

# Quarton Lake Improvement Project

Birmingham, Michigan

Published by the Quarton Lake Project Team

## Project Purpose

The purpose of the Quarton Lake Improvement Project is to improve water quality and lake ecology while enhancing its aesthetic value and providing improved public access and recreational opportunities.

Project objectives include:

- Lessen the impacts of erosion by providing shoreline stabilization
- Reduce downstream sediment loading by removing accumulated sediment in Quarton Lake and installing a sediment trap at the upstream end of the lake
- Remove nuisance fish and plant species
- Enhance habitat by establishing fish habitat features in the lake
- Develop a recreation master plan for the park

## Project Team

The project team includes members of a resident ad hoc committee, city staff and consultants. In December 2001, the Birmingham City Commission appointed the Quarton Lake Ad Hoc Committee to help guide city staff in project development. The committee is a cross-section of the community comprised of seven members.

Beth Gotthelf, Resident, Chairperson  
Donald Carney, Jr., City Commission  
Art Stevens, Parks and Recreation Board  
Mark Hester, Quarton Lake Association  
Jarad Rundell, Mill Pond Association  
Edward Schulak, Resident  
Vacant, Resident At Large

Dennis Dembiec, Director of Eng and Public Service  
Bob Fox, Asst. Director of Eng and Public Service

Support provided by:  
Hubbell, Roth and Clark  
Wade-Trim

The purpose of this newsletter is to provide a clear and continuous communication between the project team and Birmingham residents about the status of improvements at Quarton Lake.

If you have any questions regarding the project or would like additional information, please contact Dennis Dembiec at [ddembiec@ci.birmingham.mi.us](mailto:ddembiec@ci.birmingham.mi.us) or 248.644.1800.

## Preliminary Dredging Approach

At their March 26th meeting, the Quarton Lake Ad Hoc Committee reviewed the following recommended preliminary dredging approach for the Quarton Lake Project. The project approach and schedule continues to be in its preliminary stages.

The upstream sediment in the lake is sandy and will dry faster than the organic sediment located in the southern portion of the lake. To accommodate the city's desire to complete the project as quick as possible with as little disruption to the surrounding areas as possible, it has been recommended that a combination of excavation methods be utilized.

## Environmental Controls

Initially, environmental controls will be established including the installation of an upstream sediment trap. The trap would be sized to adequately protect the downstream reach from sediment loading during dredging operations, normal flows and storm events. After construction is complete, this trap would be removed and the stream returned to its original condition.

The lake would then be drawn down, maintaining a low flow channel through the northern portion and approximately three to four feet in the southern portion (to allow for a floating dredge). The low flow channel will allow for storm events to be more easily handled and will be protected from sediment during the time the lake level is lowered.

A screening would also be installed around the perimeter of Quarton Lake to assist in limiting access to and from the project area as well as assist in the visual impact of the project.

## Excavation

After the installation of environmental controls and the lake drawdown, the sandy material in the northern portion can be exposed to air and sunlight. After an initial drying period, the sediment can be pushed into linear piles to speed up the dewatering process. After sufficiently dry, the piles can then be loaded into trucks for removal and off-site disposal.

In the southern portion of the lake, a floating dredge is recommended to remove the highly organic silt material. This material remains wetter longer and can be pumped directly into geotextile dewatering bags that will allow the water to drain. The use of these bags will contain the sediment and assist in the reduction of odors caused by exposing the sediment to air and wind. The

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staging area for these geotextile bags has not been established but they could be placed in the dry excavation area, or on land surrounding the lake. Once sufficiently dry, the geotextile bags are opened, the material loaded onto trucks and disposed of off-site.

The use of a combination of excavation methods has its advantages. By partially draining the lake, a portion of the sandier upstream sediment material can be exposed to dry. Then, the lake bottom grading can be accomplished with small, low ground pressure track dozers. The exposed lake bottom area can also be used for dewatering bags. Dry excavation and wet dredging can be worked on simultaneously, allowing for multiple crews which minimizes time of construction.

### ***Site Improvements***

Before dredging, excavation and sediment disposal is fully complete, the lake edge stabilization measures can begin, and the lake bottom improvements can be constructed. Once complete, the lake filling procedure can begin.

## ***Possible Project Constraints***

Weather Conditions  
Project Duration (incentive for short period)  
Odor  
Noise (trucks, pumps, dredge, excavator, dozer, loader)  
Excessive Downstream Sediment  
Visual Impact  
Haul Routes  
Hours of Operation  
Project Maintenance (dust control, sweeping)

### ***Preliminary Schedule***

It is anticipated that environmental controls and lake drawdown could begin in October 2002 with sediment excavation occurring in November and December. With the desired aggressive schedule, it is anticipated that 1,500 cubic yards of sediment could be removed each day, five days a week. Shoreline stabilization, nuisance fish eradication and fish habitat improvements would then occur toward the end of the dredging process and again in Spring 2003 when the weather is more suitable.

## ***Fisheries Management Program***

Carp, more than any other bottom-feeding species, can increase the turbidity and phosphorus concentration of water and reduce fish spawning habitat, aquatic plant growth, aquatic diversity, and dissolved oxygen. Large carp populations can be a significant factor in the impairment of the beneficial uses of small impoundments such as Quarton Lake. Although lake dredging and re-vegetation will benefit water quality, aquatic plants cannot establish and a healthy, diverse ecosystem cannot be achieved with an overabundance of the non-native common carp.

Studies conducted in Quarton Lake by the MDNR in 1990 showed that carp made up almost 90% of the fish population by weight. Partially reducing the carp population by manual removal methods will not produce the desired benefits because the lake ecosystem is in such a state of disequilibrium. Several methods of carp removal have been discussed with MDNR including barriers, exclosures, stocking predators, chemicals, netting, and lake drawdown. The carp eradication system being proposed for Quarton includes partial lake drawdown, temporary upstream fish barriers, and rotenone application followed by fish removal and detoxification. The lake will then be restocked with predator species to discourage small carp and monitored for carp reintroduction from upstream.

Because Quarton Lake is part of a larger river system, carp will eventually repopulate the lake as they did following restocking efforts in the early 1970s. However, with proper restocking, monitoring, and management procedures, Quarton Lake's carp population can be controlled for many years. This will allow aquatic plants to establish, the lake ecology to stabilize, and water quality to improve.

Rotenone is a natural substance derived from the stems and roots of several tropical and sub-tropical plants. It is applied as a wettable paste/powder or an emulsifiable spray concentrate. Rotenone inhibits a biochemical process at the cellular level making it impossible for fish to use oxygen in the release of energy needed for body processes.

Rotenone has some toxicity to all oxygen breathing animals, but is selective to fish at the concentrations used by fishery biologists. Fish, insects, birds and mammals have natural enzymes that will detoxify sub-lethal amounts of rotenone. Fish are highly susceptible because rotenone is readily absorbed through their gills, and they cannot escape exposure to it. Rotenone is non-persistent so there is no accumulation in the water, soil, plants, or surviving animals.

Rotenone is an unstable compound that breaks down when exposed to light, heat, oxygen and alkaline water. The breakdown process is very rapid and it ultimately becomes

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carbon dioxide and water. Generally, most lakes treated with rotenone completely detoxify within five weeks of treatment, although it can vary depending on light, oxygen and alkalinity. The presence of ice and snow cover may prolong the toxic effect.

The mobility of rotenone in soil is low to slight. The expected leaching distance in soils is less than one inch in most soil types. Sandy soils is slightly more at three inches. Rotenone is strongly bound to organic matter in soil, so it's unlikely that it would enter ground water.

For more information on Rotenone go to:  
[www.dfw.state.or.us/ODFWhtml/InfoCntrFish/DiamondLake/Rotenone.html](http://www.dfw.state.or.us/ODFWhtml/InfoCntrFish/DiamondLake/Rotenone.html)

## Goose Control Methods

During the development of the city-wide Recreation Master Plan in 2000 as well as the meetings held over the past few months, the Canadian Goose population at Quarton Lake has continued to be identified as a serious problem to water quality as well as the aesthetics and condition of the upland areas surrounding the lake.

Research proves that the best results for geese management have been obtained when several control methods are used together in a cycle of implementation, observation and modification. It should also be noted that it is nearly impossible to totally rid a site of all geese, but it is possible to reduce it to a manageable population. The following details various techniques to assist in the management of geese populations.

- *Alter the Habitat Through Landscape Design*  
This method is considered to have the most effective long-term results of discouraging goose populations. Principles to decrease habitat suitability include:
  - Reduce sightlines at access points to and within foraging or nesting areas. (9M max)
  - Physically reduce/impede access to foraging areas via water or air.
  - Reduce actual size of foraging areas.
  - Provide preferred grazing areas if size permits.

There are various landscape techniques to accomplish these:

- Shoreline and Landward Treatments (combination)
- Aquatic Bench
- Hard Edges (Stone Slabs, Decks and Boardwalks)
- Low Shrubs and Meadows
- Barrier Fences (30" high and combined with vegetation)

- *Discourage Feeding of Geese by Humans*
- *Install Barriers*  
Geese tend to walk, not fly, to and from water to feed. (fences, hedge rows, plantings)
- *Scare Tactics*  
Need to be alternated and/or moved periodically Because their effectiveness is reduced if the geese become used to them.
  - Noise makers
  - Balloons
  - Streamers/Flags
  - Scarecrows
  - Windmills
- *Methyl-Anthranilate (REJEX IT)*  
Naturally occurring sweet flavored compound found in plants such as jasmine, concord grapes and orange blossoms. Distasteful to many bird species. Effect wears off after several days and must be reapplied until geese are no longer in area. Works best when applied to relatively small areas.
- *Trained Border Collies*  
Have proven highly successful in herding geese out of ponds and grassy areas at golf courses and other facilities.
- *Egg Shaking and Replacement*  
Egg Shaking is suggested once in early April and again in late April. This activity is regulated by permit.

## Recreation Use Program List

The following list of desired programs and activities at Quarton Lake was developed from information gathered during this project process. It was presented and modified by the Ad Hoc Committee as is presented below. This will be used to develop concept alternatives for the recreation improvements that will be presented at the next committee meeting.

Walking  
Running  
Biking  
Rollerblading  
Picnicking  
Fishing  
Sitting  
Bird Watching  
Ice Skating (informal)  
Education and Interpretation

## *Anticipated Project Schedule--Revised*

Public Workshops with Ad Hoc Committee	January - June 2002
Construction Drawings for Environmental/Dredging Work	May- August 2002
Final Recreation Master Plan for Quarton Lake Park	August 2002
Bid Environmental/Dredging Work	September 2002
Construction Drawings for Recreation Work	September 2002 - November 2002
Environmental and Dredging Work Conducted	October 2002 - April 2003
Bid Recreation Work	February 2003
Recreation Work Conducted	March 2003 - September 2003

## *Upcoming Ad Hoc Committee Meetings*

All Ad Hoc Committee meetings are open to the public. All meetings will be held at 6:30 pm at the Department of Public Services Building. The following is a tentative meeting schedule, please look for additional announcements or call City Hall for confirmation of meeting dates and times.

**Monday, May 6, 2002**

**Monday, June 3, 2002**

City of Birmingham  
Engineering and Public Services  
151 Martin Street  
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