A few questions resulting from yesterday's meeting of March 20, 2014, Deep Creek Lake Policy and Review Board Meeting

Q1: What would the proposed chemicals do to or effect the human consumption of fish in DCL? Same for Ducks, Geese consuming anything from the water?

The only real risk of human health hazards is to the applicator handling the herbicide itself. Once the herbicide is in the water column, it dilutes immediately and poses no risk to humans. Both of the herbicides (Clipper™ and Sonar™) are broad spectrum herbicide for control of *Hydrilla* and have no restrictions for drinking, swimming and fishing post treatment. Treated water may be used for irrigation 5 days after treatment.

Aquatic organisms will have only limited exposure to fluridone in the water as a result of dispersion, dilution and microbial degradation of the chemical into carbon, hydrogen, oxygen and organic acids, even during an extended application period. No adverse impacts have been identified which are expected to result from the presence of fluridone at or below the NYS acceptable residual level of 50 ppb and the EPA acceptable residual level of 150 ppb for potable water (NYSDEC, 1994).

Fluridone applied at the approved concentration rate has not been found to be toxic to waterfowl and wildlife. Laboratory animals (mice, rats, dogs) fed with fluridone in their diets showed little signs of toxicity even when fed levels which far exceed potential human exposure from use of Sonar. Fluridone is not considered to be a carcinogen or mutagen and is not associated with reproductive or developmental effects in test animals (WSDOH, 2000).

For ingestion of aquatic organisms, the contaminant intake rate was calculated from a daily fish ingestion rate (6.5 grams/day) multiplied by a bioconcentration factor for accumulation of the contaminant in fish tissue.

Q2: Are there any animals that could be brought in that eat the weeds in DCL? I understand some locations and some types of turtles eat some lake weeds? Same for geese and/or ducks?

Surveys for natural enemies of *Hydrilla* have been conducted in the U.S. and in Africa, Asia, and Australia. Although several insects (two weevils of the genus Bagous, two flies of the genus Hydrellia, the midge Cricotopus lebetis and the moth Paraponyx diminutalis) feed extensively on *Hydrilla* plants. Insect control of *Hydrilla* in Deep Creek Lake is not a viable strategy at this time. Weevils have failed to become established in the United States, and while the flies, midges and moths are established in the Southern United States and have demonstrated appreciable impacts to *Hydrilla* at the local scale, system-wide, effective control has not been demonstrated

(Cuda, 2002).

Grass carp are a means of biological control for a number of aquatic plant species. Grass carp do not target specific species, but instead have a wide ranging diet, which means that they would also consume native, non-invasive, and beneficial plant species, in addition to *Hydrilla* . This could have an adverse impact on non-target plant species, and grass carp are illegal in MD.

Q3: What about the use of chemicals for weed control and contamination of downstream (Friendsville) water intake for human use?

There are no label restrictions against drinking, swimming or fishing in water treated with fluridone.(EPA 1986). EPA has established a drinking water standard for fluridone of 0.15 ppm. Since the treatment planned will be measured in ppb, the levels of fluridone will be far lower than the EPA standards and contact with water and consumption of fish from these waters does not pose a health risk. In addition, the dilution that would occur from the treatment area to Friendsville would be so substantial that fluridone would not be detected in the water.

Q4: Will lake treatment go to a formal public hearing before action?

There is no formal public hearing before application of the herbicide. DNR will secure all the necessary environmental reviews and permits prior to application. DNR is also going through a public outreach campaign and has notified the Garrett Co. Commissioners, the Policy Review Board and the Property Owners Association of the intentions to use herbicides to control Hydrilla in DCL.

Q5: I did not hear any discussion of effects of not doing any treatment?

There is very little literature on lakes or impoundments that have had *Hydrilla* infestations but have taken a hands-off approach to management. The potential impacts to a water body are usually measured in loss of ecosystem services or economic impacts for recreation, fishing and boating. The limits for *Hydrilla* impacts and growth are generally regarded as the shoreline, since *Hydrilla* will eventually take over entire water bodies if left unchecked. Here in MD, several examples of a hands-off approach reinforce this theory. Loch Raven Reservoir is a drinking water impoundment that is 2,400 acres and has a watershed of 303 miles (see bathymetry map HYPERLINK "http://www.mgs.md.gov/coastal/maps/lr/index.html" ~~www.mgs.md.gov/coastal/maps/lr/index.html~~). *Hydrilla* was identified by RAS biologist Michael Naylor in 2003. The reservoir manager was notified and DNR applied for a permit and treated the area with the contact herbicide endothall. Loch Raven staff chose not to follow up with control and it was left unchecked. Current staff at Loch Raven reservoir estimate that 1,200 acres of the lake have

monotypic stands of *Hydrilla*. The bathymetry of the southern part of the reservoir where the intakes are located is very steep, rocky substrate, which has held the infestation in check in that portion of Loch Raven and not prompted any management action. Parks like Seneca Creek State Park and Black Hills Regional Park in Montgomery County have also not actively managed *Hydrilla* and their lakes are covered in it and few other species of grass can grow. Lake managers in Florida cited that *Hydrilla* will infest entire water bodies if given the opportunity, so they manage *Hydrilla* wherever it is observed. In lakes where FL has stopped *Hydrilla* management, it continues to increase lake-wide. Florida spends approximately $15 million per year on *Hydrilla* control (Haller, 2009) and aquatic invasives are present in 96% of lakes. The Do Nothing approach is not an option in FL.

Q5: Has DNR considered any option of a lake floating device that would cut the weed tops, chop and collect (filter out) the particles including any seeds. Possibly doing pre seed development? Quick search found this item. Possibly a lake weed remover robot and a new invention for GC business.

Mechanical harvesting does not reduce the plant, it reduces the nuisance. Mechanical removal is of limited utility due to the potential for stem fragments to spread and for tubers to remain behind in the lake bottom mud. The physical removal of sediments during the dredging process could remove the *Hydrilla* tuber population (found in the sediment). However, a great deal of care needs to be taken to ensure the dredging spoils are removed and taken off-site. Dredging efforts would also need to ensure that ALL tubers are removed, and that no tubers remain to give rise to new *Hydrilla* populations in the future. This is quite challenging as the *Hydrilla* tubers are quite small and some may escape removal during the dredging process. Diver assisted suction harvesting (DASH), which a method of plant removal that essentially vacuums the plant material into a boat, run through a filter and put back into the lake. It was attempted in the Cayuga Inlet but was not successful. Conditions were very turbid became dangerous for divers and lots of fragments were able to pass through the filter and back into the inlet. Fragmentation is how *Hydrilla* spreads rapidly, so any method that increases the number of potential plants should be avoided. By-catch of smaller fish is also a problem with mechanical harvesting.

Q6: I noticed both sediment problem and new weed problem were centered at South end. Is there a possibility they are connected? Possibly weed seeds are coming into lake via same way sediment also comes in?

In reviewing the results of the sediment study conducted by MGS in 2011, there is no apparent vector of sediment transport in that end of the lake that might explain the presence of *Hydrilla* . While *Hydrilla* can reproduce sexually, the most common vector of transport is fragmentation. *Hydrilla* can almost fully desiccate on a boat trailer or engine parts and develop into a plant when

put back in the water. The fact that it is clustered in the south end of the lake might suggest that boats used in that area of the lake might frequent other water bodies that have *Hydrilla*.

http://www.lakeweeds.eventwebsitebuilder.com/weedersdigest.html

Many of the products listed in this url are not long term control and only deal with clearing the top growth to improve access, primarily around shorelines and boat docks. They do not control or eradicate *Hydrilla* and encouraging the use of these products among lake owners could exacerbate the problem.

C1: Good luck on DCL DNR boat inspectors for any importation of weed related contamination! DNR in 2013 summer was not even inspecting boats at all when I put my boat in at DNR launching! I even asked. The DNR folks at launch site (2) were frozen at shack to converse while launching efforts wre going on.

Currently, DNR does not have personnel stationed at the launches for the purpose of public education and outreach. If the funding DNR requested is granted, there will be staff located at the DCL state park launch, as well as rotating through participating private marinas, to interact with the boating community, educate them about their responsibility to reduce the spread of invasive species and help them clean their boats, trailers and engines. These seasonal positions will be dedicated to be launch stewards and the will work primarily on the weekends throughout the summer.

C2: Post treatment testing of fish is likely to late to prevent a problem. It needs to be tested somewhere else than a DCL cove. Concentrations and fish intakes.

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C3: I have always thought a temporary solution with DNR permission was to allow floating docks in problem areas where power boat owners rowed out from shore to get into their moored power boats and take off into lake. DNR already allows sail boats to be moored out from shore a considerable distance!

While floating docks could be used in areas where vegetation is too dense to moor at the dock, it does not address the possibility that *Hydrilla* growth, if left unchecked could become established

in a large percentage of the lake. *Hydrilla* has the potential to dramatically alter the recreational and ecological balance of the lake, so DNR is taking an aggressive approach to its control.

References:

Cuda JP, Coon BR, Dao YM, Center TD. 2002. Biology and laboratory rearing of Cricotopus lebetis (Diptera: Chironomidae), a natural enemy of the aquatic weed hydrilla (Hydrocharitaceae). Ann. Entomol. Soc. Am. 95:587-596.

Environmental Protection Agency. 1986. Pesticide Fact Sheet: Fluridone. No. 81. 5 pp.

NYSDEC. 1994. Final generic environmental impact statement: use of the registered aquatic herbicide fluridone (Sonar®) and the use of the registered aquatic herbicide glyphosate (Rodeo® and Accord®) in the state of New York. Albany, New York.

WSDOH. 2000. Fluridone fact sheet. Washington State Department of Health. Olympia, WA.

See more at: HYPERLINK "http://ccetompkins.org/environment/invasive-species/fluridone-herbide-treatment-faq#sthash.SMXagHHT.dpuf" ~~http://ccetompkins.org/environment/invasive-species/fluridone-herbide-treatment-faq#sthash.SMXagHHT.dpuf~~

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Possibly a phone cal to answer questions rather that burning out a finger on key board?

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