

Center Lake Sediment Removal Plan

Prepared in accordance with LARE guidelines, 2007

Prepared by: Greg R. Bright, Commonwealth Biomonitoring, Indianapolis, Indiana

I. Contact Information

Name of Organization: Center Lake Association

Names of Local Sponsors:

President of Center Lake Association

Troy Turley
1212 Edgewater Drive
Warsaw, IN 46580
Phone Number: (574) 267-2930

Chairman of Sediment Removal Committee

Dale Long
531 Crestlane Drive
Warsaw, IN 46580
Phone Number: (574) 269-1920

II. Project Location

Affected Lake: Center Lake

County: Kosciusko

Nearest Town: Warsaw

Center Lake Location: See Attachment A

1 to 2000 Map of Project Site: See Attachment B

Center Lake is located in the northern part of the City of Warsaw in Kosciusko County, Indiana. The size of the lake is 120 acres. The normal elevation of lake water surface is 804 feet above sea level.

III. Sediment Details

Lone's Ditch carries overflows from the Tippecanoe River southward into Center Lake. Over the years, sediment from Lone's Ditch has accumulated in the northern Center Lake channel.

Measures Taken to Control Sediment Deposits:

A level control structure that allows water and sediment to enter the lake from Lone's Ditch can be closed off during high flow.

Sediment Depth Measurements

Sediment depths were measured in the fall of 2007 by using a two-inch diameter PVC pipe with graduated markings every 0.1 of a foot. The pipe was first lowered to the top of the sediment and the water depth recorded. Then the pipe was pushed downward through the sediment until it reached a hard bottom.

The stream located at the north end of the lake drains into the lake and forms a channel. Over the years the sediment has built up to a depth of more than 3 feet in the channel.

Dimensions of the sediment deposits that could be removed without interfering with other lake uses are as follows:

10,000 cubic yards (650 yards x 15 yards x 1 yard)

IV. Lake Bottom Map [See Attachment C]

Normal Elevation of Lake Water Surface: 804 feet above sea level

Bottom Contours – Before Dredging: 803 feet above sea level

Map of Bottom Contours – After Dredging: 800 feet above sea level

Rationale for Excavation Depths: At least three feet of sediment has accumulated in each location, as measured by sediment probing.

Presence of Aquatic Macrophytes in Dredging Area:

Four species are present:

- White water lilly
- Sago pondweed
- Chara
- Common bladderwort

None of these species are endangered or threatened.

Source: Aquatic Vegetation Management Plan, 2006

V. Chemical Monitoring of Sediment

Location of Sediment Sample Site:

During the field sampling of August 10, 2007, a sediment sample was withdrawn from the inlet at the north end of the lake. Sampling was conducted by using the 2-inch PVC pipe, inserting it into the sediment, capping the top of the pipe and then withdrawing the sample. The sediment was then sent to Environmental Service Group for analysis.

Chemical Properties of Sediment:

See Attachment E. All constituents far below IDEM land application standards (not hazardous).

VI. Disposal Site Characteristics

Description of Disposal Site

The proposed sediment disposal site is on the property of Stephen Sanchez, about six hundred feet west of the channel. The site is presently planted in grass, with no trees present. No wetlands are present in this area. When prepared for sediment de-watering, the sediment basin will occupy about two acres.

Description of Easements, etc.

See attachment G

VII. Method of Dredging

Method to be Used: Hydraulic

Rationale for Method: Easy access, low sediment effects

Sequence of Pre-Dredging Events:

Obtain permit from DNR Division of Water

Get bids from contractors

Prepare dredge spoils sites

Procedures to be used to Prevent Off-Site Harm:

Sediments found to be non-hazardous by chemical analysis

No wetlands will be filled

Disposal sites are on upland soils [see Attachment F]

VIII. Contractor

Contractor Selection Process

Submit bid requests (Attachment J) to the following contractors:

Dredging Technologies
C/O Jeff Krevda
4896 E. 200 S
Marion, Indiana 46953
765-674-6815

Tenant Industrial Dredging
C/O Steve Tennant
P.O. Box 5195
Terre Haute, Indiana 47805
812-466-5201

Encore Dredging
P.O. Box 3069
Clarksville, Indiana 47131
941-876-0559

Southwind Construction
14649 Hwy. 41 N, Ste. 100
Evansville, Indiana 47725
812-867-7220

Merrell Brothers
8811 W. 500 N
Kokomo, Indiana 46901
574-699-7782

Energy Resources
2206 Samuel Stuart Ct.
Chesterfield, Missouri 63005
636-532-9558

Dredging Specialists
43 Dewitt Ave.
Mattoon, Illinois 61938
217-259-2229

Contractor Minimum Qualifications: previous experience

Project Overseer: To be selected by lake association prior to construction.

Qualification of Project Overseer: Local resident, professional construction manager.

IX. Sediment Disposal

Transportation to Disposal Site: via hydraulic pipe

Method of Disposal: De-watering basins. See Attachment I for specifications

Erosion Control Practices to be Used:

Silt fence and earthen dike at sediment de-watering sites.

Description of Disposal Site Restoration:

Leveling and re-seeding after sediments are dry. Each area will be re-seeded with annual rye, perennial rye, and fescue.

X. Permits

Description of Required Permits:

IDNR Division of Water: "Lake Preservation Act" permit

Responsible Person for Obtaining Permits:

Dale Long, Center Lake Association

Current Status of Permit Applications:

Not yet submitted.

Submit Attachment H when funding is secured

XI. Construction Schedule

Sequence of Events and Dates

1. Obtain permit from DNR: When funding is secured
2. Get bids from contractors: August
3. Select contractor: September
4. Remove docks from dredging areas: September
5. Prepare disposal sites by excavation: October
6. Begin dredging: October
7. Complete dredging: November
8. Re-seed dredge spoils sites: When dry

XII. Cost

Estimated Project Cost: \$100,000

Description of How Costs were Estimated: 10,000 cubic yards @ \$10 per yard (contractor estimates)

Description of Unusual Costs Associated with the Project: None

Attachment A: Project Location

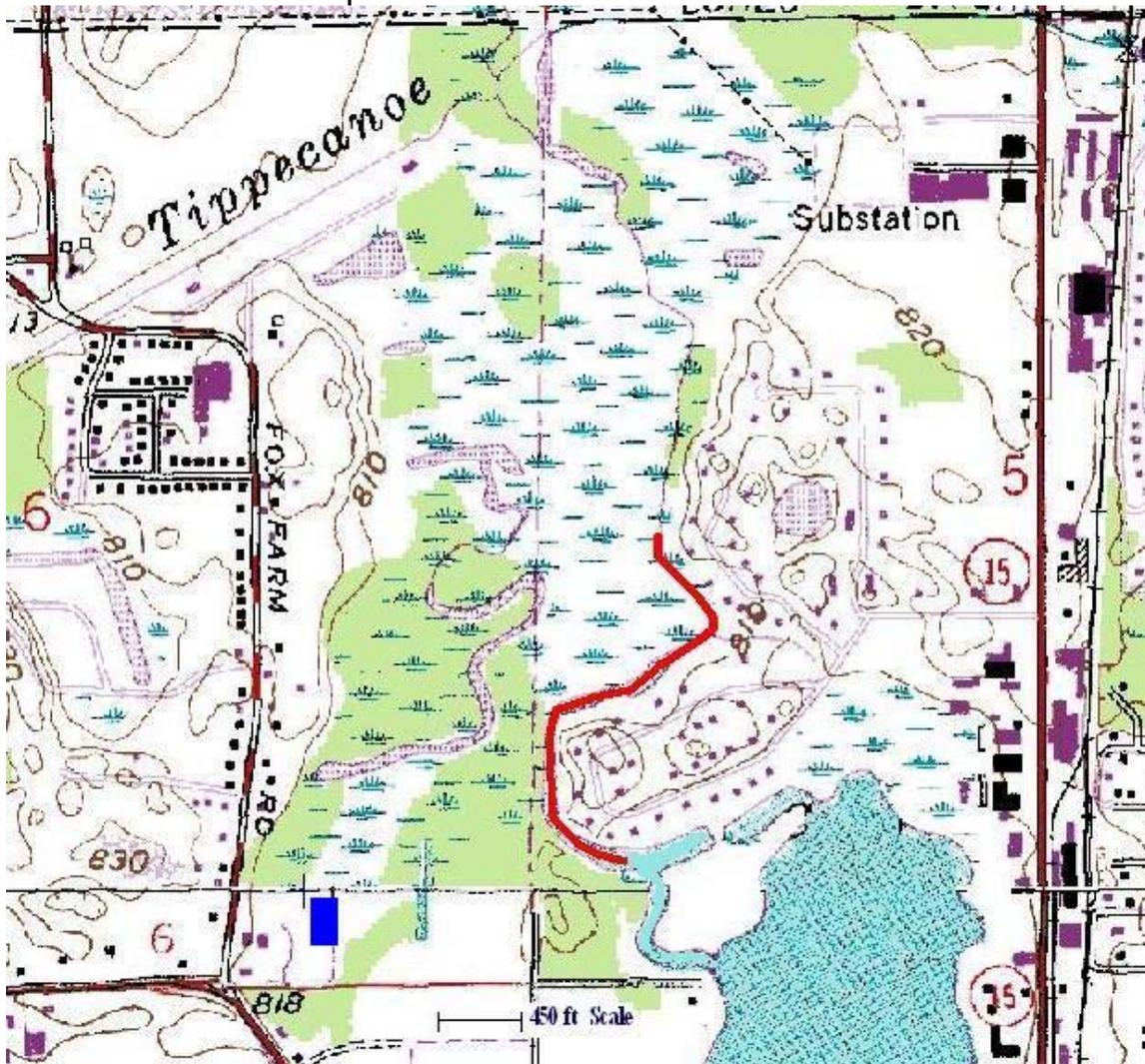


Attachment B:
 USGS topographical map of the Center Lake watershed

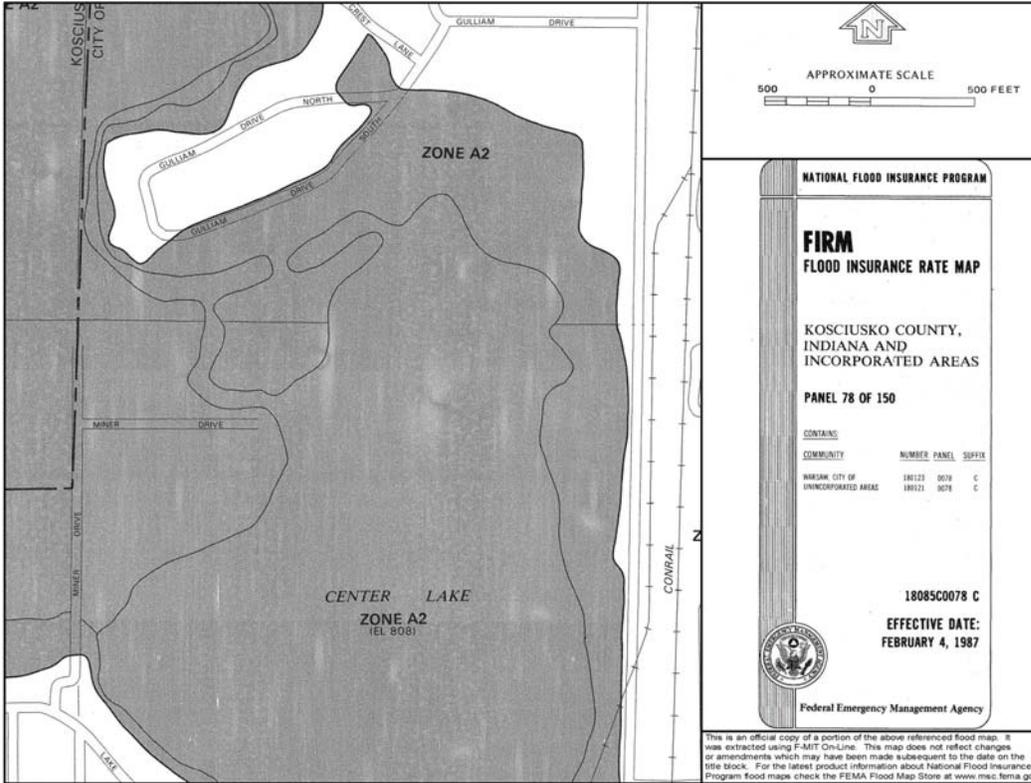


3-D TopoQuads Copyright © 1999 DeLorme Yarmouth, ME 04096 Source Data: USGS
 40 ft Scale: 1:16,000 Detail: 1:6 Datum: WGS84

Attachment C: Areas to be dredged in red
Disposal site in blue



Attachment D: Flood plain map



NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

KOSCIUSKO COUNTY,
INDIANA AND
INCORPORATED AREAS

PANEL 78 OF 150

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
WARSAW CITY OF	180123	0078	C
UNINCORPORATED AREAS	180121	0078	C

18085C0078 C

EFFECTIVE DATE:
FEBRUARY 4, 1987

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps, check the FEMA Flood Map Store at www.msc.fema.gov

Attachment E: Chemical Constituents in Sediment

- CERTIFICATE OF ANALYSIS -

Report Date: 11-Sep-07

Client ID: COMMONWEALTH

Commonwealth Biomonitoring
8061 Windham Lake Drive
Indianapolis, Indiana 46214

Phone: (317) 297-7713
FAX: (317) 297-7147

Attn: Maurice Broaddus

Our Lab # 07009406-001	Your Sample ID: Center Lake Sediment
Your Project #	Collection Date: 08/10/07
Your Project Name: Dredging Plan	Collected By: Client
Sample Type: Sediment	Receipt Date: 08/16/07 06:00

Total Phosphorus, as P	<u>Analytical Method</u> EPA 365.2	<u>Prep Method</u> EPA 365.2	<u>Prep Date</u> 8/24/07	<u>By</u> iholmes
------------------------	---------------------------------------	---------------------------------	-----------------------------	----------------------

Parameter	Result	Units	Qual	Quant. Limit	CAS #	Analysis Date	By
Phosphorus, as P	837	mg/kg Dry Wt		26.1	7723-14-0	8/24/07	iholmes

Total Kjeldahl Nitrogen	<u>Analytical Method</u> EPA 351.3	<u>Prep Method</u> EPA 351.3	<u>Prep Date</u> 8/21/07	<u>By</u> rbennett
-------------------------	---------------------------------------	---------------------------------	-----------------------------	-----------------------

Parameter	Result	Units	Qual	Quant. Limit	CAS #	Analysis Date	By
Total Kjeldahl Nitrogen	14900	mg/kg Dry Wt		52.2		8/21/07	rbennett

Arsenic, GFAA	<u>Analytical Method</u> EPA 206.2	<u>Prep Method</u> EPA 200.0	<u>Prep Date</u> 8/30/07	<u>By</u> lmcleary
---------------	---------------------------------------	---------------------------------	-----------------------------	-----------------------

Parameter	Result	Units	Qual	Quant. Limit	CAS #	Analysis Date	By
Arsenic, As	10.2	mg/kg Dry Wt		2.61	7440-38-2	8/30/07	lmcleary

Selenium, GFAA	<u>Analytical Method</u> EPA 270.2	<u>Prep Method</u> EPA 200.0	<u>Prep Date</u> 8/30/07	<u>By</u> lmcleary
----------------	---------------------------------------	---------------------------------	-----------------------------	-----------------------

Parameter	Result	Units	Qual	Quant. Limit	CAS #	Analysis Date	By
Selenium, GFAA	< 1.30	mg/kg Dry Wt		1.30	7782-49-2	8/31/07	lmcleary

Lab # 07009406-001

Sample ID: Center Lake Sediment

Page 1 of 2

ESG Laboratories

5927 WEST 71ST STREET
INDIANAPOLIS, INDIANA 46278

PHONE (317) 290-1471
FAX (317) 290-1670

Mercury, CVAA

Analytical Method Prep Method Prep Date By
EPA 245.1 EPA 245.1 8/31/07 ameal

Parameter	Result	Units	Qual	Quant. Limit	CAS #	Analysis Date	By
Mercury, CVAA	< 130	ug/kg Dry Wt		130	7439-97-6	9/6/07	ameal

Total Metals, ICP-AES

Analytical Method Prep Method Prep Date By
EPA 200.7 EPA 200.7 8/31/07 kfoltz

Parameter	Result	Units	Qual	Quant. Limit	CAS #	Analysis Date	By
Cadmium, Cd	< 6.52	mg/kg Dry Wt		6.52	7440-43-9	8/31/07	kfoltz
Chromium, Cr	< 13.0	mg/kg Dry Wt		13.0	7440-47-3	8/31/07	kfoltz
Copper, Cu	197	mg/kg Dry Wt		13.0	7440-50-8	8/31/07	kfoltz
Lead, Pb	< 26.1	mg/kg Dry Wt		26.1	7439-92-1	8/31/07	kfoltz
Molybdenum, Mo	43.5	mg/kg Dry Wt		13.0	7439-98-7	8/31/07	kfoltz
Nickel, Ni	< 13.0	mg/kg Dry Wt		13.0	7440-02-0	8/31/07	kfoltz
Potassium, K	< 652	mg/kg Dry Wt		652	7440-09-7	8/31/07	kfoltz
Zinc, Zn	117	mg/kg Dry Wt		13.0	7440-66-6	8/31/07	kfoltz

Total Solids at 105°C

Analytical Method Prep Method Prep Date By
EPA 160.3

Parameter	Result	Units	Qual	Quant. Limit	CAS #	Analysis Date	By
Total Solids at 105°C	7.67	%		0.50		8/20/07	ljackson



9/11/07

Lab Manager

Date

Lab # 07009406-001

Sample ID: Center Lake Sediment

Page 2 of 2

ESG Laboratories

5927 WEST 71ST STREET
INDIANAPOLIS, INDIANA 46278

PHONE (317) 290-1471
FAX (317) 290-1670

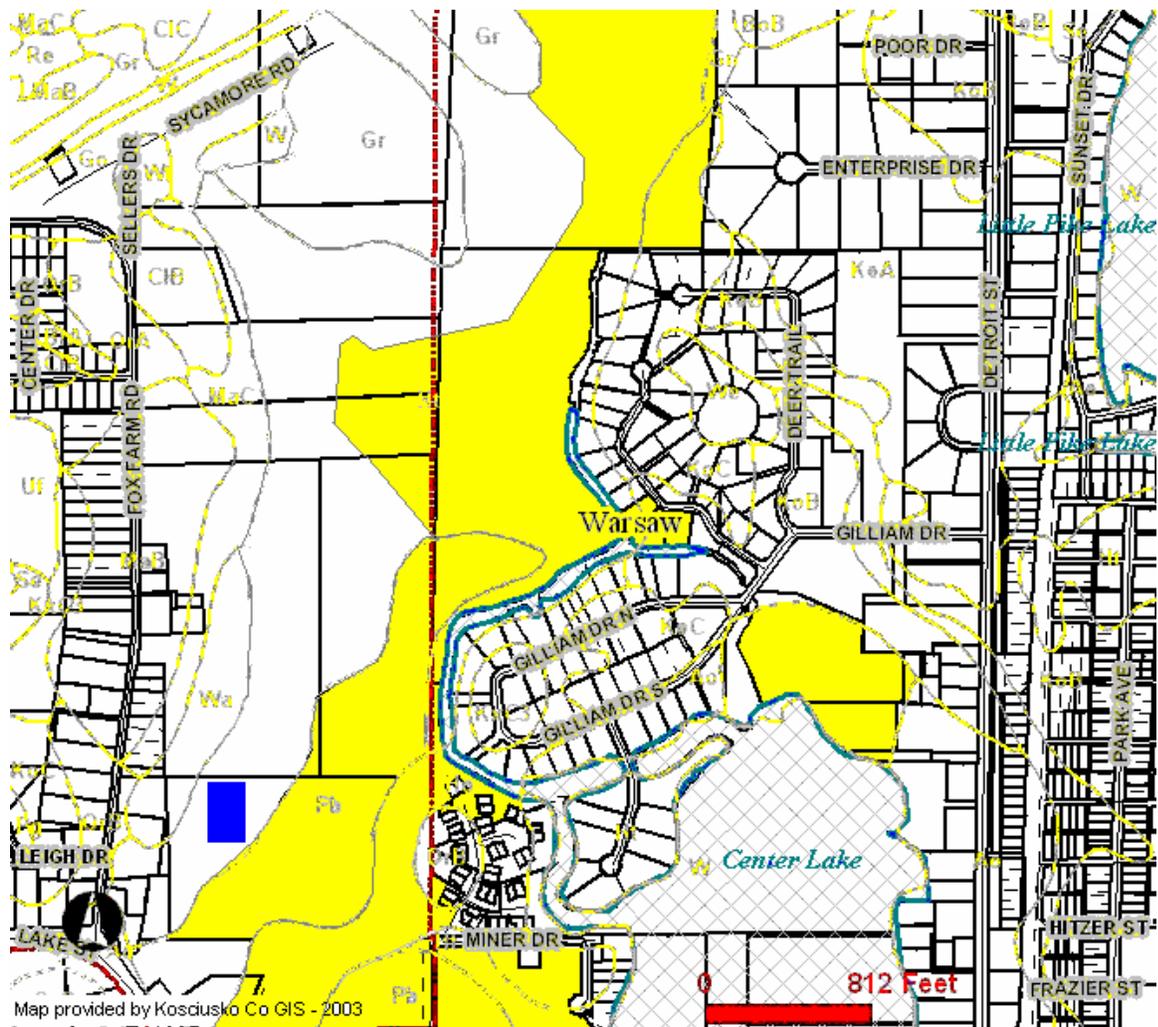
Lake Sediment Results (reported as mg/kg dry weight)
Center Lake Inlet [Kosciusko County]
10-Aug-07

	Result	Indiana Land Application "Standard"
Metals		
Arsenic	10.2	41
Cadmium	<6.5	39
Chromium	<13	1200
Copper	197	1500
Lead	<26.1	300
Mercury	<0.13	17
Molybdenum	43.5	75
Nickel	<13	420
Selenium	<1.3	100
Zinc	117	2800
Nutrients		
Nitrogen	14900	
Phosphorus	837	
Potassium	<652	

The Center Lake sediments had no chemical constituents that are a risk to land application
The sediments have some value as fertilizer [1.5% nitrogen, 0.1% phosphorus]

Attachment F. Disposal Site Characteristics

Owner: Stephen Sanchez, 980 N. Lake Street, Warsaw, IN



Soil Types at Disposal Sites: Crosier [not hydric]

Attachment G - Easements

AGREEMENT TO PROVIDE ACCESS
FOR CONSTRUCTION AND MAINTENANCE
OF SEDIMENT REMOVED
FROM CENTER LAKE

This agreement is made on the ____th day of _____, 2008 between Stephen E. Sanchez (THE OWNER) and the Center Lake Property Owner's Association (THE ASSOCIATION), a not-for-profit corporation organized under the laws of the State of Indiana.

THE OWNER enters into this agreement for the use and maintenance of real property located at 980 North Lake Street in, Warsaw, Indiana as described in the attached planning document and grants to THE ASSOCIATION access to the property as part of a sediment removal project on Center Lake.

ACCESS AGREEMENT:

TERM: The term of the agreement will begin on the signing date and continue for one year after THE ASSOCIATION receives approval from the Indiana Department of Natural Resources to proceed with the project.

CONSTRUCTION: Sediment from the lake inlet channel will be pumped out of the lake and into an excavated de-watering basin to be built on THE OWNER'S property. Water from the basin will filter out over a one year period, leaving only dry soil. When dry, the soil will be spread on THE OWNER'S property, permanently raising two acres of the property approximately six inches above its present elevation. The soil will be seeded with a grass mixture to prevent erosion.

COMPENSATION: No monetary compensation will be made. By carrying out this project, THE ASSOCIATION will have provided THE OWNER an improved lot with clean soil and nutrients for a healthy plant community.

To cause this agreement to be enacted, THE OWNER and THE ASSOCIATION (by its current President, Troy Turley) provide their signatures on the dates shown below:

THE OWNER

THE ASSOCIATION
Troy Turley, President

Date

Date

Attachment H : Permit Application & Public Notice



PERMIT APPLICATION FOR CONSTRUCTION

State Form 42946 (R6 / 2-05)
 Approved by the State Board of Accounts, 2005

Mail To: **Department of Natural Resources Division of Water**
 402 West Washington Street, Room W264
 Indianapolis, Indiana 46204-2641
 Telephone Number: (317) 232-4160
 Toll Free: 1-877-928-3755
 Fax Number: (317) 233-4579
 www.IN.gov/dnr/water

Based on the "Permit Application Assistance Manual", I am submitting this application to perform work under:			
Permit Type	Application Fee	Permit Type	Application Fee
<input checked="" type="checkbox"/> IC 14-26-2 Lake Preservation Act	\$ 100.00	<input type="checkbox"/> IC 14-29-3 Sand and Gravel Permits Act	\$ 50.00
<input type="checkbox"/> IC 14-26-5 Lowering of the Ten Acre Lake Act	\$ 25.00	<input type="checkbox"/> IC 14-29-4 Construction of Channels Act	\$ 100.00
<input type="checkbox"/> IC 14-29-1 Navigable Waterways Act	No Fee		
<input type="checkbox"/> IC 14-28-1 Flood Control Act, (select one of the following:)			
<input type="checkbox"/> Excavation, fill, or non-residential construction in a floodway			\$ 200.00
<input type="checkbox"/> Residential reconstruction in a floodway, other than the Ohio River floodway			\$ 50.00
<input type="checkbox"/> Residential construction, or reconstruction, in the Ohio River floodway			\$ 10.00

PLEASE TYPE OR PRINT

1. APPLICANT INFORMATION

Name of Applicant Center Lake Association Name of Contact Person Dale Long

Applicant Mailing Address 531 Crestlane Drive Warsaw IN 46580
 Street, P.O. Box or Rural Route City State ZIP Code

Contact Information: Daytime Tele. # (574) 269-1920 Fax # () E-mail Address _____

2. AGENT INFORMATION

Name of Agent _____ Name of Contact Person _____

Agent Mailing Address _____
 Street, P.O. Box or Rural Route City State ZIP Code

Contact Information: Daytime Tele. # () Fax # () E-mail Address _____

3. PROPERTY OWNER INFORMATION

Name of Property Owner State of Indiana Name of Contact Person _____

Property Owner Mailing Address _____
 Street, P.O. Box or Rural Route City State ZIP Code

Contact Information: Daytime Tele. # () Fax # () E-mail Address _____

Relationship of applicant to property: Owner Purchaser Lessee Other _____

4. PUBLIC NOTICE (See Permit Application Assistance Manual)

Complete and submit SF # 52086 titled "Adjacent Property Owners Listing - Form N-4: Affirmation of personal service.

PROJECT DESCRIPTION 5.1 Description Narrative: (See Permit Application Assistance Manual)

This project is funded by the IDNR Lake and River Enhancement [LARE] program. Ten thousand cubic yards of sediment that have accumulated in the Lake inlet will be removed by hydraulic dredging. The sediment will be de-watered and graded at a nearby upland disposal site. Removing the Accumulated sediments will improve water quality by reducing nutrient loading that contributes to nuisance aquatic plant growth.

6. PROJECT LOCATION**6-1 Location Narrative:** *(See Permit Application Assistance Manual)* **Stream/Lake Name:**

Center Lake, on the north side of Warsaw, on the west side of Highway 15, south of Highway 30.

6-2 Driving Directions: *(See Permit Application Assistance Manual)*

One-half mile south and west of the intersection of U.S. Highway 30 and State Highway 15 on the north side of Warsaw. The channel can be observed along Gilliam Drive, North

6-3 Special Information: *(See Permit Application Assistance Manual)*

Part of a LARE grant program

6-4 Project Location Map: *(See Permit Application Assistance Manual)***6-5 Project Site Map:** *(See Permit Application Assistance Manual)***7. DISTURBED AREA DRAWING****7-1 Drawing Requirements:** *(See Permit Application Assistance Manual)***8. PROJECT PHOTOGRAPHS****8-1 Images:** *(See Permit Application Assistance Manual)***8-2 Photo Orientation Map:** *(See Permit Application Assistance Manual)***8-3 Photo Documentation:** *(See Permit Application Assistance Manual)***9. RELATED PROJECT INFORMATION****Department of Natural Resources**

Administrative Cause #	Related Application(s) #	Early Coordination #
Floodplain Analysis/Regulatory Assessment #	Violation #	Exemption #

Department of Environmental Management

Section 401 #

Corps of Engineers

Public Notice #	Section 404 Application #	Section 10 Application #
-----------------	---------------------------	--------------------------

10. STATEMENT OF AFFIRMATION

I hereby swear or affirm, under the penalties for perjury, that the information submitted herewith is to the best of my knowledge and belief, true, accurate and complete. I further certify that I possess the authority to undertake the project. I hereby grant to the Department of Natural Resources, the right to enter the above-described location to inspect the work.

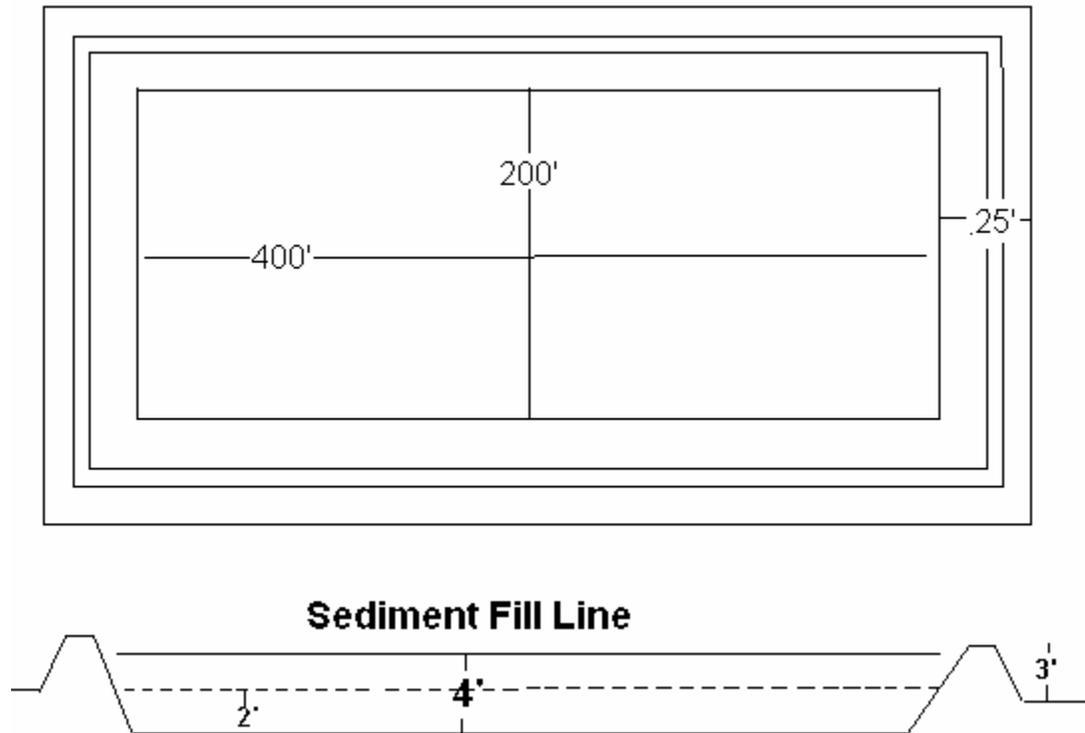
Signature of Applicant or Authorized Agent *(REQUIRED)*

Date *(month, day, year)*

11. REGULATORY FEES**11-1 Regulatory Fees Submitted:** *(See Permit Application Assistance Manual)***11-3 Payment Method:** *(See Permit Application Assistance Manual)*

Attachment I

Sediment dewatering basin specifications



When filled, the sediment de-watering basin is capable of holding 10,000 cubic yards of sediment. When de-watering is complete and the soil is re-seeded, the new elevation at the site will be approximately 1 foot above the present elevation.

Attachment J
Bid Documents

Project Name: Center Lake Dredging Project

Bid Due Date: _____

Respond in writing or by email to: Greg Bright
Commonwealth Biomonitoring
8061 Windham Lake Drive
Indianapolis, IN 46214
317-297-7713
water_quality@tcon.net

Bidder Information:

Name: _____

Address: _____

Phone: _____

Bid Information:

We propose to furnish labor, equipment, tools, and supplies to perform the various tasks checked on page 2 for the "lump sum price" of:

\$ _____

Bidder's Name _____

Bidder's Signature _____

Date Signed: _____

Tasks

Please check those tasks you propose to carry out:

Hydraulic dredging at Site 1 (10,000 cubic yards) _____

Construct sediment de-watering basin at Site 1 _____

Grade and seed dried sediment at Site 1 _____

This bid is valid for the calendar year 2009.