WISCONSIN
DEPT. OF NATURAL RESOURCES
George E. Meyer
Secretary

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

101 South Webster Street
Box 7921
Madison, Wisconsin 53707
TELEPHONE 608-266-2621
TELEFAX 608-267-3579
TDD 608-267-6897

June 1, 1994

City of Tomah
Monroe County

Tomah Lake Protection and Rehabilitation District
% City Hall
819 Superior Ave.
Tomah, WI 54660

SUBJECT: Boating Ordinance Review
City of Tomah

Dear Sirs: 0317

The Department of Natural Resources has reviewed your proposed boating ordinance to regulate water traffic on Lake Tomah in the City of Tomah, Monroe County, Wisconsin. The Department has assigned this ordinance number ~~2545~~. As authorized by statute, the Department has reviewed this ordinance and has the following comments.

1: Section 4(1) - The Department of Natural Resources will not be responsible for the placement, maintenance, or upkeep of the slow-no-wake waterway markers. Please remove the Department of Natural Resources from this section.

2 Your penalty section should be revised. Wisconsin Statute 30.77, provides that local ordinances cannot be contrary to or inconsistent with Chapter 30. Therefore, penalties for boating violations must be in strict conformity with s. 30.80, Wis. Stats. As required in ss. 800.03, 800.04, 23.66 and 23.67, deposits for boating violations must be in conformity with the Uniform Deposit and Bail Schedule established by the Wisconsin Judicial Conference. As such, it is suggested that you reword your penalty section to read as follows:

Penalties. Wisconsin state boating penalties as found in s. 30.80, Wis. Stats., and deposits as established in the Uniform Deposit and Bail Schedule established by the Wisconsin Judicial Conference, are hereby adopted by reference with all references to fines amended to forfeitures and all references to imprisonment deleted.

3. Please note the posting requirements outlined in NR 5.15, Wisconsin Administrative Code, which require a sign with a minimum of three inch lettering be posted at each public landing outlining all regulations more restrictive than state law.

The Department of Natural Resources approves the placement of the waterway markers described in the enclosed application (2545). Please have section II of the waterway marker application completed

by the city and return a copy to the Department of Natural Resources. This approval is pending on our receipt of the completed application form.

The authority for the placement of the waterway marker is vested in the local authority, with the Town being responsible for the placement, maintenance and upkeep of the markers. The Town is responsible for ensuring the markers are placed as diagrammed in the application form.

The permit and this letter should be kept by the Town to show proof of proper compliance with the law.

The Department of Natural Resources has been directed by Section 30.77(3) of the Wisconsin Statutes to provide advisory review of local regulations pertaining to the equipment, use or operation of boats on inland lakes and to determine whether those regulations are consistent or inconsistent with Wisconsin Statutes. It is suggested that you make the recommended changes and resubmit your ordinance for review.

Upon passage of an ordinance, please submit a copy to the Department of Natural Resources. As outlined in s. 30.77(4), Wis. Stats., no ordinance is valid until it is prominently posted at all access points within your jurisdiction and until a signed copy is received by this office.

If you have questions regarding this review, or would like assistance in drafting an ordinance, please feel free to contact your District Law Enforcement Safety Specialist, Tom Bokelman at (715) 839-3717 or myself.

Sincerely,

Diane L. Crawford

Diane L. Crawford
Boating Safety Specialist
Bureau of Law Enforcement
(608) 267-5035

cc: Tom Bokelman - WD
Kevin Neitzke - Warden
Phillis Zimmerman - Clerk, City of Tomah

MAY 25 1994

State of Wisconsin
Department of Natural Resources
Box 7201
Madison, Wisconsin 53707

WATERWAY MARKER APPLICATION AND PERMIT

Section NR 5.09, Wis. Adm. Code
Form 8700-58 Rev. 5-91

☒ Placement ☐ Discontinue ☐ Change

BLE	District
2545	

THE CITY OF TOMAH

COUNTY OF MONROE, WISCONSIN.

Instructions and qualifications on back of form. Complete form set (all 3 copies) and contact your local conservation warden.

SECTION I -- APPLICANT AND PROPERTY OWNER

Property Owner's Name	Applicant's Name
	TOMAH LAKE PROTECTION AND REHABILITATION DISTRICT
Street or Route	Street or Route
	% CITY HALL 819 SUPERIOR AVE
City, State, Zip Code	City, State, Zip Code
	TOMAH, WI 54660
Telephone Number (include area code)	Telephone Number (include area code)
	(608) 372-5948
I consent to the placement of water marker(s) adjacent to the waters of my private property. **Property Owner's Signature** Date Signed	Name of lake or body of water on which buoys are to be placed LAKE TOMAH
	Location of marker(s) Township: TOMAH/LAGRANGE Range: 1 WEST Section: 5

Type of Marker(s)	Qty.	Type of Marker(s)	Qty.	Message On Marker / Name of Beach	Remarks
Aid to Nav. Center		Boat Excluded ◈			
Aid to Nav. Red		Swim Area ◈		Swim Area	
Aid to Nav. Green		Controlled Area ○	5	SLOW "NO" WAKE	
Mooring		Hazard Warning ◇			
		Informational ▭			

Non-standard Qty. Describe:

Attach a sketch(es) or chart(s) showing the proposed location of the marker(s). Express exact location of water marker(s) in distance from one or more fixed objects, whose location is known.

The above information provided in support of the application for placement of water marker(s) is true and correct.

Applicant's Signature Date Signed

x John F. Graf Frances M. Pollard 5/3/94 4/13/93

SECTION II -- POLITICAL SUBDIVISION

☐ Approved -- The above named applicant may place and maintain, subject to DNR approval, the described marker(s).
☐ Disapproved -- The placement of the described marker(s) may not take place.

Restrictions
☐ None ☐ Yes -Restrictions:

Approved By (Name)	Title	Date Signed

Agency - Political Subdivision or DNR	Applicant Shall Comply with all State and/or Local Requirements.

LEAVE BLANK -- DEPARTMENT OF NATURAL RESOURCES USE ONLY

Warden's Recommendation	LE Safety Specialist
☒ Approved ☐ Disapproved	☒ Approved ☐ Disapproved
By (Warden's Signature) N. Seitz Date Signed 05-10-94	By T R Bokelman Date Signed 05-21-94
Ordinance on File ☐ Yes ☐ No ☐ Not Required	Bureau of Law Enforcement ☒ Approved ☐ Disapproved By Diane L Crawford Date Signed 5/31/94

Permit Distribution: Copy 1 - Dept. of Natural Resources, Madison, Copy 2 - Political Subdivision, Copy 3 - Permittee.

Waterway marker(s) may not be placed until all the requirements of Section NR 5.09, Wis. Adm. Code, are met.

2545

MAY 25 1994

DRAFT

Ordinance No. ____

ORDINANCE CREATING NO WAKE ZONE ON LAKE TOMAH 000317

The Common Council of the City of Tomah do ordain as follows:

SECTION 1: Section _____ of the Municipal Code of the City of Tomah is hereby created to read as follows:

An Ordinance establishing use restrictions on Lake Tomah in the City of Tomah.

SECTION 2: TITLE OF ORDINANCE: This Ordinance shall be known, cited and referred to as the "No Wake Zone Ordinance" (hereinafter referred to as "Ordinance").

SECTION 3: PURPOSE, AUTHORITY AND APPLICATION:

(1) The purpose of this Ordinance is to institute use regulations and restrictions on Lake Tomah to protect the fisheries of Lake Tomah and to promote the health, safety and general welfare of the residents of the City of Tomah.

(2) These regulations are established pursuant to the statutory authorization for municipal planning and zoning in order to protect the public health, safety and welfare.

(3) The regulations specified in this Ordinance shall apply within the City's corporate limits.

SECTION 4: NO WAKE ZONE:

(1) The Lake Committee or Lake District Commissioners or their designee and the State of Wisconsin Department of Natural Resources shall cooperate in placing markers or buoys to delineate the "No Wake Zone" on Lake Tomah.

(2) The "No Wake Zone" on Lake Tomah shall consist of that area more specifically defined on the map attached hereto as Exhibit "A" and incorporated herein as is fully set forth.

(3) Violations: It shall be unlawful for any person to operate or use any boat or other motorized watercraft on Lake Tomah in violation of this Ordinance.

(4) Penalties: Any person who fails to comply with the provisions of this Ordinance shall upon conviction thereof, forfeit not less than $20.00 nor more than $200.00 plus the costs of the prosecution for each violation.

SECTION 5:

All ordinances in conflict with the foregoing are hereby repealed or amended to read consistent with this Ordinance.

CONDITIONAL REPORT

1. CONDITIONS NECESSITATING CHANGE:

A nearly five(5) million dollar lake renovation project has been completed on Lake Tomah. The lake has been refilled and initial fish stocking completed. Throughout the project a strong emphasis on preserving the natural beauty and environmental aspects of the upper lake, yet provide safe activity for everyone, were foremost. The lake has been used extensively as a prime location for fishing, boating, sailing, and other recreational activities, and also as a haven for waterfowl during their spring and fall migrations. Because the lake is located within city limits, usage is much greater than most lakes due to ease of accessibility. Due to the heavy multi-purpose usage of this lake by fishermen, bird watchers, canoeists, water skiers/jetskiers, etc., we request no-wave approval for the southwestern portion of Lake Tomah (see attached map) for the following reasons:

A. A large portion of this area was left intact (and shallow) for proper aquatic weed growth to enhance fish and waterfowl habitat.

B. A portion of this area was dredged specifically for habitat purposes. Bottom contours were constructed to have numerous underwater depths (4'-11') with weed patches, structure, etc., on numerous fingered areas.

C. Partial shore line contouring was included in this area to provide waterfowl nesting islands, along with fish spawning areas, and shallow protected fishing areas.

D. All shore line in the proposed no-wave area is designated wetlands. We have riprapped the majority of the remaining shoreline to prevent erosion from boat waves.

E. The designation of this area as "no-wave" would provide a safe haven for fishermen, canoeists, birdwatchers and others to be separate from the skiers, jetters and other fast moving watercraft.

F. This segment of the lake was designated specifically for fishing and wildlife with full intention of it being a no-wave zone. This proposal has been discussed with a vast number of people and we have received no opposition to our proposal. In fact, both fishermen and watercraft operators agree with this concept.

2. HOW WILL THIS REGULATION SOLVE PROBLEMS:

The designation of a no-wave area will:

A. Provide prime area for fishing without the nuisance of fast moving water vehicles.

B. Provide a "safe" area for canoes and other small craft from the danger of large waves.

C. Protect both shoreline and the fish and wildlife habitat from large waves.

D. This no-wave zone will still be accessible to larger and/or faster watercraft, it will just require them to proceed at "No-Wave" speeds.

3. NEGATIVE EFFECTS OF PROPOSAL:

At this time, there has been no opposition by any individual or group to our No-Wave proposal. In fact, the idea has received overwhelming support as a method of preventing future conflict between users of the lake. The local Bass Masters Organization is endorsing this as an ideal concept. It is also noted that no homes or cottages are located on the shores are located within the proposed area (all wetlands), so access to private property is not a concern.

We see no negative effect on anyone, only a strong positive effect for those who enjoy the safety, solitude and tranquility of Lake Tomah as well as to continue to provide enjoyment for those who use the lake for recreational purposes.

4. IMPACT ON PUBLIC HEALTH, SAFETY, OR WELFARE IF NOT ADOPTED.

A. Safety is of prime concern to those individuals fishing, canoeing, or generally using this area of the lake in small water craft. A great number of elderly and retired people utilize this area in small jon boats and canoes, and cannot safely navigate through large waves and/or fast boats. The avoidance of a single capsizing or drowning is certainly worth the efforts of making this a "No-Wave" area.

B. Throughout the United States and within the state of Wisconsin there exists a degree of animosity between fishermen and motor water craft operators. The adoption of a "no-wave" area in the section of the lake that is designed/constructed for fishing should alleviate this problem.

C. The taxpayers of our small community have spent nearly five million dollars on this lake/dam renovation. A sizeable portion was spent in fish/wildlife habitat, along with an innovative sediment trapping program within this proposed "no-wave" area. The approval of this area would not only protect local taxpayer investment, but would also protect the monies allocated to this project by the Wisconsin Department of Natural Resources.

5. ARGUMENTS TO THOSE OPPOSED TO THIS REGULATION CHANGE:

As mentioned earlier in this report, there has been no opposition to this proposal. However, we have had numerous positive comments on this proposal and our efforts to make this a safe, usable lake for everyone.

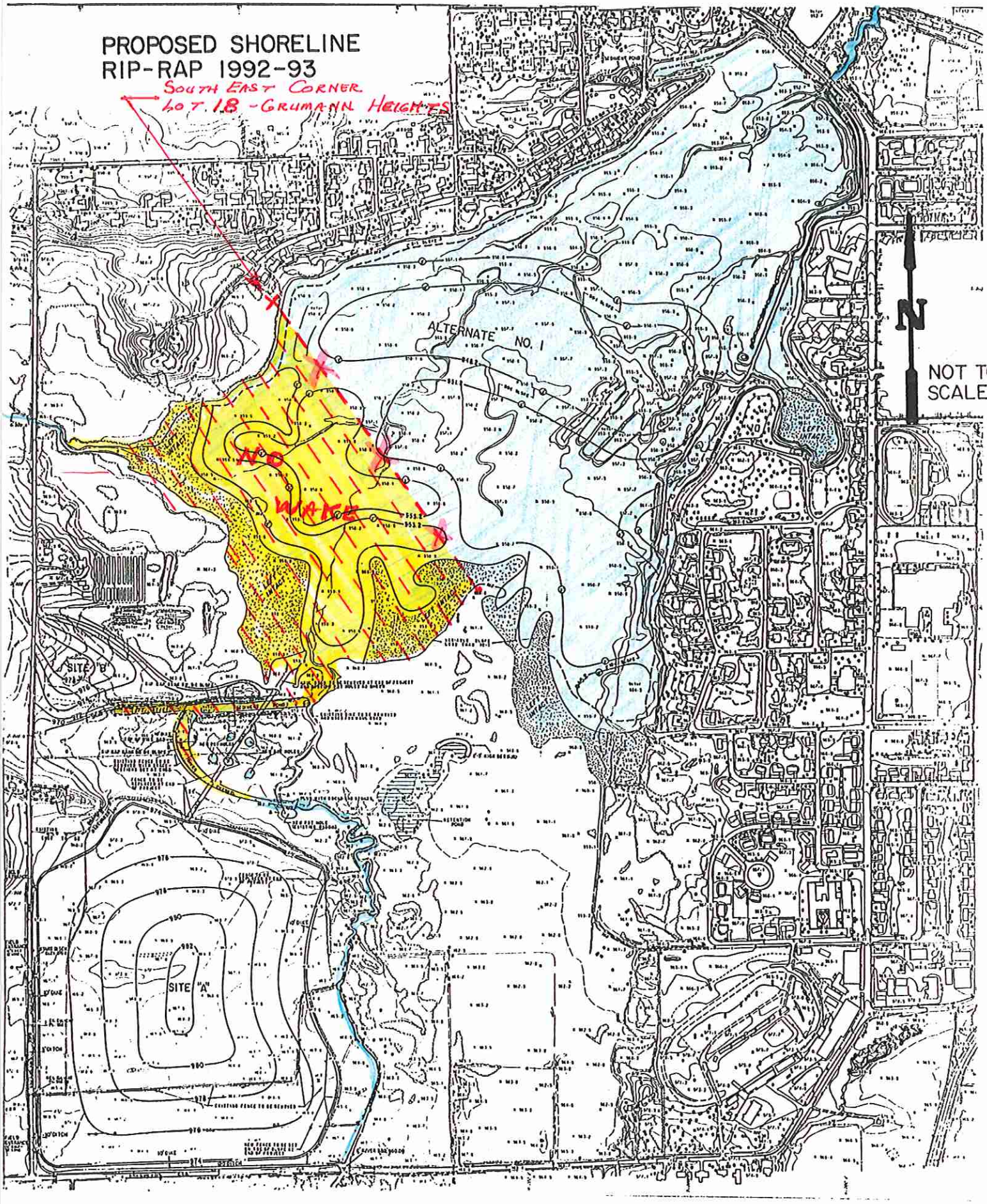
NOTE

The property owners on the lake, along with those community members using the lake, have expressed great concern and interest in the safe and effective use of this lake. Numerous boaters have volunteered their assistance in monitoring compliance of a no-wave zone. They have reported a willingness to counsel and educate anyone not abiding by the no-wave ordinance, and in fact, 'turn in" any repeat offenders.

2545

LAKE TOMAH

000317 MAY 25 1994



= SHORELINE TO BE RIP-RAPPED

PUBLIC WORKS AND UTILITIES

CITY OF TOMAH
819 Superior Avenue
Tomah, Wisconsin 54660

Public Works (608) 374-7430 Utilities (608) 374-7431

October 13, 1994

Mary Van Fossen
Dept. of Natural Resources
Western District
1300 W. Clairemont Ave.
Eau Claire, WI 54702

Dear Mary:

Please find enclosed the following:

- Signed recreation aids grant agreement
- Completed waterway marker application and permit
- Adopted City ordinance

Thank you for agreeing to see that the proper staff receive the forms. If you have any questions or comments please feel free to contact me.

Yours truly,

CITY OF TOMAH
PUBLIC WORKS AND UTILITIES

Karen Cronick

Karen Cronick
Assistant Director

Encl.

MAY 25 1994

State of Wisconsin
Department of Natural Resources
Box 7201
Madison, Wisconsin 53707

WATERWAY MARKER APPLICATION AND PERMIT

Section NR 5.09, Wis. Adm. Code
Form 8700-58 Rev. 5-91

☒ Placement ☐ Discontinue ☐ Change

BLE	District
2545	

THE CITY OF TOMAH

COUNTY OF MONROE, WISCONSIN.

Instructions and qualifications on back of form. Complete form set (all 3 copies) and contact your local conservation warden.

SECTION I – APPLICANT AND PROPERTY OWNER

Property Owner's Name	Applicant's Name
	TOMAH LAKE PROTECTION AND REHABILITATION DISTR
Street or Route	Street or Route
	% CITY HALL 819 SUPERIOR AVE
City, State, Zip Code	City, State, Zip Code
	TOMAH, WI 54660
Telephone Number (include area code)	Telephone Number (include area code)
	(608) 372-5948
I consent to the placement of water marker(s) adjacent to the waters of my private property. **Property Owner's Signature** / Date Signed	Name of lake or body of water on which buoys are to be placed: LAKE TOMAH
	Location of marker(s): Township TOMAH/LAGRANGE; Range 1 WEST; Section 5

Type of Marker(s)	Qty.	Type of Marker(s)	Qty.	Message On Marker / Name of Beach	Remarks
Aid to Nav. Center		Boat Excluded ◈			
Aid to Nav. Red		Swim Area ◈		Swim Area	
Aid to Nav. Green		Controlled Area ○	5	SLOW "NO" WAKE	
Mooring		Hazard Warning ◇			
		Informational ☐			
Non-standard	Qty.	Describe:			

RECEIVED
MAR 14 2007
WDNR - LAW ENFORCEMENT

Attach a sketch(es) or chart(s) showing the proposed location of the marker(s). Express exact location of water marker(s) in distance from one or more fixed objects, whose location is known.

The above information provided in support of the application for placement of water marker(s) is true and correct.

Applicant's Signature: x John F. Kraft Frances M. Pollard — Date Signed: 5/3/94 4/13/93

SECTION II – POLITICAL SUBDIVISION

☒ Approved -- The above named applicant may place and maintain, subject to DNR approval, the described marker(s).
☐ Disapproved -- The placement of the described marker(s) may not take place.

Restrictions
☒ None ☐ Yes -Restrictions:

Approved By (Name)	Title	Date Signed
Frances M. Pollard	Mayor	10/12/94

Agency - Political Subdivision or DNR: Applicant Shall Comply with all State and/or Local Requirements.

LEAVE BLANK – DEPARTMENT OF NATURAL RESOURCES USE ONLY

Warden's Recommendation	LE Safety Specialist
☒ Approved ☐ Disapproved	☒ Approved ☐ Disapproved
By (Warden's Signature) / Date Signed: 05-10-94	By T K Bokelman Date Signed 05-21-94
Ordinance on File: ☐ Yes ☐ No ☐ Not Required	Bureau of Law Enforcement: ☒ Approved ☐ Disapproved
	By Diane L. Crawford Date Signed 5/31/94

Permit Distribution: Copy 1 - Dept. of Natural Resources, Madison, Copy 2 - Political Subdivision, Copy 3 - Permittee.

Waterway marker(s) may not be placed until all the requirements of Section NR 5.09 Wis. Adm. Code are met

ORDINANCE NO. 94-10-17-C

ORDINANCE CREATING NO WAKE ZONE ON LAKE TOMAH

The Common Council of the City of Tomah do ordain as follows:

SECTION 1: Section 19.07 of the Municipal Code of the City of Tomah is hereby created to read as follows:

An Ordinance establishing use restrictions on Lake Tomah in the City of Tomah.

SECTION 2: TITLE OF ORDINANCE: This Ordinance shall be known, cited and referred to as the "No Wake Zone Ordinance" (hereinafter referred to as "Ordinance").

SECTION 3: PURPOSE, AUTHORITY AND APPLICATION:

(1) The Purpose of this Ordinance is to institute use regulations and restrictions on Lake Tomah to protect the fisheries of Lake Tomah and to promote the health, safety and general welfare of the residents of the City of Tomah.

(2) These regulations are established pursuant to the statutory authorization for municipal planning and zoning in order to protect the public health, safety and welfare.

(3) The regulations specified in this Ordinance shall apply within the City's corporate limits.

SECTION 4: NO WAKE ZONE:

(1) The Lake Committee or Lake District Commissioners or their designee shall cooperate in placing markers or buoys to delineate the "No Wake Zone" on Lake Tomah.

(2) Definition: "Slow-No-Wake" means that speed at which a boat moves as slowly as possible while still maintaining steerage control.

(3) The "No Wake Zone" on Lake Tomah shall consist of that area more specifically defined on the map attached hereto as Exhibit "A" and incorporated herein as is fully set forth.

(4) Violations: It shall be unlawful for any person to operate or use any boat or other motorized watercraft on Lake Tomah in violation of this Ordinance.

(5) Penalties: Wisconsin state boating penalties as found in s. 30.80, Wisconsin Statutes, and deposits as established in the Uniform Deposit and Bail Schedule established by the Wisconsin Judicial Conference, are hereby adopted by reference with all references to fines amended to forfeitures and all references to imprisonment deleted.

SECTION 5:

All ordinances in conflict with the foregoing are hereby repealed or amended to read consistent with this Ordinance.

SECTION 6:

This Ordinance shall take effect upon passage and publication.

Frances M. Pollard

Frances M. Pollard, Mayor

ATTEST:

Donna Lovell

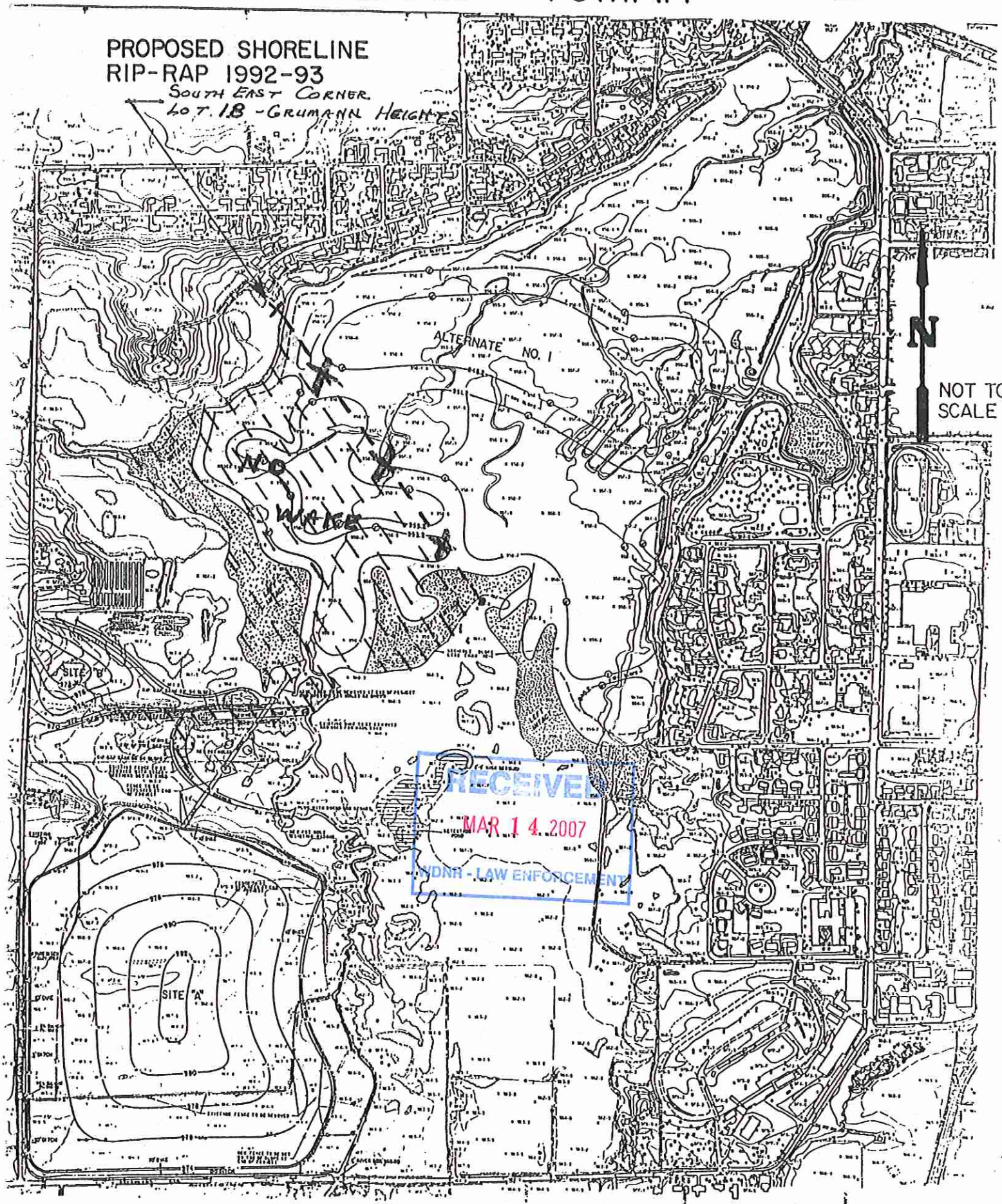
Donna Lovell, Deputy Clerk

Read: October 11, 1994

Passed: October 11, 1994

Published: October 17, 1994

2545 LAKE TOMAH 00317 MAY 25 1994



= SHORELINE TO BE RIP-RAPPED

Lake Tomah SNW area on SW end of lake. Review Materials. Approved 5/31/94

DNR OFFICE MEMO
Form 9500-43 Rev. 5-89

To TOM | Date 1994 | Time

From KEVIN

Of YOUR WARDEN IN TOMAH

Phone | Received by

☐ Please Call ☐ Returning Your Call ☐ Will Call Again ☐ Called to See You

☐ Comment
☐ For Your Information
☐ See Me
☐ Take Action
☐ Approve
☐ Sign
☐ Revise
☐ Prepare Reply For My Signature
☐ Reply Direct
☐ Per Your Request
☐ Code
☐ Route to:
☐ Return
☐ File

I SIGNED THIS AFTER TALKING TO DIANE CRAWFORD IN MADISON. APPARENTLY THIS WILL BE THE FIRST BOATING ORDINANCE IN THE STATE CONSIDERED FOR ENVIRONMENTAL REASONS. THE LAST REPORT IS ADDITIONAL INFORMATION THAT I GOT FROM DARYL URBAN TO HELP WITH EVALUATING THIS ORDINANCE.

MAY 4, 94

KEVIN

PER CONVERSATION YESTERDAY I'VE ATTACHED REQUIRED D.N.R. PAPERWORK FOR PLACEMENT OF BOUYS IN THE SOUTHWESTEREN CORNER OF LAKE TOMAH.

WE WOULD GREATLY APPRECIATE YOUR SUPPORT & SIGNATURE ON THIS PROCESS (See Yellow TAG AREA) WE HAVE BEEN IN CONTACT WITH MARY VANFOSSEN & BUZZ SORGE (DNR EAU CLAIR) AND KEN WRIGHT (LACROSSE) AND THEY ALL SUPPORT THIS.

PLEASE CONTACT ME IF I MIGHT PROVIDE ANY ADDITIONAL INFORMATION.

DARRYL URBAN
WORK # 372-3971 x 6004 8:00-4:30PM.
HOME 372-4246 5:00 —

P.S. GIVE ME A CALL AND I'LL PICK IT AND MAIL IN TO EAU CLAIRE

Darryl

LAKE TIDES

A newsletter for people interested in Wisconsin Lakes

Volume 17 No. 1 Spring 1992

Lake Tomah: A Community Lake

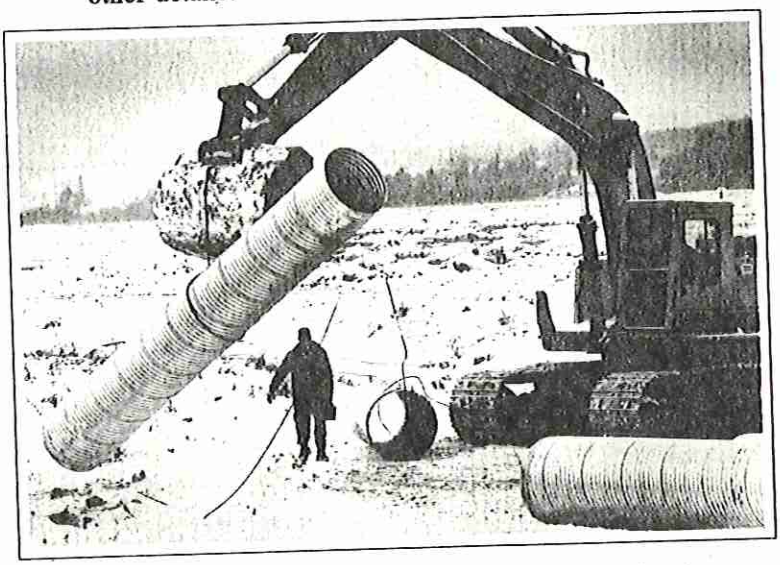
by Bentley Lein and David Sprehn

Lake Tomah was formed in 1937 by the construction of a WPA project dam on the Lemonweir River. The land flooded to create the lake was donated to the City of Tomah by Mr. A.L. Butts. He stipulated that the city control and maintain ownership of a 15-foot-wide strip of land around the entire shoreline, ensuring that Lake Tomah would always be a "community lake."

The lake was shallow from its inception, and over the past half century has accumulated large amounts of nutrients and silt from its 17,000-acre watershed. The resulting silt and aquatic plant growth has caused significant deterioration in lake quality, negatively affected fishing on the lake, and reduced its aesthetic value. To remove aquatic plants, chemical spraying was attempted in the 1960s; spraying was discontinued in 1969 after concluding it was ineffective, cost prohibitive, and environmentally unacceptable.

The community realized it was losing a valuable resource and decided to organize its efforts to save the lake. In 1975, the Lake Tomah Protection and Rehabilitation District was formally created.

The next sixteen years saw countless meetings, numerous studies, and public hearings. Finally, 1991 witnessed the beginning of a $4.8 million lake restoration and dam replacement project. The extended time frame reflects the fact that Lake Tomah is set within a very complex ecosystem; and as a result, the balancing of humans and nature has been no small task. The process certainly had its moments of frustration and setbacks as lake committee members sought to comply with state and federal regulations affecting the lake-proper and adjoining wetlands acreage. In 1989 the committee, with community input, finalized a management plan and project proposal for which a dredging permit was approved. At a district special meeting, about 150 voters gave virtually-unanimous approval for proceeding on a $3.2 million project. (A local political leader later commented that only a proposal for a cat ordinance had previously drawn that many people to city hall!) Planning and negotiations continued, specifying a dredge disposal site and a host of other details.



In August 1990, Mother Nature took a direct hand. A storm discharged 9 inches of rain in a 4-hour period. Major flooding occurred in the Tomah area. The DNR ordered opening the dam's tainter gate, which controls water level, to avoid major

flood damage in Tomah. This resulted in a lake draw-down only a few months before the district was hoping to start its project. Avoiding a natural disaster had added a new dimension to the Lake Tomah project.

Inspection of the dam found serious problems. The DNR ordered that the dam be replaced, repaired to current standards, or removed. The district and the city faced another million dollar-plus problem. They analyzed their options and hand-carried a grant proposal to DNR: the proposal was accepted.

The local share of the cost to update the dam was about $1 million. The lake committee and city, as owners of the dam, went back to the public for advice. A lake district special meeting was scheduled for October, 1991.

Over 500 people registered for the meeting, catching the committee off guard. With the sizable congregation waiting, the district commissioners had to delay the meeting until the conclusion of a girls' championship volleyball match with arch-rival Sparta, so they could move the meeting into the school gymnasium! Following presentations on the proposed project, dam status, and watershed, voters approved lake project bids and authorized dam reconstruction by a 4 to 1 margin.

* * * * *

The final lake restoration plan stresses multiple lake use. To avoid a "bathtub effect," the lake bottom will be varied and contoured to enhance aquatic plantings and maximize fish management. Consideration has been given to wildlife habitat. Site preparation for disposal and haul roads for removal of an estimated 1.2 million cubic yards of sediment are being developed.

Modifications to the dam include a new tainter gate on the existing dam and a new structure with roller gates, an emergency spillway, and "high tech" alarm and deicing systems. The major plan elements are expected to be completed by the winter of 1992-93, with refill beginning with the 1993 spring runoff.

Financing for the project comes from cash reserves, DNR dam grants, and promissory notes. The district has levied a tax for a number of years in anticipation of major projects. Lake committee members and conservation group volunteers continue to explore local and external resources to meet some special needs such as fishing and wildlife improvement projects.

When asked about his advice to others dealing with complex lake management issues, Dan Frantz, chair of the lake committee, offered these points: Commitment and open-mindedness must go hand-in-hand to create the cooperative spirit needed to accomplish community objectives. While moments of confrontation and misunderstandings did surface, they gave way to compromise and consensus both within the community and as the committee dealt with regulatory agencies.

Frantz also says, "Neat, simple packages seldom solve complex problems. But time, persistence, and commitment of leaders will provide solutions with community support."

Bentley Lein is Monroe County UW-Extension Resource Agent, and David Sprehn is UWEX Assistant State Program Leader for Community, Natural Resources, and Economic Development.

Last Call Conventioneers!

Don't forget to register for the Wisconsin Lakes Convention at the Holiday Inn in Stevens Point on March 13-14.

Send registration fee of $30 per person (extra banquet tickets $15 each) payable to UW-Extension to:

Pat Blondheim, UWEX, College of Natural Resources, University of Wisconsin, Stevens Point WI 54481 (715/346-2116).

Name_____

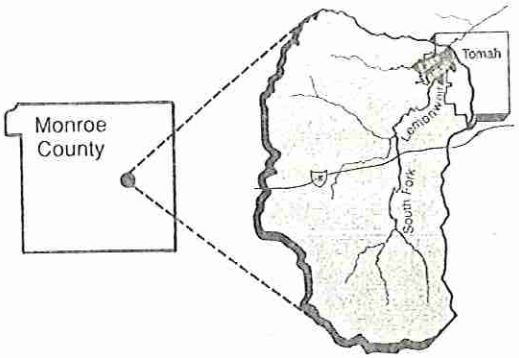
Address_____

_____

Lake_____ County_____

LAKE TOMAH
WATERSHED NEWSLETTER

WINTER 1992 NO. 3



A New Start for Lake Tomah

by Dan Frantz, Lake Committee Chair

Removal of an estimated 1.7 million cubic yards of soil (more than 135,000 truckloads) from the bottom of Lake Tomah has started and will continue throughout the winter. If you happen to be near Lake Tomah, drive down to Winnebago Park where you can see this massive operation in action -- the first stage in rehabilitating Lake Tomah.

One step forward and two steps back... That was the feeling that prevailed during the study and planning phases of this long-awaited project. But now the trucks are rolling and the restoration of Lake Tomah is underway.

A separate project, brought about by the August 1990 flood, has also started. The Lake Tomah Dam will be replaced with a larger capacity dam. This process began with an application for a dam replacement grant to the Department of Natural Resources (DNR). The grant application met DNR eligibility requirements, and $200,000 of state grant money has been reserved for the Lake Tomah Dam. Upon securing the grant, a plan for the dam's replacement was drawn up by the Chippewa Falls engineering firm of Short, Elliott, Hendrickson. This plan is now awaiting approval by the DNR. Bid opening for the dam construction project is scheduled for March 1992. Work on the new dam is scheduled to be completed in early 1993, so Lake Tomah can be filled during the 1993 spring runoff.

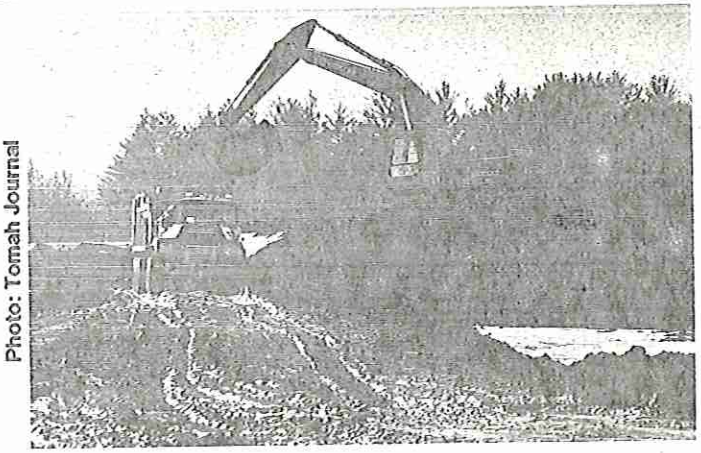


Photo: Tomah Journal

A massive dredging operation is part of a major restoration effort for Lake Tomah.

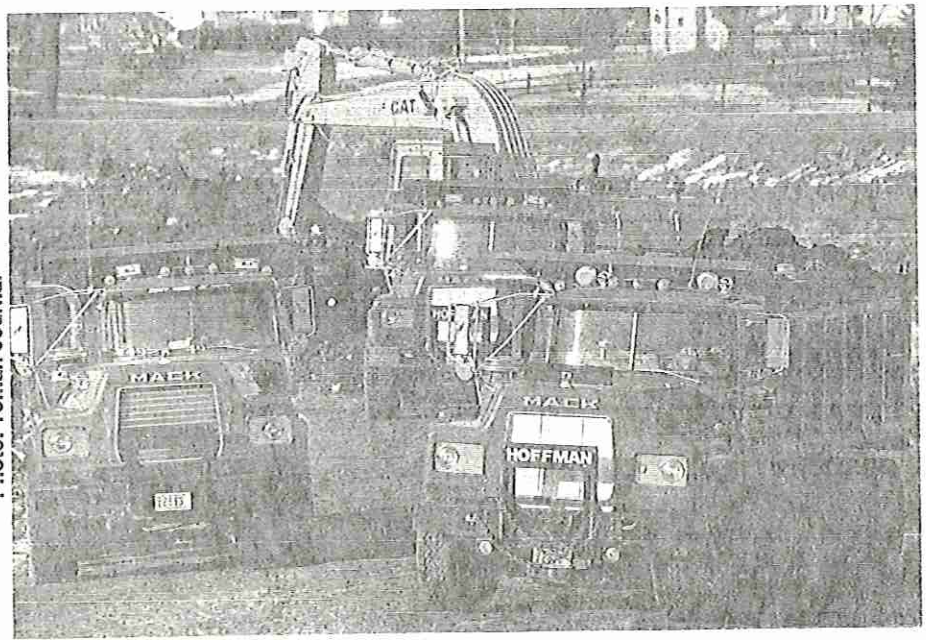


Photo: Tomah Journal

An independent fundraising committee is coordinating an areawide effort to help with the cost of these projects. The total cost of the combined projects is $4.8 million. Tomah taxpayers have been more than generous with past and current support of their lake. Everyone is invited to participate in the fund raising efforts. If you are interested in volunteering, stop by the Greater Tomah Area Chamber of Commerce, 101 Superior Avenue, Tomah, or call 372-2166. Your help will be appreciated.

Sediment removal, stream realignment, and sediment trapping is being done by Hoffman Construction of Black River Falls. More than 120 truckloads of soil per hour are being removed.

3-WC-88-3018
3-WC-89-3783FC

ENVIRONMENTAL ANALYSIS AND DECISION ON THE NEED FOR AN ENVIRONMENTAL IMPACT STATEMENT (EIS)
Form 1600-1 Rev. 3-87

Department of Natural Resources

District of Bureau: WD

Type List Designation
Type II Action

Contact Person:
David M. Pericak

Title:
Water Management Specialist

Address:
Department of Natural Resources
3550 Mormon Coulee Road
La Crosse, Wisconsin 54601

Telephone Number:
(608)785-9010

NOTE TO REVIEWERS: Comments should address completeness, accuracy or the EIS decision. For your comments to be considered, they must be received by the contact person before

(time) (date)

Applicant: Lake Tomah Protection and Rehabilitation District

Address: 819 Superior Avenue
Tomah, Wisconsin 54660

Title of Proposal: Dredging/Rehabilitation of Lake Tomah

Location: **County** Monroe **City/Town/Village** Tomah

Township 17 **North, Range** 1 **East, West**

Section(s) 5

PROJECT SUMMARY

1. **General Description (brief overview)**

The City of Tomah Lake District has requested approval from the Department of Natural Resources to mechanically dredge sediment material from the bed of Lake Tomah, place riprap along the shoreline, and install fish habitat improvement structures in the lake (Attachment 1).

Prior to beginning the dredging portion of the project, Lake Tomah will be drawn down. This is scheduled to begin the fall of 1990. The drawdown would occur by manipulating the gates at the dam to release approximately 6 inches of water per day for 22 days. The lake will remain drawn down throughout the dredging portion of the project which is scheduled to begin in the spring of 1991 and be completed in the fall of 1992 and then refilled. The period between the fall, 1990, drawdown and the following spring of 1991 will allow the bottom sediments to de-water and consolidate so that earth-moving equipment can operate on the lake bed.

A maximum of 1,200,000 cubic yards is proposed to be removed by backhoe and dump trucks. The dredging of Lake Tomah will conform to the design bathymetry shown in Figure 2. This configuration would require the removal of from 1 to 7 feet of

sediment over much of the bottom area. Most of the area from the dam to the central part of the lake would be deepened a foot or two, to nine feet, while a substantial area in the central part of the lake would be deepened to 12 feet from the current 5-foot depth. These depths were chosen to provide substantial weed-free areas for open-water recreation. The southwestern portion of the lake near the Lemonweir River inlet would be left somewhat shallower than the rest of the lake to allow beneficial plant growth and would be configured to provide habitat for fish and wildlife uses. Additional areas, such as the Lemonweir inlet, would be dredged to 10-15 foot depths to provide a basin to trap future inputs of sediment from reaching the lake-proper.

There are three sites identified for disposal of the material excavated from the lake (Attachment 1). Site A is 91-98 acres and located 1.0 mile southwest of Lake Tomah. This site is currently cropland and partially wetland capable of storing 1,218,000 cubic yards. Site B is 36 acres and is located 1.4 miles south of Lake Tomah. This site is currently a pastured emergent wetland and is capable of storing 203,000 cubic yards. Site C is 18 acres and is located 1/2 mile southwest of Lake Tomah. This site is currently grassland, emergent wetland, and ponds, and is capable of storing 367,000 cubic yards. Attachment 3 summarizes the characteristics of the three disposal sites.

Dikes will be constructed at each disposal site to contain the dredge spoils. The sediment would be somewhat wet when placed in the sites, but would de-water through evaporation and seepage to the groundwater.

Several areas of the Lake Tomah shoreline are eroding and in need of stabilization. The city and lake homeowners will be developing an agreement to implement a comprehensive shoreline stabilization project during the dredging project. This will likely consist of placement of rock riprap along the shoreline prior to refilling the lake.

The fish habitat within the lake, after completion of the dredging, would be enhanced by constructing refuge and spawning sites. These improvements will consist of log cribs and boulder groupings placed in several locations in the lake to provide rearing cover for small fish and concentration areas for large catchable fish. Shallow (3 feet deep) rock spawning reefs will also be installed. The construction and placement of the fish habitat improvements will be done by the Lake District with the locations determined with assistance from the Department Fisheries Management staff.

2. Purpose and Need (include history and background as appropriate)

Lake Tomah has a history of manipulation, including chemical weed control, dredging and drawdowns. Limited near-shore areas were dredged in the mid-1950s, 1960s and 1970s. The lake continues to undergo a gradual reduction in water depth due to sedimentation, organic matter accumulation and shoreline erosion. The lake is currently losing depth at an average rate of 1/2 inch per year with a corresponding volume decrease of 8.4 acre feet per year.

Because of the public concern for the degrading condition of certain lake uses, the Lake Tomah Protection and Rehabilitation District was formed in 1975 under Chapter 33, Wisconsin Statutes. Its boundaries encompasses the city limits of Tomah, which has a population of approximately 7,200. The Lake District has the lead role in the management of Lake Tomah and is directed by the city council.

In response to a request for technical assistance, the Department of Natural Resources' Office of Inland Lake Renewal designed a one-year data collection program for the Lake District[1]. The study included measurement of: 1) sediment and nutrient loading from watershed, 2) depth of soft sediments within the lake, 3) in-lake water chemistry, 4) algal densities, and 5) macrophyte abundance and distribution. The information was intended to provide both an insight into existing conditions in the lake and watershed, and a basis for establishing a management plan to maintain, protect, or improve those conditions. This study was followed by a report by the Office of Inland Lake Renewal, Wisconsin Department of Natural Resources in 1979 on Management Alternatives[2]. In 1983, the University graduate program provided a management report by Leonard Massie and George Gibson along with three graduate students[3]. Then, Foth and Van Dyke and Associates, Inc. of Green Bay, Wisconsin, provided the Lake District with a preliminary engineering design for dredging and sedimentation control in 1985 and 1986[4]. In 1989, the Wisconsin Department of Natural Resources in cooperation with the Lake District prepared a Protection and Management Plan for Lake Tomah[5].

These studies have estimated the lake's infilling rate to be between 5,618-13,600 cubic yards per year (Department of Natural Resources, 1979, Foth and Van Dyke, 1976). Emergent weed growth and floating macrophytes currently cover 85% of the lake. This continuing loss of depth has promoted increased plant growth in the lake, reduced the recreational opportunities and fish habitat. The Lake District has indicated that swimming is almost non-existent, boating and/or waterskiing has been reduced by more than 1/2 in the past years, and fishing activity is down.

The purpose of the lake deepening, shoreline protection, and fishery enhancement project is to restore Lake Tomah to its pre-impoundment depth. This would, in turn, reduce aquatic plant growth, improve dissolved oxygen conditions in winter, improve fishery habitat conditions and enhance public recreational use of the lake.

3. **Authorities and Approvals (list local, state and federal permits or approvals required)**

Federal Section 404 Clean Water Act
Federal Section 10 of the Rivers and Harbor Act of 1899

Section 1.11, Wisconsin Statutes
Section 23.11, Wisconsin Statutes
Section 30.12(3)(a)(2), Wisconsin Statutes
Section 30.12(3)(a)(3), Wisconsin Statutes
Section 30.20, Wisconsin Statutes
Section 144.025, Wisconsin Statutes

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[1] Refer to "Literature Cited" section located between Items 10 and 11 for this and all succeeding footnote numbers.

Wisconsin Administrative Code NR 1.95
Wisconsin Administrative Code NR 140
Wisconsin Administrative Code NR 150
Wisconsin Administrative Code NR 180
Wisconsin Administrative Code NR 345
Wisconsin Administrative Code NR 347

4. **Estimated Cost and Funding Source**

The restoration plan is currently estimated to cost $3.2 million. This figure is based primarily on the cost of the dredging component of the plan and does not include costs for the following items:

* the portion of the fisheries restoration costs to be borne by the Department of Natural Resources or funded through the Dingell-Johnson program;

* costs for dam repairs that may be required as a result of the planned inspection;

* additional costs for disposal of dredged lake sediments, should more distant upland sites be required by the Department of Natural Resources or the Corps of Engineers;

* costs of upland erosion controls, including landowner and cost-shared contributions from federal, state, and possibly city or Lake District sources;

* costs for shoreline improvements and stabilization undertaken in tandem with the restoration project;

* costs for improving or protecting access, if necessary;

* aquascaping costs; and

* financing costs.

Much of the money for the restoration project is likely to come from the proceeds of assessments levied by the Lake District against its residents. Additional cash funding will contribute relatively small amounts for specific project components. Potential contributions include $10,000 from Fish America for fishery restoration and a grant from Ducks Unlimited for wildlife habitat enhancement. Non-cash contributions will include technical assistance and the cost of the fish rehabilitation and most of the re-stocking from the Department of Natural Resources, the costs of the no-till agricultural demonstration from the DATCP, cost-sharing for agricultural best management practices from the ACP and watershed landowners, and possible cost-sharing for any access improvements from the Recreational Boating Facilities Program.

PROPOSED PHYSICAL CHANGES (More fully describe the proposal)

5. Manipulation of Terrestrial Resources (include relevant quantities - sq. ft., cu. yds., etc.)

DISPOSAL SITES - SITE A

The majority of the sediment will be placed at Spoil Disposal Site A on property owned by Merle Hill 1.0 mile southwest of Lake Tomah, west of the Lemonweir River. This site is 91-98 acres and is capable of storing 1,218,000 cubic yards of sediment. The spoils would be placed at a maximum depth of 12 feet at the center of the site and an average depth of 7-8 feet over the remaining portions of the site. A dike 10 feet in height with 4 horizontal to 1 vertical exterior sideslopes would be constructed around the perimeter of the site to contain the dredge spoils. Existing topsoil from the disposal site would be shaped to construct the dike.

Site A is currently used as cropland. There is little, if any, natural vegetation. This site has been designed to avoid the majority of adjacent wetlands. Once the spoils are placed, the entire disposal area will be landscaped, seeded and reclaimed for agricultural use. The Lake District has recently requested to also include a 7-acre emergent wetland (E1K) as a potential disposal site adjacent to Site A. This total site would then be 98 acres and be capable of storing in excess of 1,218,000 cubic yards.

SITE B

Site B has recently been acquired by the City of Tomah and is 1.4 miles south of Lake Tomah across from the fairgrounds. This site is 36 acres and is capable of storing 203,000 cubic yards of sediment. The spoils would be placed at a maximum depth of 8 feet and an average depth of 3.5 feet over the entire site. A 10-foot-high dike with 4 horizontal to 1 vertical exterior sideslopes would be constructed around a 4-acre area with the WTMB AM radio tower located in the middle of the site and, for a short distance, at the south end of the site. Existing barriers, such as CTH "C", to the west; STH 16, to the east; and high ground, to the south; would contain the majority of the spoils.

Site B is currently used as a pasture and 19 acres is a wetland identified as an emergent wet meadow (E1Kg) on the Wisconsin Wetland Inventory Maps. There are no surface waters within this wetland. Its primary water sources are stormwater run-off, high groundwater and direct precipitation. After this site is filled, it is proposed to be used to expand the fairgrounds and re-route CTH "C." Until such time that it is developed, the spoils will be landscaped and seeded with grass.

SITE C

Site C is privately-owned by Mr. Nugent and Mr. Farmer and is located 1/2 mile west of Lake Tomah. This site is 18 acres and is capable of storing 367,000 cubic yards of sediment. The spoils would be placed a maximum 20 feet thick at the center of the site tapering to an average depth of 12 feet over the remaining portions of the site. A dike 14 feet in height is proposed to surround this disposal site on the north, east and west sides to connect with existing high ground on the south side of the side.

Approximately 9 acres of Site C is wetland and designated as a forested/shrub-type wetland (T3/S3K) on the Wetland Inventory Maps. Approximately 7 acres of Site C is upland consisting of coniferous trees, deciduous trees and grasses. The remaining 2 acres consists of 4 excavated ponds and associated spoil piles that were used as fish rearing ponds in past years.

6. **Manipulation of Aquatic Resources (include relevant quantities - cfs., acre feet, MGD, etc.)**

Water depths in Lake Tomah currently range from 0 to 3 feet in the upper half of the flowage, 4 to 11 feet in the upper half near the dam with some near-shore areas that have been dredged and are 10-18 feet deep (Attachment 4). The average water depth is 3.5 to 4 feet.

The Lake District proposes to hire a contractor to mechanically remove 1.2 million cubic yards of sediment with backhoes and scrapers. The dredging will correspond to the configuration on Attachment 2 resulting in 5-foot or greater water depths over the majority of Lake Tomah.

In addition, three areas will be dredged to function as sediment traps to prevent sediment from reaching the lake proper. One of these sediment traps is located at the southwest end of the lake at the Lemonweir River inlet and is proposed to be 10 feet deep. The second is located at the south end of the lake at the end of Juneau Street and is proposed to be 15 feet deep. The third area is a small bay at the north end of the lake near Lakeside Park. This small bay near the Tomah Lake Lodge would be dredged from its existing 1.5-foot depth to 5-6 feet. The dredged material would be used to elevate the land around the Tomah Lake Lodge which will be undergoing an extensive reconstruction effort.

The shorelines slopes will be excavated and landscaped to a 6 horizontal to 1 vertical slope. The in-lake shallow reefs will be landscaped with adjacent deep water at a 50 horizontal to 1 vertical slope. Approximately 10% of the shoreline will remain undisturbed to protect existing high-use fishery areas.

The Lake District has proposed to enhance the values of two areas that are currently wetland (Attachment 5). The first site is located 1/2 mile south of Lake Tomah and is classified as a formerly cultivated, emergent type (E1Ka). There is a system of drainage ditches throughout this site that drain west towards the Lemonweir River which enters Lake Tomah a short distance downstream. The drainage ditches currently have a negative impact to the functional values of the wetland by lowering the water table and allowing less water-tolerant plants to invade.

The system of drainage ditches would be plugged with adjacent earth material in three locations to restrict lateral movement of water to the Lemonweir River. This restriction in water movement will result in an increase in the water table and possibly standing water over portions of the site. It is difficult to predict the exact area that would be influenced, however, an estimated 47 acres of wetland would likely benefit from this hydrologic change. The 20-acre site that is surrounded by ditches would be directly affected by an increase in water levels. An additional 27 acres of wetland adjacent to this site will also be hydrologically influenced by the plugging of the ditches.

The second potential enhancement area is 1/2 mile southwest of Lake Tomah between 23rd Avenue and Disposal Site A. This site is approximately 7 acres and is classified as an emergent type wetland (E1K). This site drains via an existing ditch to the south towards CTH "C" and then east where it connects to the Lemonweir River. This drainage ditch would also be plugged to restrict the existing drainage pattern and raise the water level within the wetland.

This enhancement area would not be created if this site were approved as a spoil disposal site. The Lake District has recently expressed a desire to include this 7-acre area with the rest of Site A.

7. **Buildings, Treatment Units, Roads and Other Structures (include size of facilities, road miles, etc.)**

Haul Roads - Two temporary haul roads would be constructed with lake dredge spoils to provide transportation routes for trucks moving sediment from the lake to the disposal sites.

One haul road would be constructed near the Lemonweir River inlet and will be used to transport sediment to Disposal Site A. This road will be two lanes and 24 feet wide by 1,000 feet long and occupy 24,000 square feet. The fill will be placed over an emergent wetland (E1Kg, E2H) and open water. The fill will be removed after the lake dredging is completed.

The second temporary haul road would extend from the southeastern corner of the lake at the end of Juneau Street south through a residential area, the fairgrounds and then to Disposal Site B. This road will be one lane, 12 feet wide by 4,000 feet long and occupy 48,000 square feet.

8. **Emissions and Discharges (include relevant characteristics and quantities)**

Some exhaust fumes will be discharged to the atmosphere by the scrapers, backhoes and trucks used to remove sediment from Lake Tomah, build the haul roads and to transport the material to the disposal sites.

Dust may be generated from truck traffic on the haul roads depending on the moisture content of the road surface. An estimated 150,000 two-way truck trips are projected, based on hauling 1.2 million yards with 16-yard capacity trucks.

Some of the sediment may still contain some water which will result in some drainage of water and sediment from the truck during transportation to the disposal sites. The disposal sites are designed with dikes to contain the sediment and water resulting in little or no discharge of material off the site. Any moisture contained in the sediment and precipitation will infiltrate the soil and discharge to the groundwater within the containment areas.

The dredging will occur with Lake Tomah completely drawn down. The Lemonweir River will continue to flow through the project site during construction. There will be some increased levels of turbidity in the Lemonweir River when excavation takes place within the channel area. In addition, the exposed lakebed will be subject to erosion during high run-off events. The applicant has not submitted a plan to

control this construction-related erosion. If the Chapter 30 permit is issued to dredge Lake Tomah, it is expected to include conditions to minimize erosion and downstream turbidity.

Lake Tomah sediments have been analyzed for arsenic, copper, lead, lindane, various forms of nitrogen, calmium, PCBs, mercury, aldrin, dieldrin, chlordane, endrin, methoxchlor, DDT, chromium, and total organic carbon.

The results indicated an elevated level of lead in one of the cores (see Attachment 8 - Sediment Results). Since elevated levels were not found at the other sites, the situation appears to be localized. All the levels were below the level of concern for human health for use as fill in a park (Wisconsin Division of Health).

Lindane was detected in Lake Tomah at levels closer to the acceptable "threshold" limit (see letter from Paul LaLiberte - Attachment 8). The results are questionable so we have requested that an additional analysis of composite core #4 be done to test for lindane.

9. Other Changes

No other changes to the project are expected.

10. Identify the maps, plans, and other descriptive material attached

Attachment 1 - USGS topographic map, Disposal Sites, Haul Roads and City-Owned Land

Attachment 2 - Proposed Lake Tomah Water Depths

Attachment 3 - Disposal Site Quantities

Attachment 4 - Existing Lake Survey Map

Attachment 5 - Wisconsin Wetlands Inventory Map

Attachment 6 - 1931 Soil Survey - Monroe County

Attachment 7 - Lake Tomah Watershed

Attachment 8 - Sediment Sampling Results and Analysis

Attachment 9 - Alternative Proposed Lake Tomah Water Depths

AFFECTED ENVIRONMENT (Describe existing features that may be affected by the proposal)
Information Based On (check all that apply):

/X/ Literature/correspondence (specify major sources)

[1] Environmental Resource Assessments, 1977. Final report on the Lake Tomah Study, Tomah, Wisconsin, Part 1.

[2] Wisconsin Department of Natural Resources, 1979. Lake Tomah Monroe County Feas-

ibility Study Results Management Alternatives.

3 Massie, L. and G. Gibson, 1983. Lake Tomah Management Report.

4 Foth and Van Dyke, 1986. Lake Tomah Dredging and Sedimentation Control, Preliminary Engineering Design.

5 Wisconsin Department of Natural Resources, 1989. Lake Tomah Protection and Management Plan, 23 pp.

Wisconsin Department of Natural Resources, 1985. Monroe County Natural Area Inventory.

Wisconsin Department of Natural Resources, 1969. Surface Waters of Monroe County.

Wisconsin Department of Natural Resources, 1989. Wisconsin Wetland Inventory, Monroe County.

U.S. Geological Survey, 1983. Tomah 7.5-minute quadrangle map.

/X/ Personal Contacts (list in item 28)

Field Analysis By: /X/ Author /X/ Other (list in item 28)

Past Experience With Site By: /X/ Author /X/ Other (list in item 28)

11. Physical (topography - soils - water - air)

Lake Tomah is an impoundment of the Lemonweir River within the City of Tomah, Monroe County, Wisconsin. It has a surface area of 225 acres, a maximum depth of 19 feet (attachment 4). The dam was built in 1936-37 by the Works Progress Administration primarily for recreational purposes and, to some degree, flood control and raises the water surface 11 feet above the original streambed elevation.

The lake's drainage basin comprises 17,033 acres (attachment 7, watershed: lake ratio of 75:1), and is primarily agricultural. Lemonweir Creek is the primary feeder stream with some surface water entering via a small stream on the west end of the lake (Creek 5-7) and storm sewers from the City of Tomah.

Lake Tomah lies on the eastern fringes of the Driftless Area within an area of glacio-lacustrine deposits. Soils within the watershed have been derived from weathering of the bedrock, and glacio-lacustrine sedimentation. According to the 1931 soil survey (attachment 6), the lake was created over primarily marshland along a low creek bank. The dominant soil types were Wabash silt loam and Dunning fine sandy loam. Other soils are Plainfield fine sand, Peat (shallow phase) and Lintonia fine sandy loam.

The land use and topography of the watershed, combined with its large size, lead to a substantial supply of sediment to the lake. Lake Tomah's sediment trapping efficiency is estimated to be 80 percent. An estimated 5,618 to 13,600 cubic yards of sediment are estimated to accumulate in Lake Tomah each year (Inland Lake Renewal Study, 1979, Foth and Van Dyke Report, 1976), reducing the capacity of the reservoir

approximately 8.4 acre-feet per year. The volume of water in the reservoir in 1986 was estimated to be 988 acre-feet, suggesting that the current volume is 963 acre-feet.

The water quality of Lake Tomah was studied with results summarized in a Feasibility Study Report (Department of Natural Resources, 1979). The phosphorus loading to the lake was 4,890-5,660 kg/yr. of which stream flow contributed 98-99 percent. Five storm sewers contributed the remaining portion. Based on the high phosphorus levels and concentrations of chlorophyll a, Lake Tomah is categorized as eutrophic.

The average water clarity reading was 1.3 to 3.8 feet resulting in a predicted depth of weed growth of 6.4 feet. As a result, submergent plants grow over most of the lake bottom.

Dissolved oxygen conditions seem to be adequate at most times with the lowest reading recommended during the winter of 1975-1976 (6.1 mg/l), however, occasional partial winterkills have been observed in the past.

12. Biological (dominant aquatic and terrestrial plant and animals species and habitats including threatened/endangered species; wetland amounts, types and hydraulic value)

A. Fishery - Lake Tomah has a long history of management for game species. The primary species are northern pike, largemouth bass, crappie, yellow perch, bluegill and pumpkinseed. Like many relatively shallow, nutrient-rich impoundments in Wisconsin, Lake Tomah's fishery has degraded and is currently dominated by rough fish and stunted panfish. Bottom-feeding fish, like carp and bullheads, add to the water turbidity and increase the availability of nutrients for algae growth. The gradual decrease in lake volume from sediment accumulation and dense submergent plant growth has caused available fish habitat to decline.

The very dense aquatic plant growth provides excellent cover for small forage fish and invertebrate growth, however, this type of habitat dominates the more diffused submergents-type and bottom structure that is necessary for game fish habitat. These plants do provide a spawning medium for many of the game fish that naturally reproduce in Lake Tomah and are necessary in certain amounts to sustain future populations.

B. Wildlife - The south and southwest parts of the lake and the contiguous wetland interspersed with upland provide excellent wildlife habitat. There is a wide variety and interspersion of habitats. This extensive wetland habitat provides important feed, nesting and escape cover for waterfowl, muskrats, marsh and shorebirds and many smaller birds and mammals. Numerous muskrat houses are present.

The shallow 1-3 feet deep littoral zone, located in the southwest (upper) 1/4 of the lake, contains excellent aquatic habitat (see Attachment 4). This area provides prime muskrat, waterfowl and shorebird habitat. Numerous muskrat houses are scattered throughout this zone. Ceratophyllum, Potamogeton and white water lily predominate. Migratory waterfowl, including a recorded 1,200 whistling swans, use this area of the lake as a staging and resting area in spring and fall.

The interspersed uplands within the wetlands consist of a mixture of grasses, forbs, brush and trees. Some of these uplands are 4-10 feet above normal water levels. These areas provide good nesting sites for mallards and blue-winged teal, as well as other ground-nesting birds and mammals. Some important wildlife plant species on these uplands are elderberry, honeysuckle, willow and aspen.

The following species have also been observed by Eric Epstein (Department of Natural Resources) between 1984-1987 to utilize the lake proper or lake margins:

* Red-Necked Grebe - Migrant - Wisconsin Endangered
* Great Egret - Migrant, summer visitor - Wisconsin Threatened
* Osprey - Migrant - Wisconsin Endangered
* Bald Eagle - Migrant, winter visitor - U. S. Threatened, Wisconsin Endangered
* Peregrine Falcon - Migrant - U. S. Endangered, Wisconsin Endangered
* Common Tern - Migrant - Wisconsin Endangered
* Forster's Tern - Migrant, summer visitor - Wisconsin Endangered

Loons - Common (special concern)
Grebes - Pied-Billed, Horned
Cormorants - Double-Crested (special concern)
Herons - Great Blue (special concern), Green-Backed, Black-Crowned Night-Heron (special concern), Little Blue
Swans - Tundra
Geese - Snow, Canada, White-Fronted
Ducks - Wood, Green-Winged Teal, American Black (special concern), Mallard, Northern Pintail, Blue-Winged Teal, Northern Shoveler, Gadwall, American Widgeon, Canvasback, Redhead, Ring-Necked, Greater Scaup, Lesser Scaup, Surf Scoter, White-Winged Scoter, Common Goldeneye (special concern), Bufflehead, Hooded Merganser, Common Merganser (special concern), Red-Breasted Merganser (special concern), Ruddy
Hawks - Red-Tailed, Rough-Legged, American Kestrel
Coots - American
Cranes - Sandhill
Plovers - Black-Bellied, Semipalmated, Killdeer
Sandpipers - Greater Yellowlegs, Lesser Yellowlegs, Solitary, Willet, Spotted, Ruddy Turnstone, Least, Pectoral, Dunlin, Common Snipe
Gulls - Bonaparte's, Ring-Billed, Herring
Terns - Caspian (special concern), Black (special concern)
Owls - Great Horned
Swifts - Chimney
Kingfishers - Belted
Swallows - Purple Martin, Tree, Northern Rough-Winged, Bank, Cliff, Barn
Avocets - American

The wildlife values of Disposal Sites A and B are extremely low due to their intensive agricultural use, including grazing which has eliminated or disturbed much of the native ground cover. There is likely some minor use by furbearers and small mammals. The wildlife use of Disposal Site C is described in the previous discussion for wetlands adjacent to the southwest part of the lake.

C. Vegetation

In-Lake - The macrophytes within Lake Tomah were studied in 1976 to determine the distribution and abundance of species (Environmental Resource Assess., 1977). Aquatic vegetation was found at approximately 80% of the points sampled in Lake Tomah (see species list below). Submergent vegetation was found in all areas of five feet or less in depth, which included the western half to two-thirds of the lake and the shallow areas near the northwest and east shorelines.

SPECIES LIST

Species	% Abundance
Anacharis canadensis	4.2
Ceratophyllum demersum	69.3
Chara sp.	0.4
Eleocharis sp.	---
Lemna minor	1.9
Najas flexilis	9.8
Nymphaea odorata	5.7
Potamogeton crispus	38.3
P. natans	13.3
P. nodosus	8.0
P. Pectinatus	13.3
P. Pusillus	16.3
Sagittaria latifolia	3.0
Scirpus validus	---
Typha latifolia	---

Adjacent Wetlands - The wetlands adjacent to Lake Tomah, as mapped by the Wisconsin Wetlands Inventory, are shown on Attachment 5. A small unnamed stream (Creek 5-7) flows through approximately 150 acres of wetlands before it enters the west end of Lake Tomah.

Lemonweir Creek, which flows into Lake Tomah from the south, has approximately 1,000 acres of wetland bordering it. The predominant cover type of these wetlands is emergent wet meadow vegetated by sedges, bullrushes, cattail, mixed grasses and forbs. In the drier areas, trees and shrubs, such as red-osier dogwood, tag alder, honeysuckle, willow, elderberry, aspen, elm, dominate the sites.

Many of the wetlands along the southwest side of the lake have had drainage ditches constructed through them to improve the land for agricultural purposes. The ditches have lowered the water table sufficiently to remove

surface waters for prolonged periods of time. The invasion of trees and shrubs and attempts to pasture livestock indicate a drier environment. There is no evidence that these areas have been farmed in recent years.

Portions of the Lemonweir River have also been dredged and straightened in an attempt to lower the water table and improve surface drainage and conveyance of flood flows.

Disposal Site A - This site is 91-98 acres. Ninety-one acres are currently used for agricultural purposes, including new row crops, hay and pasture. Seven acres of the site, if used, is an emergent wetland (E1K) dominated by reed canary grass. There is a system of west to east ditches that drain the south one-half of this site to the Lemonweir River. This site was likely wetland prior to the installation of these drainage ditches.

Disposal Site B - This site is approximately 36 acres, of which 19 acres is an emergent-wet meadow (E1Kg). The majority of the site is heavily pastured grasses and sedges. A 4-acre area in the middle of the site is leased by WTMB AM radio for transmission of radio signals. This area consists of primarily reed canary grass. The intense grazing of this area has limited the value of this area for wildlife. If pasturing was eliminated, this wetland would likely evolve into a medium value sedge meadow mixed with reed canary grass.

Disposal Site C - This site is approximately 18 acres, of which 9 acres is a shrub/shallow marsh-type wetland (T3/S3K, E2H). Species present on the wetland portion of the site were cattail, sedge, bullrush, reed canary grass, tag alder, red-osier dogwood, aspen, elm and birch.

There are also four excavated ponds on the upland portion of the site that were previously used for raising fish. The vegetation on the upland is dominated by mixed grasses and a stand of coniferous trees.

Haul Road A - The first 200 feet of the 24-foot-wide by 1,000-foot-long haul road will cross on open water-shallow water marsh-type habitat (WOHx, E2H). The remaining 800 feet of the road corridor is a shrub-emergent wet meadow-type wetland (S3/E1K, E1Kg).

Haul Road B - The north 1,400 feet of the 12-foot-wide by 4,000-foot-long haul road corridor is on the east edge of a forested-shrub-emergent-type wetland (T3/S3K, S3/E1K). The actual road corridor would be constructed on upland grassland. The remaining portion of the roadway corridor crosses the fairgrounds and CTH "C" and then enters Disposal Site B. The wildlife values for the disposal sites and haul roads have been described previously in the wildlife narrative.

13. Cultural

a. Land use (dominant features and uses including zoning if applicable)

The City of Tomah owns a 15-foot-wide strip of land around the perimeter of Lake Tomah. This land begins at the 960.46-foot (USGS datum) elevation and extends landward for 15 feet. In addition, the city owns and maintains two

public boat launches, three public accesses and two parks with substantial lake frontage (attachment 1).

The north and east shorelines of Lake Tomah, excluding the dam and public parks, have been developed for residential purposes. The other significant landowners along this part of Lake Tomah are the Tomah Lake Lodge, which has several cabins, and Tomah Memorial Hospital. The remaining south and southwest shorelines are undeveloped and classified as wetlands.

The City of Tomah and Monroe County have approved Shoreland-Wetland and Floodplain Ordinances. These ordinances regulate certain activities and development adjacent to Lake Tomah, Lemonweir River and Creek 5-7. There are certain permits required and standards to follow for the disposal of spoil within the shoreland-wetland and floodplain zones.

b. Social/Economic (include ethnic and cultural groups)

Lake Tomah and the adjacent wetlands are used by the public for a variety of recreational activities, including boating, sailing, waterskiing, swimming, fishing, canoeing, wildlife observation and aesthetic enjoyment. Public access is widely available as the result of the city's ownership of the 15-foot shoreline strip and public parks.

Certain boating uses of the lake, such as waterskiing and sailing, have gradually decreased as the percentage of weed-free areas in the lake has decreased. Boating is restricted by city ordinance during the spring migration of waterfowl to minimize disturbance of these species.

The Lake District sponsored a chemical weed control program up until 1985. At that time the city purchased a weed-harvester and initiated an aquatic plant harvesting program. The city began harvesting in mid- to late May and continues to harvest until mid-August.

c. Archaeological/Historical

There are no archaeological/historical areas known to be present.

14. Other Special Resources (e.g. State Natural Areas, prime agricultural lands)

The review of the 1985 Natural Areas Inventory for Monroe County does not indicate the existence of any State Natural Areas near the project site.

The endangered and threatened bird species known to use the lake are listed in the Item 12B - Wildlife. None of these species are known summer residents.

ENVIRONMENTAL CONSEQUENCES (Probable adverse and beneficial impacts including primary, indirect and secondary impacts)

15. Physical (include visual if applicable)

A. In-Lake

The removal of 1.2 million yards of sediment from Lake Tomah will result in substantial area (approximately 75-80%) that is 6-12 feet deep with some isolated previously-dredged deeper areas 10-19 feet deep. The current volume of the lake is 963 acre-feet and would be increased to 1,706 acre-feet. The remaining area of the southwest end of the lake will be 3-7 feet deep.

B. Impacts to Soils

There would be impacts to soils, primarily from landspreading dredge spoils, at three sites and the construction of two haul roads. There would be some temporary soil disturbance in the wetland enhancement areas to plug drainage ditches at various locations.

Spoil Disposal Sites A and C will be reclaimed for cropland after the sediments are placed and landscaped. The elevating of the fields will improve drainage of water from the sites, improving the agricultural value and also decreasing the need for fertilization.

The sediments in Lake Tomah were sampled in 1984 by Foth and Van Dyke Engineering. Sampling was done to identify the physical characteristics and measure levels of pesticides, metals and nutrients. Elevated levels of lead and arsenic were found in two of the cores so additional testing was done. These results indicated that the levels were still below toxicity levels and below levels allowed for landspreading. None of the sediments could be classified as hazardous.

C. Impacts to Groundwater

The Lake Tomah water level will be lowered 11 feet throughout the duration of the project. The length of time between drawdown and refill is projected to be 24 months. Groundwater in-flow to the lake would increase as the lake level is lowered because the hydraulic gradient to the lake would increase. The increased discharge of groundwater to the lake would lower the groundwater elevation in the area adjacent to the lake. Groundwater levels would rebound to former levels after the lake is restored to its permanent level.

The groundwater levels within the two wetland enhancement areas will increase approximately 1-2 feet as the result of the ditch plugs that will be constructed. Groundwater impacts extending off-site are not anticipated.

At the disposal site, there is some potential for release of contaminants to groundwater due to the decomposition of the organic detritus and muck. This may cause alterations in groundwater concentrations of Chemical Oxygen Demand, Biological Oxygen Demand, Total Disolved Solids, nitrates, hardness, alkalinity, conductivity, and possibly, metals that were bound to the organics. The

potential for groundwater alterations is low because most of the paramaters measured are comparable to levels typically found in agricultural soils.

D. Impacts to Stream Flows

The lake drawdown would temporarily increase flows in the Lemonweir River for a period of approximately 22 days. After this period the stream flows would return to normal throughout the duration of the dredging.

The normal flow of the Lemonweir River at the dam is 15 cfs. The current volume of Lake Tomah is estimated at 963 acre-feet. To completely drain Lake Tomah over a 22-day period, 44 acre-feet of water (22 cfs.) must be removed each day. This amount must be added to the normal flow resulting in an estimated downstream flow of 37 cfs. (22 + 15). This increase in flow is not anticipated to cause significant adverse impacts over the 22-day period. These elevated flow levels are attained frequently after rainfall events.

The dredging of Lake Tomah will increase the volume approximately 744 acre-feet (1.2 million yards) to 1,706 acre-feet. At a normal flow of 15 cfs. and maintaining 7.5 cfs. minimum for downstream flow, the lake will take 114 days to refill to the normal level. This rate will vary depending on high precipitation events which will decrease this time and drought conditions which would lengthen this period.

16. Biological (include impacts to threatened/endangered species)

A. Fishery - Eradication

In order to establish a balanced sport fishery, it will be necessary to eliminate the present rough fish population in Lake Tomah. The drawdown alone may accomplish this if sufficient water can be removed from the lake. However, a substantial proportion of the carp and bullhead population may take refuge upstream of the lake in the Lemonweir system, or in pockets of water that remain on the lakebed after drawdown.

The drawdown and possible eradication will be preceded by measures to salvage the present game fish population of the lake. During the drawdown, volunteers from the District or local sporting clubs would seine and separate game fish under the supervision of the Department of Natural Resources Fisheries Manager. These fish would be stocked in Lake Neshonoc or other suitable locations.

The Department of Natural Resources will investigate the possibility of liberalizing bag limits and other fishing regulations on Lake Tomah during the summer preceding the start of drawdown to allow anglers to remove and use desirable fish. The regulations can be changed by an emergency order or by an administrative rule change of the Natural Resources Board. Both methods require considerable lead time to implement, and can only be used if the Department of Natural Resources has assurance that the drawdown and eradication will immediately follow the period of liberalized fishing.

Department of Natural Resources Fisheries Management staff will conduct a survey of the remaining fish population in the system after the drawdown is complete to assess the survival rate of the carp and bullheads. Based on this assessment, Department of Natural Resources staff may choose to chemically eradicate the remaining rough fish population in the Lake Tomah system.

Rotenone, a root extract of the Derris plant found in South America, would be used to kill the fish remaining in the remnants of the lake and in the upstream watershed after drawdown. Rotenone acts by constricting the gill capillaries of fish, causing suffocation. It is provided as a liquid emulsion and applied in concentrations between 0.5 and 5.0 parts per million of the emulsified formulation. At these concentrations it is non-toxic to other vertebrates, including humans.

Department of Natural Resources Fisheries staff would conduct the rotenone treatment over a two-day period. The treatment would include all identified refuge sites in the Lemonweir system, including tributaries and wet areas. Outflow from the Tomah dam would be detoxified using potassium permanganate to protect downstream fisheries.

After the drawdown and possible rotenone application, the fish carcasses (totalling as much as 50,000 pounds) will require proper disposal. Generally, they must be landfilled in accordance with local regulations.

Dredging Impacts

The dredging plan for the southwest 1/3 of Lake Tomah is designed to benefit the fishery rather than the pleasure boating. The 3-7 foot water depths will provide good spawning, nursery and feeding areas. The plant growth in this area will vary depending on depth and may be encouraged by "aquascaping" or selective planting of native beneficial aquatic plants. The deeper portions of the lake will provide necessary wintering areas.

Habitat Reconstruction

Establishment of a stable sport fishery in Lake Tomah will require reconstruction and enhancement of the existing habitat. This should be carried out after the dredging of the lake and any alterations to the bottom bathymetry are complete.

Habitat improvements in Lake Tomah will take the form of constructed refuge and spawning sites. Log cribs and boulder groupings will be placed in several locations in the lake to provide rearing cover for small fish and concentration areas for large catchable fish. Shallow (three-feet deep) spawning reefs will also be provided in areas protected from disturbance by motorboat activity. Construction and placement of these improvements will be the responsibility of the Lake District. The District is likely to rely on volunteers to build and install the log cribs, while the boulder groupings and

spawning beds will be installed by a contractor. The dredging contractor will be required to leave shallow areas for spawning reefs in the appropriate locations. The locations of these fish habitat improvements will be identified by the Department of Natural Resources Fisheries Manager after development of the final dredging plans.

Fish Restocking

Once the lake is refilled, the Department of Natural Resources will begin a three-year restocking program to establish a balanced, self-perpetuating game fishery. If successful, this fishery will control panfish populations to prevent stunting, and will control carp and bullhead populations to reduce the adverse water quality effects of these rough fish.

The key predators in the fish assemblage will be northern pike and flathead catfish. These fish will maintain pressure on panfish populations and help prevent the growth of carp and bullhead numbers. Other fish stocked will include largemouth bass, bluegill and black crappie.

All of the stocked fish, except the flathead catfish, will be provided by the Department of Natural Resources. Adult fish will be obtained through field transfers from the Mississippi River and area lakes, while pike and bass fingerlings will be taken from the Department of Natural Resources rearing ponds in Jackson County. The flathead catfish are currently available on the private market for approximately $0.65 per pound.

B. Wildlife

The extensive aquatic growth in Lake Tomah currently provides important feeding areas for resident wildlife populations and migrating waterfowl. This habitat would be unavailable during the two-year length of the dredging project and for at least one year following lake refilling. The proposed dredging would substantially decrease the shallow water that supports this aquatic growth, reducing available food. Approximately 80% of the shallow (<3 feet) water foraging area that currently exists for a variety of birds, especially waders, will be eliminated by conversion to deep water. Some areas less than 6 feet deep will revegetate, however, the critical water depth will not be present. The numbers of various resident and migratory waterfowl and other bird species (including endangered and threatened) using Lake Tomah is expected to drastically decrease during the project and for several years afterwards. These species will be forced to relocate to other suitable areas that are present to some degree north of Tomah.

After the project is completed, the percentage of shallow water habitat will gradually increase as sediment continues to be deposited in Lake Tomah. The rate of shallow water habitat restoration is dependent on the rate of sediment deposition. At the present rate of sedimentation, it will take 89 years for the shallow water areas to be restored.

The winter drawdown will substantially reduce muskrat and other furbearer numbers. Muskrats are susceptible to freezing during periods of winter drawdown. They also suffer mortality during emigration to sub-marginal areas

and from increased predation. Many of the muskrats will likely move up the tributary streams and ditches and find suitable habitat. When the lake is refilled, these species will recolonize the littoral habitat around the lake.

As the lake is drawn down and then dredged, the population of the zooplankton, phytoplankton, benthic invertebrates and aquatic insects would be substantially removed. These species would quickly re-populate from undredged areas after the lake is refilled.

The wildlife impacts resulting from Disposal Sites A and B and Haul Road B are expected to be minimal since these areas are used for agricultural purposes currently and have minimal value. There will be some secondary impacts to wetlands adjacent to Disposal Site A and Haul Road B. These impacts include increased activity and noise from trucks and short-term sedimentation impacts until the vegetation on the disturbed soil is established to control erosion.

The use of Disposal Site C would eliminate 9 acres of high-quality wetland and wildlife habitat. This area, in close proximity to the lake proper, provides an excellent buffer from potential development. The filling of this site would further degrade much of the adjacent lake habitat.

The current alignment of Haul Road A crosses 1,000 feet of high-quality wildlife habitat. The temporary use of this corridor will displace a variety of wildlife species from direct fill and secondary noise and truck activity impacts. The roadfill would be removed upon completion of the project, resulting in a disturbed corridor of 24,000 square feet. This corridor would naturally revegetate with surrounding pioneer wetland species and some opportunistic "weed"-type species that invade disturbed areas.

C. Vegetation

In-Lake - The majority of the existing aquatic plant community within Lake Tomah will be temporarily eliminated due to the dredging project. Some near shore areas will remain undisturbed as well as adjacent wetlands. The shallow water habitats (less than 6-foot depths) would re-colonize with aquatic plants in several ways. The encroachment of emergent species from adjacent wetlands and vegetation growth from plant fragments and seeds that wash into the area would be the primary method. The Lake District may also plant native species (aquascaping) to re-establish beneficial fish and wildlife habitat.

Adjacent Wetlands - The drawdown of Lake Tomah for two years will have a temporary impact to water levels that are necessary to support the wetland vegetation. This hydrologic change will put severe stress to the more water-tolerant species, such as sedges, rushes and cattails. Less water-tolerant species, including woody vegetation (shrubs and trees) may invade areas with exposed soil. Once the lake is refilled, these less water-tolerant species would not survive and the native vegetation would once again proliferate.

The other impacts to adjacent wetland are described later in this section.

Disposal Site A - There will be some minor sedimentation impacts around the perimeter of Site A until the recently-constructed containment dikes are

revegetated. This site had been designed to avoid the wetlands to the east and a 7-acre wetland to the west of the site adjacent to 23rd Avenue. The Lake District had proposed this 7-acre site as a wetland enhancement area but has since indicated a desire to include this as part of Disposal Site A. If used, this emergent- (E1K) type wetland would be eliminated by deposition of spoil material.

Disposal Site B - Approximately 19 acres of low-value wetland pasture and 17 acres of upland pasture would be eliminated by the placement of dredge spoil and conversion of the site to fairgrounds.

Disposal Site C - Approximately 9 of the 18-acre site is a high-quality shrub, shallow, marsh-type wetland. The use of this area as a disposal site would eliminate this wetland and the high-quality benefits it provides.

Haul Road A - Dredge material would be temporarily placed over the 1,000-foot-long by 24-foot-wide road corridor. This site is high-quality wetland that would be covered with dredge spoil. This material would be removed upon completion of the project. The corridor would be seeded, however, the disturbance would likely allow non-native undesirable species to invade.

Haul Road B - The road corridor would impact primarily upland grassland and shrubs adjacent to a recently-developed residential area. This impact is not expected to be significant, since this area has already been disturbed by grading. The construction disturbance will result in removal of a certain amount of wetland/upland interface and the value of this area to buffer the wetland from impacts.

Wetland Enhancement Area - The projected increase in water levels over a 47-acre, formerly-cultivated wetland will increase the functional values of this area in several ways. More water-tolerant native wetland species will replace the alien species that have established themselves since the ditches were installed. These native plant species will provide additional aquatic habitat for a variety of wildlife species. The ditch plugs will prevent quick drainage from the site after floodwaters recede. This will allow for increased water storage and allow plants the opportunity to assimilate nutrients in floodwaters.

17. Cultural

a. Land Use (include indirect and secondary impacts)

The lake rehabilitation project would result in improved water quality and improved fishery. This projected, improved lake water quality and establishment of a healthy sport fishery in Lake Tomah should significantly improve many types of recreation. Improved recreation use and increased desirability of Lake Tomah is anticipated to increase the value of lake frontage property. This could stimulate faster development of any remaining undeveloped lots.

Spoil Disposal Site A is currently in agricultural production. This land could not be farmed for 2-3 years during the project but would return to this use after the project is completed and the spoils have dried and stabilized.

Spoil Disposal Site B would be converted from a pasture that is partially wetland and partially upland to an upland site to be used for expansion of the fairgrounds and re-routing of CTH "C." This would likely include surfaced parking areas and buildings.

b. Social/Economic (include ethnic and cultural groups)

Boating and Recreational Impacts

Boating, fishing and other recreational lake uses will be eliminated during the two-year length of the project. For about two additional years after the lake is refilled, fishing will likely be restricted to allow the sport fishery to develop. After the fishery has developed, it is anticipated that fishing use would substantially increase over pre-dredging levels.

Boating and other recreational lake use is expected to increase immediately after the lake is refilled. The improved water quality and greater weed-free area will attract more motorboaters, sailors, waterskiers and swimmers. The majority of use is expected from existing landowners and local residents.

The increase in recreational boaters will likely cause some surface water conflicts with fishermen. The increased weed-free water surface area will allow the recreational boater to navigate closer to the fishermen. The western part of the lake has been designed to provide a fishery area for fishing opportunity, however, the 7-foot water depths will be sufficient for general boating activity and may cause conflicts.

Aesthetic Impacts

The lake rehabilitation project will cause some short-term and long-term aesthetic impacts. The drawdown will expose the lake bottom composed of soft sediment, detritus and trash. There will be some temporary odor problems until the sediments have de-watered. There may also be odors associated with decaying fish, if rotenone treatments are used and fish are left to decay. Most residents will find that these impacts from the drawdown are unpleasant.

Although the improved water quality is difficult to predict as the result of dredging, the percentage of weed-free area will significantly increase. The removal of carp will improve water clarity. These improvements are perceived by the majority of the general public to be improvements to the aesthetic qualities of the water.

Traffic and Noise Impacts

An estimated 150,000 two-way truck trips (16-yard trucks) would be needed to transport 1.2 million yards of sediment to the disposal sites. The proposed Haul Road A would not interfere with any local traffic. The truck traffic on proposed Haul Road B would have to cross CTH "C" to reach Disposal Site B. There would be noise associated with each truck trip and from scrapers and backhoes dredging Lake Tomah. The noise would be an annoyance to residents with homes on the lake and for residents adjacent to the haul roads.

Economic

The costs of the project have been described in Item 4. The majority of the 3.2 million in costs will come from assessments levied by the Lake District against City of Tomah residents.

After the fishery has established and lake water quality has improved, recreational use is expected to increase, resulting in an economic benefit to the local service industries, particularly, bait dealers, sporting good stores, boat rentals, gas stations and motels.

c. Archaeological/Historical

Not applicable.

18. Other Special Resources (e.g. State Natural Areas, prime agricultural lands)

Not applicable.

19. Summary of Adverse Impacts That Cannot Be Avoided (more fully discussed in 15 through 18)

A. Lake Tomah would be drawn down for a period of approximately 24 months which would temporarily eliminate recreational use of the lake. The 11-foot drawdown will temporarily lower the groundwater table close to Lake Tomah. Very shallow wells on the southwest side of the lake could have reduced capacity or be temporarily out of service. The Lake District will be monitoring wells within the project area to determine their susceptibility to these groundwater impacts.

B. The flow of the Lemonweir River will increase from 15 cfs. to 32 cfs. for approximately 22 days to drawdown Lake Tomah. The increased velocity associated with these flows will cause temporary high turbidity levels and some minor channel scouring. The decrease in flow from 15 cfs. to 7.5 cfs. during lake refilling will de-water portions of the channel for approximately 114 days. This flow should be adequate to sustain downstream fisheries and other aquatic organisms.

C. The entire fishery in Lake Tomah will be removed or eradicated with rotenone. The fishery will be re-established through a three-year re-stocking program. Until this fishery is re-established, the fishing opportunity will be substantially reduced.

D. The intensive migratory waterfowl and other bird use of Lake Tomah during spring and fall, especially, swans will be eliminated during the two-year project. The dredging project would eliminate approximately 80% of the shallow (<3 feet) water foraging area that currently exists. This loss of habitat will substantially reduce future use of Lake Tomah by migratory waterfowl and other birds for several years. At present sedimentation rates, it will be 89 years before the present quality of habitat may be restored.

E. The majority of the aquatic vegetation, plankton, benthic invertebrates and aquatic insects would be removed as the result of dredging, but would return after the lake is refilled.

F. Thirty-five to 42 acres of wetlands would be filled at Disposal Sites A, B and C with sediment dredged from Lake Tomah if all sites are approved. In addition, a 1,000-foot-long by 24-foot-wide corridor would be temporarily filled to construct Haul Road A.

G. The exposed lake bottom throughout the length of the project would be visually unattractive to local residents. There may also be objectionable odors from exposed fine sediments and potential decaying fish.

H. The noise and dust from truck traffic and equipment dredging the Lake Tomah will disturb local residents, primarily those adjacent to the haul roads where truck trips will be frequent.

ALTERNATIVES (No action - enlarge - reduce - modify - other locations and/or methods)

20. Identify, describe and discuss feasible alternatives to the proposed action and their impacts. Give particular attention to alternatives which might avoid some or all adverse environmental effects.

A. No Action

This action is not anticipated nor desired by the Lake District, however, the potential exists that permits from either the U. S. Army Corps of Engineers or the Department of Natural Resources may be denied. In addition, the lack of project funding may result in no action. Under this alternative, the project would terminate and the current lake trends and environmental trends would continue. Rough fish populations would continue to dominate the lake and recreational use would continue to decline as the lake becomes shallower. Wildlife use of the lake would increase as "marsh-like" conditions expand and provide more suitable habitat.

B. Reduce the Size of the Project

The quantity of material removed from Lake Tomah could be reduced from the current volume of 1.2 million yards. This reduction would have several beneficial effects:

1) The cost of the project could be substantially reduced, lessening the impact to local taxpayers.

2) Avoiding dredging certain shallow areas at the west end of the lake would minimize the wildlife impacts that are expected when this area is deepened.

3) A reduction in the quantity of dredged material would reduce the need for disposal sites. The sites that are currently designated as wetland would not be required.

4) A reduced project would likely mean that the overall project could be completed in a shorter period of time which would lessen some of the adverse impacts from the drawdown.

At the current rates of sedimentation, the removal of 1.2 million yards of sediment from Lake Tomah represents an 89-year supply of sediment to the lake. If the project was reduced in size, the length of time the benefits are realized will be proportionately reduced. The Lake District's opinion is that if the dredging is to be done at all, it should be done right and dredged sufficiently to last many years.

C. Increase the Size of the Project

This alternative is not feasible because of the increased costs involved and substantial environmental impacts associated with additional material removed from the lake and locating suitable disposal sites.

D. Modify Disposal Sites

Disposal Site A has the capacity to accept the total volume of dredged material. All the spoil could be placed at Site A, thereby, eliminating the wetland impacts that are associated with Disposal Sites B and C. This alternative would not provide the City of Tomah suitable filled land at Site B to expand the fairgrounds and re-route CTH "C." There may be some other operational problems for the contractor in having to cross the Lemonweir River to haul all the spoil to Site A. There would be no significant cost increase to solely use Site A since the hauling distance is insignificant when comparing Site A to Site B. The total cost may be less since Haul Road B would not have to be constructed and removed.

To minimize the sedimentation impacts to the adjacent wetlands from construction at Disposal Site A, an undisturbed upland strip of vegetation could be maintained at least 30 to 50 feet wide.

E. Modify Haul Road A

The current alignment of Haul Road A has some substantial temporary impacts to the wetland it crosses and wildlife use of the area. To minimize these impacts, the haul road could be constructed on the existing east-west earthen berm that is 1,000 feet long and then extend south around the perimeter of the wetland boundary. This route will lengthen the haul route by 800 feet. This roadway could also be extended from the berm to 23rd Avenue. This route will lengthen the haul route by 1,500 feet. Both of these alternatives would not require the hauling of fill to build a road and subsequent removal of the road, thereby, lowering the overall project cost. It is unknown whether there would be an increased cost associated with an additional length of 800-1,500 feet for the haul road. Generally, the cost increases as the distance hauled increases.

F. Hydraulic Dredging

Lake Tomah could be dredged hydraulically as opposed to the proposed mechanical method. Hydraulic dredging would not require that the lake be drawn down, and the groundwater impacts and water level associated with this action would be minimized or completely eliminated. The hydraulic method would likely require larger spoil containment sites to allow for the water capacity as well as dredged material. The discharge water would likely contain suspended solids that would be discharged to adjacent wetlands or the Lemonweir River.

Turbidity levels in Lake Tomah would be very high from the re-suspension of sediments from the dredging activity. The Lake District has not pursued this dredging method nor has it received any interest from dredging contractors they have contacted.

EVALUATION OF PROJECT SIGNIFICANCE (Complete each item)

21. Significance of Environmental Effects

a. Would the proposed project or related activities substantially change the quality of the environment (physical, biological, socio-economic)? Explain.

The proposed dredging project would substantially change the character of Lake Tomah so that water depths will be similar to when the lake was created in 1936-37. With an improved fishery after 2-3 years and a substantial increase in weed-free water surface, the recreational use is expected to increase. The two-year drawdown of Lake Tomah will completely eliminate migratory use of this area during the duration of the project and reduce this use for 2-3 years after the lake is refilled.

If all three disposal sites are approved, 35-42 acres of wetlands would be eliminated. The proposed 47-acre wetland enhancement area is expected to provide substantial benefits that would replace some of the values lost due to filling.

b. Discuss the significance of short-term and long-term environmental effects of the proposed project including secondary effects; particularly to geographically scarce resources such as historic or cultural resources, scenic and recreational resources, prime agricultural lands, threatened or endangered species or ecologically sensitive areas. (The reversibility of an action affects the extent or degree of impact)

This project should have no significant long-term effects on any scarce resources, prime agricultural land, etc. There will be a long-term impact to migratory waterfowl use, especially whistling swans and threatened and endangered migrants. The recreational use of Lake Tomah will drastically reduce for two years during project construction, but will substantially increase immediately after the lake is refilled and a fishery is re-established.

There would be a permanent loss of 35-42 acres of wetland as the result of construction of dredge disposal areas. To minimize the overall project

wetland impacts, a wetland enhancement area has been designed to replace values that are lost from the wetlands that are filled.

The conversion of approximately 80% of the shallow water habitat to deep water habitat is a significant negative change to the wildlife use of Lake Tomah. The increase in deep water habitat, however, is a benefit to the establishment of a viable fishery.

22. **Significance of Cumulative Effects**

Discuss the significance of reasonably anticipated cumulative effects on the environment. Consider cumulative effects from repeated projects of the same type. What is the likelihood that similar projects would be repeated? Would the cumulative effects be more severe or substantially change the quality of the environment? Include other activities planned or proposed in the area that would compound effects on the environment.

No significant cumulative impacts are anticipated. Dredging projects occur with regularity throughout the state and, with proper permit conditions, they pose no significant environmental problems.

23. **Significance of Risk**

a. **Explain the significance of any unknowns which create substantial uncertainty in predicting effects on the quality of the environment. What additional studies or analyses would eliminate or reduce these unknowns? Explain why these studies were not done.**

The lake sediments have been analyzed for potential contaminants and have been determined to be acceptable for land disposal. The wells adjacent to the disposal sites have been analyzed to provide background contaminant data. These wells will be periodically re-sampled after completion of the project to determine if the groundwater is affected by the dredge spoil. The Department may also require the installation of 3-4 monitoring wells at, at least, one of the disposal sites to gather information on this subject.

The dredging project has been designed to benefit fish, wildlife and recreation. It is the writer's opinion that the primary benefit will be to general recreation interests and, to a lessor degree, fishery and wildlife. The current wildlife values will suffer at the expense of an improved recreation and fishery resource.

b. **Explain the environmental significance of reasonably anticipated operating problems such as malfunctions, spills, fires or other hazards (particularly those relating to health or safety). Consider reasonable detection and emergency response, and discuss the potential for these hazards.**

There does not appear to be any significant anticipated operating problems relating to this project. The fact that Lake Tomah will be de-watered during the dredging reduces the potential for fuel spills coming in contact with surface water.

Although the dam was inspected by the Department in 1986 and found to be structurally adequate, the Lake District is concerned about the long-term structural integrity of the dam. The Department will be requested to inspect the dam once the lake is drawn down. Any repairs needed could be then made at this time.

24. **Significance of Precedent**

a. **Would a decision on this proposal influence future decisions or foreclose options that may additionally affect the quality of the environment? Explain the significance.**

No. Dredging proposals of this nature have to be considered on a case-by-case basis. It is unknown at this time whether the Lake District has any additional plans of this type in the area. The use of Disposal Site B may influence a decision of the city to use this land for park expansion and re-routing of CTH "C." This site may also be filled regardless of the lake dredging project.

b. **Describe any conflicts the proposal has with plans or policy of local, state or federal agencies that provide for the protection of the environment. Explain the significance.**

The proposed project does not conflict with any plans or policies of any local, or state agencies which are responsible for protecting the environment. The applicant must apply for and obtain permits from Monroe County and the City of Tomah to place fill in a wetland. A permit must also be obtained from the U. S. Army Corps of Engineers. Contacts with these agencies do not indicate any special problems at this time. The wetland losses associated with this project would be contrary to the federal "no net wetland loss" policy.

25. **Discuss the effects on the quality of the environment, including socio-economic effects, that are (or are likely to be) highly controversial, and summarize the controversy.**

There are no known effects on the quality of the environment that are likely to be controversial. There may be some opposition from members of the tax-paying public that will object to the costs involved, however, the community has been very supportive of the project to date.

26. **Explain other factors that should be considered in determining the significance of the proposal.**

None known.

SUMMARY OF ISSUE IDENTIFICATION ACTIVITIES

27. **Summarize citizen and agency involvement activities (completed and proposed).**

The Lake District, since forming in 1975, has sponsored several studies to assess various lake management alternatives. There have been numerous Lake District Committee meetings that have involved public involvement. The Lake District will likely hold a public informational meeting if the Department permit is issued.

The U. S. Army Corps of Engineers has been involved in assisting to develop appropriate dredge disposal sites and potential wetland enhancement areas. The Corps will be issuing a public notice concerning the project in December, 1989.

The Department of Natural Resources will be issuing a public notice on the project after completion of the environmental review.

Department of Natural Resources personnel investigated the proposed dredging project site and spoil disposal areas on May 20, 1987; March 13, 1989; and November 11, 1989. The following resource disciplines have reviewed, commented on, and have not expressed objections to the dredging proposal: Fisheries Management, Wildlife Management, Water Regulation and Zoning, Solid Waste Management, Water Resources Management and Wastewater Management.

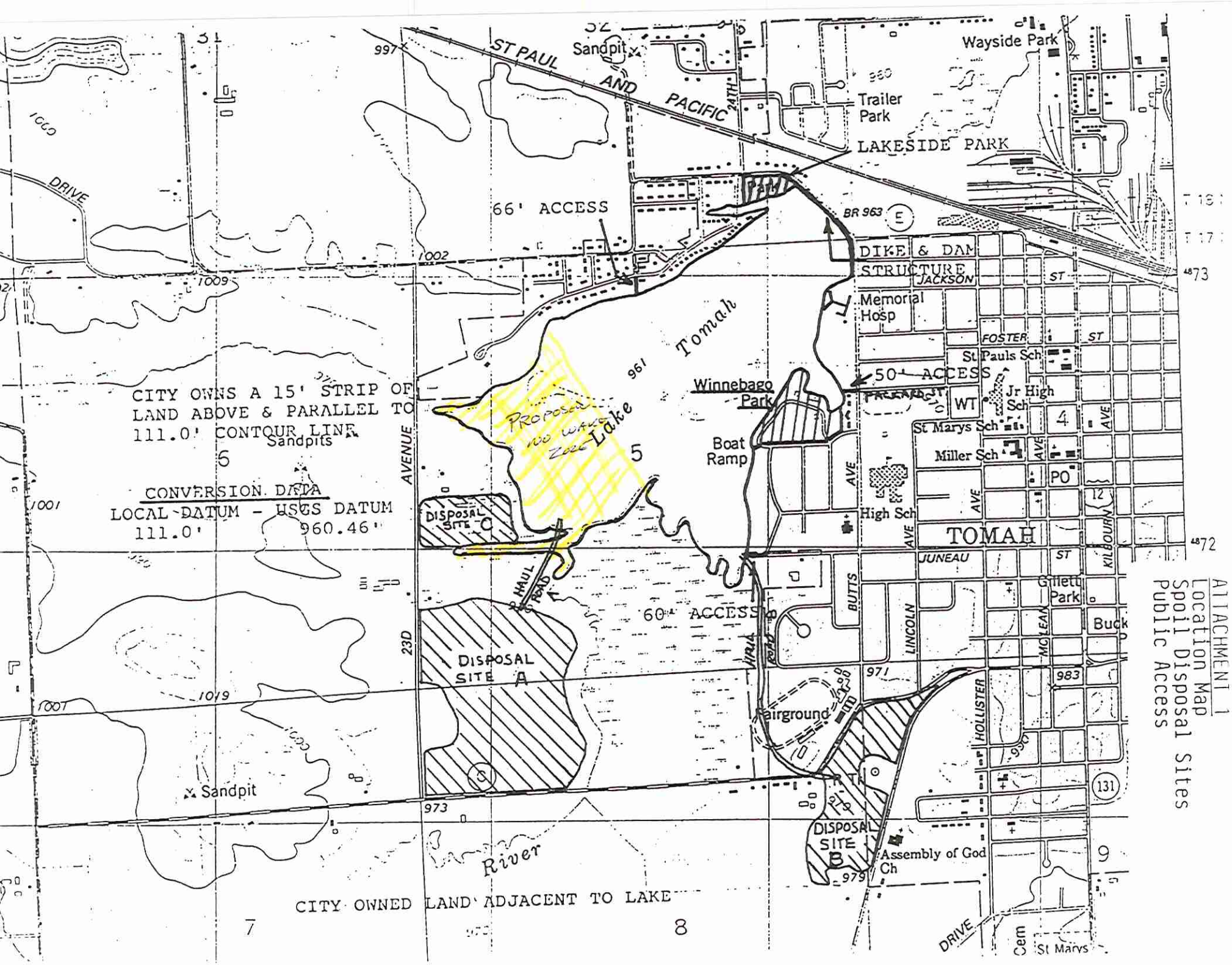
28. List agencies, groups and individuals contacted regarding the project (include DNR personnel and title).

Date	Contact	Comment Summary
Various dates including 12/14/88 and 10/17/89	Bill Blanchard Phaelen, Pope and John	Disposal Site B (Dickey property) viability
Various dates	Lawrence A. Fedderson Fedderson Engineering and Surveying	Submitted project application for the Lake District. Discussed various aspects of dredging plan, disposal sites and sediment sampling.
5/30/89	Ralph E. Osborne Osborne and Goodman	Disposal Site A (Hill property). Concerns about disposing sediment on client's property.
Various dates	John J. Rusch Mayor, City of Tomah	Discussed sediment sampling requirements and other project details.
7/27/88	Phyllis Rice WTMB	Concerned about the impact filling Disposal Site B will have on transmission of radio signals from WTMB-AM radio tower.
Various dates	Dan Frantz, Chairman Lake Committee	Discussed project details including dredging plan, disposal sites and scheduling.
Various dates including 8/19/87	Dave Thompson Thompson Laboratories	Sediment sampling procedures and results.

7/27/88	Eric Epstein Department of Natural Resources - Endangered Resources	Birds using Lake Tomah and vicinity.
5/9/79	Raymond Kyro Department of Natural Resources - Wildlife	Wildlife resources in Lake Tomah and vicinity.
1/28/88	Kenneth Wright Department of Natural Resources - Fishery	Fishery resources in Lake Tomah and project design to benefit the fishery.
1/28/88	Craig Thompson Department of Natural Resources - Environmental Impact	General project design and environmental impacts.
1/28/88	Ed Bourget Department of Natural Resources - Water Management Supervisor	General project design, permit requirements and state laws pertaining to the project.
Various dates	Buzz Sorge Department of Natural Resources - Water Resources	General project development. Co-author of Lake Tomah Restoration Management Plan (1989).
1/28/88	Jake VanderVoort Department of Natural Resources - Community Assistance	Potential funding assistance programs.
1/28/88	Dick Wedepohl Department of Natural Resources - Water Resources	Lake management plans.
1/28/88	Dave Sprehn Monroe County Extension Service	General project design and watershed planning.
1/12/88 3/13/89	John Wetzel Department of Natural Resources - Wildlife	Wildlife resources at Lake Tomah and potential impacts.
1/28/88	Al Hoff Monroe County Land Conservation Department	Upland erosion control and watershed planning.
1/28/88	Mark Wienkes Monroe County Soil Conservation Service	Upland erosion control and watershed planning.

Various dates	Dave Dralle U. S. Army Corps of Engineers	Project development, particularly impacts to wetlands.
Various dates	Michael Degen Department of Natural Resources - Solid Waste	Spoil disposal sites and potential groundwater impacts.
Various dates	Paul LaLiberte Department of Natural Resources - Water Resources	Identified the sampling parameters for the Lake District and evaluated the sediment sampling results for land application.

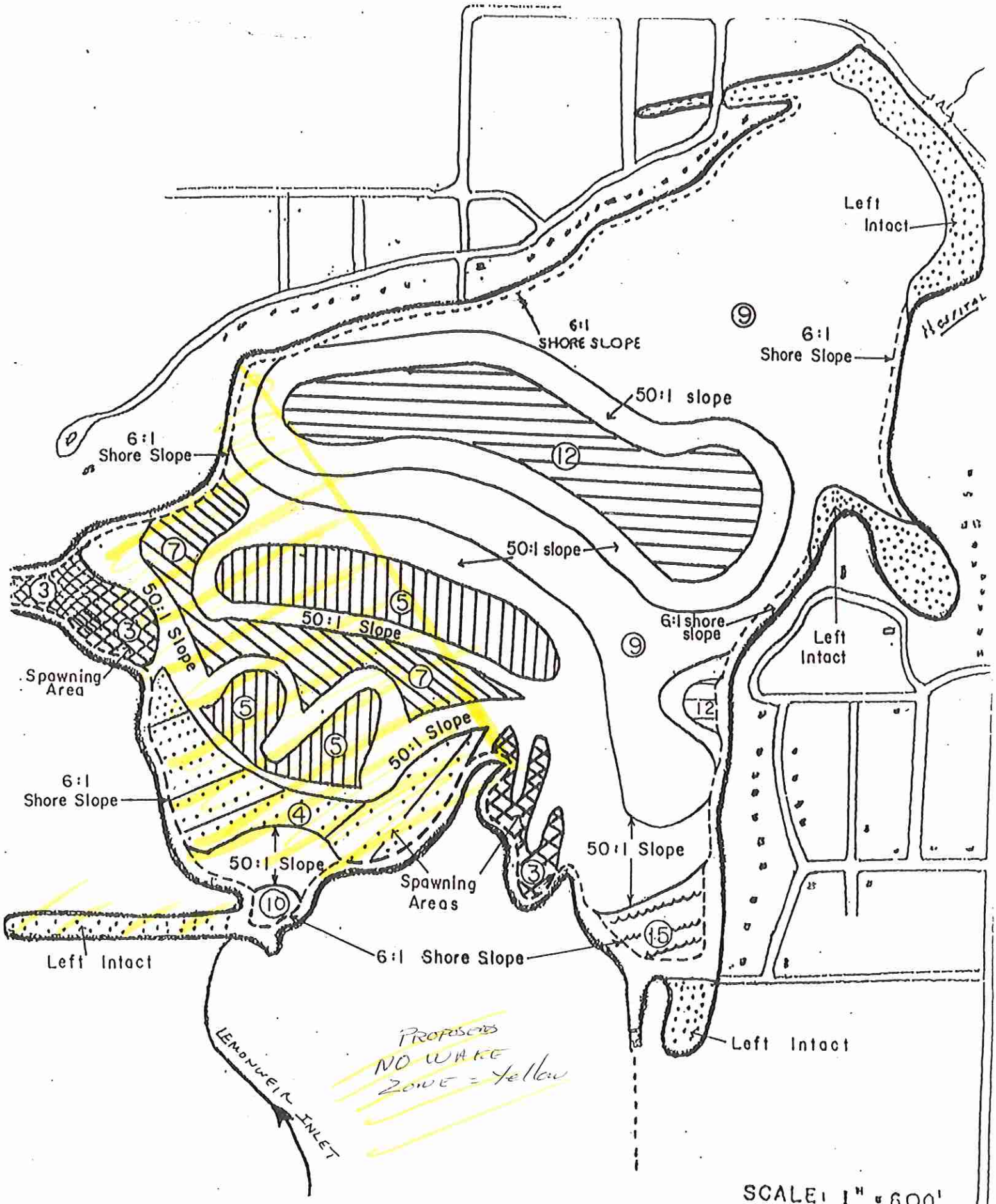
DMP:cs



ATTACHMENT 1
Location Map
Spoil Disposal Sites
Public Access

ATTACHMENT 2

Proposed Lake Tomah Water Depths



ATTACHMENT 3

Spoil Disposal Site
Characteristics

FILL SITES

PARCEL	LAND OWNER	ACRES	LAND USE	APPROX. FILL CAP.	SOIL TYPE	AVE. DIST.
"A"	HILL FARMS	91±	CROPLAND	1,218,000 C.Y.	SANDY LOAM SILTY LOAM	1.0 MI.
"B"	DICKIE RANDALL	36±	PASTURE GRASSLANDS WETLANDS	203,000 C.Y.	MUCK SAND	1 3/8 MI.
"C"	NUGENT FARMER	18±	GRASSLANDS	367,000 C.Y.	SAND PEAT	1/2 MI.

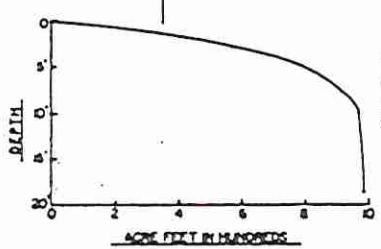
APPROX. TOTAL 1,788,000 C.Y.

SPOILS FROM LAKE ESTIMATED AT 1,200,000 C.Y.

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURSES

LAKE SURVEY MAP

TOMAH LAKE — MONROE COUNTY
SEC. 5,32 — T.-17,18- N. R.-1- W.



P.S.C. B.M. is a bronze plate imbedded in top of southeast corner of concrete catwalk across top of dam.
Assumed elevation 100.00'
Water elevation 97.40'

C.M. St. P&P R.R.
LEMONWEIR CREEK
city park
B.M.
dam with 11' height
TOMAH
31 32 T-18-N
6 5 T-17-N
CREEK S.T.
0.47 acres
LEMONWEIR CREEK
city park

EQUIPMENT RANGE POLE & SONAR MAPPED MAY 1968
MO. YR.

WATER ELEV. 97.40'

TOPOGRAPHIC SYMBOLS
Brush — Steep slope
Partially wooded — Indefinite shoreline
Wooded — Marsh
Cleared — Spring
Pastured — Intermittent stream
Agricultural — Permanent inlet
B.M. Bench Mark — Permanent outlet
Dwelling — Dam

LAKE BOTTOM SYMBOLS
P. Peat — Gr. Gravel — Stumps & Snags
Mk. Muck — R. Rubble
C. Clay — Br. Bedrock
M. Marl — T Submergent vegetation
Sd. Sand — ⊥ Emergent vegetation

400' 0 400' 800' 1,200' 1,600' 2,000'
SCALE

◇ Access — ◆ Access with Parking — ◆ Boat Livery

SPECIES OF FISH

225.88 ACRES INCLUDING ISLAND
AREA 225.41 ACRES
UNDER 3 FT. 31 %
OVER 20 FT. 0 %
VOLUME 888.27 ACRE FT.
TOTAL ALK. 69 P.P.M.
SHORELINE 3.7 MILES
MAX. DEPTH 19 FEET

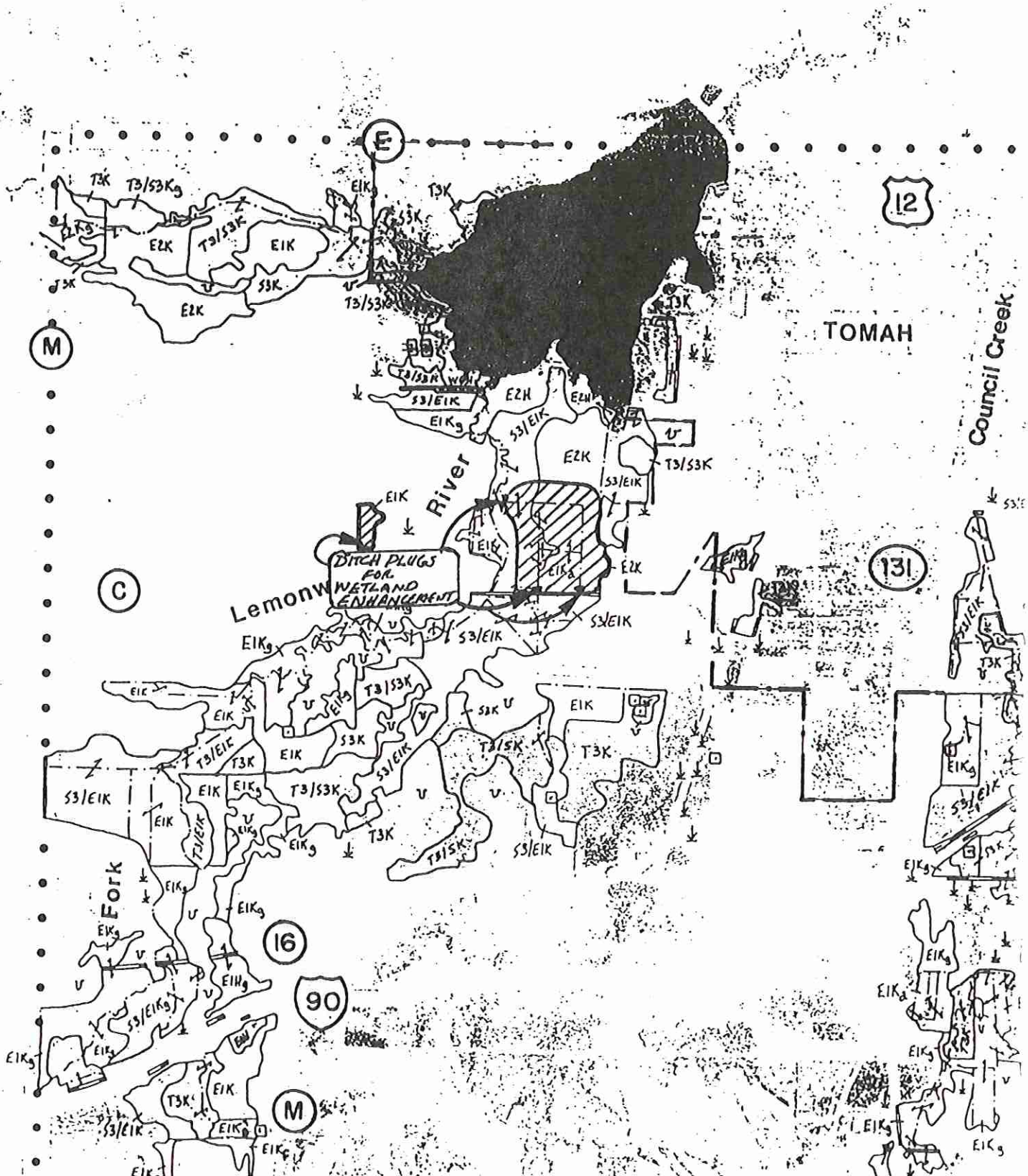
ATTACHMENT 4

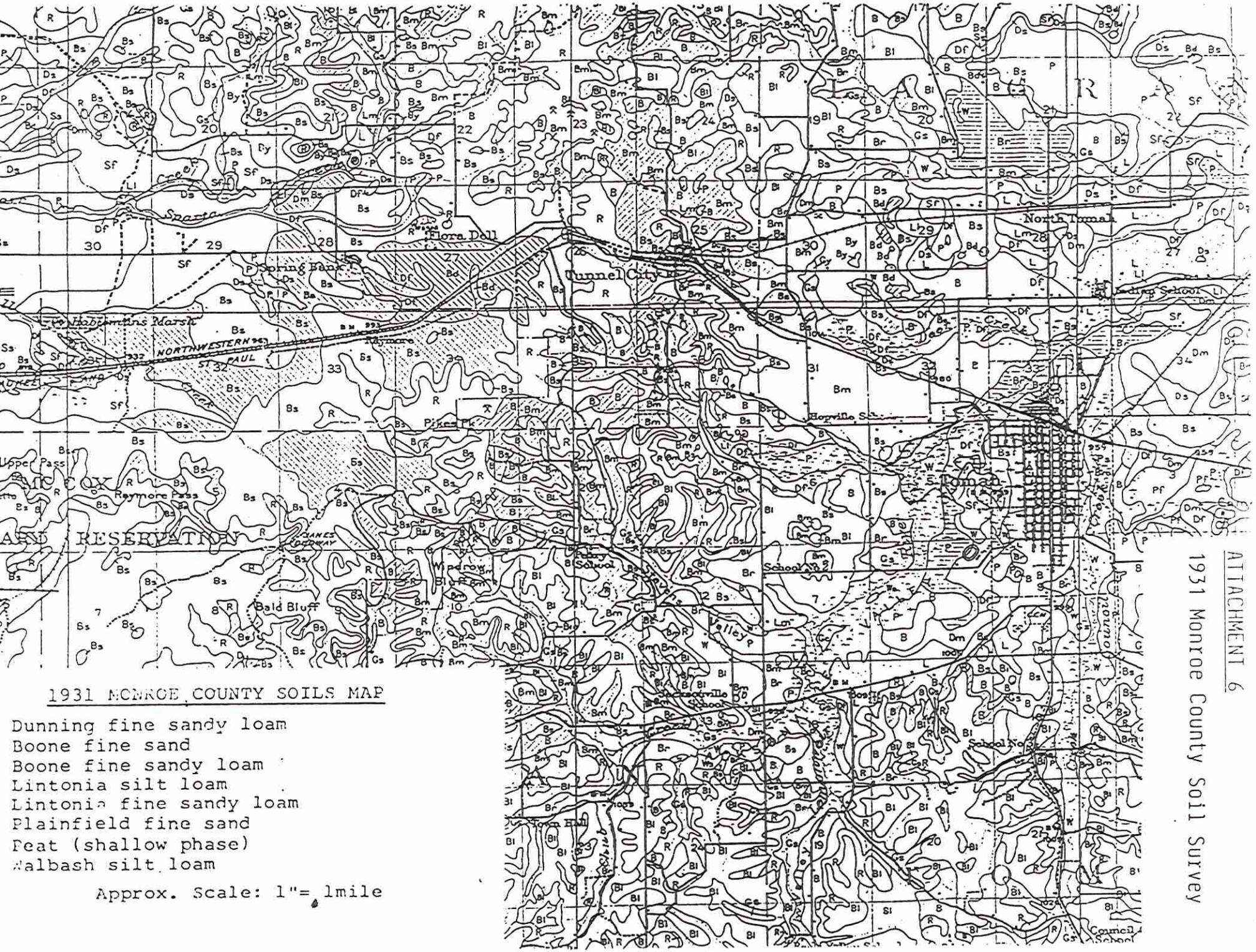
Lake Tomah Hydrographic Map

ATTACHMENT 5

Wetland Inventory Map

DNR Bureau of Water Regulation and Zoning





1931 MONROE COUNTY SOILS MAP

Dunning fine sandy loam
Boone fine sand
Boone fine sandy loam
Lintonia silt loam
Lintonia fine sandy loam
Plainfield fine sand
Peat (shallow phase)
Wabash silt loam

Approx. Scale: 1"= 1mile

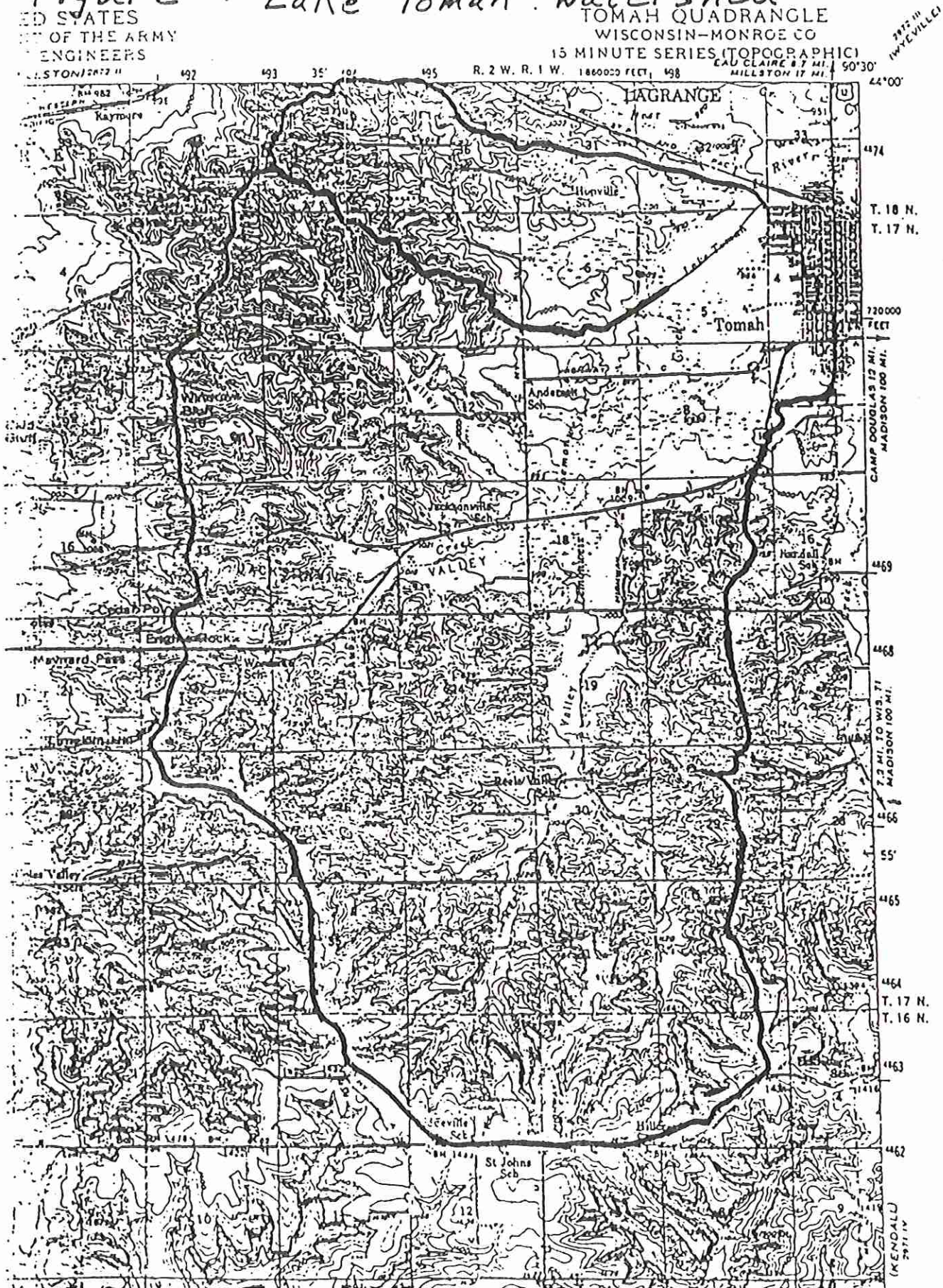
ATTACHMENT 6

1931 Monroe County Soil Survey

ATTACHMENT 7

Lake Tomah Watershed

Figure : Lake Tomah Watershed.



ATTACHMENT 8

Sediment Sampling Results and analysis

THOMPSON LABORAT
CHEMICAL and BIOLOGICAL TES
510 Copeland Avenue • La Crosse, V
Phone (608) 784-0688

To: FeddersonEngineering & Surveying
P.O. Box 407
Tomah, WI 54660

Lake Tomah Project

Bottom Sediments and Soil Sampling Testing Report

Table of Contents

THOMPSON LABORATORIES
CHEMICAL and BIOLOGICAL TESTING SERVICES
510 Copeland Avenue • La Crosse, Wisconsin 54603
Phone (608) 784-0688

Feddersen Engineering & Surveying
613 Superior Ave.
Tomah, WI 54660

Regarding organic content tests on core sample #4 (page 3)

Note that the test results for organic substances listed lindane in detectable quantities in all (3) segments in core sample No. 4. As agreed by phone on October 15, 1987, the subcontractor laboratory (Interpoll Inc.) was contacted and requested to confrim the test findings. They were cooperative with the recheck and did confirm that a gas chromatographic peak was present in all samples at the relative elution time corresponding to g-BHC (lindane). Upon further discussion of the test results with the laboratory manager, Mr. Richard Dahl, of Interpoll, he stated that there were many minor background interference peaks on the chromatograms for these test samples, (which is somewhat common to all soil and sediment samples) and it was definitely possible that there could have been a different substance present other than lindane which could have eluted at the identical time corresponding to lindane.

Based on previous experience, it is possible that lindane traces could be present in sediments such as the silt and organic detritis layers corresponding to core #4, top layer #1 and middle layer #2, however it is highly unlikely that lindane would be present in the bottom sand layer, #3 which is presently regarded as deep undisturbed pre-agricultural subsoil, which was in place before the lake was formed. This leads the writer to the logical conclusion that the chromatographic peaks observed to correspond to the lindane elution time in all 3 layers were not actually due to lindane, but due to some other identified trace substance present in all samples.

If the levels reported as lindane in the 6 to 10 parts per billion range are of concern and would be regarded as significant enough to classify the lake bottom sediments as hazardous material, I would suggest that the test results should be confirmed by a different, more specific analytical method known as gas chromatography-mass spectometer analysis which would possitively identify lindane, if present. This would involve testing by a different subcontractor lab, other than Interpoll, Inc.

Dave Thompson

THOMPSON LABORATORIES

510 COPELAND AVENUE - LA CROSSE, WISCONSIN 54603

Wis. Lab Certification #632021170

Reported To: Federson Engineering & Surveying
P.O. Box 407
Tomah, WI 54660

Date: October 14, 1987
Laboratory No: 44839-44846

LABORATORY REPORT

Sample Identification: Lake bottom verticle core samples of sediments and soil obtained from Lake Tomah on July 23, 1987, on designated map locations (locations on Lake Tomah map, page 4 of this report)

Tests and Results:

Chemical and Physical Characteristics of the Core Samples

A top to bottom verticle section of each core sample was obtained, mixed and blended to form a composite test sample for each of the core samples.

TRACE METALS CONTENT (mg. per killogram, dry basis)

	Core Sample Number							
	#1	#2	#3	#4	#5	#6	#7	#8
Total Arsenic	2.08	5.16	2.19	0.90	0.59	1.51	2.19	11.0
Total Cadmium	0.40	0.61	0.18	0.24	<0.12	0.61	0.29	0.57
Total Chromium	8.48	21.8	2.69	3.33	2.84	11.1	6.16	10.1
Total Copper	8.51	13.5	6.04	4.20	3.08	19.2	9.24	15.0
Total Lead	6.20	8.80	5.91	1.20	1.20	120	8.10	30
Total Mercury	0.032	0.050	0.014	0.014	0.016	0.024	0.017	0.013

NITROGEN CONTENT (milligrams per killogram, as sampled, wet basis)

Total Kjeldahl-N	740	1900	446	946	403	964	1540	1950
Ammonia-N	78	14	4.0	28	2.0	33	16	51
Nitrate-N	9.3	20	2.0	7.1	7.9	3.8	3.6	3.5

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Phone (608) 784-0688

Federson Engineering & Surveying

Lake Tomah Project

PHYSICAL PROPERTIES

	Core Sample Number							
	#1	#2	#3	#4	#5	#6	#7	#8
Weight precent moisture	21.3 %	44.4 %	24.5 %	27.2 %	17.1 %	32.2 %	41.3 %	43.4 %
Wet Density $lbs./ft.^3$	120	71.8	99.3	90.5	106	87.9	87.6	82.9
Dry Density $lbs./ ft.^3$	126	110	118	136	140	102	109	103

OPTIONAL ANALYSIS

Organic Content tons per acre	18	48	6	38	10	59	61	42
Total Phosphorous as P_2O_5 tons/acre	3.3	2.8	0.8	1.3	0.9	1.4	0.7	4.9
Total Potassium as K_2O tons/acre	0.5	1.2	0.4	0.6	0.5	0.7	0.3	0.7
Soil pH	5.7	5.4	6.2	5.6	6.0	5.7	5.3	4.9

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Fedderson Engineering & Surveying

Lake Tomah Project

VOLITILE SOLIDS CONTENT on Core #4 (3 segmented layers)

Top Segment	Middle Segment	Bottom Segment
31.5 inches silty layers	6.5 inches of organic peat and detrits	66 inches of sand
6.5 wt.%	9.37 wt.%	0.23 wt.%

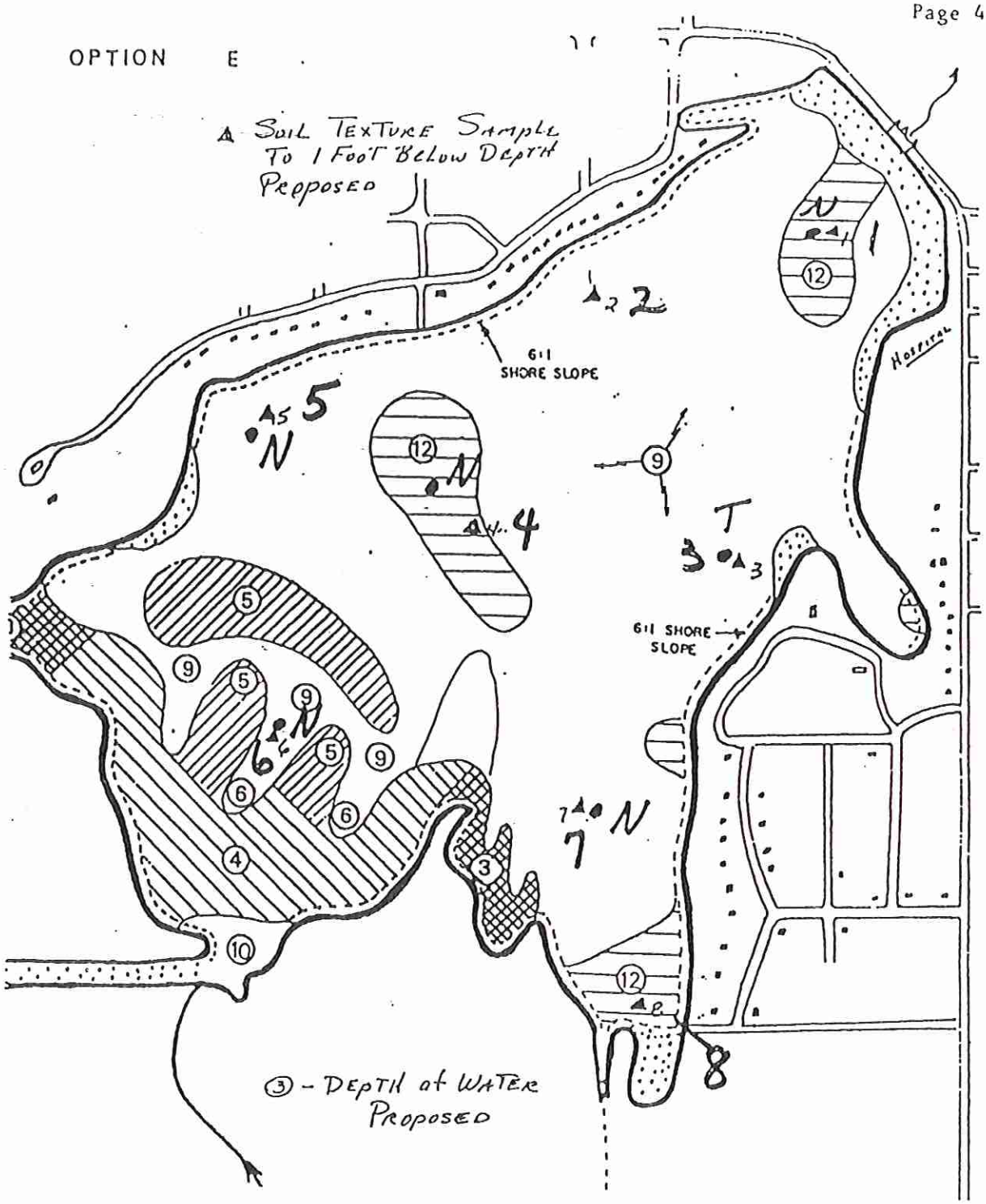
ORGANICS CONTENT of Core #4 (micrograms per kilogram, as sampled, wet basis)

EP Tox

	Top Segment	Middle Segment	Bottom Segment
Total PCB's	< 7.0	< 7.0	< 7.0
Aldrin	< 0.4	< 0.4	< 0.4
g-BHC (Lindane)	8.0	6.0	10
Chlordane	< 0.8	< 0.8	< 0.8
p,p-DDT	< 2.0	< 2.0	< 2.0
Dieldrin	< 0.5	< 0.5	< 0.5
Endrin	< 1.5	< 1.5	< 1.5
Methoxychlor	< 5.0	< 5.0	< 5.0

thought to be parent material

OPTION E



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LAKE TOMAH, Tomah, Wisconsin

CORE DESCRIPTION Lake Botom Materials

Core Sample, Map Location No.	1
Water Depth at sample location	81 inches
*Total depth of sample (including water depth plus solid core)	13 feet
Actual depth of core	75 inches

Description of Various Segments or stratification layers within the core, starting from Top of core

Texture	Depth of Strata
Muck - high water content, very fluid consistancy	9 inches
Much, semi-solid consistancy	5 inches
Silt, dark, consolidated, firm	6.5 inches
Clay - grey green	2.5 inches
Mixed, varied, striated, fine sand and silty sand	52 inches

Comments

Instructions were to analyze segments individually as stated in memo dated September 3, 1986.

*Instructions for sampling stated that depth of sample was to be to

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Phone (608) 784-0688

LAKE TOMAH, Tomah, Wisconsin

CORE DESCRIPTION Lake Botom Materials

Core Sample, Map Location No.	2
Water Depth at sample location	80 inches
*Total depth of sample (including water depth plus solid core)	10 feet
Actual depth of core	40 inches

Description of Various Segments or stratification layers within the core, starting from Top of core

Texture	Depth of Strata
Muck, high water content, very fluid consistancy	5.5 inches
(Muck) silt with fine sand (less than 10 % sand)	10 inches
Organic detritis mixed with silt	1.5 inches
Silt, dark consolidated	7 inches
Fine white sand	16 inches

*Instructions for sampling stated that depth of sample was to be to

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LAKE TOMAH, Tomah, Wisconsin

CORE DESCRIPTION Lake Botom Materials

Core Sample, Map Location No.	3
Water Depth at sample location	99 inches
*Total depth of sample (including water depth plus solid core)	10 feet
Actual depth of core	21 inches

Description of Various Segments or stratification layers within the core, starting from Top of core

Texture	Depth of Strata
Silty sand (estimated 80-90 % sand)	5 inches
fine white "sugar" sand containing fragments or lumps of semi-soft sandstone consistancy	16 inches

Comments

The lake bottom material at this sample location was easily penetrated by the sample core tube to a depth of about six inches and then encountered a firm feeling "crusty" layer. With moderate steady pressure, the "crusty" layer layer was penetrated and the core tube dropped about six to eight inches with very little resistance to another "crusty" layer. Several sampling attempts in the designated area revealed the same type of lake bottom characteristics. At certain sampling points, the weight of the metal core sampling tube alone with no additional downward force was sufficient to cause verticle penetration of the core tube into the bottom material. Later examination identified the bottom material as fine white "sugar" sand and it was suspected that the bottom was unstable due to flowing spring water activity, similar to "quick sand" between the "crusty" layers. This sample (near the city park location) is regarded as less than an ideal sample for the testing of toxic organics, (as previously designated) because of the high sand content in all layers, and (suspected) spring water flow.

*Instructions for sampling stated that depth of sample was to be to

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LAKE TOMAH, Tomah, Wisconsin

CORE DESCRIPTION Lake Botom Materials

Core Sample, Map Location No.	4
Water Depth at sample location	52 inches
*Total depth of sample (including water depth plus solid core)	13 feet
Actual depth of core	104 inches

Description of Various Segments or stratification layers within the core, starting from Top of core

Texture	Depth of Strata
Muck, high water content, very fluid consistancy	14 inches
Muck, semi-soft	6.5 inches
Silt, dark, consolidated	3.5 inches
Brown silt, possible 10-20 % clay content	7.5 inches
Organic layer, similar to peat, some sticks & detris	6.5 inches
Fine white sand	66 inches

*Instructions for sampling stated that depth of sample was to be to

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Phone (608) 784-0688

LAKE TOMAH, Tomah, Wisconsin

CORE DESCRIPTION Lake Botom Materials

Core Sample, Map Location No.	5
Water Depth at sample location	93 inches
*Total depth of sample (including water depth plus solid core)	10 feet
Actual depth of core	33 inches

Description of Various Segments or stratification layers within the core, starting from Top of core

Texture	Depth of Strata
Muck, high water content, fluid consistancy	4 inches
Silt muck, semi-soft	6 inches
Sand, striations of silt present (est. 5-10 % silt) some gravel present at 22 inch depth from top of core in this sample	19 inches
Silt, dark brown	3.5 inches
Silt loam (grey) - encountered solid non-penetrable layer	2.5 inches

Comments

Core tube encountered solid substrate which felt similar to sandstone or large chunk of stone at slightly over 10 foot depth.

*Instructions for sampling stated that

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510 Copeland Avenue • La Crosse, Wisconsin 54603
Phone (608) 784-0688

LAKE TOMAH, Tomah, Wisconsin

CORE DESCRIPTION Lake Botom Materials

Core Sample, Map Location No.	6
Water Depth at sample location	24 inches
*Total depth of sample (including water depth plus solid core)	10 feet
Actual depth of core	96 inches

Description of Various Segments or stratification layers within the core, starting from Top of core

Texture	Depth of Strata
Muck, high water content, fluid consistancy	27 inches
Muck - soft	10 inches
Muck, silty solid consistancy	6.5 inches
Silty clay (grey)	9 inches
Organic, peat like consistancy	4 inches
Fine sand	2 inches
Fine sand, striated with silty sand	38 inches

*Instructions for sampling stated that depth of sample was to be to proposed dredging (excavation) [illegible]

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Phone (608) 784-0688

LAKE TOMAH, Tomah, Wisconsin

CORE DESCRIPTION Lake Botom Materials

Core Sample, Map Location No.	7
Water Depth at sample location	55 inches
*Total depth of sample (including water depth plus solid core)	10 feet
Actual depth of core	65 inches

Description of Various Segments or stratification layers within the core, starting from Top of core

Texture	Depth of Strata
Muck, high water content, fluid consistancy	11 inches
Muck, silty, soft	8 inches
Brown silty, consolidated	4 inches
Silty clay, grey color	8 inches
Organic detritis, silty (sticks, stems, etc)	3.5 inches
Silty sand	10 inches
Organic peat	2 inches
silty sand, striated	18.5 inches

*Instructions for sampling stated that depth of sample was to be to

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510 Copeland Avenue • La Crosse, Wisconsin 54603
Phone (608) 784-0688

LAKE TOMAH, Tomah, Wisconsin

CORE DESCRIPTION Lake Botom Materials

Core Sample, Map Location No.	8
Water Depth at sample location	106 inches
*Total depth of sample (including water depth plus solid core)	13 feet
Actual depth of core	50 inches

Description of Various Segments or stratification layers within the core, starting from Top of core

Texture	Depth of Strata
Muck, high water content, fluid consistancy	11 inches
Much, soft	16 inches
Dark silt, consolidated	8 inches
Organic detritis, silty	1 inch
Dark Mucky silt	12 inches
Grey clay	2 inches

*Instructions for sampling stated that depth of sample was to be to

dry wt basis on organic content of
* cores 2,7+8 (mean = 43%)
** cores 1+5 (mean = 19%)
JK 11-K-89

interpoll

INTERPOLL INC.
4500 BALL ROAD N.E.
CIRCLE PINES, MINNESOTA 55014
612/786-6020

Thompson Laboratories
510 Copeland Avenue
LaCrosse, WI 54603

not confirmed with GC massspec

Attention: Dave Thompson

LABORATORY REPORT: #5284
PURCHASE ORDER: #0906

September 30, 1987

SAMPLES RECEIVED: September 14, 1987

Sample Identification:		44842-A Top Soil		44842-B Middle Soil		44842-C Bottom Soil	
Sample Type:							
Laboratory Log Number:		5284-01	Dry *	5284-02	Dry *	5284-03	Dry **
Parameter	Units						
Total PCB	ug/kg	< 7.0		< 7.0		< 7.0	
Aldrin	ug/kg	< 0.4		< 0.4		< 0.4	
d-BHC (Lindane)	ug/kg	8.0	14	6.0	10	10	12
Chlordane	ug/kg	< 0.8		< 0.8		< 0.8	
p,p-DDT	ug/kg	< 2.0		< 2.0		< 2.0	
Dieldrin	ug/kg	< 0.5		< 0.5		< 0.5	
Endrin	ug/kg	< 1.5		< 1.5		< 1.5	
Methoxychlor	ug/kg	< 5.0		< 5.0		< 5.0	

Respectfully submitted,

Wayne A Olson

Wayne A. Olson,
Organic Chemistry Department Manager

WAO/cg
Invoice Enclosed
< = less than

All analyses were performed using EPA or other recognized methodologies.
All units are on an "as received" basis unless otherwise indicated.

THOMPSON LABORATORIES

510 COPELAND AVENUE - LA CROSSE, WISCONSIN 54603

Wis. Lab Certification #632021170

Reported To: Fedderson Engineering & Surveying
P.O. Box 407
Tomah, WI 54660

Date: December 7, 1987
Laboratory No: 44844-44846

ADDENDUM REPORT

LABORATORY REPORT

Sample Identification: Lake bottom verticle core samples of sediments and soil obtained from Lake Tomah on July 23, 1987, on designated map locations

Tests and Results: Additional testing was done as requested by Mr. Paul LaLiberte of the Wis. DNR, Eau Claire in his letter dated November 11, 1987 to Mr. Dan Franz, Chairman, Lake Tomah Committee

Chemical Characteristics of the Core Samples

Core samples #6 and #8 were divided into strata per instructions and tested as listed below

TRACE METALS CONTENT (mg.per killogram, dry basis)

CORE #6 SEGMENTS

	Top (much) 0 to 43.5"	Middle (silt) 43.5" to 56.5"	Bottom (sand) 56.5" to 96.5 "
Lead Content	361	16.5	7.7

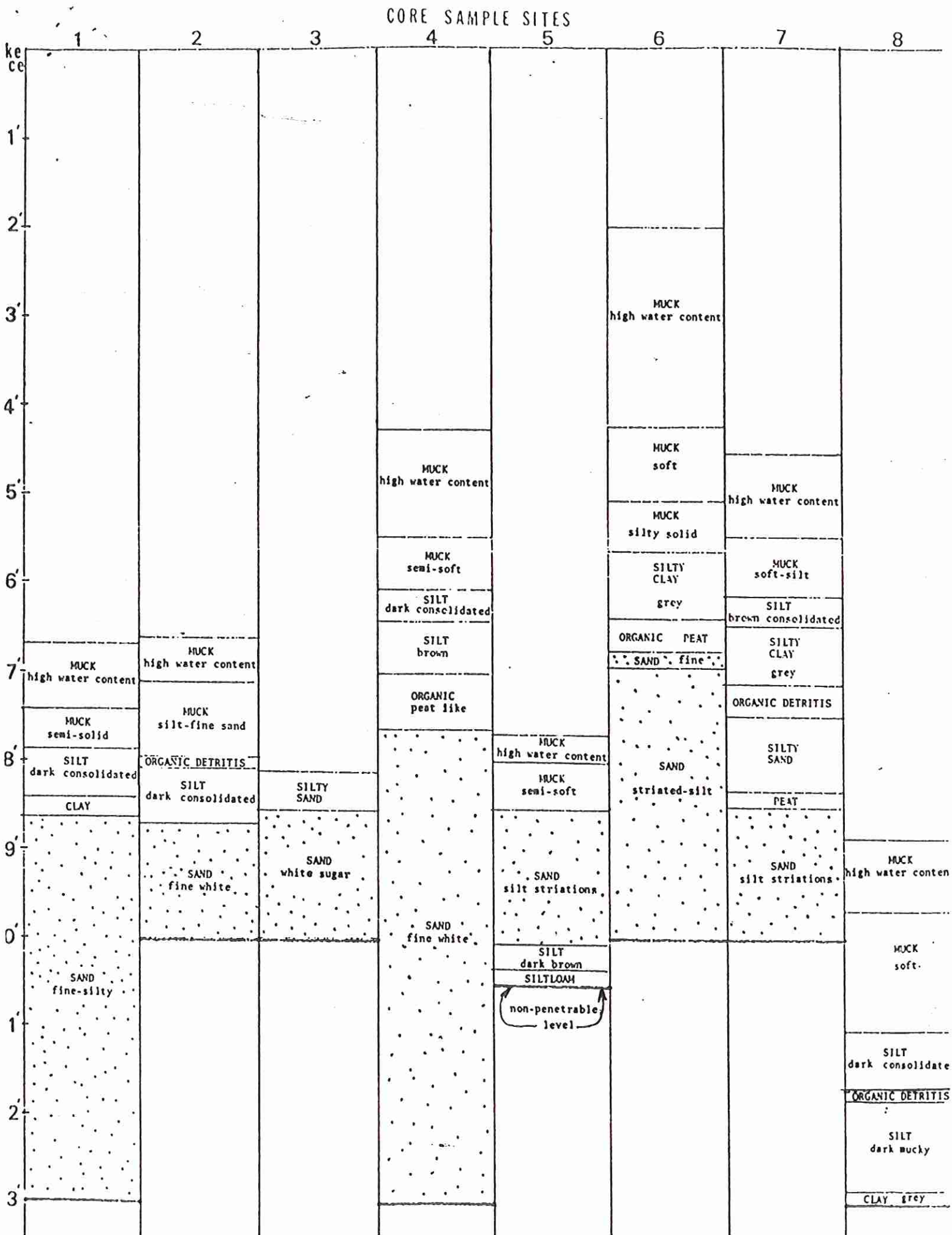
CORE #8 SEGMENTS

	Top (muck) 0" to 27"	Bottom (silt/clay) 27" to 50"
Arsenic Content	23.7	12.9

Dave Thompson

Dave Thompson

Thompson Laboratorie


CORE SAMPLE SITES
1
2
3
4
5
6
7
8
ke
ce
1'
2'
3'
4'
5'
6'
7'
8'
9'
0'
1'
2'
3'
MUCK
high water content
MUCK
semi-solid
SILT
dark consolidated
CLAY
SAND
fine-silty
MUCK
high water content
MUCK
silt-fine sand
ORGANIC DETRITIS
SILT
dark consolidated
SAND
fine white
SILTY
SAND
SAND
white sugar
MUCK
high water content
MUCK
semi-soft
SILT
dark consolidated
SILT
brown
ORGANIC
peat like
SAND
fine white
MUCK
high water content
MUCK
semi-soft
SAND
silt striations
SILT
dark brown
SILTLOAM
non-penetrable
level
MUCK
high water content
MUCK
soft
MUCK
silty solid
SILTY
CLAY
grey
ORGANIC PEAT
SAND fine
SAND
striated-silt
MUCK
high water content
MUCK
soft-silt
SILT
brown consolidated
SILTY
CLAY
grey
ORGANIC DETRITIS
SILTY
SAND
PEAT
SAND
silt striations
MUCK
high water conten
MUCK
soft
SILT
dark consolidate
ORGANIC DETRITIS
SILT
dark mucky
CLAY grey

CORRESPONDENCE/MEMORANDUM — STATE OF WISCONSIN

Date: November 22, 1989

File Ref: 3200

To: Buzz Sorge
Dave Pericak

From: Paul LaLiberte

Subject: Lake Tomah Dredging Project

At Dave's request, I dusted off the Lake Tomah Dredging file and reexamined the chronology of the project. I found that Solid Waste staff had not progressed on their evaluation of this project, nor had I completed an evaluation of the potential impacts of the project in terms of in-place pollutants. The intent of this memo is to deal with the latter issue. I understand Mike Degen will see to the Bureau of Solid Waste concerns.

My preliminary evaluation of the sediment sample data (letter to Dan Franz, dated 11/87) requested further analytical work on frozen cores for lead and arsenic. The current data indicate that the elevated lead levels (120 ug/g) in the composite core from site 6 are the result of a high lead level (361 ug/g) in the top 43 inches of the core. Since elevated composite sample lead levels were not encountered at other sites, the situation appears localized. According to Joan Bahura, Wisconsin Division of Health, the level of concern for human health from soil used as fill in a park is about 500 ug/g. As such, this material should be okay for fill. Since removing this material will expose soil with lower lead levels, any in-place pollutant effects should be reduced or at least remain the same once the project is completed.

The arsenic data from core #8 indicates that the dredging project will expose arsenic levels lower than that currently at the sediment surface. Any in-place pollutant effects should be reduced or at least remain the same once the project is completed in terms of arsenic, as well as lead.

In my 11/11/87 letter, I discussed the detection of lindane. This insecticide is commonly used as a seed treatment and may have other uses. Since my 1987 analysis, I have become aware of a proposed "threshold value" for sediment above which exceedances of the water quality standard in overlying water are possible (Boulton et al, 1985). The proposed value of 12.4 ug/g for lindane is close to the levels found in Lake Tomah (6-10 ug/g wet wt., probably 10-14 ug/g dry wt.). Lindane was reported in all three layers of the core, including the sand layer at 66" to 104" thought to be parent material.

The underlying sand layers would be exposed by the dredging project in many places. Since this material is low in silt, clay, and organic matter, it could represent a strata which would more readily release any lindane present to the water column. In this scenario, the dredging project could increase the likelihood of effects on aquatic life including residues in fish tissue.

Lindane has not commonly been detected in fish tissue or sediment samples of which I am aware. Furthermore, the presence of lindane in the parent sands under the lake seems unlikely given the affinity of most contaminants for fine particulates and organic matter. Dave Thompson of Thompson Labs indicated to me that the subcontractor who analyzed the lindane sample did not confirm the identification of lindane by gas chromatography - mass spectrometer analysis (gc/ms). These three factors lead me to suspect that the lindane detects may be erroneous. Mr. Thompson is of similar opinion, and in his 10-14-87 report to Federson Engineering, suggested that confirmation be done by a separate lab using gc/ms. I agree with his recommendation and understand he still has a portion of a composite sample from core #4 suitable for this work. I suggest that a single analysis for lindane be conducted on this sample.

If further analyses determines that lindane is not present, I see little potential for increased in-place pollutant problems as a result of the Lake Tomah dredging project. Buzz has agreed to contact the city regarding this matter. I assume the significance of the bulk sediment analysis data in terms of the proposed disposal sites will be assessed by the Bureau of Solid Waste staff.

c: L. Talbot - WR/2
D. Lundberg
WR/PL024.sz

ATTACHMENT 9

Alternative Proposed Lake Tomah Water Depths