

Anchorage Lakes Elodea Eradication Project: Environmental Assessment

Public Review Draft

Alaska Department of Natural Resources
Division of Agriculture



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Plant Materials Center
5310 S. Bodenburg Spur
Palmer, Alaska 99645

Table of Contents

Title	Page
1.0 Introduction.....	1
1.1 Need for Action and Project Goals.....	1
1.2 Background: Elodea in Alaska.....	1
1.2.1 Elodea Impacts.....	3
1.3 Legal Authorities.....	3
1.4 Proposed Action.....	4
1.5 Location of Project.....	4
1.5.1 Elodea Survey Results and Lake Characteristics.....	5
2.0 Alternatives.....	7
2.1 Alternative 1: No Eradication or Control of Elodea.....	7
2.2 Alternative 2: Mechanical Removal.....	7
2.3 Alternative 3: Benthic Barriers.....	7
2.4 Alternative 4: Drawdown.....	7
2.5 Alternative 5: Fluridone Treatment (Proposed Action).....	8
2.5.1 Description of fluridone.....	8
2.5.2 Description of proposed fluridone treatment.....	10
3.0 Affected Environment.....	12
3.1 Physical Environment.....	12
3.1.1 Land Resources.....	12
3.1.2 Water Resources.....	12
3.2 Biological Environment.....	14
3.2.1 Air Resources.....	14
3.2.2 Vegetation	15
3.2.3 Fish and Wildlife.....	16
3.3 Human Environment.....	18
3.3.1 Public and Worker Safety and Health.....	18
3.3.2 Recreational and Land Use.....	19
3.3.3 Aesthetics.....	19
3.3.4 Evaluation of Significance.....	21
4.0 Consultation and Coordination.....	21
5.0 References.....	22
6.0 Appendix.....	25
6.1 EPA Herbicide Labels.....	25
6.2 Material Safety Datasheet for Herbicides.....	35
6.3 APDES Permit.....	48

1.0 Introduction

Elodea spp. (Elodea) is Alaska's first invasive submersed freshwater aquatic plant. It was first documented in Alaska near Cordova in 1982 and in Anchorage in 2011. It has also been found in other parts of the state including the Copper River Delta (2012), Fairbanks (2010), the Kenai Peninsula (2013), and the Matanuska-Susitna (Mat-Su) valley (2014). While this project's proposed action is located in the most populated and high risk area of spread in Alaska; Anchorage, the statewide goal is eradication per Memorandum of Understanding with regard to invasive freshwater aquatic plants agreed between the Alaska Department of Natural Resources (ADNR), Alaska Department of Fish and Game, and the Alaska Department of Environmental Conservation.

Elodea was likely introduced into Alaska as an aquarium plant, and then deposited into nearby water bodies. It has since spread via flowing water, seasonally fluctuating water levels, and anthropogenic influences including boats, gear and float plane traffic. Eradicating Elodea from Anchorage is a high priority because its aggressive growth and high reliance on vegetative reproduction can displace native vegetation by creating single-species stands, increasing sedimentation, and slowing water velocities, potentially impacting the function, structure and productivity of freshwater resources. If left unmanaged, Elodea in Anchorage would be a primary source for new infestations and spread to other areas around the state. Sand Lake, the only Elodea infested lake in the Anchorage area where float plane use is allowed, is the suspected source of the first Mat-Su infestation discovered in 2014. If eradication of Elodea in Anchorage is successful, it would limit the potential spread of Elodea elsewhere in the state.

This Environmental Assessment evaluates the direct, indirect, and cumulative environmental effects of the proposed action and alternatives. Alternatives to the proposed herbicide treatments include no action, suction harvesting, benthic barriers, and water drawdown. The ADNR has prepared this document in compliance with the National Environmental Policy Act (NEPA) under the standards of the U.S. Fish and Wildlife Services (USFWS).

1.1 Need for Action and Project Goals

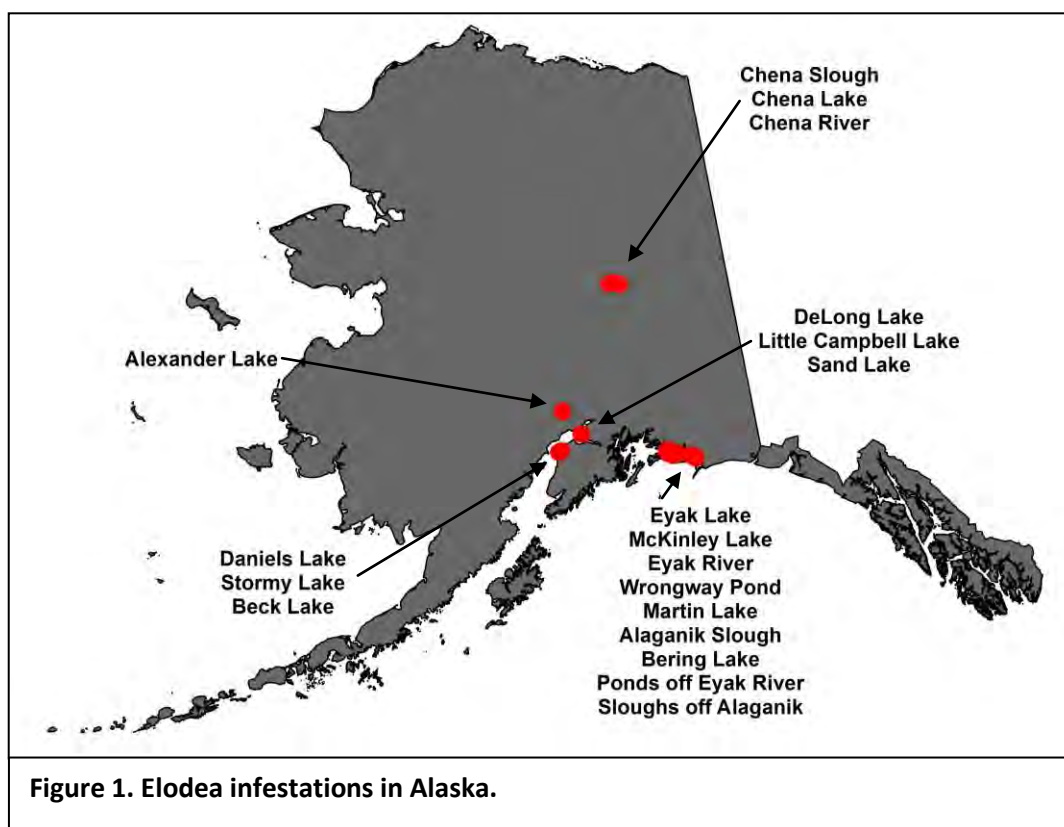
The purposes of this proposed project are to: 1) eradicate Elodea from Anchorage; 2) propose an effective method that meets ADNR's objective of eradicating Elodea while minimizing potential environmental impacts; 3) present and evaluate alternative approaches for managing Elodea in the Municipality of Anchorage; and 4) provide an opportunity for public input on the control and eradication options presented. ADNR will select a preferred alternative and USFWS, the agency tasked with granting Federal authority for the preferred alternative, will disclose its final decision and supporting rationale in a separate decision document.

1.2 Background: Elodea in Alaska

Elodea is a submersed aquatic plant within the Hydrocharitaceae or Tape-grass or Frog-bit Family. Elodea reproduction is primarily vegetative and readily breaks into transportable fragments which take root in sediments. It is dioecious with separate male and female plants and is tolerant of cold water and can survive freezing, with documented rapid invasions as far

north as northern Finland (Heikkinen et al. 2009; Sand-Jensen 2000) and Norway (Rørslett et al. 1986).

The first documented occurrence of *Elodea* in Alaska was in 1982 in Eyak Lake, Cordova, within the Copper River watershed. It was the first record of *Elodea* in a comprehensive statewide vegetation study by the University of Alaska Fairbanks with over 1,500 aquatic plant specimens (Wurtz et al. 2013). *Elodea* was later found near Fairbanks in the Chena Slough in 2009 and in Chena Lake and Chena River in 2011. *Elodea* was also discovered in three Anchorage lakes in 2011; DeLong, Little Campbell, and Sand. In 2012, *Elodea* was found in Stormy and Daniels lakes on the Kenai Peninsula, and in McKinley Lake on the Copper River Delta. *Elodea* was found in another Kenai Peninsula lake, Beck Lake, in 2013. The most recent discoveries in 2014 include Alexander Lake in the Mat-Su valley and in sloughs and Bering Lake on the Copper River Delta. It is now found in a total of 19 lakes, rivers and sloughs, in both populated and remote areas of Alaska (Figure 1).



Suitable habitat for *Elodea* in Alaska may increase in response to global climate change resulting from physical and chemical changes to freshwater systems. For example, bioclimatic models of future *Elodea* distribution in Europe suggest that *Elodea* will continue to aggressively colonize farther north (Heikkinen et al. 2009). *E. canadensis* is highly competitive with most vegetation, similar to other invasive aquatic plants including Brazilian waterweed (*Egeria densa*)

and African Elodea (*Lagarosiphon major*), under a wide variety of water temperature conditions and variable light conditions (Riis et al. 2012).

1.2.1 Elodea Impacts

Elodea is a particularly injurious aquatic plant outside of its native range and is easily spread. Float planes and boats can transport fragments from dense Elodea beds to other nearby waterways. For example, it is likely that a float plane from Sand Lake was the vector for the Elodea introduction to Alexander Lake in the Matanuska-Sustina drainage. The likely initial vectors in Anchorage were dumping's of aquaria used by hobbyists or school classrooms. The sooner Elodea is eradicated from Anchorage, the more likely it is that other water bodies in the state will remain free of Elodea.

Elodea can develop into dense, single species stands that prevent light from reaching other species and limit water movement as well. Stands can experience 5-6 year growth cycles, possibly related to iron availability and then collapse and cause oxygen depletion with massive amounts of decaying vegetation (Josefsson 2011). Chemical composition, pH, and oxygen level are all affected by Elodea infestations, thereby affecting fish, amphibian, and invertebrate populations in a water body. Elodea can impede recreational activities such as fishing, boating, and swimming. In higher latitudes of Norway, dense stands of Elodea introduced after 1970 were likely the cause of decreasing native macrophyte species and local extinctions of *Najas flexilis*, one of the most endangered species in Norway (Mjelde et al. 2012). Elodea has impacted Chinook salmon spawning by reducing spawning habitat in a regulated California river (Merz et al. 2008). Elodea can clog water intake pipes at hydropower and industrial plants or even cause scrape damage to boats in calcium encrusted stands (Josefsson 2011).

Elodea and other aquatic invasive species can reduce property values on infested lakes. Thus, policies to prevent invasions can provide significant benefits to lakefront properties and community members. A study in New Hampshire found a 21-43% decline in property values associated with an infestation of variable milfoil, which can clog water bodies, crowd out native aquatic plant species, and reduce recreational activities like boating and swimming (Halstead et al. 2003). In a Wisconsin study of 170 lakes infested with Eurasian watermilfoil, property values were reduced by an average of 13% (Horsch and Lewis 2009). A similar study in Washington also with Eurasian watermilfoil showed a 19% decline in property values (Olden and Tamayo, 2014).

1.3 Legal Authorities

Alaska Statue 03.05.027 states that ADNR shall oversee the enforcement of regulations regarding noxious weeds, invasive plants, and coordinate with other agencies, public groups, and private organizations to control noxious and invasive plants. It also mandates that a state coordinator implement a comprehensive plan including early detection and rapid response to regulate and control the entry of prohibited noxious and invasive plants into the state. In 2013, ADNR formally recognized Elodea as a noxious aquatic plant in Alaska. It is ADNRs legal responsibility to remove the threat imposed by invasive Elodea and develop a plan to coordinate an effective interagency response, to delineate, contain, and when feasible,

implement a plan to eradicate Elodea. ADNR is currently developing an Elodea management plan for statewide eradication.

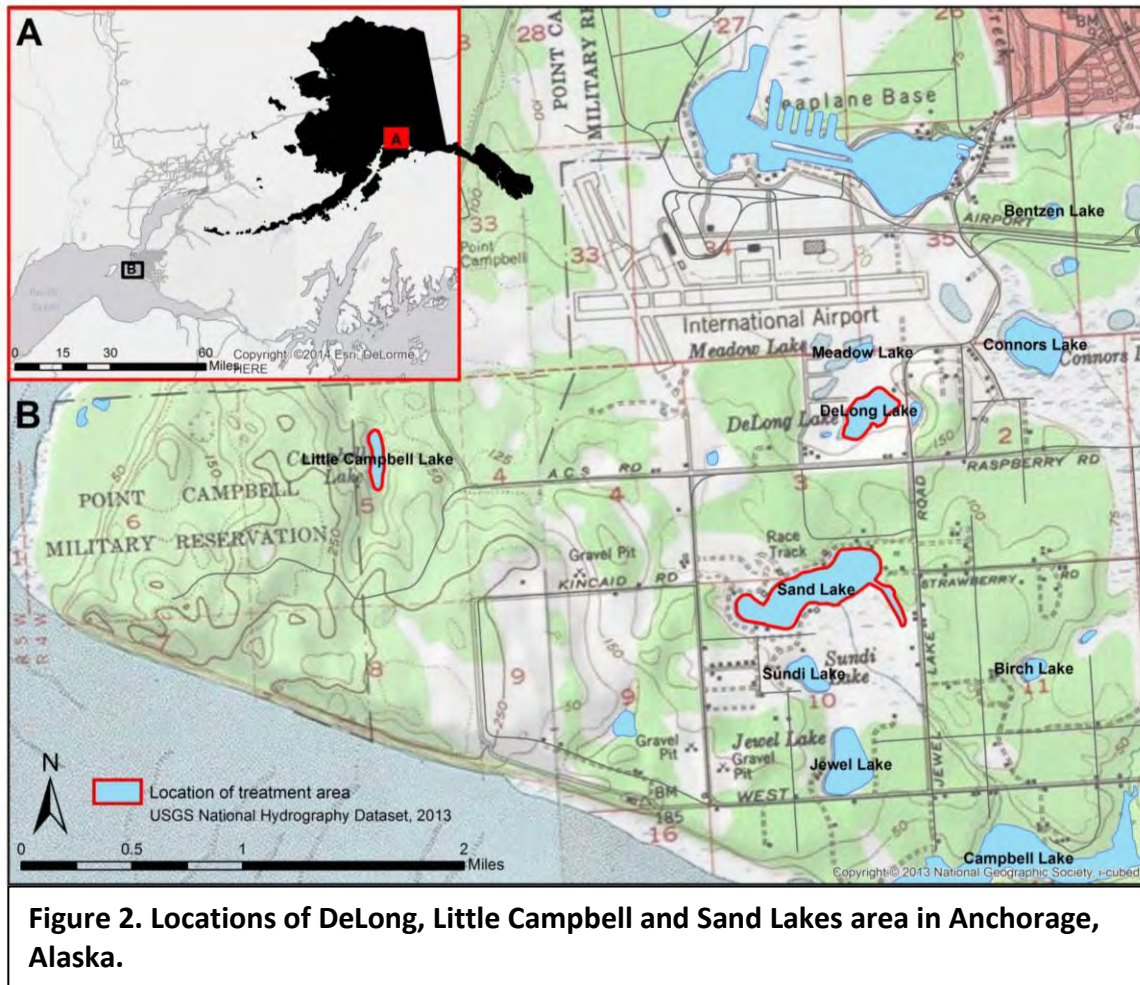
1.4 Proposed Action

Eradicate Elodea from infested lakes in the Municipality of Anchorage using a systemic herbicide. Fluridone in both liquid and pellet form will be used. Eradicating Elodea will allow native aquatic plants to repopulate, return habitats toward their natural state, and reduce the threat of this highly invasive species from spreading to other water bodies in the state. Eradicating Elodea will also reduce potential damage to native fish species resulting from habitat degradation or loss.

The expected time for the initial herbicide treatments to occur is June 2015. This will ensure maximum effectiveness in controlling Elodea by applying the herbicide early in the season when Elodea plants are actively growing and taking up the herbicide throughout the plant.

1.5 Location of Project

The three lakes located in Anchorage that currently have Elodea are DeLong Lake, Little Campbell Lake, and Sand Lake. DeLong Lake is located at S3, T12N, R4W (Seward Meridian, Anchorage) in the Campbell Creek watershed. Little Campbell Lake is located at S5, T12N, R4W (Seward Meridian, Anchorage) in the Municipality of Anchorage Frontal Cook Inlet drainage basin in Kincaid Park. Sand Lake is located at S10 and 3, T12N, R4W (Seward Meridian, Anchorage) in the Municipality of Anchorage Frontal Cook Inlet drainage basin (Figure 2).



1.5.1 Elodea Survey Results and Lake Characteristics

Invasive freshwater plants were not known to occur in Anchorage until 2011 when Elodea was found in Sand, DeLong, and Little Campbell lakes during “roadside” surveys by the U.S. Fish and Wildlife Service (USFWS), after it was newly discovered in the Chena Slough in Fairbanks.

In September 2014, a comprehensive vegetation survey of the three infested Anchorage lakes was completed by ADNR, Alaska Department of Fish and Game, and USFWS. In DeLong Lake, grids of 50 equally spaced points were surveyed using a method that involved throwing a sampling rake attached to a length of rope. A total of 16 species of both submersed and emergent vegetation species were collected, with 62% of the sample points having Elodea. In Little Campbell, Elodea was found in 90% of the 30 rake throw sites, and a total of 18 species of both submersed and emergent plants were found. During the Sand Lake survey, 82% of the 100 survey sites had Elodea, and a total of 22 species of both submersed and emergent plant species were found. In all three lakes, Elodea was found throughout the entire littoral zone.

A total of 11 other lakes in the Municipality of Anchorage have been assessed by USFWS, Anchorage Parks Foundation and ADNR since 2011 and no invasive aquatic plants have been

found. At this time, the distribution of Elodea in the Anchorage area is thought to include only DeLong, Little Campbell and Sand lakes.

The lakes to be treated include DeLong Lake (21.6 acres) Little Campbell Lake (9.1 acres), and Sand Lake (74.2 acres). DeLong Lake has a maximum depth of 22 feet and an estimated volume of 267.8 acre-feet. Little Campbell has a maximum depth of 17 feet and an estimated volume of 83.7 acre-feet. Sand Lake has a maximum depth of 35 feet and an estimated volume of 1061.1 acre-feet. Figure 3 shows the bathymetry the three Anchorage lakes and the distribution of Elodea.

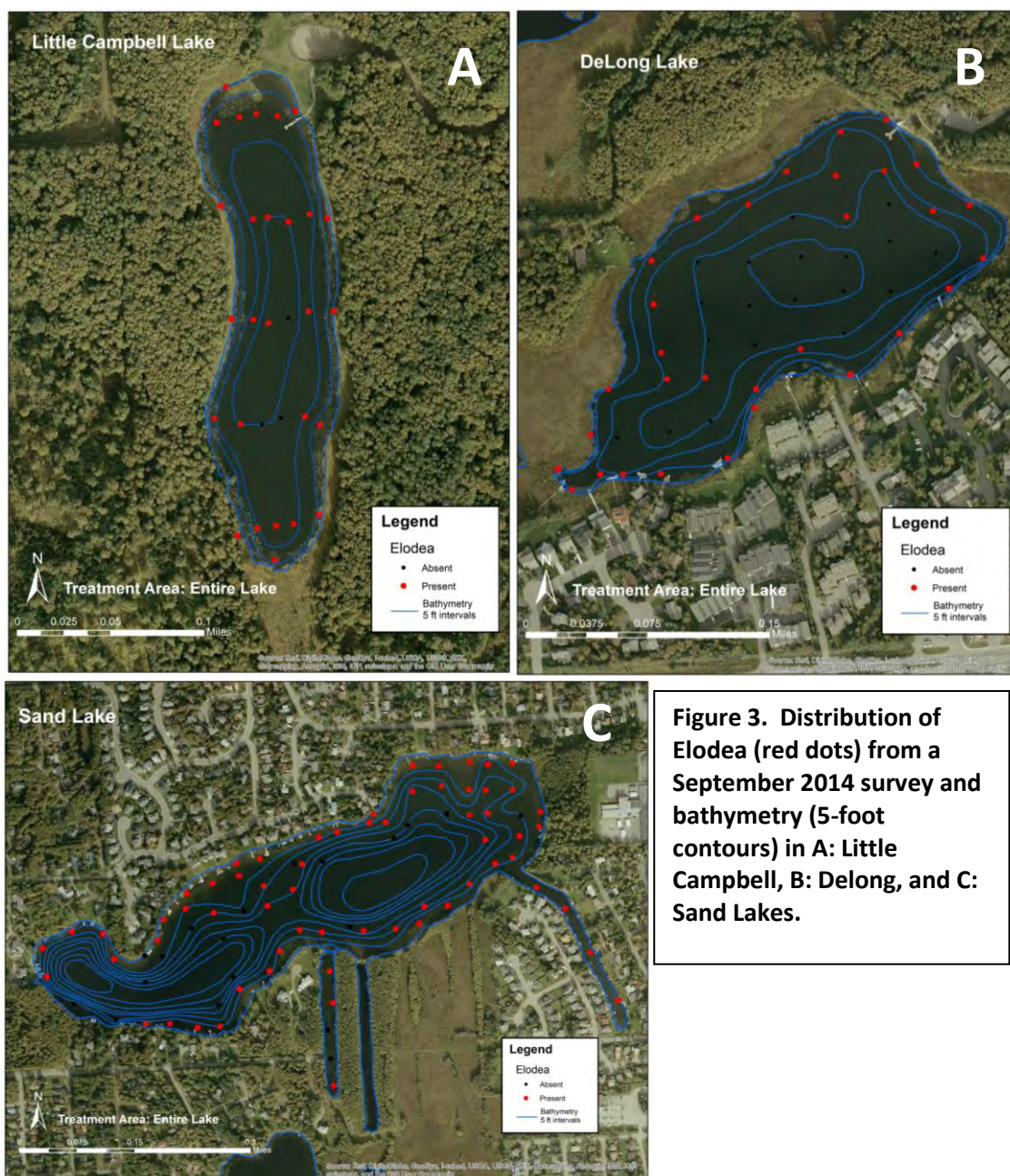


Figure 3. Distribution of Elodea (red dots) from a September 2014 survey and bathymetry (5-foot contours) in A: Little Campbell, B: DeLong, and C: Sand Lakes.

2.0 Alternatives

In this section, alternative methods are assessed for the eradication of invasive Elodea. These alternatives include no action, suction harvesting or mechanical removal, suppression of growth by benthic barriers, drawdown, and eradication using an herbicide.

2.1 Alternative 1: No Eradication or Control of Elodea (No Action Alternative)

The no action alternative would maintain the status quo and Elodea populations would remain in all three Anchorage lakes. As long as Elodea remains in Sand Lake, there is a high risk of spread via float planes to adjacent lakes and water bodies, especially to the Lake Hood Seaplane Base, which is located 1.5 miles north and has up to 50,000 aircraft operations annually. Elodea is likely to spread to remote locations from float plane use of Sand Lake to other lakes from transportation by boats. Elodea can also be spread by humans and their gear, and possibly waterfowl. Spread of Elodea could be very detrimental to the ecological and recreational values of water bodies throughout the region due to the prevalence of vectors of transport, thus, the no action alternative is not a viable alternative.

2.2 Alternative 2: Mechanical Removal

Mechanical removal via suction dredge, dragline, cutting, or similar mechanical treatments has a high risk of further spreading Elodea. Because Elodea is easily broken into small pieces when disturbed, mechanical treatments are likely to make the Elodea problem worse. Mechanical treatments have not been successful with Elodea removal except where removal is done merely to reduce biomass on an annual basis. Mechanical removal would not eradicate Elodea in the lakes, and may only serve to increase the density of Elodea and increase the risk of spread, rather than eradicate the population.

2.3 Alternative 3: Benthic Barriers

Using benthic barriers in DeLong, Little Campbell and Sand lakes would be impractical and expensive. The mixed lake sediments would be difficult to anchor tarps in, and installation would require trained divers to cover the entire littoral zone of the three lakes. Benthic barriers may be effective in suppressing growth or potentially eradicating Elodea (Laitala et al. 2012) in areas where the population in the littoral zone is sparse, but this would not be possible in the Anchorage lakes due to the large areas infested. In areas with thick biomass, benthic barriers would not be effective in controlling Elodea. Benthic barriers may reduce biomass or prevent growth after several years of application, but would not eradicate Elodea from the lakes (Laitala et al. 2012).

2.4 Alternative 4: Drawdown or Draining

Draining DeLong, Little Campbell and Sand lakes would not be a practical alternative because of the size, complexity, and impacts on associated wetlands of these lakes. Only Sand Lake has an existing outlet drain, although its elevation would not lower the lake level sufficiently to lead to the eradication of Elodea. DeLong and Little Campbell lakes lack an existing drain and would therefore need structural changes for drawdown to be effective, which would be expensive.

Lake drawdown would also have many unwanted side effects such as impacts to adjacent wetlands, fish and wildlife, and extended loss of use while the lakes refill. Draining the lakes would still leave some water that would require chemical treatment or manual removal of all plant fragments to ensure Elodea did not survive.

2.5 Alternative 5: Fluridone Treatment (Proposed Action)

ADNRs proposed action involves eradicating well established populations of Elodea from DeLong, Little Campbell and Sand lakes using the systemic herbicide fluridone: Sonar One™ (pelleted formulation) and Sonar Genesis™ (liquid formulation). Multiple treatments spanning 3 or more years may be necessary to completely remove the Elodea populations from the lakes. After herbicide treatment, hand removal of any remaining plants may be accomplished by divers.

This alternative offers the highest probability of achieving the goal of completely eradicating Elodea from all three Anchorage lakes and preventing it from spreading to other water bodies and maintaining the ecological integrity of Alaska's waterways.

2.5.1 Description of Fluridone

Fluridone is a systemic herbicide that is absorbed through leaves, shoots, and roots of susceptible plants and interferes with the synthesis of RNA, proteins, and carotenoid pigments in plants, and disrupts photosynthesis. Disruption of photosynthesis prevents the formation of carbohydrates that are necessary to sustain the plant (Durkin 2008).

In field studies, fluridone did not adversely affect water quality parameters such as pH, dissolved oxygen, color, dissolved solids, hardness, nitrate nitrogen, total phosphates, and turbidity (McCowen et al. 1979). Field tests in mixed invasive and native submersed aquatic vegetation showed 95% to 100% reductions in a year in invasive populations with native plant cover retention of approximately 70% (Madsen et al. 2002). Treatment of Michigan lakes resulted in drastic reductions in invasive Eurasian watermilfoil, increases in native submersed aquatic vegetation, and increases in size and abundance of native fish populations (Schneider 2000).

Several formulations of fluridone are approved for use in Alaska by the Alaska Department of Environmental Conservation. Fluridone may be applied to an entire water body (whole-lake) or on smaller infestations within a water body (partial-lake). For whole-lake treatments, fluridone is generally applied as a liquid by boat through surface or underwater drip equipment depending on the size and distribution of the infested areas. For partial-lake treatments, fluridone is often applied as time-release pellets. In both cases, application would take place under appropriate conditions for boating, by avoiding high winds or wave action. The herbicide would be applied following all directions on the U.S. Environmental Protection Agency (USEPA) approved label and would not exceed the maximum cumulative concentration of 150 ppb.

All USEPA approved herbicides have undergone extensive testing to determine toxicity levels through acute (high doses for short periods of time) and chronic (long-term exposure) studies

on animals (USEPA 1986). Fluridone has been tested in both acute and chronic toxicity studies, as well as studies examining potential genetic, cancer, and reproductive effects. Fluridone has not been shown to result in the development of tumors, adverse reproductive effects and offspring development, or genetic damage (USEPA 1986). Fluridone has been extensively tested for efficacy in treating aquatic plants, including long-term residue monitoring studies by USEPA, SePRO Corporation, as well as non-governmental, and non-industry entities.

USEPA has approved the application of fluridone in water used for drinking as long as residue levels do not exceed 0.15 parts per million (ppm), which is equivalent to 150 parts per billion (ppb). One ppm is equivalent to approximately one second in 12 days or one foot in 200 miles. Concentrations of the active ingredient fluridone up to 150 ppb (0.15 ppm) are allowed in potable water sources. However, application rates greater than 20 ppb within one-fourth mile (1,320 feet) of any functioning potable water intake is restricted. The proposed treatment concentrations of 5-15 ppb are well below the 150 ppb allowable limit in water used for drinking (USEPA 1986). Human contact with fluridone can occur through swimming in treated waters, drinking treated waters, consuming fish from treated waters, or by consuming meat, poultry, eggs, or milk from livestock that were provided water from treated waters. DeLong, Little Campbell and Sand lakes have no commercial agricultural use, so human exposure through livestock is unlikely. There are no private wells identified that utilize the three lakes for drinking water in the ADNR Well Log Tracking System (WELTS) and there are no USEPA restrictions on the use of fluridone-treated water for swimming, fishing or consumption by livestock or pets when used according to label directions (USEPA 1986). Restrictions include the use of treated water on greenhouse and nursery plants, hydroponic farming, and turf that have known concentrations more than 1 ppb.

The maximum non-toxic dose for humans is characterized by the “no-observed-effect-level” (NOEL) for herbicides. The dietary NOEL (i.e., the highest dose ingested at which no adverse effects were observed in laboratory test animals) is approximately 8 mg of fluridone per kg of body weight per day (8mg/kg/day). A 70-kg (150 lb) adult would need to drink more than 1,000 gallons of water containing the maximum legal allowable concentration of fluridone in potable water (15 ppm) for to receive an equivalent dose. A 20-kg (40 lb) child would need to drink approximately 285 gallons of fluridone-treated water in a day to receive a NOEL-equivalent dose. Therefore, the risk to humans and all mammals is negligible even if fluridone-treated water was ingested directly after treatment. Because fluridone is only applied intermittently and in limited areas, and because it degrades over time in the environment, long-term continuous exposure for humans would not likely occur when the proposed action is completed.

Fluridone has minimal to no toxic effects on mammals, fish and birds. Fluridone has been tested for acute and chronic toxicity, as well as reproductive effects, on mammals (rats, mice, guinea pigs, rabbits, dogs), birds (bobwhite quail, mallard duck), insects (honey bees, amphipods, daphnids, midges, chironomids), earthworms, fish (fathead minnows *Pimephales promelas*, channel catfish *Ictalurus punctatus*, mosquitofish *Gambusia affinis*, rainbow trout *Oncorhynchus mykiss*, and other aquatic animals (Hamelink et al. 1986 Kamarianos et al. 1989; Muir et al. 1982; McCowen et al. 1979). Dermal exposure (skin contact) of test animals to

fluridone has shown minimal to no toxicity on mammals from acute, concentrated contact. Chronic dermal exposure in mammals showed no signs of toxicity and only slight skin irritation. Mammals given varying fluridone doses up to 1,400 ppm per day excreted fluridone metabolites within 72 hours (McCowen et al. 1979). A dietary NOEL for fluridone was established for birds that feed on aquatic plants and insects. The risk to birds from fluridone via diet was considered negligible. The acute median lethal concentration of fluridone was 4.3 (+/- 3.7) mg/L for invertebrates and 10.4 (+/- 3.9) mg/L for fish. Fish in treated ponds showed no fluridone metabolites after treatment (Kamarianos et al. 1989). Chronic studies showed no effects on daphnids, midge larvae, fathead minnows, or channel catfish and rapid rates of metabolic excretion (Hamelink et al. 2009; Muir et al. 1982). Insects that fed on bottom sediments had higher rates of fluridone intake and persistence than other insects (Muir et al. 1982). Honeybees and earthworms were not particularly sensitive to fluridone, even when directly dusted or placed in treated soil (Kamarianos et al. 1989).

Fluridone has low bioaccumulation potential in fish, bird, or mammal tissues. Irrigation of crops using water treated with fluridone led to only “residue” amounts in forage crops; containing 0.05ppm after being fortified with 0.1 ppm (West and Day 1988). Livestock consumption of fluridone-treated water resulted in negligible levels of fluridone in lean meat and milk. Fluridone manufacturer recommendations indicate livestock can consume fluridone-treated water. The tolerance level for drinking milk is the same as for water: 0.15 ppm (West and Day 1988).

Fluridone is removed from treated water by degradation from sunlight, adsorption to sediments, and absorption by plants. In partially treated water bodies, dilution reduces the level of herbicides more rapidly following application. In field studies, fluridone (various formulations) decreased logarithmically with time after treatment and was undetectable between 64 and 69 days after treatment (Langeland and Warner 1986). In other studies, fluridone levels decreased rapidly to values below detection levels after 60 days, with a half-life 7-21 days or less (Kamarianos et al. 1989; Osborne et al. 1989; Muir et al. 1980; McCowen et al. 1979). Fluridone can persist in hydrosols (sediments) with a half-life exceeding one year (Muir et al. 1980).

Applicators of fluridone will have some risk of exposure. However, there is no expected risk of exposure to the public from drift. Applicators must avoid breathing spray mist, and avoid contact with skin, eyes, or clothing, and must wash thoroughly with soap and water after handling and wash exposed clothing before reusing. Fluridone used according to label instructions minimizes risk to applicators. Fluridone labels from Sonar Genesis™ and Sonar One™ are included in Appendix 6.1 and the Material Data Safety Sheet (MSDS) is available in Appendix 6.2.

2.5.2 Description of proposed fluridone treatment

Treatment concentrations will be the same for each of the three Anchorage lakes. Elodea populations are distributed throughout the littoral zones, which due to shallow depths includes all of Delong and Little Campbell Lakes. Sand Lake’s infestation was found to a depth of 20 feet.

Treatment plans will be developed for each lake to maximize control of Elodea and concentrations will be maintained within the target range over the course of the treatments.

The success rates of fluridone for treating Elodea exceed 95% (DiTomaso et al. 2013). Treating DeLong, Little Campbell, and Sand lakes during the growing season (June through September) is preferred because plants are actively growing, aiding uptake and translocation of the herbicide through the plant's tissues. Aquatic herbicides are more effective at warmer temperatures and the fall turnover of the lakes will help disperse the herbicide to deeper areas. A common application strategy for fluridone is to combine an initial treatment using a liquid formulation with a subsequent treatment of a pelleted formulation. This helps ensure the desired target concentration is reached quickly and maintained long enough for effective control. The projected time necessary to eradicate Elodea in the Anchorage lakes is approximately 3 years. An additional fall application of pelleted slow-release fluridone will be applied to maintain target concentrations under the ice during winter.

The proposed treatment includes applying the initial treatment of fluridone shortly after ice-out when water clarity is good, turbidity is low, water volume is low, and plants are actively photosynthesizing. However, fluridone can be applied at any time that Elodea is photosynthesizing. Unlike most other native submersed aquatic plants, Elodea does not appear to completely senesce. In February 2013, when Elodea was sampled on the Kenai Peninsula beneath 2 feet of snow and ice in Stormy and Daniels lakes, it was obvious the Elodea was green, vibrant and photosynthesizing under the ice.

Herbicide will be applied from motorboats using DEC-certified applicators. Fluridone will be applied using gas-powered pumping systems that mix lake water with liquid fluridone. In addition, pelleted fluridone will be distributed on the lake surface by an electric disk-driven spreader or high-velocity blower applicator. With either method, the application rate will be calibrated to ensure that desired concentrations are achieved. Titration tests have been conducted with Elodea samples from a lake on the Kenai Peninsula to calculate optimal concentrations required for effective control in Alaska and these results will guide treatment concentrations applied at the three Anchorage lakes. The target concentration is 5-15 ppb, and the sum of all applications in a given season will not exceed 150 ppb. The treatment plan is to maintain the target concentration of fluridone for 45-90 days. To ensure target concentrations are maintained, water samples will be collected from 2-4 sites in each lake, at the surface, and at mid- and bottom depths every two weeks. Based on the water sample results additional fluridone may be added.

Public notification of the herbicide applications will be conspicuously posted on signs at all public access points of entry and exit at each lake. Signs will remain posted for at least 24 hours after the applications with contact names, phone numbers, time of application, and any appropriate label restrictions per Alaska Department of Environmental Conservation and Municipality of Anchorage requirements. All public notifications related to the fluridone treatments will include two consecutive newspaper notices at least 30 days before the first

application including information about product name, EPA registration number, quantity of mixed herbicide and treatment locations.

3.0 Affected Environment

This section identifies and describes the ecological and human health impacts of the proposed action. Potential impacts are described with three broad subject areas: physical environment, biological environment, and human health. The description and comments will focus on issues identified as potential concerns by ADNR.

3.1 Physical Environment

3.1.1 Land Resources

Will the proposed action result in:	Impact Unknown	None	Minor	Potentially significant	Can impact be mitigated
a. Soil instability or changes in geologic substructure?		X			
b. Disruption, displacement, erosion, compaction, moisture loss, or over-covering of soil which would reduce lake productivity or fertility?		X			
c. Destruction, covering or modification of any unique geologic or physical features?		X			
d. Changes in siltation, deposition or erosion patterns that may modify the channel of a river or stream or the bed or shore of a lake?		X			

3.1.2 Water Resources

Will the proposed action result in:	Impact Unknown	None	Minor	Potentially significant	Can impact be mitigated
a. Discharge into, or any alteration of, surface water quality including but not limited to temperature, dissolved oxygen, and turbidity?			X		See 3.1.2a
b. Changes in drainage patterns or rate and amount of surface runoff?		X			
c. Alteration of the course or magnitude of flood water or other flows?		X			
d. Changes in the amount of surface water in any water body or creation of a new water body?		X			
e. Exposure of people or property to water		X			

related hazards such as flooding?					
f. Changes in the quality of groundwater?		X			3.1.2f
g. Changes in the quantity of groundwater?		X			
h. Increase risk of contamination of surface or groundwater?			X		3.1.2a, 3.1.2f
i. Effects on any existing water right or reservation?		X			
j. Effects on other water users as a result of any alteration in surface or groundwater quality?			X		3.1.2f
k. Will the project affect a designated floodplain?		X			
l. Will the project result in any discharge that would affect federal or state water quality regulations standards? (Also see 2a)			X		3.1.2l

Comment 3.1.2a. This project would apply an herbicide to surface waters to eradicate an invasive aquatic plant. The anticipated impacts would be short-term. Fluridone (brand name Sonar, USEPA Registration Number 67690-45 for Sonar ONE™ and USEPA Registration Number 67690-54 for Sonar Genesis™) is registered by both the USEPA and the Alaska Department of Environmental Conservation and are deemed safe for use to eradicate invasive aquatic plants when applied according to label instructions.

The active ingredient in the products is fluridone. The concentration in the liquid formulation in Sonar GENESIS is 6.3%. The pelleted formulation has a fluridone concentration of 5%. Regardless of formulation or application rate, the application will not exceed 150 ppb cumulatively in any one season. Spill prevention measures, especially when using liquid formulations, will be undertaken to reduce the likelihood of spills. Spill risk will be minimized by implementing standard operating procedures to ensure the proper handling of fluridone products as detailed by the label.

Long term water quality is not expected to decrease with the application of fluridone to DeLong, Little Campbell or Sand lakes. Application of fluridone is expected to eradicate Elodea, which will increase decaying and dead biomass within the lake as the Elodea plants break down. This could result in temporary increases in organic material suspended in the lakes, and a decrease in dissolved oxygen levels (McCowen et al. 1979). The algae levels within the three lakes may also increase as a result of the decrease in Elodea, though algal levels in spring are typically low in all three lakes. Increase in algae may reduce visibility within the lakes and decrease dissolved oxygen. However, any changes or impacts to water quality resulting from an increase in algae are expected to be short-term and minor.

Longer term water quality may improve with the reduction of the large biomass of Elodea in these lakes, and native submersed aquatic vegetation is expected to increase.

Comment 3.1.2f: The primary soil types in DeLong, Little Campbell and Sand lakes are similar and generally consist of a thin top layer of organics, covering a sandy, silt loam and gravelly till interbedded with layers of clay. Most of the soils are moderately to highly permeable and glacial in origin (Munk et al. 2004). Fluridone readily binds to organic and clay particles, and is unable to travel more than a few inches through lake sediments (Muir et al. 1980). Therefore, it is not expected to contaminate groundwater resources. In addition, the source of the groundwater recharge for the Anchorage area is the base of the Chugach Mountains, east of the lowlands, and not from infiltration of the lakes or precipitation in the lowland areas (Barnwell et al. 1972).

Comment 3.1.2i: The treatments would be confined to DeLong, Little Campbell and Sand lakes. Any treated water discharged from the Sand Lake drain would not have a fluridone concentration that exceeds the 0.15 ppm threshold; Delong and Little Campbell lakes do not have discharge outlets. As required by state regulation, ADNOR has submitted a pesticide use permit application to the Alaska Department of Environmental Conservation, which must be approved prior to any fluridone treatments.

3.2 Biological Environment

3.2.1 Air Resources

Will the proposed action result in:	Impact Unknown	None	Minor	Potentially significant	Can impact be mitigated
a. Emission of air pollutants or deterioration of ambient air quality?			X		3.2.1a
b. Creation of odors?			X		3.2.1b
c. Alteration of air movement, moisture, or temperature patterns or any change in climate, either locally or regionally?		X			
d. Adverse effects on vegetation, including crops, due to increase emissions of pollutants?		X			
e. Will the project result in any discharge which will conflict with federal or state air quality regulations.		X			

Comment 3.2.1a: Emissions from four-stroke outboard motors would be produced, but are expected to dissipate rapidly.

Liquid and pelleted fluridone are not volatilized and present no or minimal airborne or drift risk.

Comment 3.2.1b: As the product label recommends, all applicators will wear respirators for protection. Therefore, any impacts caused by potential odors would be short-term and minor.

3.2.2 Vegetation

Will the proposed action result in:	Impact Unknown	None	Minor	Potentially significant	Can impact be mitigated
a. Changes in the diversity, productivity or abundance of plant species (including trees, shrubs, grass, crops and aquatic plants)?				X	3.2.2a
b. Alteration of a plant community?				X	3.2.2b
c. Adverse effects on any unique, rare, threatened, or endangered species?		X			
d. Reduction in acreage or productivity of any agricultural land?		X			
e. Establishment of spread of noxious weeds?		X			
f. Adverse effects on wetlands, or prime and unique farmland?		X			

Comment 3.2.2a and 3.2.2b: The desired outcome of the proposed project is eradication of Elodea. Elodea forms a substantial portion of the submersed aquatic vegetation in all three of the infested Anchorage lakes. Elodea grows both in single species stands, with other aquatic plant species, in all three lakes. Fluridone is applied at low concentrations so that potential impacts to other aquatic plant species are minimized while impacts to Elodea, due to its high sensitivity to fluridone, are maximized. The aquatic plant community is expected to return to one compromised entirely of native species because the seed bank of native vegetation will not be affected by fluridone. As the Elodea decays and before native vegetation can recover, dissolved oxygen levels could be reduced up to 25%, but because of the slow mode of action by fluridone, abrupt or large swings in dissolved oxygen are not likely (McCowen et al. 1979). As Elodea continues to decompose, water clarity, dissolved oxygen, and nutrient levels are expected to return to normal levels. Eradication of Elodea may create a more favorable environment in which native plants can compete with Elodea (Rybicki and Landwehr 2007).

Operations would be based at boat launches and public access areas, which would avoid trampling of lakeside and nearshore vegetation. In DeLong Lake, motor boat access would occur at along the public gravel and concrete walkway. The north side of Little Campbell Lake was revegetated in 2014 and because this is the only access point to the lake, boat launching could result in temporary trampling of grasses along the bank. Prior to removing boats and equipment, all equipment would be carefully inspected to ensure that Elodea is not transported to other waterbodies.

Fluridone is a systemic herbicide that can affect plants that are sensitive to this herbicide if treated water is used as irrigation. Watering with treated lake water could potentially kill garden plants and lawns. According to the USEPA approved label, fluridone use is restricted for irrigating greenhouse or nursery plants unless concentrations are less than 1 ppb. Lakeside property owners will be notified of this restriction by mail. Restrictions would also be posted on the ADNR project website and on project notice signs in public access areas around the lakes.

3.2.3 Fish and Wildlife

Will the proposed action result in:	Impact Unknown	None	Minor	Potentially significant	Can impact be mitigated
a. Deterioration of critical fish or wildlife habitat?		X			
b. Changes in the diversity or abundance of mammals or bird species?			X		3.2.3b
c. Changes in diversity or abundance of other species?			X		3.2.3c
d. Introduction of new species into an area?		X			
e. Creation of a barrier to the migration or movement of animals?		X			
f. Adverse effects on any unique, rare, threatened, or endangered species?		X			
g. Increase in conditions that stress wildlife populations or limit abundance (including harassment, legal or illegal harvest or other human activity)?		X			
h. Will the project be performed in any area in which T & E species are present, and will the project affect any T & E species or their habitat?		X			3.2.3d
i. Will the project introduce or export any species not presently or historically occurring in the receiving location?		X			

Comment 3.2.3b: Mammals: Although the infested Anchorage lakes range from unpopulated to densely populated areas, mammals can inhabit and utilize lake water year-round. Ingestion of treated waters by mammals is expected to have minimal to no effects because of the enzymatic action in animal's digestive tracts (Durkin 2008) and the low herbicide concentration

used in the lake treatments. Thus, there are minimal to no adverse effects expected to mammals from drinking treated lake water.

Waterfowl: Waterfowl will likely be present and could be temporarily displaced from DeLong, Little Campbell and Sand lakes due to treatment activities (i.e., boats). Because of the close proximity and availability of other waters to the project area there should be minimal or no impacts to waterfowl during project activities.

It is possible that birds may ingest treated water, consume aquatic plants, fish or aquatic invertebrates that have been exposed to or affected by treated water. Ingestion or exposure to treated water is unlikely to have any effects at the proposed treatment levels because the toxicity of fluridone to waterfowl and other birds is low. USEPA categorizes fluridone for acute toxicity in birds as *Practically Nontoxic* based on >5000 ppm in both mallards and quail (reference). Ingesting fish exposed to fluridone will also have minimal or no impact on birds, because fish do not bioaccumulate fluridone. Ingesting invertebrates from treated water may introduce trace amounts of herbicides to bird digestive systems. Studies indicate that low amounts of fluridone are metabolized and excreted by birds (Hamelink et al. 2009, Muir et al. 1982). However, all of the laboratory examples regarding effects of fluridone on animals involved laboratory specimens subjected to unusually high concentrations of herbicides, which far exceed any concentrations proposed in this project. Thus, we expect minimal, short-term or no or impacts to waterfowl or other birds.

Comment 3.2.3c: Other species that could be present during this project include zooplankton, aquatic insects, and other birds. Similar to mammals, fluridone has minimal to no effects because of the enzymatic action in animal's digestive tracts (Durkin 2008) and the low herbicide concentration used in the lake treatments.

Invertebrates: Micro- and macroinvertebrates can be affected by fluridone and its effects on aquatic macroinvertebrate populations vary. However, effects are expected to be minimal because most insects and earthworms are not sensitive to fluridone at low concentrations (Haag and Buckingham 1991). The only study that found reduced biomass of macroinvertebrates (fly larvae; *Hydrellia*) used fluridone at concentrations of 4600-9200 ppb (Haag and Buckingham 1991); far exceeding EPA approved label concentrations. Another study conducted at low fluridone concentrations (5 ppb) for the treatment of milfoil, a similar concentration and with similar species as in our proposed project, found no negative effects on macroinvertebrate biomass (Cheruvilil et al. 2000).

Because of their short life cycles, high dispersal ability, and generally high reproductive potential, aquatic invertebrates are capable of rapid recovery from disturbance (Matthaei et al. 1996; Boulton et al. 1992; Anderson and Wallace 1984). Recolonization of aquatic invertebrates (e.g., mayflies and caddis flies) in the treated lakes would occur via aerial dispersal of adult invertebrates from adjacent areas. No impacts on benthic organisms were reported in field studies where fluridone treatment was >1000 ppb (Durkin 2008).

Amphibians: Wood frogs are the only amphibians in the Anchorage area and presumably inhabit the area around DeLong, Little Campbell and Sand lakes. Wood frogs mate in the spring and their offspring quickly develop from eggs to tadpoles to frogs. Adult frogs may be more resistant than earlier life stages to herbicide affects; however, there is no published literature available to examine amphibian effects of fluridone (Durkin 2008).

Fish: Fish in ponds showed no fluridone metabolites in their systems after treatment (Kamarianos et al. 1989). Chronic studies showed no effects on fathead minnows or channel catfish, and demonstrated rapid rates of metabolic excretion (Hamelink et al. 2009, Muir et al. 1982). The acute median lethal concentration of fluridone for fish was 10.4 +/- 3.9 mg/L (Hamelink et al. 2009, Muir et al. 1982).

Comment 3.2.3d

Threatened and Endangered Species

There will be no effects to any threatened or endangered species. Cook Inlet beluga whales are the only threatened or endangered species found in the Cook Inlet drainage, but are not located in or near the project area. Any herbicide potentially discharged from the lakes or would be highly diluted and would be below detectable levels by the time it reached Cook Inlet.

3.3 Human Environment

3.3.1 Public and Worker Safety and Health

Will the proposed action result in:	Impact Unknown	None	Minor	Potentially significant	Can impact be mitigated
a. Risk of an explosion or release of hazardous substances (including, but not limited to oil, pesticides, chemicals, or radiation) in the event of an accident or other forms of disruption?			X		See 3.3.1a
b. Affect an existing emergency response or emergency evacuation plan or create a need for a new plan?		X			
c. Creation of any human health hazard or potential hazard?			X		3.3.1a
d. Will any chemical toxicants be used?			X		3.3.1c

Comment 3.3.1a: The primary risk of human exposure to hazardous substances from this project would be to the herbicide applicators. To minimize exposure risk, all applicators would wear personal protective equipment as stipulated by the fluridone product label. The fluridone application would also be supervised by an Alaska Department of Environmental Conservation certified aquatic herbicide applicator.

Fluridone will be transported, handled, applied, and stored according to the label specifications to minimize the possibility of human exposure or a spill. Accidental spills are a concern and a spill response plan is being developed, along with a general safety plan, for all aspects of the project and will be added to the Appendix of this environment assessment when they become

available. If a spill occurs, pelleted fluridone would be physically picked up, whereas liquid fluridone would be contained and absorbed using a spill kit on shore and placed in a container for disposal according to local regulations.

Comment 3.3.1c: Although herbicides are widely used to control unwanted species, public concerns have been raised regarding health and human safety. Fluridone is an EPA-registered herbicide that has been approved for use by ADEC.

Any risks to human health during application (particularly to applicators) will be minimized by following a safety plan, including proper use of safety equipment. Orientation meetings will be held prior to all applications to cover planned activities, as well as spill prevention and response. People recreating in the area would not be at risk from chemical toxicants when the lakes are being treated. Public notifications through news releases, signs, and ADNR personnel in the project area should be adequate to keep any potential recreationists from being exposed to waters during the day of the treatment.

3.3.2 Recreational and Land Use

Will the proposed action result in:	Impact Unknown	None	Minor	Potentially significant	Can impact be mitigated
a. Alteration or interference with the productivity or profitability of any existing land use?			X		See 3.3.2a
b. Conflict with a designated natural area or area of unusual scientific or educational importance?		X			
c. Conflict with any existing land use whose presence would constrain or potentially prohibit the proposed action?		X			
d. Adverse effects on the relocation of residences?		X			

Comment 3.3.2a: The boat launches and lake use at Delong, Little Campbell and Sand lakes may be temporarily restricted during the application of fluridone, which is anticipated to take one day per lake. To minimize the potential spread of Elodea, we anticipate posting signs to educate the public on how to prevent the spread of Elodea to other water bodies.

3.3.3 Aesthetics

Will the proposed action result in:	Impact Unknown	None	Minor	Potentially significant	Can impact be mitigated
a. Alteration of any scenic vista or creation of an aesthetically offensive site or effect that is open to public view?			X		3.3.3a
b. Alteration of the aesthetic character of a community or neighborhood?			X		3.3.3b

c. Alteration of the quality or quantity of recreational/tourism opportunities and settings?			X		3.3.3c
d. Will any designated or proposed wild and scenic rivers, trails or wilderness areas be impacted?		X			

Comment 3.3.3a: Public access will be highly discouraged at each lake during staging during the treatments as well as any contact with treated water the day of the treatments. Public notification regarding limiting public access will be based on the requirements of the permitting agencies.

Comment 3.3.3b: DeLong and Sand lake property owners will be informed of treatment activities and treatment personnel will be the present in their community the days that the lakes are treated. Any alterations of the aesthetic character of the lake environments would be minor and limited to the days of the treatments.

Comment 3.3.3c: Removal of Elodea may improve boating, float plane operations (Sand Lake only), or angling quality at all three lakes, which could increase recreational use. The long-term benefits of eradicating this invasive plant population would outweigh any short-term, and minor, recreational impacts associated with the actual herbicide treatment. Any loss of recreational opportunities are expected to be short-term, minor, and directly associated with the actual herbicide treatment and immediately thereafter.

3.3.4 Evaluation of Significance

Will the proposed action, considered as a whole:	Impact Unknown	None	Minor	Potentially significant	Can impact be mitigated
a. Have impacts that are individually limited, but cumulatively considerable? (A project or program may result in impacts on two or more separate resources which creates a significant effect when considered together or in total).		X			
b. Involve potential risks or adverse effects which are uncertain but extremely hazardous if they were to occur?				X	3.3.4b
c. Potentially conflict substantively with requirements of any local, state, or federal law, regulation, standard or formal plan?		X			
d. Establish a precedent or likelihood that future actions with significant environmental impacts will be proposed?		X			
e. Generate substantial debate or controversy about the nature of the impacts that would be created?	X		X		3.3.4e
f. Have any expected organized opposition or generate substantial public controversy?	X		X		See 3.3.4e,f

Comment 3.3.4b: There is always some potential that a crisis or emergency could result from this project due to unforeseen accidents or acts of vandalism. The site, safety and storage plans developed will minimize the risk that a crisis or emergency occurs. The plans will also provide a structured and planned response should a crisis or emergency occur.

Comment 3.3.4e and 3.3.4f: In general, the use of herbicides can generate controversy. Outreach efforts by ADNR will help educate the public on the safe and effective use of fluridone and the benefits of eradicating Elodea from these three lakes. Several public meetings with stakeholders have helped this education effort, and will continue throughout the course of the project. It is unknown if this project will have any significant opposition.

The following permits and approvals are needed prior to the proposed treatment:
Alaska Department of Environmental Conservation: Alaska Pollution Discharge Elimination System (APDES) Permit (Appendix 5.1) and Pesticide Use Permit
ADF&G (Alaska Department of Fish and Game) Fish Habitat Permit
Anchorage Municipality Health and Human Services Pesticide Permit
ADNR Division of Mining Land and Water Land Use Permit

These permits will be added to the Appendix in this environmental assessment as they are approved.

4.0 Consultation and Coordination

Following the public meeting and notice for this environmental assessment, ADNR will incorporate public comments received and subsequent ADNR responses into this document. The revised document will then be submitted to USFWS to comply with the National Environmental Policy Act (NEPA) process to determine whether a Finding of No Significant Impact (FONSI) will be issued for the preferred action. Other major authorizations required to approve the preferred action include ADEC issuance of a Pesticide Use Permit, compliance with the Alaska Pollutant Discharge Elimination System (APDES), a Municipality of Anchorage Health and Human Services Pesticide Permit, and approval by ADNR.

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5.0 Appendix

5.1 EPA Pesticide Labels

Sonar[®] Genesis
Aquatic Herbicide

SPECIMEN **SePRO**

AN HERBICIDE FOR MANAGEMENT OF FRESHWATER AQUATIC VEGETATION IN PONDS, LAKES, RESERVOIRS, POTABLE WATER SOURCES, DRAINAGE CANALS AND IRRIGATION CANALS.
For use in New York State, comply with Section 24 (C) Special Local Need labeling for Sonar Genesis, SLN NY120006.

Active Ingredient
fluridone, 1-methyl-3-phenyl-5-[3-(trifluoromethyl)phenyl]-4(1H)-pyridone 5.3%
Other Ingredients 94.7%
TOTAL 100.0%
Contains 0.5 pounds active ingredient per gallon.

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

Refer to the inside of the label booklet for additional precautionary information and Directions for Use including 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.

Sonar is a registered trademark of SePRO Corporation.
SePRO Corporation 11550 North Mendota Street, Suite 600
Carmel, IN 46032, U.S.A. EPA Reg. No. 67690-54
FPL20121219

Concentrated Formulation

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

Corrosive. Causes irreversible eye damage. Harmful if swallowed. Avoid contact with skin. Do not get in eyes or on clothing. Wear protective eyewear (goggles, face shield, or safety glasses). Wear long-sleeved shirt and long pants, socks, shoes, and chemical resistant gloves. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before reuse.

KEEP OUT OF REACH OF CHILDREN

DANGER / PELIGRO

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

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 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 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.
NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage.	
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 life or property involving this product, call INFOTRAC at 1-800-535-5053.	

ENVIRONMENTAL HAZARDS

Do not apply to water except as specified on the label. Do not contaminate water by disposal of equipment washwaters. 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. Trees and shrubs growing in water treated with Sonar Genesis aquatic herbicide may occasionally develop chlorosis. Follow use directions carefully so as to minimize adverse effects on non-target organisms.

DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling. Read all Directions for Use carefully before applying.

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

Ensure spray drift to nontarget susceptible species does not occur.

DO NOT apply Sonar Genesis Aquatic Herbicide in any manner not specifically described in this label.

Observe all cautions and limitations on this label and on the labels of products used in combination with Sonar Genesis. DO NOT use Sonar Genesis other than in accordance with the instructions set forth on this label. Keep containers closed to avoid spills and contamination.

IN CASE OF EMERGENCY

In case of large-scale spillage regarding this product, call INFOTRAC at 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 INFORMATION

Sonar Genesis is a selective systemic aquatic herbicide for management of freshwater aquatic vegetation in ponds, lakes, reservoirs, drainage canals and irrigation canals, including dry or de-watered areas of these sites. Sonar Genesis is absorbed from water by plant shoots and from hydrosol by the roots of aquatic vascular plants. For in-water treatments, it is important to maintain the specified concentration of Sonar Genesis in contact with the target plants for a minimum of 45 days. Rapid water movement or any condition which results in rapid dilution of Sonar Genesis in treated water will reduce its effectiveness. In susceptible plants, Sonar Genesis inhibits the formation of carotene. In the absence of carotene, chlorophyll is rapidly degraded by sunlight. Herbicidal symptoms of Sonar Genesis appear in seven to ten days and appear as white (chlorotic) or pink growing points in many susceptible plant species. Under optimum conditions, a minimum of 30 to 90 days may be required before the desired level of aquatic plant management is achieved. Plant species susceptibility to Sonar Genesis may vary depending on time of year, stage of growth, and water movement. For best results, apply Sonar Genesis 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 Genesis is not corrosive to application equipment.

This label provides recommendations on the use of a laboratory analysis for the active ingredient. SePRO Corporation recommends the use of high-performance liquid chromatography (HPLC) for the determination of fluridone concentrations in water. It is recommended to contact SePRO Corporation for the incorporation of this test, known as a FastEST, in a treatment program. FastEST is referenced in this label as the preferred method for the rapid determination of the active ingredient in water. Other proven chemical analyses for the active ingredient may also be used.

Application rates and calculations of Sonar Genesis are provided to achieve a desired concentration of fluridone 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, reservoirs and static canals per annual growth cycle. For purposes of Sonar Genesis 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. This maximum concentration is the amount of product calculated as the target application rate, NOT determined by testing the concentration of fluridone in the treated water.

Use Restrictions and Precautions

- 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 or local public agencies.
- Chemigation: Do not apply Sonar Genesis through any type of irrigation system.
- Hydroponic Farming: Do not use Sonar Genesis treated water for hydroponic farming unless a FastEST has been run and confirmed that concentrations are less than 1 ppb.
- Greenhouse and Nursery Plants: Consult with SePRO Corporation for site-specific recommendations prior to any use of Sonar Genesis treated water for irrigating greenhouse or nursery plants. Without site-specific guidance from SePRO, do not use Sonar Genesis treated water for irrigating greenhouse or nursery plants unless a FastEST has been run and confirmed that concentrations are less than 1 ppb.

Water Use Restrictions Following Applications With Sonar Genesis (Days)

Application Rate	Drinking ¹	Fishing	Swimming	Livestock/Pet Consumption	Irrigation ²
Maximum Rate (150 ppb) or less	0	0	0	0	See irrigation instructions below

¹ Note below, under Potable Water Intakes, the information for application of Sonar Genesis within ¼ mile (1,320 feet) of a functioning potable water intake.

² Note below, under Irrigation, specific time frames or fluridone concentrations that provide the widest safety margin for irrigating with treated water.

- Potable Water Intakes: In lakes and reservoirs or other sources of potable water, do not apply Sonar Genesis at application rates greater than 20 ppb within one-fourth mile (1,320 feet) of any functioning potable water intake. At application rates of 4 to 20 ppb, Sonar Genesis 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 potable water wells or connections to a municipal water system, are not considered to be functioning potable water intakes.

- Irrigation: Irrigation from a Sonar Genesis treated area may result in injury to the irrigated vegetation. Follow these precautions and inform those who irrigate from areas treated with Sonar Genesis of the irrigation time frames or FastEST requirements presented in the table below. Follow the following time frames and assay directions to reduce the potential for injury to vegetation irrigated with water treated with Sonar Genesis. Greater potential for crop injury occurs where Sonar Genesis treated water is applied to crops grown on low organic and sandy soils.

Application Site	DAYS AFTER APPLICATION		
	Established Tree Crops	Established Row Crops/Turf/Plants	Newly Seeded Crops/Seedbeds or Areas to be Planted Including Overseeded Golf Course Greens
Ponds and Static Canals ¹	7	30	Assay required
Canals	7	14	Assay required
Lakes and Reservoirs ²	7	14	Assay required
Dry or De-watered Canals ³	0	0	***

¹ For purposes of Sonar Genesis 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.

² In lakes and reservoirs where one-half or greater of the body of water is treated, use the pond and static canal irrigation precautions. When applying Sonar Genesis to exposed sediments of aquatic sites such as lakes and reservoirs, follow these time frames prior to using water for irrigation once sites are reflooded.

^{†††} When Sonar Genesis is applied to exposed sediments of dry or de-watered irrigation canals, treatments must be made at least 2 weeks prior to when the canals are to be refilled, and allow canals to refill for a minimum of 24 hours before using water for irrigation.

Where the use of Sonar Genesis treated water is desired for irrigating crops prior to the time frames established above, the use of FastEST analysis is recommended to measure the concentration of fluridone in the treated water. Where a FastEST has determined that the fluridone concentrations are less than 10 parts per billion, there are no irrigation precautions for irrigating established tree crops, plants, row crops or turf. For tobacco, tomatoes, peppers or other plants within the Solanaceae Family and newly seeded crops or newly seeded grasses such as overseeded golf course greens, do not use Sonar Genesis treated water if measured fluridone concentrations 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 in the previous year without direct consultation with a SePRO Aquatic Specialist. It is recommended that a SePRO Aquatic Specialist be consulted prior to commencing irrigation of these sites.

PLANT CONTROL INFORMATION

Sonar Genesis selectivity is dependent upon dosage, time of year, stage of growth, method of application and water movement. The following categories, controlled and partially controlled are provided to describe expected efficacy under ideal treatment conditions using higher to maximum label rates. Use of lower rates will increase selectivity of some species listed as controlled or partially controlled. Additional aquatic plants may be controlled, partially controlled, or tolerant to Sonar Genesis. It is recommended to consult a SePRO Aquatic Specialist prior to application of Sonar Genesis to determine a plant's susceptibility to the planned treatment.

Vascular Aquatic Plants Controlled by Sonar Genesis:

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*)
najas (*Najas* spp.)
pondweed (*Potamogeton* spp., except Illinois pondweed)
watermilfoil (*Myriophyllum* spp., including *M. spicatum* x *sibiricum* hybrids)

Emerald Plants:

spatterdock (*Nuphar luteum*)
water-lily (*Nymphaea* spp.)
waterlily (*Brassia schreberi*)

Floating Plants:

common duckweed (*Lemna minor*)
Salvinia (*Salvinia* spp.)

Vascular Aquatic Plants Partially Controlled by Sonar Genesis:

Submersed Plants:

Illinois pondweed (*Potamogeton illinoensis*)
littoralia (*Littoralia sessiliflora*)
tapegrass, American eelgrass (*Vallisneria spiralis*)

Emerald Plants:

alligatorweed (*Alternanthera philoxeroides*)
American lotus (*Nelumbo lutea*)
cattail (*Typha* spp.)
creeping waterlily (*Ludwigia peploides*)
parrotfish (*Myriophyllum aquaticum*)
smartweed (*Polygonum* spp.)
spikerush (*Eleocharis* spp.)
waterpurslane (*Ludwigia palustris*)

Floating Plants:

common watermeal (*Wolffia columbiana*)[†]

Shoreline Grasses:

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

[†] Consult with a SePRO Aquatic Specialist about techniques to enhance efficacy of watermeal, including incorporation of Galeon S.C. Aquatic Herbicide into a Sonar Genesis treatment program, in difficult to control sites.

MIXING AND APPLICATION DIRECTIONS

The aquatic plants present in the treatment site should be identified prior to application to determine their susceptibility to Sonar Genesis. 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.

Sonar Genesis may be applied or metered directly into the treated area or diluted with water prior to application. Add the specified amount of Sonar Genesis to water in the spray tank during the filling operation. Surface and subsurface application of the spray can be made with conventional spray equipment. Sonar Genesis can also be applied near the surface of the hydrosol using weighted trailing hoses. A minimum spray volume of 5 to 100 gallons per acre may be used. Sonar Genesis may also be directly metered into the pumping system where it is diluted with water.

Tank Mix Directions

Sonar Genesis may be tank mixed with other aquatic herbicides and algicides to enhance efficacy and plant selectivity provided that this label does not prohibit such mixing. 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. No labeled rate or dose should be exceeded. To ensure compatibility, a jar test is recommended before field application of any tank mix combination. It is recommended to consult with SePRO Corporation for latest tank mix recommendations.

NOTE: Tank mixing or use of Sonar Genesis with any other product which is not specifically and expressly authorized by the label shall be at the exclusive risk of the user, applicator and/or application adviser, to the extent allowed by applicable law.

Application Rate Calculation

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

Sonar Genesis gallons required per treated surface acre = surfaces acres X average water depth of treatment site (feet) x desired ppb concentration of active ingredient x 0.0054.

For example, the amount per acre of Sonar Genesis required to provide a concentration of 30 ppb of active ingredient in a 1 acre pond with an average depth of 5 feet is calculated as follows:

$$1 \text{ acre} \times 5 \text{ feet} \times 30 \text{ ppb} \times 0.0054 = 0.81 \text{ gallons per treated surface acre}$$

$$\text{or}$$

$$0.81 \text{ gallons} \times 4 \text{ quarts/gallon} = 3.2 \text{ quarts per treated surface acres}$$

$$\text{or}$$

$$0.81 \text{ gallons} \times 128 \text{ ounces/gallon} = 104 \text{ ounces per treated surface acres}$$

Application to Ponds

Sonar Genesis may be applied to the entire surface area of a pond. For single applications, rates may be selected to provide 30 to 90 ppb to the treated water. 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 are shown in the following table. For additional application rate calculations, refer to the Application Rate Calculation section of this label. Split or multiple applications may be used to control more difficult target plants and/or where dilution of treated water is anticipated; however, the sum of all applications must not exceed a total of 90 ppb per annual growth cycle.

Average Water Depth of Treatment Site (feet)	Gallons of Sonar Genesis per Treated Surface Acre [†]	
	30 ppb	90 ppb
1	0.16	0.48
2	0.32	0.97
3	0.48	1.45
4	0.64	1.94
5	0.81	2.43
6	0.97	2.91
7	1.13	3.40
8	1.29	3.88
9	1.45	4.37
10	1.62	4.86

[†] To calculate the number of quarts of Sonar Genesis required, use the calculation as follows:
gallons per surface acre x 4 quarts/gallon = quarts per surface acre

For example: targeting a concentration of 30 ppb in a one acre pond with average depth of 5 feet would require 0.81 gallons or 3.2 quarts.

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 Genesis 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 Genesis at an application rate of 10 to 90 ppb. Application rates necessary to obtain these concentrations in treated water are shown in the following table. For additional rate calculations, refer to the Application Rate Calculation 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, it is recommended to contact a SePRO Aquatic Specialist for 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. Retreatments may be required to control more difficult to control species or in the event of a heavy rainfall event where dilution of the treatment concentration 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.

SINGLE APPLICATION OF Sonar Genesis		
Average Water Depth of Treatment Site (feet)	Gallons of Sonar Genesis per Treated Surface Acre to Achieve [†]	
	10 ppb	90 ppb
1	0.05	0.48
2	0.10	0.97
3	0.16	1.45
4	0.21	1.94
5	0.27	2.43
6	0.32	2.91
7	0.37	3.40
8	0.43	3.88
9	0.48	4.37
10	0.54	4.86

[†] To calculate the number of quarts of Sonar Genesis required, use the calculation as follows:
gallons per surface acre x 4 quarts/gallon = quarts per surface acre

For example: targeting a dose of 10 ppb in a 20 acre lake with average depth of 5 feet would require 0.27 gallons per surface acre or 1.0 quarts.

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, through the use of a water analysis, e.g. FastEST, add additional Sonar Genesis to maintain this lower dose for the sufficient time to ensure efficacy and enhance selectivity. Water may be treated at an initial application concentration of 4 to 50 ppb. Additional split applications should be conducted to maintain a sufficient concentration for a minimum of 45 days or longer. In controlling Eurasian watermillet and curlyleaf pondweed and where greater plant selectivity is desired, choose an application rate lower in the rate range. For other plant species, it is recommended to contact a SePRO Aquatic Specialist for assistance in selecting the appropriate concentrations and timing of application to meet specific plant management goals. When utilizing split or multiple applications of Sonar Genesis, the utilization of FastEST is strongly recommended to determine the actual concentration in the water over time. For split or multiple applications, the sum of all applications must not exceed 150 ppb per annual growth cycle.

NOTE: In treating lakes or reservoirs that contain functioning 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 Genesis with untreated water is anticipated, such as in partial lake or reservoir treatments, split or multiple applications may be used to extend the contact time to the target plants. The application rate and use frequency of Sonar Genesis 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 Sonar Genesis concentration in the treatment area. Use a rate at the higher end of the rate range where greater dilution with untreated water is anticipated.

Treatment Areas Greater Than ¼ Mile from a Functioning Potable Water Intake

For single applications, apply Sonar Genesis at application rates from 30 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.

Treatment Areas 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 multiple applications of Sonar Genesis 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 to Sediments of Dry or De-Watered Aquatic Sites

For application of Sonar Genesis to sediments of dry or de-watered aquatic sites, including exposed sediments of lakes or reservoirs, irrigation canals, non-irrigation canals and drainage canals, apply a maximum of 4 gallons of Sonar Genesis per surface acre per annual growth cycle. Apply Sonar Genesis evenly to the sediment surface, with a minimum spray solution of 30 to 100 gallons per surface acre. High levels of organic matter in treated sediments may reduce efficacy. Sonar Genesis may be applied with other aquatic herbicides labeled for this use. It is recommended that a SePRO Aquatic Specialist be consulted for further use recommendations.

Direct foliar application to floating, topped-out and emerged aquatic vegetation

For application of Sonar Genesis to floating, topped-out and emerged aquatic vegetation in ponds, lakes, reservoirs, drainage canals and irrigation canals, including dry or de-watered areas of these sites, apply a maximum of 4 gallons of Sonar Genesis per surface acre per annual growth cycle. Apply Sonar Genesis evenly to the treatment area using properly calibrated broadcast equipment in a minimum spray solution of 20 to 100 gallons per surface acre. For treatment of vegetation in or on water, do not exceed a water concentration of 150 ppb. Spot treatments can be made with up to 5% Sonar Genesis by volume when application rate does not exceed 4 gallons Sonar Genesis per surface acre. It is recommended that a SePRO Aquatic Specialist be consulted for site specific recommendations.

Application to Drainage Canals and Irrigation Canals

Static Canals:

In static drainage and irrigation canals, apply Sonar Genesis at the rate of 30 to 150 ppb per treated surface acre. The maximum application rate or sum of all application rates cannot exceed 150 ppb per annual growth cycle.

Moving Water Canals:

In slow moving bodies of water use an application technique that maintains a concentration of 10 to 40 ppb in the target area for a minimum of 45 days. Sonar Genesis 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 Containing a Functioning Potable Water Intake

In treating a static or moving water canal which contains a functioning potable water intake, applications of Sonar Genesis 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 of Sonar Genesis are made within ¼ mile of a functioning potable water intake, a FastEST analysis must be utilized to demonstrate that concentrations do not exceed 150 ppb at the functioning potable water intake.

Application Rate Calculation – Moving Water Drainage and Irrigation Canals

The amount of Sonar Genesis 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 canal width (ft.) x average canal depth (ft.) = 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 0.0054 = Gallons Sonar Genesis required per day

STORAGE AND DISPOSAL

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

Pesticide Storage: Keep from freezing. Store in original container only. Do not store near feed or foodstuffs. In case of leak or spill, use absorbent materials to contain liquids 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

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.

TERMS AND CONDITIONS OF USE

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

WARRANTY DISCLAIMER

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

INHERENT RISKS OF USE

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

LIMITATION OF REMEDIES

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

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

To the extent consistent with applicable law, SePRO Corporation shall not be liable for losses or damages resulting from handling or use of this product unless SePRO Corporation is promptly notified of such losses or damages in writing. In no case shall SePRO Corporation be liable for consequential or incidental damages or losses.

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

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SePRO Corporation
11550 North Meridian Street, Suite 600
Carmel, IN 46032



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

SonarOne®

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 pound active ingredient per pound of product.

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 the inside of the label booklet for additional precautionary information and Directions for Use including 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.

SonarOne is a registered trademark of SePRO Corporation.
SePRO Corporation 11550 North Meridian Street, Suite 600,
Carmel, IN 46032, U.S.A.
EPA Reg. No. 67660-45
FPL20120928

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION. Harmful If Swallowed. Causes moderate eye irritation. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. Avoid contact with eyes or clothing. Wear protective eyewear.

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

Do not apply to water except as specified on the label. Do not contaminate water outside the intended treatment area by disposal of equipment washwaters. Do not apply in tidalwater/brackish water. Lowest rates should be used in shallow areas where the water depth is considerably less than the average depth of the entire treatment site, for example, shallow shoreline areas. Trees and shrubs growing in water treated with SonarOne herbicide may occasionally develop chlorosis. Follow use directions carefully so as to minimize adverse effects on non-target organisms.

DIRECTIONS FOR USE

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

Read all *Directions for Use* carefully before applying.

PRODUCT INFORMATION

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

Herbicidal symptoms of SonarOne appear in 7 - 10 days and appear as white (chlorotic) or pink growing points. Under optimum conditions 30 - 90 days are required before the desired level of aquatic weed management is achieved with SonarOne. Species susceptibility to SonarOne may vary depending on time of year, stage of growth and water movement. For best results, apply SonarOne 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.

SonarOne is not corrosive to application equipment.

This label provides recommendations on the use of a chemical analysis for the active ingredient. SePRO Corporation recommends the use of 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 SonarOne to achieve a desired concentration of the active ingredient in part per billion (ppb). The maximum application rate or sum of all application rates is 90 ppb in ponds and 150 ppb in lakes and reservoirs per annual growth cycle. This maximum concentration is the amount of product calculated as the target application rate, NOT determined by testing the concentrations of the active ingredient in the treated water.

Use Precautions and Restrictions

- **Obtain Required Permits:** Consult with appropriate state or local water authorities before applying this product to public waters. Permits and/or posting treatment notification may be required by state or local public agencies.
- **New York State:** Application of SonarOne 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 SonarOne treated water for hydroponic farming unless a FastEST has been run and confirmed that concentrations are less than 1 ppb.
- **Greenhouse and Nursery Plants:** Consult with SePRO Corporation for site-specific recommendations prior to any use of SonarOne treated water for irrigating greenhouse or nursery plants. Without site-specific guidance from SePRO, do not use SonarOne treated water for irrigating greenhouse or nursery plants unless a FastEST has been run and confirmed that concentrations are less than 1 ppb.

• **Water Use Restrictions Following Application with SonarOne (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 SonarOne 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 SonarOne 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, SonarOne may be applied within ¼ mile where functioning potable water intakes are present. NOTE: Existing potable water intakes which are no longer in use, such as those replaced by connections to potable water wells or a municipal water system, are not considered to be functioning potable water intakes.
- **Irrigation:** Irrigation with SonarOne treated water may result in injury to the irrigated vegetation. Follow these precautions and inform those who irrigate from areas treated with SonarOne of the irrigation time frames or water FastEST requirements presented in the table below. Follow the following time frames and FastEST directions to reduce the potential for injury to vegetation irrigated with water treated with SonarOne. Greater potential for crop injury occurs where SonarOne treated water is applied to crops grown on low organic and sandy soils.

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

† For purposes of SonarOne 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 SonarOne treated water is desired for irrigating crops prior to the time frames established above, use the FastEST 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 SonarOne treated water if concentrations 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

SonarOne 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 SonarOne. It is recommended to consult a SePRO Aquatic Specialist prior to application of SonarOne to determine a plant's susceptibility to SonarOne. NOTE: algae (chara, nitella, and filamentous species) are not controlled by SonarOne.

Vascular Aquatic Plants Controlled By SonarOne: †

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)

Floating Plants:

salvinia (*Salvinia* spp.)
duckweed (*Lemna**, *Spirodela**, and *Landoltia* spp.)
mosquito fern (*Azolla caroliniana*) †

Shoreline Grasses:

paragrass (*Urochloa mutica*)

† 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 SonarOne use rates (not to exceed maximum labeled rates) when selective control of exotic species is desired.

Vascular Aquatic Plants Partially Controlled By SonarOne:

Submersed Plants:

Illinois pondweed (*Potamogeton illinoensis*)
limnophila (*Limnophila sessiliflora*)
tapegrass, American eelgrass (*Vallisneria spiralis*)
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*)

Shoreline Grasses:

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

Vascular Aquatic Plants Not Controlled By SonarOne:

Emerald Plants:

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

Floating Plants:

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

Shoreline Grasses:

maiden cane (*Panicum hemiltonianum*)

NOTE: Algae (chara, nitella, and filamentous species) are not controlled by SonarOne.

APPLICATION DIRECTIONS

The aquatic plants present in the treatment site should be identified prior to application to determine their susceptibility to SonarOne. 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

SonarOne may be applied to the entire surface area of a pond. For single applications, rates may be selected to provide 30 - 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 30 - 90 ppb and must not exceed a total of 90 ppb per annual growth cycle.

Average Water Depth of Treatment Site (feet)	Pounds of SonarOne 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, SonarOne 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.

NOTE: In treating lakes or reservoirs that contain potable water intakes and where the application requires treating within one-fourth (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.

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 SonarOne at an application rate of 16 - 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 SonarOne 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 - 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.

B. Partial Lake or Reservoir Treatments

Where dilution of SonarOne 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 SonarOne 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 SonarOne 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 SonarOne at application rates from 45 - 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 SonarOne 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 SonarOne to be applied to provide the desired ppb concentration of active ingredient equivalents in treated water may be calculated as follows:

$$\begin{aligned} &\text{Pounds of SonarOne required per treated acre} = \\ &\quad \text{Avg. water depth of treatment site} \times \\ &\quad \text{Desired ppb concentration of active ingredient equivalents} \times 0.054 \end{aligned}$$

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

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

NOTE: Calculated rates 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 SonarOne at the rate of 20 - 40 pounds per surface acre.

Moving Water Canals and Rivers

The performance of SonarOne 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 - 40 ppb in the applied area for a minimum of 45 days. SonarOne 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 SonarOne 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 of SonarOne 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 SonarOne 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 (ft. 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 SonarOne 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

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 ≤ 50 pounds) 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.

Triple rinse containers too large to shake (capacity > 50 pounds) 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. 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.

TERMS AND CONDITIONS OF USE

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

WARRANTY DISCLAIMER

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

INHERENT RISKS OF USE

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

LIMITATION OF REMEDIES

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

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

To the extent consistent with applicable law, SePRO Corporation shall not be liable for losses or damages resulting from handling or use of this product unless SePRO Corporation is promptly notified of such losses or damages in writing. In no case shall SePRO Corporation be liable for consequential or incidental damages or losses.

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

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

6.2 Material Safety Data Sheets for Pesticides

Conforms to ANSI Z400.1-2004 Standard (United States).

Material Safety Data Sheet



Sonar Genesis Aquatic Herbicide

1. Product and company identification

Product name	: Sonar Genesis Aquatic Herbicide
EPA Registration Number	: 67690-54
Material uses	: Aquatic herbicide.
Supplier/Manufacturer	: SePRO Corporation 11550 North Meridian Street Suite 600 Carmel, IN 46032 U.S.A. Tel: 317-580-8282 Toll free: 1-800-419-7779 Fax: 317-428-4577 Monday - Friday, 8am to 5pm E.S.T. www.sepro.com
Responsible name	: KMK Regulatory Services Inc.
In case of emergency	: INFOTRAC - 24-hour service 1-800-535-5053

2. Hazards identification

Physical state	: Liquid. [Clear.]
OSHA/HCS status	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Emergency overview	: WARNING! CAUSES EYE IRRITATION. MAY CAUSE SKIN IRRITATION. Severely irritating to eyes. Moderately irritating to the skin. Do not get in eyes. Avoid breathing vapor or mist. Avoid contact with skin and clothing. Wash thoroughly after handling.
Routes of entry	: Dermal contact. Eye contact. Inhalation. Ingestion.
Potential acute health effects	
Inhalation	: Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
Ingestion	: No known significant effects or critical hazards.
Skin	: Moderately irritating to the skin.
Eyes	: Severely irritating to eyes. Risk of serious damage to eyes.
Potential chronic health effects	
Chronic effects	: No known significant effects or critical hazards.
Carcinogenicity	: No known significant effects or critical hazards.
Mutagenicity	: No known significant effects or critical hazards.
Teratogenicity	: No known significant effects or critical hazards.
Developmental effects	: No known significant effects or critical hazards.
Fertility effects	: No known significant effects or critical hazards.
Over-exposure signs/symptoms	
Inhalation	: No specific data.
Ingestion	: No specific data.
Skin	: Adverse symptoms may include the following: irritation redness
Eyes	: Adverse symptoms may include the following: pain or irritation watering redness
Medical conditions aggravated by over-exposure	: Irreversible eye damage is possible.
See toxicological information (Section 11)	

Not available.

Page: 1/7



Date of issue : 08/15/2011

3. Composition/information on ingredients

United States			
Name	CAS number	%	
Active ingredient: 4(1h)-Pyridinone, 1-methyl-3-phenyl-5-[3-(trifluoromethyl)phenyl]-	59756-60-4	5 - 10	
Inert ingredient: 1,2-Propanediol	57-55-6	30 - 60	

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4. First aid measures

Eye contact	: Immediately flush eyes with plenty of water for at least 20 minutes, occasionally lifting the upper and lower eyelids.
Skin contact	: In case of contact, immediately flush skin with plenty of water for at least 20 minutes. Get medical attention if symptoms occur.
Inhalation	: Move exposed person to fresh air.
Ingestion	: Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.
Protection of first-aiders	: No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
Notes to physician	: In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

5. Fire-fighting measures

Flammability of the product	: No specific fire or explosion hazard.
Extinguishing media	
Suitable	: Use an extinguishing agent suitable for the surrounding fire.
Not suitable	: None known.
Hazardous thermal decomposition products	: Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides halogenated compounds
Special protective equipment for fire-fighters	: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental release measures

Personal precautions	: Provide adequate ventilation. Put on appropriate personal protective equipment (see Section 8).
Environmental precautions	: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
Spill	: Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

Sonar Genesis Aquatic Herbicide



7. Handling and storage

- Handling** : Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Storage** : Protect from freezing. Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8. Exposure controls/personal protection

	United States
Product name	Exposure limits
1,2-Propanediol	AIHA WEEL (United States, 5/2010). TWA: 10 mg/m ³ 8 hour(s).

Consult local authorities for acceptable exposure limits.

Applicators should refer to the product label for personal protective equipment.

- Respiratory** : Not required under normal conditions of use. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Ensure an MSHA/NIOSH-approved respirator or equivalent is used.
- Hands** : Use gloves appropriate for work or task being performed. Recommended: Natural rubber (latex).
- Eyes** : Safety eyewear should be used when there is a likelihood of exposure. Recommended: Safety glasses with side shields.
- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Recommended: Lab coat.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

9. Physical and chemical properties

- Physical state** : Liquid. [Clear.]
- Color** : Golden yellow.
- Flash point** : Open cup: >93.333°C (>200°F)
- pH** : 5 to 7 [Conc. (% w/w): 1%]
- Boiling/condensation point** : Not available.
- Relative density** : 8.1 lbs/gal.
- Vapor pressure** : Not available.
- Solubility** : Dispersible in water.

10. Stability and reactivity

- Chemical stability** : The product is stable.
- Conditions to avoid** : No specific data.
- Materials to avoid** : Reactive or incompatible with the following materials: oxidizing materials and acids.
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.
- Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.
- Hazardous polymerization** : Under normal conditions of storage and use, hazardous polymerization will not occur.

Not available.

Page: 3/7



Date of issue : 08/15/2011

Sonar Genesis Aquatic Herbicide



11. Toxicological information

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
1,2-Propanediol	LD50 Dermal	Rabbit	20800 mg/kg	-
	LD50 Oral	Rat	20.8 g/kg	-
	LC50 Inhalation Vapor	Rat	>2130 g/m3	1 hours
	LD50 Dermal	Rabbit	>500 mg/kg	-
4(1h)-Pyridinone, 1-methyl-3-phenyl-5-[3-(trifluoromethyl)phenyl]-	LD50 Oral	Rat	>10 g/kg	-

Chronic toxicity

: No known significant effects or critical hazards.

12. Ecological information

Environmental effects : Not established

Aquatic ecotoxicity

Product/ingredient name	Result	Species	Exposure
1,2-Propanediol	Acute LC50 >1000 mg/L Marine water	Crustaceans - Chaetogammarus marinus - Young - 5 mm	48 hours
	Acute LC50 1020 mg/L Fresh water	Daphnia - Ceriodaphnia dubia - <=24 hours	48 hours
	Acute LC50 710 mg/L Fresh water	Fish - Pimephales promelas - <=7 days	96 hours
	Chronic NOEC 660 mg/L Fresh water	Daphnia - Ceriodaphnia dubia - <=24 hours	48 hours
4(1h)-Pyridinone, 1-methyl-3-phenyl-5-[3-(trifluoromethyl)phenyl]-	Chronic NOEC 600 mg/L Fresh water	Fish - Pimephales promelas - <=7 days	96 hours
	Acute EC50 5.6 mg/L Fresh water	Algae - Anabaena cylindrica	96 hours
	Acute EC50 3.6 mg/L Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 8 mg/L Fresh water	Crustaceans - Eucyclops sp.	48 hours
	Acute LC50 1.8 mg/L Fresh water	Fish - Stizostedion vitreum - 8 to 12 days	96 hours
	Chronic NOEC 780 ug/L Fresh water	Fish - Stizostedion vitreum - 8 to 12 days	96 hours

13. Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. This material and its container must be disposed of in a safe way. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Empty containers or liners may retain some product residues. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14. Transport information

DOT/IMDG/IATA : Not regulated.

15. Regulatory information

HCS Classification : Irritating material

U.S. Federal regulations : TSCA 8(a) IUR Exempt/Partial exemption: Not determined
United States inventory (TSCA 8b): All components are listed or exempted.
SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: 1,2-Propanediol
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: 1,2-Propanediol: Immediate (acute) health hazard, Delayed (chronic) health hazard
Clean Air Act (CAA) 112 accidental release prevention: No products were found.

Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

Not available.

Page: 4/7



Date of issue : 08/15/2011

Sonar Genesis Aquatic Herbicide



DEA List I Chemicals : Not listed
(Precursor Chemicals)

DEA List II Chemicals : Not listed
(Essential Chemicals)

State regulations :

- Connecticut Carcinogen Reporting:** None of the components are listed.
- Connecticut Hazardous Material Survey:** None of the components are listed.
- Florida substances:** None of the components are listed.
- Illinois Chemical Safety Act:** None of the components are listed.
- Illinois Toxic Substances Disclosure to Employee Act:** None of the components are listed.
- Louisiana Reporting:** None of the components are listed.
- Louisiana Spill:** None of the components are listed.
- Massachusetts Spill:** None of the components are listed.
- Massachusetts Substances:** None of the components are listed.
- Michigan Critical Material:** None of the components are listed.
- Minnesota Hazardous Substances:** None of the components are listed.
- New Jersey Hazardous Substances:** The following components are listed: 1,2-Propanediol
- New Jersey Spill:** None of the components are listed.
- New Jersey Toxic Catastrophe Prevention Act:** None of the components are listed.
- New York Acutely Hazardous Substances:** None of the components are listed.
- New York Toxic Chemical Release Reporting:** None of the components are listed.
- Pennsylvania RTK Hazardous Substances:** The following components are listed: 1,2-Propanediol
- Rhode Island Hazardous Substances:** None of the components are listed.

California Prop. 65

No products were found.

International regulations

Chemical Weapons : Not listed
Convention List Schedule I
Chemicals

Chemical Weapons : Not listed
Convention List Schedule II
Chemicals

Chemical Weapons : Not listed
Convention List Schedule
III Chemicals

16 . Other information

Label requirements : CAUSES EYE IRRITATION. MAY CAUSE SKIN IRRITATION.

Hazardous Material :
Information System (U.S.A.)

Health	1
Flammability	1
Physical hazards	0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

National Fire Protection :
Association (U.S.A.)



Not available.

Page: 5/7



Date of Issue : 08/15/2011

Sonar Genesis Aquatic Herbicide



Date of issue : 08/15/2011

Date of previous issue : 07/01/2011

Version : 1.1

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Not available.

Page: 6/7



Date of issue : 08/15/2011

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been intentionally
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Conforms to ANSI Z400.5-2004 Standard (United States).

Material Safety Data Sheet



SonarOne Aquatic Herbicide

1. Product and company identification

Product name	: SonarOne Aquatic Herbicide
EPA Registration Number	: 67690-45
Material uses	: Aquatic herbicide.
Supplier/Manufacturer	: SePRO Corporation 11550 North Meridian Street Suite 600 Carmel, IN 46032 U.S.A. Tel: 317-580-8282 Toll free: 1-800-419-7779 Fax: 317-428-4577 Monday - Friday, 8am to 5pm E.S.T. www.sepro.com
Responsible name	: Atrion Regulatory Services, Inc.
In case of emergency	: INFOTRAC - 24-hour service 1-800-535-5053

2. Hazards identification

Physical state	: Solid. [Pellets.]
Odor	: Faint earthy/musty.
OSHA/HCS status	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Emergency overview	: WARNING! HARMFUL IF ABSORBED THROUGH SKIN. CANCER HAZARD - CONTAINS MATERIAL WHICH CAN CAUSE CANCER. Harmful if absorbed through the skin. Avoid exposure - obtain special instructions before use. Do not get in eyes or on skin or clothing. Contains material which can cause cancer. Risk of cancer depends on duration and level of exposure. Wash thoroughly after handling.
Routes of entry	: Dermal contact. Eye contact. Inhalation. Ingestion.
Potential acute health effects	
Inhalation	: Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
Ingestion	: No known significant effects or critical hazards.
Skin	: Toxic in contact with skin.
Eyes	: No known significant effects or critical hazards.
Potential chronic health effects	
Chronic effects	: No known significant effects or critical hazards.
Carcinogenicity	: Contains material which can cause cancer. Risk of cancer depends on duration and level of exposure.
Mutagenicity	: No known significant effects or critical hazards.
Teratogenicity	: No known significant effects or critical hazards.
Developmental effects	: No known significant effects or critical hazards.
Fertility effects	: No known significant effects or critical hazards.
Over-exposure signs/symptoms	
Inhalation	: No specific data.
Ingestion	: No specific data.
Skin	: No specific data.
Eyes	: No specific data.
Medical conditions aggravated by over-exposure	: None known.
See toxicological information (section 11)	

* Indicates trademark of SePRO Corporation.

Page: 1/6

Date of issue : 01/15/2009



3. Composition/information on ingredients

United States		
Name	CAS number	%
4(1h)-pyridinone, 1-methyl-3-phenyl-5-[3-(trifluoromethyl)phenyl]-	59756-60-4	10 - 30
Silica, Crystalline - Quartz	14808-60-7	0.1 - 1

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4. First aid measures

Eye contact	: Check for and remove any contact lenses. In case of contact with eyes, rinse immediately with plenty of water. Get medical attention.
Skin contact	: In case of contact, immediately flush skin with plenty of water for at least 20 minutes. Get medical attention.
Inhalation	: If inhaled, remove to fresh air. If not breathing, give artificial respiration. Get medical attention.
Ingestion	: Do not induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention.
Protection of first-aiders	: No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.
Notes to physician	: In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

5. Fire-fighting measures

Flammability of the product	: Non-flammable.
Extinguishing media	
Suitable	: Use an extinguishing agent suitable for the surrounding fire.
Not suitable	: None known.
Special exposure hazards	: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
Hazardous thermal decomposition products	: Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides halogenated compounds
Special protective equipment for fire-fighters	: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental release measures

Personal precautions	: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).
Environmental precautions	: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
Methods for cleaning up	
Small spill	: Move containers from spill area. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

SonarOne Aquatic Herbicide



- Large spill** : Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor. Note: see section 1 for emergency contact information and section 13 for waste disposal.

7. Handling and storage

- Handling** : Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not get in eyes or on skin or clothing. Do not ingest. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Storage** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8. Exposure controls/personal protection

	United States
Product name	Exposure limits
Silica, Crystalline - Quartz	ACGIH TLV (United States, 1/2007). TWA: 0.025 mg/m ³ 8 hour(s). Form: Respirable fraction NIOSH REL (United States, 12/2001). TWA: 0.05 mg/m ³ 10 hour(s). OSHA PEL Z3 (United States, 9/2005). TWA: 10 mg/m ³ 8 hour(s). Form: Respirable OSHA PEL 1989 (United States, 3/1989). TWA: 0.1 mg/m ³ , (as quartz) 8 hour(s). Form: Respirable dust

Consult local authorities for acceptable exposure limits.

- Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. **Applicators should refer to the product label for personal protective clothing and equipment.**
- Engineering measures** : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Personal protection**
- Eyes** : Safety glasses.
- Skin** : Lab coat.
- Respiratory** : A respirator is not needed under normal and intended conditions of product use.
- Hands** : Disposable vinyl gloves.
- Personal protective equipment (Pictograms)** :



*Indicates trademark of SePRO Corporation.

Page: 3/6

Date of issue : 01/15/2009



SonarOne Aquatic Herbicide



HMIS Code/Personal protective equipment	: A
Environmental exposure controls	: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9 . Physical and chemical properties

Physical state	: Solid. [Pellets.]
Color	: Brown to gray.
Odor	: Faint earthy/musty.
pH	: 7.8 [Conc. (% w/w): 31%]
Relative density	: 64 lbs/cu. Ft (20C)
Solubility	: Insoluble; pellets disintegrates in water.

10 . Stability and reactivity

Stability	: The product is stable.
Hazardous polymerization	: Under normal conditions of storage and use, hazardous polymerization will not occur.
Conditions to avoid	: Avoid exposure - obtain special instructions before use.
Materials to avoid	: Reactive or incompatible with the following materials: oxidizing materials.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11 . Toxicological information

Acute toxicity						
Product/ingredient name	Species	Dose	Result	Exposure		
4(1h)-pyridinone, 1-methyl-3-phenyl-5-[3-(trifluoromethyl)phenyl]-	Rabbit	>500 mg/kg	LD50 Dermal	-		
	Rat	>10 g/kg	LD50 Oral	-		
Inhalation	: Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.					
Ingestion	: No known significant effects or critical hazards.					
Skin	: Toxic in contact with skin.					
Eyes	: No known significant effects or critical hazards.					
Carcinogenicity						
Classification						
Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
Silica, Crvstalline - Quart	A2	2A	-	+	Proven.	-

12 . Ecological information

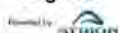
Environmental effects	: No known significant effects or critical hazards.
-----------------------	---

Aquatic ecotoxicity				
Product/ingredient name	Test	Species	Exposure	Result
4(1h)-pyridinone, 1-methyl-3-phenyl-5-[3-(trifluoromethyl)phenyl]-	-	Daphnia	48 hours	Acute EC50 3.9 mg/L
	-	Daphnia	48 hours	Acute EC50 3.6 mg/L
	-	Fish	96 hours	Acute LC50 4.2 mg/L
	-	Fish	96 hours	Acute LC50 4.5 mg/L
	-	Fish	96 hours	Acute LC50 4.25 mg/L

* Indicates trademark of SePRO Corporation.

Page: 4/6

Date of issue : 01/15/2009



13 . Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14 . Transport information

AERG : Not applicable.

Regulatory information

DOT/ IMDG/ IATA : Not regulated.

15 . Regulatory information

United States

HCS Classification : Toxic material
Carcinogen

U.S. Federal regulations : **United States inventory (TSCA 8b)**: All components are listed or exempted.
SARA 302/304/311/312 extremely hazardous substances : No products were found.
SARA 302/304 emergency planning and notification : No products were found.
SARA 302/304/311/312 hazardous chemicals : No products were found.
SARA 311/312 MSDS distribution - chemical inventory - hazard identification : No products were found.

Clean Water Act (CWA) 307: No products were found.

Clean Water Act (CWA) 311: No products were found.

Clean Air Act (CAA) 112 accidental release prevention: No products were found.

Clean Air Act (CAA) 112 regulated flammable substances: No products were found.

Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

State regulations : **Connecticut Carcinogen Reporting**: None of the components are listed.
Connecticut Hazardous Material Survey: None of the components are listed.
Florida substances: None of the components are listed.
Illinois Chemical Safety Act: None of the components are listed.
Illinois Toxic Substances Disclosure to Employee Act: None of the components are listed.
Louisiana Reporting: None of the components are listed.
Louisiana Spill: None of the components are listed.
Massachusetts Spill: None of the components are listed.
Massachusetts Substances: None of the components are listed.
Michigan Critical Material: None of the components are listed.
Minnesota Hazardous Substances: None of the components are listed.
New Jersey Hazardous Substances: The following components are listed: Silica, Crystalline - Quartz
New Jersey Spill: None of the components are listed.
New Jersey Toxic Catastrophe Prevention Act: None of the components are listed.
New York Acutely Hazardous Substances: None of the components are listed.
New York Toxic Chemical Release Reporting: None of the components are listed.
Pennsylvania RTK Hazardous Substances: The following components are listed: Silica, Crystalline - Quartz
Rhode Island Hazardous Substances: None of the components are listed.

California Prop. 65 : **WARNING**: This product contains a chemical known to the State of California to cause cancer.

United States inventory (TSCA 8b) : **United States inventory (TSCA 8b)**: All components are listed or exempted.

International regulations

* Indicates trademark of SePRO Corporation.

Page: 5/6

Date of issue : 01/15/2009



SonarOne Aquatic Herbicide



International lists : This product, (and its ingredients) is (are) listed on national inventories, or is (are) exempted from being listed, in Australia (AICS), in Europe (EINECS/ELINCS), in Korea (TCCL), in Japan (METI), in the Philippines (RA6969).

16 . Other information

Label requirements : HARMFUL IF ABSORBED THROUGH SKIN. CANCER HAZARD - CONTAINS MATERIAL WHICH CAN CAUSE CANCER.

Hazardous Material Information System (U.S.A.) :

Health	*	2
Fire hazard		0
Physical hazard		0
Personal protection		A

HAZARD RATINGS

4- Extreme
3- Serious
2- Moderate
1- Slight
0- Minimal
See section 8 for more detailed information on personal protection.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.) :



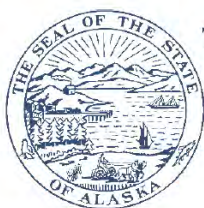
References : ANSI Z400.1, MSDS Standard, 2004. - Manufacturer's Material Safety Data Sheet. - 29CFR Part1910.1200 OSHA MSDS Requirements. - 49CFR Table List of Hazardous Materials, UN#, Proper Shipping Names, PG.

Date of issue : 01/15/2009
Date of previous issue : 12/15/2008
Version : 2

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist. The data in this MSDS relates only to the specific material designated herein. Possible adverse effects (see Section 2, 11 and 12) may occur if this material is not handled in the recommended manner.

Appendix 6.3: APDES Permit



THE STATE
of **ALASKA**
GOVERNOR BILL WALKER

Department of Environmental Conservation

DIVISION OF WATER
Wastewater Discharge Authorization Program

555 Cordova Street
Anchorage, Alaska 99501-2617
Main: 907.269.6285
Fax: 907.334.2415
www.dec.alaska.gov/water/wwdp

March 2, 2015

Heather Stewart
5310 S. Bodenburg Spur
Palmer, AK 99645

Re: AKG870007: DNR – DeLong, Little Campbell, and Sand Lakes - Elodea

Dear Ms. Stewart:

This letter acknowledges that you have submitted a Notice of Intent form to be covered under the APDES Pesticide General Permit (PGP). The permittee is authorized to discharge to Waters of the US under the terms and conditions of this permit ten (10) calendar days after acknowledgment of receipt of the permittee's completed NOI is posted on ADEC's Storm Water Permit Search website (<http://www.dec.state.ak.us/Applications/Water/WaterPermitSearch/Search.aspx>).

As stated above, this letter acknowledges receipt of a Notice of Intent. However, it is not an ADEC determination of the validity of the information you provided. Your eligibility for coverage under the Permit is based on the validity of the certification you provided. Your signature on the Notice of Intent certifies that you have read, understood, and are implementing all of the applicable requirements. An important aspect of this certification requires that you correctly determine whether you are eligible for coverage under this permit.

As you know, the PGP requires you to have developed and begun implementing a Pesticide Discharge Management Plan (PDMP) and establishes additional monitoring, corrective action, record keeping, and annual reporting requirements. You must also comply with any additional location-specific requirements applicable to Alaska.

For tracking purposes, the following number has been assigned to your Notice of Intent Form: **AKG870007**.

If you have any questions regarding the above, please contact me at 907-334-2288 or via email at James.Rypkema@alaska.gov.

Sincerely,

A handwritten signature in cursive script that reads "James Rypkema".

James Rypkema
Section Manager, Storm Water and Wetlands

Enclosure: NOI

cc: w/enclosure (email)

Karin Hendrickson, Pesticide Program Coordinator, DEC-EH/Pesticides
Kristine Dunker, DFG – Sport Fish Central

AKG870007 Auth.docx



Form Approved
OMB No.
2040-0284

Submission of this completed Notice of Intent (NOI) constitutes notice that the Operator identified in Section B intends to be authorized to discharge pollutants to Waters of the United States within the pest management area identified in Section C under EPA's Pesticide General Permit. Submission of this NOI constitutes notice that the party identified in Section B of this form has read, understands, and meets the eligibility conditions of Part 1 of the permit, agrees to comply with all applicable terms and conditions of the permit; and understands that continued authorization under the permit is contingent on maintaining eligibility for coverage. To be granted coverage, all information required on this form must be completed. Please read and make sure you comply with all permit requirements, including the requirement for large entities to prepare a Pesticide Discharge Management Plan (PDMP) prior to NOI submittal. Refer to the instructions at the end of this form to complete your NOI.

☐ I hereby acknowledge my waiver request from the use of EPA's electronic Notice of Intent system (eNOI) because my use of eNOI will incur undue burden or expense over my use of this paper NOI form.

Briefly describe the reason why use of the electronic system causes undue burden or expense.

1. Mark whether this is the first time you are requesting coverage under the Pesticide General Permit or if this is a change of information for a discharge already covered under the Pesticide General Permit. If this is a change of information, supply the NPDES permit tracking number for the discharge.

- a. ☒ Original NOI Submission
- b. ☐ NOI Change of Information: _____ (NPDES Permit Tracking Number)

Please note: When selecting A.1.b please fill out Section B (Operator Name and Mailing Address) and the fields of the NOI that need to be modified.

[illegible]

2. IRS Employer Identification Number (EIN): 92-6001185

3. Operator Type (check one):

- a. ☐ Federal government

- b. ☒ State government

- c. ☐ Local government

- d. ☐ Mosquito control district (or similar)

- e. ☐ Irrigation control district (or similar)

- f. ☐ Weed control district (or similar)

- g. ☐ Other: If other, provide brief description of type of operator: _____

4. Are you a large entity as defined in Appendix A of the permit? (check one):

- ☒
- Yes
- ☐
- No

Please note: If you answer "Yes" to question 4 you are required to develop a Pesticide Discharge Management Plan (PDMP) and submit an Annual Report reflecting all pesticide uses for which you are requesting permit coverage under this NOI.

5. In which state are your pest management areas located? Please specify only one state per NOI:

6. Mailing Address:

- a. Street: 5310 S. Bordenburg Spur

- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------|---|---|---|---|---|---|--|--|--|--|--|--|--|--|--|--|--|--|--|-----------|---|---|--------------|---|---|---|---|---|---|--|--|--|--|--|--|--|--|--|
| b. City: | P | a | i | m | e | r | | | | | | | | | | | | | | c. State: | A | K | d. ZIP Code: | 9 | 9 | 6 | 4 | 5 | - | | | | | | | | | |
|----------|---|---|---|---|---|---|--|--|--|--|--|--|--|--|--|--|--|--|--|-----------|---|---|--------------|---|---|---|---|---|---|--|--|--|--|--|--|--|--|--|

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| e. Telephone: | | 9 | | 0 | | 7 | | - | | 7 | | 4 | | 5 | | - | | 8 | | 7 | | 2 | | 1 | | Ext | | | | | | | f. Fax: | | | | | | - | | | | | | - | | | | | |
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- g. Contact Name: | H | e | a | t | h | e | r | | S | t | e | w | a | r | t | | | | | | |

- h. E-mail: | h | e | a | t | h | e | r | , | s | t | e | w | a | r | t | @ | a | l | a | s | k | a | . | g | o | v |

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C. Pest Management Areas: Complete Section C for each Pest Management Area for which coverage under EPA's Pesticide General Permit is desired. Copy this section for non-electronic submissions.

Pest Management Area # 1 of ## 1

1. Pest Management Area Name: Anchorage Alaska: DeLong Lake, Little Campbell Lake, and Sand Lake

Provide a map of the location of the Pest Management Area (attach map) or describe the location of the Pest Management Area in detail.
Please see attached

2. Are any of your activities for which you are requesting coverage under this NOI occurring on Indian Country Lands? ☐ Yes ☒ No

If yes, identify the reservation or otherwise describe those areas:

3. Are any of your activities (in this pest management area) for which you are requesting coverage under this NOI occurring on areas considered "federal facilities" as defined by the permit? ☐ Yes ☒ No

4. Mailing address and contact information of the pesticide applicator (or check here ☐ if same as provided in Section B):

a. Street: 333 Raspberry Road

b. City: Anchorage c. State: AK d. ZIP Code: 99518

e. Telephone: 907-267-2889 Ext. f. Fax:

g. Contact Name: Kristine Dunker

h. E-mail: kristine.dunker@alaska.gov

5. Pesticide Use Patterns to be included in this Pest Management Area (check all that apply):

- a. ☐ Mosquito and Other Flying Insect Pest Control c. ☐ Animal Pest Control
b. ☒ Weed and Algae Pest Control d. ☐ Forest Canopy Pest Control

6. Receiving Waters (check one):

- a. ☒ Coverage requested for all Waters of the United States within the Pest Management Area identified above.
b. ☐ Coverage requested specifically for the following Waters of the United States within the Pest Management Area identified above.

c. ☐ Coverage requested for all Waters of the United States within the Pest Management Area identified above except for:

7. Tier 3 Waters

Is coverage requested for discharge to a Tier 3 water (Outstanding National Resource Water) of the United States? ☐ Yes ☒ No

If yes, answer a and b:

- a. Name of Tier 3 water(s):
b. Provide rationale for determination that pesticide discharge is necessary to protect water quality, the environment, and/or public health and that any such discharge will not degrade water quality or will degrade water quality only on a short-term or temporary basis:

8. Water Quality Impaired Waters

Operators are not eligible for coverage under this permit for any discharges from a pesticide application to Waters of the United States if the waters are identified as impaired by a substance which is either an active ingredient of the pesticide designated for use or is a degradate of such an active ingredient. See Part 1.1.2.1 of the permit. Check one:

- a. ☒ Waters are NOT impaired by any substance which is either an active ingredient of a pesticide to be discharged or a degradate of such an active ingredient
b. ☐ Waters are on a current state list as being impaired by a substance which is either an active ingredient of a pesticide to be discharged or a degradate of such an active ingredient; however, evidence is attached documenting that the waters are no longer impaired.

D. Endangered Species Protection: Complete Section D for each Pest Management Area for which coverage under EPA's Pesticide General Permit is desired. Copy this section for non-electronic submissions.

Pest Management Area # 1 of ## 1

1. Identify the criterion for which you are eligible for permit coverage as it applies to Federally Listed Threatened or Endangered Species (i.e., Species) and/or Federally Designated Critical Habitat (i.e., Habitat) (check one):

- a. ☒ Pesticide application activities will not result in a point source discharge to one or more Waters of the United States containing National Marine Fisheries Service (NMFS) Listed Resources of Concern, as defined in Appendix A, of the PGP.
- b. ☐ Pesticide application activities for which permit coverage is being requested will discharge to one or more Waters of the United States containing NMFS Listed Resources of Concern, as defined in Appendix A of the PGP, but consultation with NMFS under Section 7 of the Endangered Species Act (ESA) has been concluded for pesticide application activities covered under the PGP. Consultations can be either formal or informal, and would have occurred only as a result of a separate federal action. The consultation addressed the effects of pesticide discharges and discharge-related activities on federally-listed threatened or endangered species and federally-designated critical habitat, and must have resulted in either:
- i. A biological opinion from NMFS finding no jeopardy to federally-listed species and no destruction/adverse modification of federally-designated critical habitat; or
 - ii. Written concurrence from NMFS with a finding that the pesticide discharges and discharge-related activities are not likely to adversely affect federally-listed species or federally-designated critical habitat.
- c. ☐ Pesticide application activities for which permit coverage is being requested will discharge to one or more Waters of the United States containing NMFS Listed Resources of Concern, as defined in Appendix A of the PGP, but all "take" of these resources associated with such pesticide application activities has been authorized through NMFS' issuance of a permit under section 10 of the ESA, and such authorization addresses the effects of the pesticide discharges and discharge-related activities on federally-listed species and federally-designated critical habitat. (The term "take" means to harass, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. See Section 3 of the Endangered Species Act, 16 U.S.C. § 1532 (19).)
- d. ☐ Pesticide application activities were, or will be, discharged to one or more Waters of the United States containing NMFS Listed Resources of Concern, as defined in Appendix A of the PGP, but only in response to a Declared Pest Emergency Situation.
- e. ☐ Pesticide application activities for which permit coverage is being requested in the NOI will discharge to one or more Waters of the United States containing NMFS Listed Resources of Concern, as defined in Appendix A of the PGP. Eligible discharges include those where the Decision-maker includes in the NOI written correspondence from NMFS that pesticide application activities performed consistent with appropriate measures will avoid or eliminate the likelihood of adverse effects to NMFS Listed Resources of Concern.
- f. ☐ Pesticide application activities for which permit coverage is being requested in the NOI will discharge to one or more Waters of the United States containing NMFS Listed Resources of Concern, as defined in Appendix A of the PGP. Eligible discharges include those from pesticide application activities that are demonstrated by the Decision-maker as not likely to adversely affect NMFA Listed Resources of Concern or that the pest poses a greater threat to the NMFS Listed Resources of Concern than does the discharge of the pesticide.

2. If you checked criterion d or criterion f above, provide the following information for all discharges to Waters of the United States containing NMFS Listed Resources of Concern identified within the pest management area for which permit coverage is being requested. For discharges pursuant to criterion d, Declared Pest Emergency Situations, information for items a through g should also include any discharges that have already occurred prior to NOI submission as well as the activities you performed in the 15 day period before submission of this NOI was required. In some cases, implementation of pest management measures as specified in the permit involves a degree of "adaptive management" such that exact timing and quantities of applications cannot be determined in advance for the duration of the permit. In such cases, the permittee must provide the required information to the extent feasible and consistent with the implementation of the selected pest management measures.

a. Describe the location of the pest management area in detail or provide a map of the location:

b. Pest(s) to be controlled:

c. Pesticide product(s) to be discharged and method of application:

d. Planned quantity and rate of discharge(s) for each method of application:

e. Number of planned discharges:

f. Approximate date(s) of planned discharge(s):

g. Your rationale supporting your determination that you meet the criterion for which you are submitting this NOI, including appropriate measures to be undertaken to avoid or eliminate the likelihood of adverse effects. For certifications pursuant to Criterion D, indicate whether the discharge is likely to adversely affect NMFS Listed Resources of Concern and, if so, any feasible measures to avoid or eliminate such adverse effects (attach additional pages as necessary):

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E. 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 gather and evaluate the information submitted. On the basis of my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the 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.

Printed Name: H e a t h e r S t e w a r t

Title: N a t u r a l R e s o u r c e S p e c i a l i s t I I I

E-Mail: h e a t h e r . s t e w a r t @ a l a s k a . g o v

Signature/Responsible Official: *Heather Stewart*

Date: 9 / 2 / 1 7 / 2 0 1 5

NOI Preparer (Complete if NOI was prepared by someone other than the certifier)

Preparer Name:

Organization:

Phone: - Ext

Date: / /

E-Mail:

Alaska State Department of Environmental Conservation
Certified Pesticide Applicators

The following certified applicators are also involved with the Proposed Project:

1. Scott Shuler: scotts@sepro.com
SePRO Corporation
11550 North Meridian Street
Suite 600
Carmel, IN 46032

317-388-3316

Certification number: 9759-1705-6
2. Andrew Skibo: andrew.skibo@sepro.com
SePRO Corporation
Great Plains & Mountain Territory
Fort Collins, CO

303-229-9622

Certification number: 9760-1605-6/9
3. Heather Stewart: heather.stewart@alaska.gov
5310 S. Bodenburg Spur
Palmer, AK 99645

907-745-8721

Certification number: 9742-1710-9
*Intend to be certified in Category 6 before project application