Illinois
Department of
Natural Resources
One Natural Resources Way • Springfield, Illinois 62702-1271
http://dnr.state.il.us

August 12, 2010

Mr. Vince Mosca
Hey and Associates, Inc.
26575 West Commerce Drive - Suite 601
Volo, Illinois 60073

RE: *Incidental Take Authorization - Conservation Plan Review (Various Aquatic Species)*
East and West Loon Lakes, Lake County, Illinois

Dear Vince:

Pursuant to the Illinois Endangered Species Protection Act (520 ILCS 10/5.5) the Loon Lakes Management Association's (LLMA) authorization for the incidental take of the State threatened Banded killifish (*Fundulus diaphanus*); the State threatened Starhead topminnow (*Fundulus dispar);* State threatened Blackchin shiner (*Notropis heterodon*); the State endangered Blacknose shiner (*Notropis heterolepsis*); the State endangered Pugnose shiner (*Notropis anogenus*); the State threatened Iowa darter (*Etheostoma exile*); and the State threatened Mudpuppy (*Necturus maculosus*) in Lake County, Illinois [associated with LLMA's activities at/in East and West Loon Lakes in Lake County, Illinois] is hereby granted, subject to the terms and conditions described in the attached Authorization and Implementing Agreement. The Illinois Department of Natural Resources has determined that this authorized take is incidental to the LLMA's activities in East and West Loon Lakes in Antioch, Illinois in Lake County.

Please have an authorized LLMA Official(s) sign the last page of both copies of the Authorization and Implementing Agreement and return **both** copies to my the attention. Upon receipt, I will have the agreements signed and return one (1) fully executed copy to you for your official records. This authorization shall be effective once signed by the Department.

Thank you for your cooperation and assistance during the incidental take preparation and review process. Please do not hesitate to contact our office at (217)782-6384 with any questions or comments you may have regarding this authorization agreement.

Sincerely,

Joseph A. Kath
Endangered Species Manager
IDNR-Office of Resource Conservation

Enclosures

Authorization for Incidental Take and Implementing Agreement

Pursuant to the Illinois Endangered Species Protection Act (520 ILCS 10/5.5) LLMA's authorization for the incidental take of the State threatened Banded killifish (*Fundulus diaphanus*); the State threatened Starhead topminnow (*Fundulus dispar);* State threatened Blackchin shiner (*Notropis heterodon*); the State endangered Blacknose shiner (*Notropis heterolepsis*); the State endangered Pugnose shiner (*Notropis anogenus*); the State threatened Iowa darter (*Etheostoma exile*); and the State threatened Mudpuppy (*Necturus maculosus*) in Lake County, Illinois (as described/shown in the conservation plan received by the Department on 02 March 2010) is hereby granted, subject to the terms and conditions described in the attached Authorization and Implementing Agreement. The Illinois Department of Natural Resources has determined that this authorized take is incidental to the LLMA's activities in East and West Loon Lakes in Antioch, Illinois in Lake County.

Procedural History

The Loon Lakes Management Association (LLMA) (acting through its environmental consultant, Hey and Associates, Inc.) prepared a conservation plan as described by the Illinois Endangered Species Protection Act (520 ILCS 10/5.5). That plan and LLMA's request for authorization for incidental take of the State threatened Banded killifish (*Fundulus diaphanus*); the State threatened Starhead topminnow (*Fundulus dispar);* State threatened Blackchin shiner (*Notropis heterodon*); the State endangered Blacknose shiner (*Notropis heterolepsis*); the State endangered Pugnose shiner (*Notropis anogenus*); the State threatened Iowa darter (*Etheostoma exile*); and the State threatened Mudpuppy (*Necturus maculosus*) were received by the Illinois Department of Natural Resources (Department) on 02 March 2010. Public notice of LLMA's request for authorization of incidental take of the above listed aquatic species was published in the Arlington Heights Daily Herald (Official State newspaper) and the "general" Daily Herald (widespread Northeastern Illinois Suburban distribution) on March 22, 23, and 24 2010, as well as on April 1, 2010 and April 8, 2010. Public comments on LLMA's conservation plan were accepted by the Department until April 14, 2010. No comments were received by the public during the period of March 22, 2010 through April 14, 2010.

Compliance with the Endangered Species Protection Act

The Illinois Endangered Species Protection Act includes six (6) criteria which must be met for the authorization of incidental take of an endangered or threatened species. These criteria and the Department's determination for each criteria are listed below.

1. The taking will not be the purpose of, but will only be incidental to, the carrying out of an otherwise lawful activity:

East and West Loon Lakes are natural glacial lakes in the Fox River watershed. Both lakes are widely used for recreation. East Loon Lake is the larger of the two and it includes the watersheds of West Loon Lake, Cedar Lake, Deep Lake, and Sun Lake. West Loon Lake is connected to East Loon Lake via a shallow channel and East Loon Lake then drains to Lake Marie and eventually to the Fox River via Sequoit Creek. The two lakes have been extensively researched and surveyed over the years by the LCHD, by the IDNR and its predecessor agency (Department of Conservation), and by private consultants.

The lakes provide habitat for several fish species that are listed as threatened or endangered by the IDNR and the Illinois Endangered Species Protection Board. The IDNR also has advised that the lakes could potentially host the mudpuppy *(Necturus maculosus)*, which is an aquatic salamander and a newly State-listed (2009) amphibian species.

The LLMA is mindful of the need to protect listed species and is committed to doing so in recognition of the special natural resource distinction the species lend to the lakes. The lakes and their surrounding environs also host listed aquatic plants and terrestrial plants as well as listed birds.

The two lakes are located in Sections 20 and 21, Township 46 North, Range 10 East, 3rd P.M., in unincorporated Lake County, Illinois. The lakes lie east of IL Rt. 83 and south of IL. Rt. 173 and are near the Village of Antioch. The lakes are physically connected via a shallow channel.

The majority of the shorelines on both lakes are owned by private individuals in single family residences or by subdivisions which provide community beaches for their residents. A portion of the shoreline and lake bottom on each lake is owned by the Lake County Forest Preserves. There is no public access on either lake although fee-based access does currently exist at a private launch on West Loon Lake.

The LLMA currently conducts aquatic weed harvesting, contracts for aquatic herbicide applications, and performs other management activities to maintain and improve the quality of the lakes and the recreational uses of the lakes. There also is the potential for additional management activities in the future such as dredging sediment-clogged channels, and shoreline protection. Existing and future management projects and impacts associated with each include:

A. Mechanical harvesting of aquatic plants: The LLMA owns and operates a mechanical aquatic plant harvester. Operation of that equipment could potentially result in taking of listed fish species or *Necturus maculosus* through injury or death by cutter heads or by removal from the water by the harvester's conveyor. Harvester operation can also result in removal of aquatic vegetation that may be consumed as food or used as shelter or spawning substrate by listed species and may also cause temporary turbidity in the area of operation (especially if operated at very shallow depths).

B. Hand harvesting of aquatic plants: Hand harvesting will result in the removal of minor quantities of aquatic vegetation in near-shore areas and is not likely to cause adverse impact on the listed fish or amphibian species.

C. Herbicide applications to aquatic plants: Use of aquatic herbicides will result in mortality of plants susceptible to the herbicide. Treating too large an area of a lake with herbicide at one time can also cause oxygen deficits with harmful repercussions for aquatic organisms, especially if done during summer months. In the extreme, complete eradication of rooted aquatic vegetation would negatively impact lake water quality and also adversely affect the shelter and spawning requirements of the listed fish species.

D. Lake aeration would be expected to have beneficial effects on the listed species.

E. Use of bacterial pellets: This technique purports to control sludge, muck, and nutrients in lakes through application of aerobic and anaerobic bacteria. It typically is applied to only small areas and is not expected to have adverse effects on listed species. This management technique has been used in limited fashion at beaches and boat launches on both lakes in the past. No adverse impacts would be expected since the treatment does not cause turbidity or result in oxygen deficits.

F. Dredging maintenance: Dredging has been discussed as a means to restore depths in the connecting channel between the two lakes and in channels in East Loon Lake. This would result in short-term turbidity in the water column during dredging operations as well as disruption of benthic habitat in the dredged areas. Depending upon season and areas dredged, dredging could disrupt the spawning of listed species and could adversely affect reproductive success. Either mechanical or hydraulic dredging would be expected to result in injury or mortality to *Necturus maculosus* if any are encountered.

G. Fish stocking: The lakes already contain predator fish such as largemouth bass, northern pike, walleye, channel catfish, and muskellunge and stocking efforts have taken place in the past. Adding to the population of gamefish as is typically done in lake stocking programs might adversely affect the population of listed species since some individuals likely become part of the forage base for predators. However, the listed fish species may have very well adapted to co-exist with predators, although this is not proven. Large predator fish such as muskellunge or muskellunge hybrids potentially could adversely affect *Necturus maculosus* if that species is present in the lakes. All fish stocking at Loon Lakes should only be done in accordance with and guidance from IDNR Fisheries Staff.

H. Shoreline restoration: The LCHD estimates that 19 percent of the West Loon Lake shoreline and 30 percent of the East Loon Lake shoreline has some degree of erosion. Past shoreline protection efforts by the LLMA have included installation of geo-fabric, rip rap, and native shoreline plantings. Shoreline restoration involving native vegetation or installation of cobble, rip rap, or boulders would be expected to have beneficial impacts on the listed species. Conversely, shoreline protection with sheetpile armoring would reduce habitat for macroinvertebrates and other aquatic life. The only plans currently being considered involving sheetpile stabilization relate to the need to protect the banks and shore of the connecting channel with replacement sheetpile if and when the channel is dredged.

I. Boat launch restoration and creation: This could result in lake bottom and shoreline disturbances although the area affected would be minimal. Minor turbidity increases might also result during construction.

2. The parties to the conservation plan will, to the maximum extent practicable, minimize and mitigate the impact caused by the taking.

The two lakes collectively comprise over 350 surface acres. The LLMA is aware that it has responsibilities regarding listed species when conducting management activities on the lakes. The LLMA is also aware that aquatic vegetation is an essential life requirement of many of the fish species. The LLMA is not at all interested in eliminating aquatic vegetation from the lakes, but rather in controlling the large monotypic stands of invasives through managed herbicide applications and through managed harvesting so that traditional recreational activities on the lakes can continue.

The LLMA plans to minimize the risk of taking listed species by minimizing the areas targeted for application of management measures. Of all the management measures now employed or being considered, mechanical weed harvesting is believed to pose the most direct threat to the species of interest because harvesters are known to gather small fish along with the cut weeds that are collected. LLMA will implement a plan that will restrict the harvester to cutting several narrow navigational lanes that will allow recreational boats to pass from launch ramps, private piers, and near-shore moorings to the open waters of the lake. In addition to limiting the area of harvester operation, efforts also will be made to educate operators to recognize listed species so individuals that might be brought on board by the harvester's conveyor can potentially be returned to the water. Nonetheless, it is believed that even with precautions, possibly as many as 100 individuals of all species may be taken, and that is why incidental take authorization is being sought. In addition, in order to reduce potential impacts on reproductive recruitment of listed fish, LLMA will not initiate harvesting until late-June of each year, by which time it is believed that these fish will have completed initial spawning. Also, large blocks of aquatic vegetation will be left unmanaged in each lake.

Eurasian watermilfoi/**EWM** (in late spring and throughout summer) is the aquatic macrophyte posing the greatest problems for residents and recreational users. Of these, EWM is the most invasive and problematic, and East Loon Lake is the lake most impacted by its presence with large areas of infestation. The LCHD's plant density surveys conducted in 2008 found EWM at 62 percent of the East Loon Lake sample sites in June, increasing to 73 percent presence in August 2008. In West Loon Lake, EWM was found at about 18 percent of sites in June and at 33 percent of sites in August.

With the cooperation of and assistance from the LCHD, the LLMA shall:

a. Prioritize harvesting to occur in areas where Eurasian watermilfoil is most densely concentrated. LCHD will approve the aquatic plant management plan each year prior to implementation.

b. Establish standard operational procedures so the harvester does not cut in shallow, near-shore waters (other than perpendicular lanes for specific piers and boat ramps) where the listed fish typically occur or at speeds that disturb substrate, create turbidity problems, or not allow time for fish to evade.

c. Under the Annual Memorandum of Agreement between LLMA and LCHD, the LLMA will submit monthly reports to LCHD, mapping and documenting how many loads of biomass are cut and removed from the lakes by the harvester.

With respect to herbicide treatments, only spring applications of 2, 4-D to concentrations of Eurasian watermilfoil are currently being considered. However, with time, use of other approved aquatic herbicides also may be warranted for spot treatments of specific problem areas. **Please note that any and all herbicides considered for treatment at any time during this project must first be approved in writing by the IDNR District Fisheries Biologist for Region II - no herbicide applications what so ever shall be made without prior written approval of the local IDNR Fisheries Biologist.** As noted, the current greatest infestations of EWM are in East Loon Lake, minimizing the need for applications in West Loon.

Experience has shown that 2, 4-D is moderately to highly effective on Eurasian watermilfoil and expectations are that herbicide applications can be reduced with time as the EWM is controlled and beneficial native plants re-colonize areas now occupied by EWM. It is important to note that 2, 4-D does not affect aquatic monocots including many of the beneficial native pondweeds that occur in the lakes. **If 2, 4-D is used per this Incidental Take Authorization, then only the *AMINE* formulation shall be used as there is less chance for toxic effects upon aquatic organisms.**

3. The parties to the conservation plan will ensure that adequate funding for the conservation plan will be provided:

The LLMA is a not-for-profit (NFP) corporation responsible for lake management in and around East Loon Lake and West Loon Lakes in unincorporated northern Lake County, Illinois. The LLMA is comprised of the property owners that are on the tax assessment roll for Lake County Special Service Area No. 8, which itself was created for the specific purpose of providing funding for lake restoration and maintenance in the Loon Lakes watershed.

The LLMA's management activities are coordinated by the Lakes Management Unit of the Lake County Health Department (LCHD). The LLMA has existed since 1983 and the Special Service Area has been in existence for 20 years.

Unlike most other lakes in Lake County where homeowner or subdivision dues, user fees, or voluntary donations are relied upon to pay for management, East and West Loon Lakes benefit from having earmarked annual property tax revenues available for LLMA utilization. The tax levy for the Special Service Area has been established by ordinance to produce $50,000 annually. This assures that the management and monitoring activities established by this *Conservation Plan* can be funded.

By ordinance, the LCHD coordinates the activities of the Special Service Area and oversees the disbursement of funds for lake management activities. The LCHD shall ensure that provisions of the *Conservation Plan and Incidental Taking Authorization* are observed.

Overall, the *Conservation Plan and subsequent Incidental Taking authorization* will allow the LLMA to continue to conduct lake management activities within the watersheds of the two lakes while avoiding or minimizing risk to several listed animal species known or believed to reside in the two lakes or adversely affecting the habitat of those listed species.

4. Based on the best available scientific data, the Department has determined that the taking will not reduce the likelihood of the survival or recovery of the endangered species or threatened species in the wild in Illinois, the biotic community of which the species is a part, or the habitat essential to the species' existence in Illinois:

The most intensive management activities planned for the lakes and the ones most likely to directly interface with the listed species will be aquatic plant control through mechanical harvesting and herbicide treatment of EWM.

As stated, mechanical harvesting will be limited to that necessary to open and maintain boat access lanes and will be primarily conducted in depths greater than those favored by the listed fish species (1.5 meters or less). The harvester currently used by LLMA has a cutting width of 5 feet and a maximum cutting depth of 8 feet. Standard operating procedure will be for the equipment operator to harvest only in water depths greater than 4-feet and keeping the cutter head no closer than 3-feet above the lake bottom in order to avoid fish seeking shelter in and along the substrate and also the bottom-dwelling *Necturus maculosus.*

Depths shallower than 4 feet are encountered only in near-shore areas where harvesting needs to be done to create lake access for specific piers, launches, or channels. For example, in Laguna Channel at the north end of East Loon Lake, the harvester will need to operate 2-feet above the channel bottom in order to provide boating access to the lake. These specific areas will be proposed by LLMA and submitted to LCHD for approval prior to each harvesting season. **To minimize potential impact to spawning fish, no harvesting shall be conducted until late-June of each year.**

In addition, a policy shall be implemented so that cutting will be done at low forward speed in order to provide ample warning to fish allowing them to evade or to seek shelter in the substrate. Low operational speeds will improve cutting and harvesting efficiency and also minimize risk of turbidity in the shallower areas.

Harvester operators shall be instructed to return all turtles and any mudpuppies that might be collected to the lake. Authorization for operator handling of the listed species necessary to accomplish safe returns is requested as part of the Incidental Take permit. The harvester also will be equipped with clear color photos of all listed fish species and brief narrative descriptions in the hope that any listed fish removed from the water by conveyor can be identified and rapidly returned to the water.

With guidance and assistance from the LCHD, the LLMA shall map and annually prioritize areas for herbicide treatment of EWM. (The LCHD previously made recommendations for 2009 harvesting and herbiciding in the two lakes in its *2008 Summary Reports*). It is anticipated that no more than 25-30 acres per year (or approximately 15% of East Loon Lake) would be treated in any given year with a reasonable expectation to treat specific areas for 2 to 3 consecutive years to bring current infestations under control. No herbicide applications are currently made in West Loon Lake although it is possible that this alternative would need to be applied during this **five (5) year period of authorization (See *Authorization Section* below for more details). Any and all herbicides used now or in the future on any portion of the Loon Lakes property must first be approved in writing by the IDNR District Fisheries Biologist prior to any application. If approved by the IDNR, all applications shall be made in early- to mid-spring and only in areas infested with EWM.** Spring applications will result in plant die-off at a time when dissolved oxygen levels are typically high so problems associated with oxygen deficits due to plant decomposition should not materialize. Label instructions and application rates shall be observed and applications shall only be made by licensed aquatic herbicide applicators/operators.

Lake County Forest Preserves (LCFP) has stated that harvesting and herbicide treatments should not be conducted on those portions of the lakes where the lake bottom is owned by LCFP. This includes approximately 23.5 acres of West Loon Lake and 10.8 acres of East Loon Lake. Accordingly, both those areas shall be avoided in EWM herbicide treatment. However, it is proposed that minimal harvesting be allowed in West Loon Lake over Preserve-owned lake bottom to allow recreational boaters from an adjoining subdivision to have access lanes as they have enjoyed in the past. The LLMA shall work with the LCFP to attempt to secure permission to harvest "horseshoe" lanes approximately 15-feet wide and extending no more than 3 feet beneath the lake surface in this 23.5-acre area. It is estimated that these lanes will constitute a total of 0.5 to 0.75 acre. The LCFP maintains ultimate jurisdiction in these areas and formal, written permission to harvest such lanes must be granted first by the LCFP before any such activities occur by the LLMA.

Lake County Forest Preserves also requested that three specific investigations or studies be conducted as part of the LLMA *Conservation Plan*: 1.) an investigation of E/T populations of fish and plant in each of the lakes (*including the mudpuppy*), 2.) an assessment of vegetation densities to determine if harvesting is necessary, and 3.) identification and location of invasive species within the lakes.

In response to that request, the LLMA (in conjunction and consultation with the LCHD, LCFP, and/or the IDNR) shall hire an independent fisheries/biological consultant to conduct supplemental fish surveys, with the listed fish in mind, *as well as for the mudpuppy*. The IDNR will take this task on only if Agency time and budget constraints are met and permission is granted from the IDNR Region II Fisheries Regional Administrator and/or the IDNR District Fisheries Biologist. These monitoring activities shall take place annually for the duration of this five (5) year authorization. All monitoring activities shall be directly coordinated with Regional IDNR Fisheries Staff and an annual report documenting monitoring results shall be provided to the IDNR (attn: Joseph Kath) and the LCFP within 60 days of survey completion. Failure to provide such annual monitoring reports may result in revocation of this Incidental Take Authorization.

In addition, the LLMA will provide the LCFP with: A copy of *EA Engineering, Science, and Technology's 2009 report Survey of State-Listed Fishes from East and West Loon Lakes, Lake County, Illinois* which documents the most recent survey of threatened and endangered fish in the lakes. Copies of the LCHD 2008 reports on West Loon and East Loon Lakes which document the results of 2008 aquatic plant surveys, including data and map information on species and densities. Separate maps in those reports illustrate current (2008) EWM densities in both June and August in each lake. The reports include the LCHD's map recommendations for herbicide applications and mechanical harvesting on the lakes which serve as the basis for current and future management activities. LCHD has agreed to pre-screen any proposed harvesting lanes on Forest Preserve property for listed plant species and advise LLMA staff on preferred harvesting lanes.

With respect to invasive species, Eurasian watermilfoil/EWM is the predominant invasive of concern in the two lakes. The lakes also include curlyleaf pondweed *(Potamogeton crispus)* but that species has not presented a management problem. Invasive zebra mussels are also present in the lakes.

If dredging is conducted, protocols will need to be developed to limit direct impacts to listed species. These could include pre-dredge seining in the work area to remove and re-locate fish along with expanded use of turbidity curtains to serve as fish barriers to prevent return of re-located individuals. Turbidity during dredging will need to be minimized in order to protect turbidity-intolerant species and to prevent suspended materials from being deposited in the lakes.

5. Any measures required under Section 5.5 of the Illinois Endangered Species Protection Act [520 ILCS 10/5.5 - 17 IL. Adm. Code Part 1080.40(b)], will be performed:

Additional measures are listed below under "Authorization." This authorization is, by definition, subject to those terms and conditions and official LLMA's signature(s) on this authorization indicates their commitment to performing those measures.

6. The public has received notice of the application and has had the opportunity to comment before the Department made any decision regarding the application:

The Loon Lakes Management Association (LLMA) (acting through its environmental consultant, Hey and Associates, Inc.) prepared a conservation plan as described by the Illinois Endangered Species Protection Act (520 ILCS 10/5.5). That plan and LLMA's request for authorization for incidental take of the State threatened Banded killifish (*Fundulus diaphanus*); the State threatened Starhead topminnow (*Fundulus dispar);* State threatened Blackchin shiner (*Notropis heterodon*); the State endangered Blacknose shiner (*Notropis heterolepsis*); the State endangered Pugnose shiner (*Notropis anogenus*); the State threatened Iowa darter (*Etheostoma exile*); and the State threatened Mudpuppy (*Necturus maculosus*) were received by the Illinois Department of Natural Resources (Department) on 02 March 2010. Public notice of LLMA's request for authorization of incidental take of the above listed aquatic species was published in the Arlington Heights Daily Herald (Official State newspaper) and the "general" Daily Herald (widespread Northeastern Illinois Suburban distribution) on March 22, 23, and 24, 2010, as well as on April 1, 2010 and April 8, 2010. Public comments on LLMA's conservation plan were accepted by the Department until April 14, 2010. No comments were received by the public during the period of March 22, 2010 through April 14, 2010.

Authorization

It is the determination of the Department that the measures to be implemented by the LLMA (in conjunction with the LCHD) will adequately minimize and mitigate for the possible taking of the State threatened Banded killifish (*Fundulus diaphanus*); the State threatened Starhead topminnow (*Fundulus dispar);* State threatened Blackchin shiner (*Notropis heterodon*); the State endangered Blacknose shiner (*Notropis heterolepsis*); the State endangered Pugnose shiner (*Notropis anogenus*); the State threatened Iowa darter (*Etheostoma exile*); and the State threatened Mudpuppy (*Necturus maculosus*) in Lake County, Illinois.

It is worth noting that continued presence of listed fish species in East and West Loon Lakes after approximately 20 years of harvesting and other management suggests that management measures likely have not adversely altered habitat or reduced chances of survival. EA Engineering, Science, and Technology's seining efforts in July 2009 collected the following in West Loon and East Loon Lakes: Blacknose shiner (15), Blackchin shiner (75), and Banded killifish (3).

These fish are also found in other glacial lakes in northeastern Illinois, including other lakes in the Sequoit Creek watershed of which the Loon Lakes are a part. Other species such as the Pugnose shiner have not been documented for several years in Lake County lakes according to the LCHD.

Also, spring herbicide treatments for EWM control have been shown to be beneficial, often allowing beneficial native plants to re-colonize lake areas and become dominant after EWM concentrations are reduced. Reducing the level of harvesting or herbiciding may allow EWM to become more dominant which is an undesirable outcome for both native pondweeds and other aquatic plants.

With respect to harvesting, the IDNR Fisheries Division concluded in a *Supplemental Survey Report* for the lakes (dated January 22, 2008) that harvesting should be maintained because of the benefits of better access for recreational users, nutrient removal, and reduction in the potential for occurrence of algal blooms. The *Supplemental Survey Report* noted that continued confirmed presence of listed species was indicative that current and past lake management practices have not adversely altered listed species habitat or reduced their chances of survival.

Lastly, it is our opinion (IDNR) that the restrictions authorized herein would not diminish the likelihood of the survival of the State threatened Banded killifish (*Fundulus diaphanus*); the State threatened Starhead topminnow (*Fundulus dispar);* State threatened Blackchin shiner (*Notropis heterodon*); the State endangered Blacknose shiner (*Notropis heterolepsis*); the State endangered Pugnose shiner (*Notropis anogenus*); the State threatened Iowa darter (*Etheostoma exile*); and the State threatened Mudpuppy (*Necturus maculosus*) in the wild within the State of Illinois, the biotic community of which the species is a part or the habitat essential to the species' existence in Illinois.

Pursuant to Section 5.5 of the Illinois Endangered Species Protection Act [520 ILCS 10/5.5 - 17 IL. Adm. Code Part 1080.40(b)], this authorization is issued subject to the following additional terms and conditions:

The Loon Lakes Management Association (LLMA) and the Lake County Health Department (LCHD) will be the participants in the implementation of the Conservation Plan and this Incidental Take Authorization.

1. This authorization is effective upon signature of the Department and shall remain in effect for a period of **five (5) years** [commencing at the start of weed harvesting and herbicide application in 2010 or 2011], unless terminated pursuant to Section 5.5. of the Illinois Endangered Species Protection Act [520 ILCS 10/5.5 - 17 IL. Adm. Code Part 1080.80].

2. The effectiveness of the first five (5) years of weed harvesting and herbicide application and any impacts to any and all listed species shall be evaluated by the LLMA , LCHD, LCFP, and the IDNR. A comprehensive report covering these first 5 years shall be prepared by an agent of the LLMA and provided to the LCHD, LCFP, and IDNR (attn: Joseph Kath) within 60 days after completion of weed harvesting and herbicide application in 2015 or 2016. Upon review of this report, the IDNR shall maintain ultimate jurisdiction over future activities. The IDNR shall notify the LLMA within 120 days of report receipt if activities can continue on site with or without modification(s) for the next five (5) years - i.e. 2015-2020 (or 2016-2021).

3. In the event that the measures planned to minimize takings are deemed ineffective at any time during this initial five (5) year authorization, the LLMA shall work with the LCHD's Lakes Management Unit and the IDNR to develop and employ alternate management measures. Such actions shall be reviewed and approved by the IDNR prior to the commencement of any in-field activities. These alternate management measures shall be developed and approved by the LCHD and IDNR within 12 months (1 year) after initial measures are officially deemed "ineffective".

4. The LLMA (in conjunction and consultation with the LCHD, LCFP, and/or the IDNR) shall hire an independent fisheries/biological consultant to conduct supplemental fish surveys, with the listed fish in mind, as well as the mudpuppy. The IDNR will take this task on only if Agency time and budget constraints are met and permission is granted from the IDNR Region II Fisheries Regional Administrator. These "Special Survey monitoring efforts" shall be accomplished through electrofishing and seining, with the timing of the special surveys set to coincide with the habits and habitats of the listed species rather than those of traditional sportfish monitored in IDNR lake surveys. In addition, the status of listed aquatic plants in the lakes will be documented by the LCHD as part of its recurring studies of Lake County lakes. **The Special Survey monitoring efforts shall occur annually for the duration of this initial five (5) year authorization. All monitoring activities shall be directly coordinated with Regional IDNR Fisheries Staff and an annual report documenting monitoring results shall be provided to the IDNR (attn: Joseph Kath) and LCFP within 60 days of survey completion. Failure to provide such annual monitoring reports may result in revocation of this Incidental Take Authorization.**

5. In addition to **ALL** commitments/provisions/tasks/criteria noted in **EVERY** section above (Criteria 1 through 6) of this Incidental Take Authorization, the following conditions summarized below shall be followed/implemented by the LLMA and its partners:

a. In order to reduce potential impacts on reproductive recruitment of listed fish, LLMA will not initiate harvesting until late-June of each year, by which time it is believed that these fish will have completed initial spawning. Also, large blocks of aquatic vegetation will be left unmanaged in each lake.

b. Mechanical harvesting will be limited to that necessary to open and maintain boat access lanes and will be primarily conducted in depths greater than those favored by the listed fish species (1.5 meters or less). The harvester currently used by LLMA has a cutting width of 5 feet and a maximum cutting depth of 8 feet. Standard operating procedure will be for the equipment operator to harvest only in water depths greater than 4-feet and keeping the cutter head no closer than 3-feet above the lake bottom in order to avoid fish seeking shelter in and along the substrate and also the bottom-dwelling *Necturus maculosus*.

c. In summary, the LLMA shall minimize or mitigate the effects of all proposed actions on listed species referenced in this Incidental Take Authorization by:

-Practicing *de minimis* aquatic weed harvesting and herbicide application, currently concentrating on EWM control in East Loon Lake.

-In the case of herbicide applications, it is possible that a range of aquatic herbicides would be used for spot treatment of problem areas throughout the 5-year span of this *Plan*. The *Plan* keeps that option open should it be needed, particularly for EWM control. Short-term plans, however, call only for spring season application of herbicide (not to exceed 25-30 acres of East Loon Lake) to areas of EWM concentration as a means of controlling that invasive. **PLEASE NOTE: Any and all herbicides used now or in the future on any portion of the Loon Lakes property must first be approved in writing by the IDNR District Fisheries Biologist and/or the IDNR Region II Fisheries Regional Administrator prior to any application.**

-The LLMA shall work with the LCHD to map and target the priority areas for herbicide treatment of Eurasian watermilfoil. LCHD will review and approve LLMA's annual aquatic plant management plan.

-Operating harvesting equipment only in water depths primarily greater than 4 feet which will avoid the shallow water habitat preferred by many of the listed fish species. LCHD will pre-approve any harvesting plans. No harvesting will commence prior to late-June.

-Operating harvesting equipment at low cutting speed to give fish an opportunity to escape and operating in such a manner that cutter heads do not come within 1 foot of the bottom substrate that is favored by *Necturus maculosus* and also by small fish when disturbed.

-Providing the harvester operator with clear descriptions and photos of the listed species so that collected individuals have some opportunity of being returned to the lakes.

-Limiting dredging and shoreline restoration activities to those areas that are problematic. For shoreline restoration and protection projects, efforts will be focused at using naturalized measures that will enhance shoreline fish and macroinvertebrate habitat.

-Stocking fish only in accordance with IDNR Division of Fisheries (IDNR-Office of Resource Conservation) recommendations.

6. The effective period of this authorization may be altered by mutual agreement between the LLMA and the Department.

7. This authorization may be revoked pursuant to Section 5.5 of the Act if the Department finds that the LLMA has failed to comply with any of these terms and conditions or has been responsible for the take of any State threatened Banded killifish (*Fundulus diaphanus*); the State threatened Starhead topminnow (*Fundulus dispar);* State threatened Blackchin shiner (*Notropis heterodon*); the State endangered Blacknose shiner (*Notropis heterolepsis*); the State endangered Pugnose shiner (*Notropis anogenus*); the State threatened Iowa darter (*Etheostoma exile*); and the State threatened Mudpuppy (*Necturus maculosus*) in Lake County, Illinois associated with this project.

8. The LLMA official identified below is authorized to execute this agreement. Execution by the LLMA indicates acceptance of all terms and conditions described in this document.

For the IL. Department of Natural Resources

Dr. James Herkert, Director
Office of Resource Conservation

Date Signed

For the LLMA (Lake County, Illinois)

Signature

Please print name and official title

Date Signed