:

- 50 percent of the littoral zone in lakes up to 50 acres
or
- 40 percent of the littoral zone in lakes from 50 - 500 acres.

Elements from other documents such as Integrated Aquatic Vegetation Management Plans may substitute for equivalent elements of the Fluridone Vegetation Management Plan.

The Permittee must submit a signed and dated plan to Ecology when applying for or updating a permit coverage (Special Condition S2.B.1.a).

The applicant/Permittee must develop its Fluridone Vegetation Management Plan jointly with the sponsor.

I. WATERBODY INFORMATION

1. Names and locations of any inlets and outlets and impacts of those inlets and outlets on fluridone treatment.
2. List the aquatic plant species (species or common names) in the water body (submersed, floating, and floating-leaved plants) and along the shorelines (emergent plants):

Ecology's aquatic plant database:

<https://fortress.wa.gov/ecy/coastalatlus/tools/LakeDetail.aspx>

Ecology's freshwater plant identification manual:

<https://fortress.wa.gov/ecy/gisresources/lakes/AquaticPlantGuide/index.html>

3. List any sensitive, threatened, or endangered aquatic plant species in the water body or along the shoreline.

Attach a recent map of their locations.

Washington Department of Natural Resources (DNR) rare plant information:

<http://www1.dnr.wa.gov/nhp/refdesk/plants.html> or contact Ecology's permit manager for this information.

4. List any sensitive habitats or wetlands associated with the water body.

Attach a recent map of these areas.

DNR's information about high quality/rare ecological communities:

<https://www.dnr.wa.gov/NHPspecies>.

5. Are any of the fish species using the water body and associated tributaries sensitive, threatened, or endangered?

If present, at what time of year are they in the water body?

6. List any sensitive, threatened, or endangered aquatic animals (excluding fish) using the water body:

WDFW Priority Habitats and Species <https://wdfw.wa.gov/species-habitats/at-risk/phs>

7. Are there any sensitive waterfowl and bird species (common names) or important nesting areas or rookeries associated with the water body? If so, attach a map of these areas.

WDFW Priority Habitats and Species: <https://wdfw.wa.gov/species-habitats/at-risk/phs>

See also WDFW species timing windows: <https://ecology.wa.gov/Asset-Collections/Doc-Assets/Water-quality/Water-Quality-Permits/Aquatic-Pesticides-Permits/WDFW-timing-table.pdf>

II. PROBLEM DESCRIPTION AND STATEMENT

1. Describe the target noxious weed species, growth types (e.g. emergent, submersed, etc.), locations, and density in the water body.
2. Describe any unique characteristics about the noxious weed species that may help determine the most appropriate management methods and timing.
3. Attach a map that includes the approximate location and species of the target noxious weed species in the water body:

Ecology's survey methods for aquatic plant mapping:

<https://fortress.wa.gov/ecy/publications/SummaryPages/9003001.html>

4. Identify and discuss possible factors that are causing or contributing to noxious weed growth (e.g., nutrients, invasive species, etc.).
5. Describe why whole lake Fluridone treatment(s) is the appropriate method for eradicating the target noxious weed species from this water body.
6. If a sensitive, threatened, or endangered species or habitat is present (identified in section I. WATERBODY INFORMATION of this plan), describe in detail how will its presence be taken into account during planning and treatment to prevent take?

III. SURVEILLANCE

1. Describe your surveillance plan for evaluating the treatment areas to determine when treatment or re-treatment is appropriate.
2. Describe how you will evaluate (monitor) treatment effectiveness and explain your criteria for determining treatment efficacy.

3. Describe how you will monitor for any adverse impacts caused by treatment.

IV. OUTCOMES AND RESPONSES

1. Describe how you will respond, including specific actions you will take, to any detection of non-target impacts from whole lake treatment with Fluridone.
2. If non-target impacts to sensitive, threatened, or endangered species or habitat are detected, describe how you will respond and the specific actions you will take.
3. Describe the desired outcome of whole lake noxious weed treatment with Fluridone.

V. SIGNATURE REQUIREMENTS

I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of those persons directly responsible for gathering information, the information in the Fluridone Vegetation Management Plan is, to the best of my knowledge and belief, true, accurate, and complete and will be updated as necessary. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment of knowing violations.

Signature of Permittee

Date

I certify under penalty of law, that I have reviewed this document and all attachments, and that the sponsor concurs with the information contained in the Fluridone Vegetation Management Plan. The information in the Fluridone Vegetation Management Plan is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment of knowing violations.

Signature of Sponsor's Representative

Date

Sonar[®] Q

Aquatic Herbicide

SPECIMEN



AN 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) pyridinone 5.0%
Other Ingredients 95.0%
TOTAL 100.0%

Contains 0.05 lbs active ingredient 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.)

Refer to inside of label booklet for additional precautionary statements and Directions for Use, including first aid and Storage and Disposal.

NOTICE: Read the entire label before using. Use only according to label directions. Before buying or using this product, read *Warranty Disclaimer* and *Misuse* statements inside label booklet. If terms are unacceptable, return at once unopened.

EPA Reg. No. 67690-3
FPL20170208
EPA Est. No. 067690-NC-002
167808

Sonar is a registered trademark of SePRO Corporation
SePRO Corporation 11550 North Meridian Street, Suite 600
Carmel, IN 46032, U.S.A.

PRODUCT INFORMATION

Sonar Q herbicide is a selective systemic aquatic herbicide for management of aquatic vegetation in fresh water ponds, lakes, reservoirs, drainage canals, irrigation canals, and rivers. This product is a pelleted formulation containing 5% fluridone. Sonar Q is absorbed from water by plant shoots and from hydrosol by the roots of aquatic vascular plants. It is important to maintain this product in contact with the target plants for as long as possible. Rapid water movement or any condition which results in rapid dilution of this product in treated water will reduce its effectiveness. In susceptible plants, this product inhibits the formation of carotene. In the absence of carotene, chlorophyll is rapidly degraded by sunlight.

Herbicidal symptoms of Sonar Q 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 this product. Species susceptibility to this product may vary depending on time of year, stage of growth and water movement. For best results, apply this product prior to initiation of weed growth or when weeds begin active growth. Application to mature target plants may require an application rate at the higher end of the specified rate range and may take longer to control.

Sonar Q 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 a High-Performance Liquid Chromatography (HPLC) for the determination of the active ingredient concentration in the water. Contact SePRO Corporation to incorporate this test, known as a FasTEST, into your treatment program. Other proven chemical analyses for the active ingredient may also be used. The 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 Q to achieve a desired concentration of the active ingredient in parts 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 concentrations of the active ingredient in the treated water.

Use Restrictions

- **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 Q is not permitted in waters less than two (2) feet deep, except as permitted under FIFRA Section 24(c), Special Local Need registration.
- **Hydroponic Farming:** Do not use water from a Sonar-treated area for hydroponic farming unless one of the following has been verified for the relevant active water intake and its withdrawal of surface water:
 - o A FasTEST has been run and the concentration in water at the intake is less than 1 ppb; or
 - o A filtration or water treatment process following water intake has been verified analytically to reduce the concentration in potential irrigation water below 1 ppb.
- **Greenhouse and Nursery Plants:** Do not use water from a Sonar-treated area for greenhouse and nursery irrigation unless one of the following has been verified for the relevant active water intake and its withdrawal of surface water:
 - o For the irrigation of woody ornamental plants, a FasTEST has been run and the concentration at the intake is less than 5 ppb; or
 - o For the irrigation of other greenhouse or nursery plants, the concentration is confirmed less than 1 ppb; or
 - o A filtration or water treatment process following water intake has been verified analytically to reduce the concentration in potential irrigation water below either the 1 or 5 ppb levels cited above.

Water Use Restrictions Following Applications With Sonar Q (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 Q within ¼ miles (1,320) feet of a functioning potable water intake.

^{††} Note below, under *Irrigation*, specific time frames or fluridone concentrations 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 Q at application rates greater than 20 ppb within one-fourth (1/4) mile (1,320 feet) of any functioning potable water intake. At application rates of 8-20 ppb, this product 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.**

Use Precautions

- **Irrigation:** Irrigation with Sonar Q treated water may result in injury to the irrigated vegetation. Follow these precautions and inform those who irrigate from areas treated with this product of the irrigation time frames or FasTEST requirements presented in the table below. These time frames and FasTEST recommendations are suggestions which should be followed to reduce the potential for injury to vegetation irrigated with water treated with this product. Greater potential for crop injury occurs where treated water is applied to crops grown on low organic and sandy soils.

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION. 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.

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.)

FIRST AID	
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 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 to 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.
HOTLINE 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 .	

ENVIRONMENTAL HAZARDS

Follow use directions carefully so as to minimize adverse effects on non-target organisms. Trees and shrubs growing in water treated with this product may occasionally develop chlorosis. Do not apply in tidal saltwater. 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.

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 Q.

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	FasTEST required
Canals	7	7	FasTEST required
Rivers	7	7	FasTEST required
Lakes and Reservoirs ^{††}	7	7	FasTEST required

[†] For purposes of Sonar Q 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 Q treated water is desired for irrigating crops prior to the time frames established above, the use of a FasTEST is recommended to measure the concentration in the treated water. Where a 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 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 a SePRO Aquatic Specialist be consulted prior to commencing irrigation of these sites.**

PLANT CONTROL INFORMATION

Sonar Q 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 this product. It is recommended to consult a SePRO Aquatic Specialist prior to application to determine a plant's susceptibility to this product.

Vascular Aquatic Plants Controlled by Sonar Q:¹

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*)

¹ Species denoted by a dagger (†) are native plants that are often tolerant to fluridone at lower use rates. Please consult a SePRO Aquatic Specialist for recommended Sonar Q use rates (not to exceed maximum labeled rates) when selective control of exotic species is desired.

Vascular Aquatic Plants Partially Controlled by Sonar Q:

Submersed Plants:

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

Emerald 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*)

Floating Plants:

Salvinia (*Salvinia* spp.)

Shoreline Grasses:

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

Vascular Aquatic Plants Not Controlled by Sonar Q:

Emerald 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.)

Floating Plants:

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

Shoreline Grasses:

maidenhair (*Panicum hemitomon*)

NOTE: algae (chara, nitella, and filamentous species) are not controlled by Sonar Q

APPLICATION DIRECTIONS

The aquatic plants present in the treatment site should be identified prior to application to determine their susceptibility to Sonar Q. 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 Q 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 the *Application Rate Calculation—Ponds, Lakes and Reservoirs* section of this label. Split or multiple applications may be used 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 Q per Treated Surface Acre	
	45 ppb	90 ppb
1	2.5	5.0
2	5.0	10.0
3	7.5	15.0
4	10.0	20.0
5	12.5	25.0
6	15.0	30.0
7	17.0	34.0
8	19.5	39.0
9	22.0	44.0
10	24.5	49.0

Application to Lakes and Reservoirs

The following treatments may be used 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 Q 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)

Single Application to Whole Lakes or Reservoirs

Where single applications to whole lakes or reservoirs are desired, apply Sonar Q 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 application rate calculations, refer to the *Application Rate Calculation—Ponds, Lakes and Reservoirs* section of this label. Choose an application rate from the table below 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 a SePRO 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 section of this label entitled, *Split or Multiple Applications to Whole Lakes or Reservoirs*, for guidelines and maximum rate allowed.

Average Water Depth of Treatment Site (feet)	Pounds of Sonar Q per Treated Surface Acre	
	16 ppb	90 ppb
1	0.9	5.0
2	1.7	10.0
3	2.6	15.0
4	3.5	20.0
5	4.3	25.0
6	5.2	30.0
7	6.0	34.0
8	6.9	39.0
9	7.8	44.0
10	8.6	49.0
11	9.5	54.0
12	10.4	59.0
13	11.2	64.0
14	12.1	68.0
15	13.0	73.0
16	13.8	78.0
17	14.7	83.0
18	15.6	88.0
19	16.4	93.0
20	17.3	98.0

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 a SePRO 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 ¼ 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 Q 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 this product in a partial lake is highly dependent upon the treatment area. An application rate at the higher end of the specified rate range may be required and frequency of applications will vary depending upon the potential of untreated water diluting the product concentration in the treatment area. Use a rate at the higher end of the rate range where greater dilution with untreated water is anticipated.

Application Sites Greater Than ¼ Mile from a Functioning Potable Water Intake

For single applications, apply Sonar Q 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 a FasTEST is recommended to maintain the desired concentration in the target area over time.

Application Sites within ¼ Mile of a Functioning Potable Water Intake

In treatment areas that are within ¼ mile of a potable water intake, no single application can exceed 20 ppb. When utilizing split or repeated applications of Sonar Q for sites which contain a potable water intake, a 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 Q to be applied to provide the desired ppb concentration of active ingredient equivalents in treated water may be calculated as follows:

Pounds of Sonar Q 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 Q 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 x 25 x 0.054 = 6.75 pounds per treated surface acre.

NOTE: Calculated rates may 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, apply Sonar Q at the rate of 20 to 40 pounds per surface acre.

Moving Water Canals and Rivers:

The performance of Sonar Q 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. This product 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 a 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 Q greater than 20 ppb must be made more than ¼ mile from a functioning potable water intake. Applications less than 20 ppb may be applied within ¼ mile from a functioning potable water intake; however, if applications are made within ¼ mile from a functioning water intake, a 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 Q 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 Q required per day.

STORAGE AND DISPOSAL

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

Pesticide 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 Handling

Non-refillable, rigid container. DO NOT reuse or refill this container. Triple rinse or pressure rinse container (or equivalent) promptly after emptying; then offer for recycling, if available, or reconditioning, if appropriate, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures approved by state and local authorities.

Triple rinse containers small enough to shake as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank, or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times.

Pressure rinse as follows: Empty the remaining contents into application equipment or mix tank. Hold container upside down over application equipment or mix tank, or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

Non-refillable, non-rigid container. DO NOT reuse or refill this container.

Completely empty liner into application equipment by shaking and tapping sides and bottom to loosen clinging particles. If not emptied in this manner, the bag may be considered an acute hazardous waste and must be disposed of in accordance with local, state and federal regulations. When completely empty, offer for recycling if available or 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. If outer packaging is contaminated and cannot be reused, dispose of it in the manner required for its liner.

Warranty Disclaimer: SePRO Corporation warrants that this product conforms to the chemical description on the product label. Testing and research have also determined that this product is reasonably fit for the uses described on the product label. To the extent consistent with applicable law, SePRO Corporation makes no other express or implied warranty of fitness or merchantability nor any other express or implied warranty and any such warranties are expressly disclaimed.

Misuse: Federal law prohibits the use of this product in a manner inconsistent with its label directions. To the extent consistent with applicable law, the buyer assumes responsibility for any adverse consequences if this product is not used according to its label directions. In no case shall SePRO Corporation be liable for any losses or damages resulting from the use, handling or application of this product in a manner inconsistent with its label.

For additional important labeling information regarding SePRO Corporation's Terms and Conditions of Use, Inherent Risks of Use and Limitation of Remedies, please visit <http://www.seprolabels.com/terms/> or scan the image below.



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Littora®

Landscape and Aquatic Herbicide



SPECIMEN

For use as a general herbicide to control weeds in commercial greenhouses and nurseries; ornamental seed crops*; landscape, industrial, recreational, commercial, residential, and public areas; turf renovation; dormant established turfgrass; and aquatic areas.

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 pounds diquat cation per one (1) U.S. gallon (3.73 pounds diquat dibromide per gallon).

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.)

NOTICE: Read the entire label before using. Use only according to label directions. Before buying or using this product, read *Warranty Disclaimer* and *Misuse statements*. If terms are unacceptable, return at once unopened.

*except in the state of California

Littora is a registered trademark of SePRO Corporation

Manufactured for: **SePRO Corporation**

11550 North Meridian Street, Suite 600

Carmel, IN 46032, U.S.A.

EPA Reg. No. 67690-53

FPL20151006

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

KEEP OUT OF REACH OF CHILDREN CAUTION / PRECAUCIÓN

Harmful if inhaled. Harmful if swallowed. Causes moderate eye irritation. Avoid breathing spray mist and contact with eyes or clothing.

FIRST AID	
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 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 the poison control center or doctor. Do not give anything to an unconscious person.
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.
HOTLINE 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 .	

Note to Physicians: 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.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Some materials that are chemical-resistant to this product are: barrier laminate, butyl rubber ≥14 mils, nitrile rubber ≥14 mils.

Mixers, Loaders, Applicators and Other Handlers Must Wear:

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

Exception: After this product has been diluted to 0.50% or less in water (i.e., the labeled rate for some spot applications), applicators for **AQUATIC SURFACE APPLICATIONS** must, at a minimum, wear (Note: Mixers and loaders for this application method must still wear the PPE as described in the above section.):

- Long-sleeved shirt and long pants;
- Shoes plus socks;
- Waterproof gloves; and
- 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 PPE as described in the above section.):

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

USER SAFETY REQUIREMENT

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 exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

ENGINEERING CONTROLS

Mixers and loaders supporting aerial applications are required to use closed systems that provide dermal protection. The closed system must be used in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4)]. When using the closed system, mixers and loaders' PPE requirements may be reduced or modified as specified in the WPS.

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.

USER SAFETY RECOMMENDATIONS

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing/PPE 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

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.

DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling. Read the entire label. Use strictly in accordance with precautionary statements and directions for use, and with applicable state and federal regulations.

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. Do not apply this product through any type of irrigation system. Do not use this product for reformulation.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard (WPS), 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 WPS.

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 WPS and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls over long-sleeve shirt and long pants;
- Chemical-resistant gloves;
- Chemical-resistant footwear plus socks;
- Protective eyewear; and
- 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 (WPS) 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.

PRODUCT INFORMATION

This product is a nonvolatile herbicide for general weed control in:

- Commercial greenhouses and nurseries;
- Ornamental seed crops (flowers, bulbs, etc. - except in the state of California);
- Landscape, industrial, recreational, commercial, residential, and public areas;
- Turf renovation (all turf areas except commercial sod farms);
- Dormant established turfgrass (Bermudagrass, zoysiagrass, nonfood or feed crop); and
- Aquatic areas.

Absorption and herbicidal action is usually quite rapid with effects visible in a few days. This product controls weeds by interfering with photosynthesis that occurs within green plant tissue. Weeds should be succulent and/or 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 aquatic application. Use of dirty or muddy water for diluting this product 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. The interactions of many equipment and weather-related factors determine the potential for spray drift. The applicator is 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 to agricultural field crops:

- The distance of the outermost nozzles on the boom must not exceed $\frac{3}{4}$ the length of the wingspan or rotor; and
- 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 must 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* sections of this label).

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 feet 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 conditions 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).

USE IN COMMERCIAL GREENHOUSES AND NURSERIES

For general weed control in commercial greenhouses (beneath benches), field grown and container stock, and other similar areas, this product may be applied before crop emergence either pre- or post-plant in field grown ornamental nursery plantings, or post-emergence as a directed spray. This product may also be applied before crop emergence in ornamental seed crops (except in the state of California).

Avoid contact with desirable foliage as injury may occur. Do not use on food or feed crops.

Spot spray: Apply 1-2 quarts of this product plus the labeled rate of a 75% or greater nonionic surfactant per 100 gallons of water, or 0.75 ounces (22 milliliters) of this product plus the labeled rate of a 75% or greater nonionic surfactant per 1 gallon of water.

Broadcast: Apply 1-2 pints of this product in a minimum of 15 gallons of water per acre. Add the labeled rate of a 75% or greater nonionic surfactant per 100 gallons of spray mixture. Use an adequate spray volume to insure good coverage.

USE IN ORNAMENTAL SEED CROPS (FLOWERS, BULBS, ETC.)

[EXCEPT IN THE STATE OF CALIFORNIA]

For pre-harvest desiccation of ornamental seed crops. NOT FOR FOOD OR FIBER CROPS.

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

USE IN LANDSCAPE, INDUSTRIAL, RECREATIONAL, COMMERCIAL, RESIDENTIAL, AND PUBLIC AREAS

Littora Landscape and Aquatic Herbicide provides fast control of broadleaf and grassy weeds in industrial, recreational, golf course, commercial, residential, and public areas. This product is a nonselective herbicide that rapidly kills undesirable above ground weed growth in 24-36 hours. Avoid applications to desirable plants.

This product 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 this product with other systemic-type herbicides. Refer to other product labels for specific application directions.

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

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

- **Grounds maintenance weed control:** This product 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. This product can also be used for weed control around the edges and non-flooded portions of ponds, lakes and ditches.
- **Trim and Edge weed control:** This product 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 this product is limited to the spray application width. Do not exceed the labeled rate of this product as excessive rates may result in staining of concrete-based materials.

Since this product 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.

- **Industrial weed control:** Littora 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 non-crop areas.

Spot spray: Apply either 1-2 quarts of this product plus the labeled rate of a 75% or greater nonionic surfactant per 100 gallons water, or 0.75 ounces (22 milliliters) this product plus the labeled rate of a 75% or greater nonionic surfactant per 1 gallon of water.

Broadcast: 1-2 pints of this product per acre in sufficient water to insure good spray coverage. Add the labeled rate of 75% or greater nonionic surfactant per 100 gallons spray mixture. Greater water volumes are necessary if the target plants are tall and/or dense. It is recommended that 60 gallons or greater water volume be used to obtain good coverage of dense weeds.

USE IN TURF RENOVATION (ALL TURF AREAS EXCEPT COMMERCIAL SOD FARMS)

To desiccate golf course turf and other turf areas prior to renovation, apply 1-2 pints of this product per acre plus the labeled rate of a 75% or greater nonionic surfactant in 20-100 gallons of water (4 teaspoons of this product plus the labeled rate of a 75% or greater nonionic surfactant per 1 gallon 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 gallons of water per acre.

For **suppression** of regrowth and quick desiccation of treated turfgrass, this product may be mixed with other systemic nonselective or systemic post-emergence 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.

USE IN 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, six-weeks fescue, henbit, buttercup, and Carolina geranium in established dormant Bermudagrass lawns, parks, golf courses, etc.

Apply 1-2 pints of this product per acre in 20-100 gallons of spray mix by ground as a broadcast application. Add the labeled rate of a 75% or greater nonionic surfactant per 100 gallons of spray mixture.

Bermudagrass must be dormant at application. Application to actively growing Bermudagrass or Bermudagrass in transition 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 this product prior to the mid-boot stage.

USE IN AQUATIC AREAS

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

Obtain Required Permits: Consult with appropriate state or local pesticide and/or water authorities before applying this product in or around public waters. Permits and posting or treatment notification may be required by state, tribal, or local public agencies.

Treatment of dense weed areas may result in oxygen loss from decomposition of dead weeds. This loss of oxygen may cause fish suffocation. Therefore, to minimize this hazard, do not treat more than 1/2 of the water body area at one time and wait 14 days between treatments when susceptible plants are mature and have grown to the water's surface, or when the treatment would result in significant reductions in total plant biomass. Waters having limited and less dense weed infestations may not require partial 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;
- 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.

Treated water may be used according to the water use restrictions set forth in Table 1 or when an approved assay or analytical method establishes that the water does not contain more than the design-nated maximum contaminant level goal (MCLG) of 0.02 mg/l (ppm) of diquat dibromide (calculated as the cation).

Application Rate (gallons/surface acre)	Drinking	Fishing and Swimming	Livestock/ Domestic Animals Consumption	Irrigation to Turf and Landscape Ornamentals ^{††}	Irrigation to Food Crops and Production Ornamentals ^{††}
≥ 2	3 days	0	1 day	3 days	5 days
1	2 days	0	1 day	2 days	5 days
0.75	2 days	0	1 day	2 days	5 days
0.50	1 day	0	1 day	1 day	5 days
Spot Spray[†] (< 0.5)	1 day	0	1 day	1 day	5 days

[†] Add a nonionic surfactant (with at least 75% of the constituents active as a spray adjuvant) at the rate recommended by the manufacturer.

^{††} For preparing agricultural sprays for food crops, turf or ornamentals (to prevent phytotoxicity), do not use water treated with this product 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.

Floating and Marginal Weed Control

This product may be applied by backpack, airboat, spray handgun, helicopter, airplane, or similar application equipment that results in thorough spray coverage.

- cattails, *Typha* spp.
- duckweed, including *Lemna* spp.
- frog's bit[†], *Limnobium spongia*
- pennywort, *Hydrocotyle* spp.
- salvinia spp., including *Salvinia molesta*
- water hyacinth, *Eichhornia crassipes*
- water lettuce, *Pistia stratiotes*

[†] Not for use in California

Spot Treatment: Apply this product at 2 to 4 quarts per 100 gallons spray carrier (0.5 - 1.0% solution) with an approved aquatic surfactant or wetting agent at 0.25 - 1.0% v/v (1 quart to 1 gallon per 100 gallons water; refer to the surfactant label for product-specific rates). For cattail control, this product should be applied prior to flowering at the maximum application rate (8 quarts of this product /100 gallons spray carrier) plus the wetting agent. Repeat treatments may be necessary for complete control.

Spray to completely wet target weeds but not to runoff. Densely packed weeds or mats may require additional applications due to incomplete spray coverage. Re-treat as needed. For best results, re-treat weed escapes within 2 weeks of the initial treatment.

Broadcast Treatment: Apply this product at the rate of 0.5 - 2.0 gallons per surface acre in sufficient carrier along with 16-32 ounces per acre of an aquatic surfactant or wetting agent (refer to the surfactant label for product specific rates). Re-treat as necessary for densely populated weed areas. Good coverage is necessary for control of the target weeds.

For duckweed control, apply this product at 1 - 2 gallons/acre.

Submersed Weed Control

To control submersed weeds apply this product in water at 0.5 - 2.0 gallons per surface acre (per 4 foot water depth), or up to 0.5 gallons/acre foot in water with an average depth greater than 4 feet deep. For severe weed infestations or when treating more difficult to control species, use 0.5 gallons/acre foot of water. Refer to Table 2 for application rates.

- algae^{††}, *Spirogyra* spp. and *Pithophora* spp.
- bladderwort, *Utricularia* spp.
- Brazilian elodea, *Egeria densa*
- coontail, *Ceratophyllum demersum*
- watermilfoils, including Eurasian, *Myriophyllum* spp.
- elodea, *Elodea* spp.
- hydrilla, *Hydrilla verticillata*
- naiads, *Najas* spp.
- pondweeds[†], *Potamogeton* spp.

[†]This product controls *Potamogeton* species except Richardson's pondweed, (*P. richardsonii*).

^{††}Suppression only. For control of *Spirogyra* and/or *Pithophora*, use this product in a tank mix with an approved algacide.

TABLE 2: GALLONS OF PRODUCT PER SURFACE ACRE[†]

Application Rate (gallons/acre)	Average Water Depth			
	1 Foot	2 Feet	3 Feet	4 Feet ^{††}
1	0.25 gal.	0.50 gal	0.75 gal.	1.0 gal.
2	0.50 gal	1.0 gal.	1.5 gals.	2.0 gals.

[†] For water depths ≤ 2 feet including shorelines, do not exceed 1 gallon per surface acre.

^{††} In treatment areas with an average water depth greater than 4 feet, apply a maximum of 0.5 gallons per acre foot of water.

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 trailing hoses to apply the dilute spray below the water surface to insure adequate coverage.

Bottom Placement: Where submersed weeds such as hydrilla, bladderwort, or coontail are growing in deeper water and are less mature (e.g. not to the surface of the water) and/or where the water is slowly moving through the weed growth, the use of an application method (such as invert emulsion carrier or long-trailing hoses) to inject this product near the bottom with weighted hoses may improve control.

Surface Application for Submerged Aquatic Weeds: Apply the recommended rate of this product as a spray in sufficient carrier to fully cover the target area. 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. For dense submersed weeds or water over 2 feet deep, a surface spray is not recommended (This product should be applied subsurface in these situations.)

Tank Mixes With Other Aquatic Herbicides/Algaecides: For severe weed or algae infestations, the use of an approved algaecide either as a pretreatment to the application of this product or in a tank mix, may result in enhanced weed control.

When tank mixing, read and follow the labeled precautionary statements, directions for use, weeds controlled, and other restrictions for each tank mix product. **Use in accordance with the most restrictive label limitations and precautions of the products used in the tank mix.** Do not exceed any labeled rate or dose. To ensure compatibility, a jar test is recommended before field application of any tank mix combination. Consult with SePRO Corporation for latest tank mix recommendations.

Littora Landscape and Aquatic Herbicide + Komeen®

The addition of Komeen, or other copper-based herbicides/algaecides, with this product may improve control on some species, such as hydrilla. For best results, apply 2 gallons this product in combination with 4 gallons of Komeen (0.8 lbs. a.i./gallon) per acre. For hydrilla control and control of other species with high sensitivity to copper, lower rates of Komeen may also enhance the activity of this product. Apply copper at a minimum of 0.1 ppm in combination with this product. Higher rates may be needed in areas with dense weeds.

Littora Landscape and Aquatic Herbicide + endothall

The addition of endothall with this product may improve control on some species, such as hydrilla. For best results, apply this product at 1 to 2 gallons per acre in combination with the dipotassium salt of endothall at 0.6 to 1.2 gallons/acre foot (i.e. 1 to 2.0 ppm a.i.). Higher rates may be used, but do not exceed the maximum allowed rate for either product.

NOTE: For Drinking (Potable) Water

- The drinking (potable) water restrictions for applications of this product plus endothall are to ensure that consumption of water by the public is allowed only when the concentration of endothall in the water is less than the MCL (Maximum Contamination Level) of 0.1 ppm. Applicators should consider the unique characteristics of the treated waters to assure that endothall concentrations in potable drinking water do not exceed 0.1 ppm at the time of consumption.
- For applications of this product plus endothall, the drinking water setback distance from functioning potable water intakes is ≥ 600 feet. Note: Existing potable water intakes that are no longer in use, such as those replaced by a connection to a municipal water system or a potable water well, are not considered to be functioning potable water intakes.

STORAGE AND DISPOSAL

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

Pesticide 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.

Pesticide Disposal: Open dumping is prohibited. 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.

Non-refillable Container Disposal (rigid, 5 gallons or less): Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat the procedure two more times. Then offer the container for recycling (if available) 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!

Warranty Disclaimer: SePRO Corporation warrants that this product conforms to the chemical description on the product label. Testing and research have also determined that this product is reasonably fit for the uses described on the product label. To the extent consistent with applicable law, SePRO Corporation makes no other express or implied warranty of fitness or merchantability nor any other express or implied warranty and any such warranties are expressly disclaimed.

Misuse: Federal law prohibits the use of this product in a manner inconsistent with its label directions. To the extent consistent with applicable law, the buyer assumes responsibility for any adverse consequences if this product is not used according to its label directions. In no case shall SePRO Corporation be liable for any losses or damages resulting from the use, handling or application of this product in a manner inconsistent with its label.

For additional important labeling information regarding SePRO Corporation's Terms and Conditions of Use, Inherent Risks of Use and Limitation of Remedies, please visit <http://seprolabels.com/terms> or scan the image below.



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SePRO Corporation
11550 North Meridian Street, Suite 600
Carmel, IN 46032, U.S.A.

Habitat[®]

Herbicide

SPECIMEN



For the control of undesirable vegetation growing within specified aquatic sites and nonirrigation ditchbanks.

Active Ingredient

isopropylamine salt of imazapyr: (2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid) * . . . 27.77%

Other Ingredients 72.23%
TOTAL 100.0%

* Equivalent to 22.6% 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid or 2 pounds acid per gallon.

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.)

Refer to inside of label booklet for additional precautionary information and directions for use, including first aid and storage and disposal.

NOTICE: Read the entire label before using. Use only according to label directions. Before buying or using this product, read *Terms and Conditions of Use, Warranty Disclaimer, Inherent Risks of Use and Limitation of Remedies* inside label booklet.

Habitat is a registered trademark of BASF Corporation.

Manufactured for: SePRO Corporation 11550 N. Meridian St. EPA Reg. No. 241-426-67690
Suite 600, Carmel, IN 46032 U.S.A. FPL20120613

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.)

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.
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HOTLINE 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 INFOTRAC for emergency medical treatment information: 1-800-535-5053.

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

CAUTION. Harmful if swallowed

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Some materials that are chemically resistant to this product are listed below. If you want more options, follow the instructions for **Category A** on an EPA chemical-resistance category selection chart.

Mixers, loaders, applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves (except for pilots)
- Shoes plus socks.

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

ENGINEERING CONTROLS

Pilots must use an enclosed cockpit that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240 (d)(6)].

USER SAFETY RECOMMENDATIONS

Users should:

- Wash hands with plenty of soap and water before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing/PPE 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.

PHYSICAL AND CHEMICAL HAZARDS

Spray solutions of **Habitat[®] herbicide** should be mixed, stored and applied only in stainless steel, fiberglass, plastic and plastic-lined steel containers.

Thoroughly clean application equipment, including landing gear, immediately after use of this product. Prolonged exposure of this product to uncoated steel (except stainless steel) surfaces may result in corrosion and failure of the exposed part. The maintenance of an organic coating (paint) may prevent corrosion.

ENVIRONMENTAL HAZARDS

This product is toxic to plants. Drift and runoff may be hazardous to plants in water adjacent to treated areas. **DO NOT** apply to water except as specified in this label. Treatment of aquatic weeds may result in oxygen depletion or loss due to decomposition of dead plants. This oxygen loss may cause the suffocation of some aquatic organisms. **DO NOT** treat more than 1/2 of the surface area of the water in a single operation and wait at least 10 to 14 days between treatments. Begin treatment along the shore and proceed outward in bands to allow aquatic organisms to move into untreated areas. **DO NOT** contaminate water when disposing of equipment washwaters or rinsate. See Directions for Use for additional precautions and requirements.

This pesticide is toxic to vascular plants and must be used strictly in accordance with the drift precautions on the label.

DIRECTIONS FOR USE

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

Habitat must be used only in accordance with the instructions on the leaflet label attached to the container. Keep containers closed to avoid spills and contamination.

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.

NONAGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are **NOT** within the scope of the Worker Protection Standard (WPS) 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.

Noncrop weed control is not within the scope of the Worker Protection Standard. See the **Product Information** section of this label for a description of noncrop sites.

DO NOT enter or allow others to enter treated areas until sprays have dried.

STORAGE AND DISPOSAL

DO NOT contaminate water, food or feed by storage or disposal.

Pesticide Storage

DO NOT store below 10° F.

Pesticide Disposal

Wastes resulting from the use of this product must be disposed of on-site or at an approved waste disposal facility.

Container Handling

Nonrefillable Container. DO NOT reuse or refill this container. Triple rinse or pressure rinse container (or equivalent) promptly after emptying; then offer for recycling, if available, or reconditioning, if appropriate, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures approved by state and local authorities.

Triple rinse containers small enough to shake (capacity ≤ 5 gallons) as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank, or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times.

Triple rinse containers too large to shake (capacity >5 gallons) as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank, or store rinsate for later use or disposal. Repeat this procedure two more times.

Pressure rinse as follows: Empty the remaining contents into application equipment or mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank, or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

Refillable Container. Refill this container with pesticide only. **DO NOT** reuse this container for any other purpose. Triple rinsing the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller.

Triple rinse as follows: To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10% full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

When this container is empty, replace the cap and seal all openings that have been opened during use; return the container to the point of purchase or to a designated location. This container must only be refilled with a pesticide product. Prior to refilling, inspect carefully for damage such as cracks, punctures, abrasions, worn-out threads and closure devices. Check for leaks after refilling and before transport. **DO NOT** transport if this container is damaged or leaking. If the container is damaged, or leaking, or obsolete and not returned to the point of purchase or to a designated location, triple rinse emptied container and offer for recycling, if available, or dispose of container in compliance with state and local regulations.

IN CASE OF EMERGENCY

In case of large-scale spillage regarding this product, call:

- INFOTRAC 1-800-535-5053

In case of medical emergency regarding this product, call:

- Your local doctor for immediate treatment
- Your local poison control center (hospital)
- INFOTRAC 1-800-535-5053.

Steps to be taken in case material is released or spilled:

- Dike and contain the spill with inert material (sand, earth, etc.) and transfer liquid and solid diking material to separate containers for disposal.
- Remove contaminated clothing and wash affected skin areas with soap and water.
- Wash clothing before reuse.
- Keep the spill out of all sewers and open bodies of water.

PRODUCT USE PRECAUTIONS AND RESTRICTIONS

Applications may be made for the control of undesirable vegetation growing within specified aquatic sites. Aquatic sites consist of standing and flowing water, estuarine/marine, wetland and riparian areas and nonirrigation ditchbanks.

Restrictions

- **DO NOT** use on food crops.
- **DO NOT** apply this product within 1/2 mile upstream of an active potable water intake in flowing water (i.e., river, stream, etc.) or within 1/2 mile of an active potable water intake in a standing body of water, such as a lake, pond or reservoir.
- **DO NOT** apply to water used for irrigation except as described in **Product Use Precautions and Restrictions** section of this label.
- Keep from contact with fertilizers, insecticides, fungicides and seeds.
- **DO NOT** drain or flush equipment on or near desirable trees or other plants, or on areas where their roots may extend, or in locations where the treated soil may be washed or moved into contact with their roots.
- **DO NOT** side trim desirable vegetation with this product unless severe injury and plant death can be tolerated. Prevent drift of spray to desirable plants.
- Clean application equipment after using this product by thoroughly flushing with water.

Aquatic Sites

- **DO NOT** apply more than 1.5 lbs ae imazapyr (equivalent to 96 fl ozs of **Habitat® herbicide**) per acre per year.
- **Public waters.** Application of **Habitat** to water can only be made by federal or state agencies, such as Water Management District personnel, municipal officials, and the U.S. Army Corps of Engineers, or those applicators who are licensed or certified as aquatic pest control applicators and are authorized by the state or local government. Treatment to other than non-native invasive species is limited to only those plants that have been determined to be a nuisance by a federal or state government entity.
- **Permitting.** Consult local state fish and game agency and water control authorities before applying this product to public water. Permits may be required to treat such water.
- **Private waters.** Applications may be made to private waters that are still, such as ponds, lakes and drainage ditches where there is minimal or no outflow to public waters.
- **Aerial application.** Aerial application to aquatic sites is restricted to helicopter only.
- **Irrigation water.** Application to water used for irrigation that results in **Habitat** residues > 1.0 ppb **MUST NOT** be used for irrigation purposes for 120 days after application or until **Habitat** residue levels are determined by laboratory analysis or other appropriate means of analysis to be 1.0 ppb or less. When applications are made within 500 feet of an active irrigation intake, **DO NOT** irrigate for at least 24 hours following application to allow for dissipation.

Recreational use of water in treatment area. There are no restrictions on the use of water in the treatment area for recreational purposes, including swimming and fishing.

Livestock use of water in/from treatment area. There are no restrictions on livestock consumption of water from the treatment area.

Precautions for potable water intakes. DO NOT apply **Habitat** directly to water within 1/2 mile upstream of an active potable water intake in flowing water (i.e., river, stream, etc.) or within 1/2 mile of an active potable water intake in a standing body of water such as a lake, pond or reservoir. To make aquatic applications around and within 1/2 mile of active potable water intakes, the water intake **must** be turned off during application and for a minimum of 48 hours after the application. These aquatic applications may be made only in the cases where there are alternative water sources or holding ponds that would permit the turning off of an active potable water intake for a minimum period of 48 hours after the applications.

NOTE: Existing potable water intakes that are no longer in use, such as those replaced by connections to wells or a municipal water system, are not considered to be active potable water intakes.

Quiescent or Slow-moving Waters. In lakes and reservoirs, **DO NOT** apply **Habitat** within one (1) mile of an active irrigation water intake during the irrigation season. Applications less than one (1) mile from an active irrigation water intake may be made during the off-season, provided that the irrigation intake will remain inactive for a minimum of 120 days after application or until **Habitat** residue levels are determined by laboratory analysis or other appropriate means of analysis to be 1.0 ppb or less.

PRODUCT INFORMATION

Habitat® herbicide is an aqueous solution to be mixed with water and a surfactant and applied as a spray solution to control undesirable vegetation growing within specified aquatic sites. Aquatic sites consist of standing and flowing water, estuarine/marine, wetland, riparian areas and nonirrigation ditchbanks.

Herbicidal Activity. **Habitat** will control most annual and perennial grasses and broadleaf weeds in addition to many brush and vine species with some residual control of undesirable species that germinate above the waterline. **Habitat** is readily absorbed through emergent leaves and stems and is translocated rapidly throughout the plant with accumulation in the meristematic regions. For maximum activity, weeds should be growing vigorously at the time of application, and the spray solution should include a surfactant (see **Adjuvants** section for specific use directions). Treated plants stop growing soon after spray application. Chlorosis appears first in the newest leaves, and necrosis spreads from this point. In perennials, the herbicide is translocated into, and kills, underground or submerged storage organs, which prevents regrowth. Chlorosis and tissue necrosis may not be apparent in some plant species until 2 or more weeks after application. Complete kill of plants may not occur for several weeks. Applications of **Habitat** are rainfast 1 hour after treatment.

Application Methods. **Habitat** may be selectively applied by using low-volume directed application techniques or may be broadcast applied by using ground equipment, watercraft, or aircraft (aerial applications to aquatic sites must be made by helicopter). In addition, **Habitat** may also be applied using cut stump, cut stem, and frill and girdle treatment techniques within aquatic sites (see Aerial Application and Ground Application sections for additional details).

PRECAUTIONS FOR AVOIDING INJURY TO NONTARGET PLANTS

Untreated desirable plants can be affected by root uptake of **Habitat** from treated soil. Injury or loss of desirable plants may result if **Habitat** is applied on or near desirable plants, on areas where their roots extend, or in locations where the treated soil may be washed or moved into contact with their roots. When making applications along shorelines where desirable plants may be present, caution should be exercised to avoid spray contact with their foliage or spray application to the soil in which they are rooted. Shoreline plants that have roots which extend into the water in an area where **Habitat** has been applied generally will not be adversely affected by uptake of the herbicide from the water. If treated vegetation is to be removed from the application site, **DO NOT** use the vegetative matter as mulch or compost on or around desirable species.

Wind Erosion

Avoid treating powdery, dry or light sandy soils when conditions are favorable for wind erosion. Under these conditions, the soil surface should first be settled by rainfall or irrigation.

Spray Drift Requirements

Aerial Application

- Applicators are required to use a coarse or coarser droplet size (ASABE S572) or, if specifically using a spinning atomizer nozzle, applicators are required to use a volume mean diameter (VMD) of 385 microns or greater for release heights below 10 feet. Applicators are required to use a very coarse or coarser droplet size or, if specifically using a spinning atomizer nozzle, applicators are required to use a VMD of 475 microns or greater for release heights above 10 feet. Applicators must consider the effects of nozzle orientation and flight speed when determining droplet size.
- Applicators are required to use upwind swath displacement.
- The boom length must not exceed 60% of the wingspan or 90% of the rotor blade diameter to reduce spray drift.
- Applications with wind speeds less than 3 mph and with wind speeds greater than 10 mph are prohibited.
- Applications into temperature inversions are prohibited.

Ground Boom Application

- Applicators are required to use a nozzle height below 4 feet above the ground or plant canopy and coarse or coarser droplet size (ASABE S572) or, if specifically using a spinning atomizer nozzle, applicators are required to use a volume mean diameter (VMD) of 385 microns or greater.
- Applications with wind speeds greater than 10 mph are prohibited.
- Applications into temperature inversions are prohibited.

ADJUVANTS

Postemergence applications of **Habitat** require the addition of a spray adjuvant. When making aquatic applications, only spray adjuvants that are approved or appropriate for aquatic use must be utilized.

Nonionic Surfactants. Use a nonionic surfactant (NIS) at the rate of 0.25% volume/volume (v/v) or higher (see manufacturer's label) of the spray solution (0.25% v/v is equivalent to 1 quart in 100 gallons). For best results, select a nonionic surfactant with an HLB (hydrophilic to lipophilic balance) ratio between 12 and 17 with at least 70% surfactant in the formulated product (alcohols, fatty acids, oils, ethylene glycol or diethylene glycol should not be considered as surfactants to meet the above requirements).

Methylated Seed Oils or Vegetable Oil Concentrates. Instead of a surfactant, a methylated seed oil (MSO) or vegetable-based seed oil concentrate may be used at the rate of 1.5 to 2 pints per acre. When using spray volumes greater than 30 gallons per acre, methylated seed oil or vegetable-based seed oil concentrates should be mixed at a rate of 1% of the total spray volume, or alternatively use a nonionic surfactant as described above. Research indicates that these oils may aid in **Habitat** deposition and uptake by plants under moisture or temperature stress.

Silicone-based Surfactants. See manufacturer's label for specific rates. Silicone-based surfactants may reduce the surface tension of the spray droplet allowing greater spreading on the leaf surface as compared to conventional nonionic surfactants. However, some silicone-based surfactants may dry too quickly, limiting herbicide uptake.

Invert Emulsions. **Habitat** can be applied as an invert emulsion. The spray solution results in an invert (water-in-oil) spray emulsion designed to minimize spray drift and spray runoff, resulting in more herbicide on the target foliage. The spray emulsion may be formed in a single tank (batch mixing) or injected (in-line mixing). Consult the invert chemical label for proper mixing directions.

Other. An antifoaming agent, spray pattern indicator, or drift-reducing agent may be applied at the product labeled rate if necessary or desired.

TANK MIXES

Habitat may be tank mixed with other herbicides.

Consult manufacturer's labels for specific rate restrictions and weeds controlled. Always follow the more restrictive label restrictions and precautions for all products used when making an application involving tank mixes.

AERIAL APPLICATION

All precautions must be taken to minimize or eliminate spray drift. Only helicopters can be used for aquatic applications. **DO NOT** make applications by helicopter unless appropriate buffer zones can be maintained to prevent spray drift out of the target area. Aerial equipment designed to minimize spray drift, such as a helicopter equipped with a **Microfoil™ boom, Thru-Valve™ boom,** or raindrop nozzles, must be used and calibrated. Except when applying with a **Microfoil boom,** a drift control agent may be added at the specified label rate. **DO NOT** side trim with **Habitat** unless death of treated tree can be tolerated.

Uniformly apply the specified amount of **Habitat** in 2 to 30 gallons of water per acre. A foam-reducing agent may be added at the specified label rate, if needed.

IMPORTANT: Thoroughly clean application equipment, including landing gear, immediately after use of this product. Prolonged exposure of this product to uncoated steel (except stainless steel) surfaces may result in corrosion and failure of the exposed part. The maintenance of an organic coating (paint) may prevent corrosion.

GROUND APPLICATION

FOLIAR APPLICATIONS

Low-volume Foliar Application

Use equipment calibrated to deliver 5 to 20 gallons of spray solution per acre. To prepare the spray solution, thoroughly mix in water 0.5% to 5% **Habitat** plus surfactant (see the **Adjuvants** section of this label for specific use directions). A foam-reducing agent may be applied at the specified label rate, if needed. For control of difficult species (see **Aquatic Weeds Controlled** section for relative susceptibility of weed species), use the higher concentrations of herbicide and/or spray volumes, but **DO NOT** apply more than 6 pints of **Habitat** per acre in aquatic sites. Excessive wetting of foliage is not necessary. See **Spray Solution Mixing Guide for Low-volume Foliar Applications** following for specified volumes of **Habitat** and water.

For low-volume foliar application, select proper nozzles to avoid overapplication. Proper application is critical to ensure desirable results. Best results are achieved when the spray covers the crown and approximately 70 percent of the plant. The use of an even, flat-fan tip with a spray angle of 40 degrees or less will aid in proper deposition.

Appropriate tip sizes include 4004E or 1504E. For a straight-stream and cone pattern, adjustable cone nozzles, such as 5500 X3 or 5500 X4, may be used. Attaching a rollover valve onto a Spraying Systems Model 30 gunjet or other similar spray gun allows for the use of both flat-fan and cone tips on the same gun.

Moisten, but **DO NOT** drench target vegetation causing spray solution to run off.

Low-volume Foliar Application with Backpacks

For low-growing species, spray down on the crown, covering crown and penetrating approximately 70% of the plant.

For target species 4 to 8 feet tall, swipe the sides of target vegetation by directing spray to at least 2 sides of the plant in smooth vertical motions from the crown to the bottom. Make sure to cover the crown whenever possible.

For target species over 8 feet tall, lace sides of the target vegetation by directing spray to at least 2 sides of the target in smooth zigzag motions from crown to bottom.

Low-volume Foliar Application with Hydraulic Handgun Application Equipment

Use the same technique as described above for **Low-volume Foliar Application with Backpacks**.

For broadcast applications, simulate a gentle rain near the top of target vegetation allowing spray to contact the crown and penetrate the target foliage without falling to the understory. Herbicide spray solution that contacts the understory may result in severe injury or death of plants in the understory.

Spray Solution Mixing Guide for Low-volume Foliar Applications

Spray Solution Prepared (gallons)	Desired Concentration (% v/v)				
	0.5%	0.75%	1%	1.5%	5%
	(amount of Habitat ® herbicide to use)				
1	0.6 fl oz	0.9 fl oz	1.3 fl ozs	1.9 fl ozs	6.5 fl ozs
3	1.9 fl ozs	2.8 fl ozs	3.8 fl ozs	5.8 fl ozs	1.2 pints
4	2.5 fl ozs	3.8 fl ozs	5.1 fl ozs	7.7 fl ozs	1.6 pints
5	3.2 fl ozs	4.8 fl ozs	6.5 fl ozs	9.6 fl ozs	2 pints
50	2 pints	3 pints	4 pints	6 pints	10 quarts
100	4 pints	6 pints	8 pints	6 quarts	5 gallons

2 tablespoons = 1 fluid ounce

High-volume Foliar Application

For optimum performance when spraying medium-density to high-density vegetation, use equipment calibrated to deliver up to 100 gallons of spray solution per acre (GPA). Spray solutions exceeding 100 GPA may result in excessive spray runoff, causing increased ground cover injury, and injury to desirable species. To prepare the spray solution, thoroughly mix **Habitat** in water and add a surfactant (see **Adjuvants** section for specific use directions and rates for surfactants). A foam-reducing agent may be added at the specified label rate, if needed. For control of difficult species (see **Aquatic Weeds Controlled** chart for relative susceptibility of weed species), use the higher concentrations of herbicide and/or spray volumes, but **DO NOT** apply more than 6 pints of **Habitat** per acre in aquatic sites. Uniformly cover the foliage of the vegetation to be controlled, but **DO NOT** apply to runoff. Excessive wetting of foliage is not necessary.

Side Trimming

DO NOT side trim with **Habitat** unless severe injury or death of the treated tree can be tolerated. **Habitat** is readily translocated and can result in death of the entire tree.

CUT-SURFACE TREATMENT

Habitat may be used to control undesirable woody vegetation by applying the **Habitat** solution to the cambium area of freshly cut stump surfaces or to fresh cuts on the stem of the target woody vegetation. Applications can be made at any time of the year except during periods of heavy sap flow in the spring. **DO NOT** overapply solution causing runoff from the cut surface.

Injury may occur to desirable woody plants if the shoots extend from the same root system or their root systems are grafted to those of the treated tree.

Cut-surface Application with Dilute and Concentrate Solutions

Habitat may be mixed as either a concentrated or dilute solution. The dilute solution may be used for applications to the cut surface of the stump or to cuts on the stem of the target woody vegetation. Concentrated solutions may be used for applications to cuts on the stem. Use of the concentrated solution permits application to fewer cuts on the stem, especially for large-diameter trees. Follow the application instructions to determine proper application techniques for each type of solution.

- To prepare a dilute solution, mix 8 to 12 fluid ounces of **Habitat** with 1 gallon of water. The use of a surfactant or penetrating agent may improve uptake through partially callused cambiums.
- To prepare a concentrated solution, mix 2 quarts of **Habitat** with no more than 1 quart of water.

Cut-stump Treatment

- **Dilute Solution.** Spray or brush the solution onto the cambium area of the freshly cut stump surface. Ensure that the solution thoroughly wets the entire cambium area (the wood next to the bark of the stump).

Cut-stem (injection, hack and squirt) Treatment

- **Dilute Solution.** Using standard injection equipment, apply 1 milliliter of solution at each injection site around the tree with no more than 1-inch intervals between cut edges. Ensure that the injector completely penetrates the bark at each injection site.
- **Concentrate Solution.** Using standard injection equipment, apply 1 milliliter of solution at each injection site. Make at least 1 injection cut for every 3 inches of Diameter at Breast Height (DBH) on the target tree. For example, a 3-inch DBH tree will receive 1 injection cut, and a 6-inch DBH tree will receive 2 injection cuts. On trees requiring more than 1 injection site, place the injection cuts at approximately equal intervals around the tree.

Frill or Girdle Treatment

- Using a hatchet, machete, or chainsaw, make cuts through the bark and completely around the tree to expose the cambium. The cut should angle downward extending into the cambium enough to expose at least 2 growth rings. Using a spray applicator or brush, apply a 25% to 100% solution of **Habitat** into each cut until thoroughly wet. Avoid applying so much herbicide that runoff to the ground or water occurs.

AQUATIC WEED CONTROL

Habitat may be applied for the control of floating and emergent undesirable vegetation (see the **Aquatic Weeds Controlled** section) in or near bodies of water that may be flowing, nonflowing, or transient. **Habitat** may be applied to aquatic sites that include lakes, rivers, streams, ponds, seeps, drainage ditches, canals, reservoirs, swamps, bogs, marshes, estuaries, bays, brackish water, transitional areas between terrestrial and aquatic sites, riparian sites, and seasonal wet areas. See **Product Use Precautions and Restrictions** section of this label for precautions, restrictions, and instructions on aquatic uses.

Habitat must be applied to the emergent foliage of the target vegetation and has little-to-no activity on submerged aquatic vegetation. **Habitat** concentrations resulting from direct application to water are not expected to be of sufficient concentration nor duration to provide control of target vegetation. Application should be made in such a way as to maximize spray interception by the target vegetation while minimizing the amount of overspray that enters the water.

Habitat does not control plants that are completely submerged or have a majority of their foliage under water.

Habitat should be applied with surface or helicopter application equipment in a minimum of 2 gallons of water per acre. When applying by helicopter, follow directions under the **Aerial Application** section of this label; otherwise, refer to the **Ground Application** section when using surface equipment.

Applications made to moving bodies of water should be made while traveling upstream to prevent concentration of this herbicide in water. **DO NOT** apply to bodies of water or portions of bodies of water where emergent and/or floating weeds do not exist.

When application is to be made to target vegetation that covers a large percentage of the surface area of impounded water, treating the area in strips may avoid oxygen depletion due to decaying vegetation. Oxygen depletion may result in the suffocation of some sensitive aquatic organisms. If oxygen depletion is a concern, treat no more than 1/2 of the surface area of the water in a single operation and wait at least 10 to 14 days between treatments. Begin treatment along the shore and proceed outward in bands to allow aquatic organisms to move into untreated areas.

Avoid washoff of sprayed foliage by spray boat or recreational boat backwash for 1 hour after application.

Apply **Habitat® herbicide** at 2 to 6 pints per acre depending on species present and weed density. **DO NOT** exceed the maximum label rate of 6 pints per acre (1.5 lbs ae/A) per year. Use the higher labeled rates for heavy weed pressure. Consult the **Aquatic Weeds Controlled** section of this label for specific rates.

Habitat may be applied as a draw-down treatment in areas described above. Apply **Habitat** to weeds after water has been drained and allow 14 days before reintroduction of water.

WEEDS CONTROLLED

Aquatic Weeds Controlled

Habitat will control the following target species as specified in the **Use Rates and Application Directions** column of the table. Rates are expressed in terms of product volume for broadcast applications and as a % solution for directed applications including spot treatments. **For % solution applications, DO NOT apply more than the equivalent of 6 pints of Habitat per acre.**

Common Name	Scientific Name	Use Rates and Application Directions
Floating		
*Floating heart	<i>Nymphodes</i> spp.	2 to 4 pints/A (0.5 to 1.0% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
*Frogbit	<i>Limnobium spongia</i>	1 to 2 pints/A (0.5% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
*Spatterdock	<i>Nuphar luteum</i>	Apply a tank mix of 2 to 4 pints/A Habitat + 4 to 6 pints/A glyphosate (0.5% Habitat + 1.5% glyphosate) in 100 GPA water for best control. Ensure 100% coverage of actively growing emergent foliage.
*Water hyacinth	<i>Eichhornia crassipes</i>	1 to 2 pints/A (0.5% solution) applied in 100 GPA water to actively growing foliage.
*Water lettuce	<i>Pistia stratiotes</i>	1 to 2 pints/A (0.5% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
Emerg		
*Alligatorweed	<i>Alternanthera philoxeroides</i>	1 to 4 pints/A (0.5% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
*Arrowhead, duck-potato	<i>Sagittaria</i> spp.	1 to 2 pints/A (0.5% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
*Bacopa, lemon	<i>Bacopa</i> spp.	1 to 2 pints/A (0.5% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
*Parrot feather	<i>Myriophyllum aquaticum</i>	Must be foliage above water for sufficient Habitat uptake. Apply 2 to 4 pints/A to actively growing emergent foliage.
*Pennywort	<i>Hydrocotyle</i> spp.	1 to 2 pints/A (0.5% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
*Pickerelweed	<i>Pontederia cordata</i>	2 to 3 pints/A (1% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.

* Use not permitted in California unless otherwise directed by supplemental labeling.

(continued)

Aquatic Weeds Controlled (continued)

Common Name	Scientific Name	Use Rates and Application Directions
Emerg (continued)		
*Taro, wild Dasheen Elephant's ear Coco yam	<i>Colocasia esculentum</i>	4 to 6 pints/A (1.5% solution) applied in 100 GPA with a high quality "sticker" adjuvant. Ensure good coverage of actively growing emergent foliage.
*Water chestnut	<i>Trapa natans</i>	4 to 6 pints/A (1.5% solution) applied in 100 GPA with a high quality "sticker" adjuvant. Ensure good coverage of actively growing emergent foliage.
*Water lily	<i>Nymphaea odorata</i>	2 to 3 pints/A (1% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
*Water primrose	<i>Ludwigia uruguayensis</i>	4 to 6 pints/A (1.5% solution). Ensure 100% coverage of actively growing emergent foliage.
Terrestrial/Marginal		
*Soda apple Aquatic nightshade	<i>Solanum tampicense</i>	2 pints/A applied to foliage
*Bamboo, Japanese	<i>Phyllostachys</i> spp.	3 to 4 pints/A applied to the foliage when plant is actively growing; before setting seed head. More foliage will result in greater herbicide uptake, resulting in greater root kill.
Beach, vitex	<i>Vitex rotundifolia</i>	5% solution + 1% MSO foliar spray. 17% solution stem injection (hack and squirt)
Brazilian pepper Christmasberry	<i>Schinus terebinthifolius</i>	2 to 4 pints/A applied to foliage
Cattail	<i>Typha</i> spp.	2 to 4 pints/A (1% solution) applied to actively growing green foliage after full leaf elongation. Lower rates will control cattail in the North; higher rates are needed in the South.
Chinese tallow tree	<i>Sapium sebiferum</i>	16 to 24 fl ozs/A applied to foliage
Cogon grass	<i>Imperata cylindrica</i>	Burn foliage, till area; then fall-spray 2 quarts/A Habitat + MSO applied to new growth.
Cordgrass, prairie	<i>Spartina</i> spp.	4 to 6 pints/A applied to actively growing foliage
*Cutgrass	<i>Zizaniopsis miliacea</i>	4 to 6 pints/A applied to actively growing foliage
*Elephant grass Napier grass	<i>Pennisetum purpureum</i>	3 pints/A applied to actively growing foliage
*Flowering rush	<i>Butomus umbellatus</i> L.	2 to 3 pints/A applied to actively growing foliage
Giant reed Wild cane	<i>Arundo donax</i>	4 to 6 pints/A applied in spring to actively growing foliage
*Golden bamboo	<i>Phyllostachys aurea</i>	3 to 4 pints/A applied to foliage when plant is actively growing; before setting seed head. More foliage will result in greater herbicide uptake, resulting in greater root kill.
Junglerice	<i>Echinochloa colonum</i>	3 to 4 pints/A applied to actively growing foliage
Knapweed	<i>Centaurea</i> spp.	Russian knapweed: 2 to 3 pints + 1 quart/A MSO fall-applied after senescence begins

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(continued)

Aquatic Weeds Controlled (continued)

Common Name	Scientific Name	Use Rates and Application Directions
Terrestrial/Marginal (continued)		
Knotweed, Japanese	<i>Polygonum cuspidatum</i> <i>Fallopia japonica</i>	3 to 4 pints/A applied post-emergence to actively growing foliage
Melaleuca Paperbark tree	<i>Melaleuca quinquenervia</i>	For established stands, apply 6 pints/A Habitat ® herbicide + 6 pints/A glyphosate + spray adjuvant. For best results, use 4 quarts/A methylated seed oil as an adjuvant. For ground foliar application, uniformly apply to ensure 100% coverage. For broadcast foliar control, apply aerially in a minimum of 2 passes at 10 gallons/A applied cross treatment. For spot treatment, use a 25% Habitat + 25% solution of glyphosate + 1.25% MSO in water applied as a frill or stump treatment.
*Nutgrass Kili'p'opu	<i>Cyperus rotundus</i>	2 pints Habitat + 1 quart/A MSO applied early post-emergence
*Nutsedge	<i>Cyperus</i> spp.	2 to 3 pints post-emergence to foliage or pre-emergence incorporated, nonincorporated, pre-emergence applications will not control.
Phragmites Common reed	<i>Phragmites australis</i>	4 to 6 pints/A applied to actively growing green foliage after full leaf elongation. Ensure 100% coverage. If stand has a substantial amount of old stem tissue, mow or burn, allow to regrow to approximately 5 feet tall before treatment. Lower rates will control phragmites in the North; higher rates are needed in the South.
*Poison hemlock	<i>Conium maculatum</i>	2 pints Habitat + 1 quart/A MSO applied pre-emergence to early post-emergence to rosette prior to flowering
Purple loosestrife	<i>Lythrum salicaria</i>	1 pint/A applied to actively growing foliage
Reed canarygrass	<i>Phalaris arundinacea</i>	3 to 4 pints/A applied to actively growing foliage
Rose, swamp	<i>Rosa palustris</i>	2 to 3 pints/A applied to actively growing foliage
Russian olive	<i>Elaeagnus angustifolia</i>	2 to 4 pints/A or a 1% solution applied to foliage
Saltcedar Tamarisk	<i>Tamarix</i> spp.	Aerial apply 2 quarts Habitat + 0.25% v/v NIS applied to actively growing foliage during flowering. For spot spraying, use 1% solution of Habitat + 0.25% v/v NIS and spray to wet foliage. After application, wait at least 2 years before disturbing treated saltcedar. Earlier disturbance can reduce overall control.
Smartweed	<i>Polygonum</i> spp.	2 pints/A applied early post-emergence
Sumac	<i>Rhus</i> spp.	2 to 3 pints/A applied to foliage
Swamp morningglory Water spinach Kangkong	<i>Ipomoea aquatica</i>	1 to 2 pints/A Habitat + 1 quart/A MSO applied early post-emergence
Torpedo grass	<i>Panicum repens</i>	4 pints/A (1 to 1.5% solution); ensure good coverage to actively growing foliage.
*White top Hoary cress	<i>Cardaria draba</i>	1 to 2 pints/A applied in spring to foliage during flowering
Willow	<i>Salix</i> spp.	2 to 3 pints/A Habitat applied to actively growing foliage. Ensure good coverage.

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