1995

Lake Winona EAW documents

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ENVIRONMENTAL ASSESSMENT WORK SHEET

1. Removal of Sediments from Lake Winona by Hydraulic Dredging

2. City of Winona, Robert Bollant, Director of Public Works

3. same

4. mandatory, EQB rule category number?

5. Bob has information. Should state "within the City of Winona"

6. (This could go in the appendix) All 319 acres of Lake Winona lie within the City of Winona and are protected by the City's permanent levee system. The lake includes two basins, but the proposed project only involves the 215-acre east basin. Lake Winona is highly eutrophic because it receives nutrient-rich storm sewer effluent from parts of Winona and Goodview. The lake was originally marshy, but its depth was decreased further by agricultural soil eroded from the intensively farmed Gilmore Valley watershed and transported to Lake Winona by 1885-1944 floods of Gilmore Creek. The lake was dredged several times from 1913 to 1952. A flood reservoir (Boller Lake), created in 1944, now intercepts Gilmore Creek sediments. The entire lake has an average depth of 8 feet, but this figure does not truly reflect the shallowness of the lake because it is inflated by small, deep dredge holes along the north shore. Severe winterkills in 1965 and 1969 led to a reclamation project in 1973 to restore the lake as a sportfishery. Because of the lake's shallowness and fertility, curlyleaf pond weed has proliferated, causing stunting of panfish and decreased recreational and scenic values. The lake has been artificially aerated since 1973.

Lake sediments were sounded to a depth of 30 feet at 40 locations in 1986. They showed that the east basin of Lake Winona is underlain with sand that extends downward to great depths, but that the sand deposits are covered by a layer of soil (mainly agricultural soil washed in due to
early, destructive farming practices) of varying thickness, and an uppermost layer of organic muck about two feet thick. The 1986 soundings were confirmed with five test hole borings made through the ice in 1995. Only the sand is suitable for fill. Dredging will be done where the soil layer is thinnest and the sand deposits are closest to the surface.

A floating 12-inch hydraulic dredge will extend its cutter head downward, removing sand to a depth of 30 feet. About 80 (?) acres of the lake will be dredged to a 16-foot depth. The overlying soil layer will cave in behind the cutterhead, remaining at the lake bottom. Dredging consultants estimate that about 25% of the organic muck layer will be sucked up with the sand that will be piped through a culvert under Mankato Avenue and along County Ditch No. 4 to Riverbend Industrial Park. The remaining 75% of the muck will settle to the bottom of the lake. The sand will drop out close to the outlet of the dredge pipe, but the water, silt and organics will flow to a basin where the silt and organics will settle out, to be mined later. The project is expected to be completed in one dredging season, from spring breakup until fall freeze up, possibly as early as 1997.

Specifically, 1,300,000 (?) cubic yards of sand would be mined from ___ acres of the east basin of Lake Winona. The sand would be pumped to Riverbend Industrial Park where 81 acres would be filled with 950,000 (?) cubic yards of the sand. The rest of the sand (350,000 (?) cubic yards) would be stockpiled and later used to fill low portions of Schain Industrial Park and to raise low-lying parkland and athletic fields around Lake Winiona. Additionally, 180,000 (?) cubic yards of soil and organic muck would be pumped out of a 14-acre bay, forming a two-foot layer of muck atop the sand at Riverbend. The muck will shrink as it dries, forming a one-foot deep layer of soil that will be used for landscaping.

This plan has been refined over a 15-year period in consultation with Robers Dredging Company, J. F. Brennan Dredging Company, U. S. Army Corps of Engineers dredging personnel, various governmental agencies, City of Winona engineering staff, Winona Port Authority, Winona State University Biologists, and the Lake Winona Committee.
7. Bob

8. Bob

9. ?

10. NA. no change

11. a. Lake Winona has a high standing crop of bluegills, crappies, largemouth bass, and bullheads. Northern pike, walleyes, yellow perch, and carp are also common. Large year-round population of nesting wild mallards and wild-domestic mallard hybrids have developed in recent years. Woodducks utilize the lake and nest in the adjacent forest and in nest boxes. Cormorants, gulls, and ospreys fish the lake in summer. Canada geese have become common, especially in winter. Muskrats utilize the banks of the lake for their burrows, but construct no houses in the lake proper. The project should not significantly impact any of these fish or wildlife resources.

   b. No

12. Yes. explain about Riverbend

13. a. No

   b. Yes. Bob, supply cubic feet per sec. Because the aquifer is sandy, and because of the proximity of the Mississippi River, ground water levels will not be significantly affected.

14. No. Both Lake Winona and Riverbend Industrial Park lie within Winona's flood protection levees; they are thus excluded from the floodplains of the Mississippi River and its tributaries.

15. No.

16. No.

17. Bob, cubic yards to be moved, acres to be affected in LW and RB.
18. NA.

19. NA.

20. NA?

21. a. In 1995, core samples were collected at 7 locations where dredging will be done. The cores were segmented, and duplicate samples from each segment were sent to different laboratories for analysis. Analytical analyses were performed for 12 inorganics (mainly heavy metals), 9 PCBs (polychlorinated biphenols), total organic carbon, total solids, total volatile solids, 19 pesticides, and 16 polynuclear aromatic hydrocarbons. Sediments were also characterized physically. The tests revealed no hazardous levels of any contaminant tested. Earlier tests have shown elevated lead levels near the mouths of storm sewers, but the lead exists as lead carbonate which is relatively insoluble in the hard water of Lake Winona.

   b. NA.

22. NA.

23. NA.

24. Yes. There will be diesel exhaust from the dredge and from the earth moving equipment at Riverbend.

25. There will probably be an odor of hydrogen sulfide near the outfall of the dredge pipe, but no one lives there. Noise will be minimal.

26. a. Yes, b. No, c. Yes, d. Yes, e. Yes Lake Winona is surrounded by city parks, municipal band shell, playgrounds, and a bike path. The east basin has three fishing piers. Garvin Heights Scenic Overlook views the project area. The project should have no adverse impacts on these resources.

27. No. On the contrary, the project should be educational and interesting to residents and visitors.
28. Yes. Bob, what's the title, etc of the comprehensive 25-year city plan?

29. No.

30. a. No, b. Yes c. No d. The dredging will: 1) help control growth of nuisance weeds, 2) remove nutrient-rich sediments that have a high biochemical oxygen demand, 3) increase the volume of the lake, 4) probably make artificial aeration unnecessary for about 15 years, 5) make the lake bottom more productive of fish-food organisms, 6) extend the useful life of the lake, and 7) make the lake more swimmable, fishable, and aesthetically pleasing. The filling of Riverbend Industrial Park will: 1) provide industrial space and employment, 2) concentrate industry in one place, away from residential, riverside, and scenic areas, 3) reduce truck traffic near a school and residential areas, 4) enable the area to be filled in a planned manner, rather than having it filled piecemeal, and 5) provide the only possible disposal area for Lake Winona sediments.

31. The project will destroy 1.85 acres of Types 3 and 5 wetland (???) within Riverbend. Monetary mitigation for this has been accomplished. (Bob, how much, etc).

32. Bob, what's a Scoping Decision Document??

ABSTRACT FOR EQB MONITOR:

Sediments will be hydraulically dredged from Lake Winona to construct Riverbend Industrial Park, thereby improving the recreational qualities of this eutrophic urban lake and providing badly needed industrial space within the city to prevent the sprawl of industry into agricultural land and scenic blufflands. Both projects are excluded from the Mississippi River floodplain because they are protected by Winona's levee system.

Miscellaneous: We'll need an appendix of maps, background information, tables, etc.
Lake Winona      EAW LOG

Sept 22  ½ hr  with  Bollant
          1 hr at home
25       1 hr  with  Neal
26       3 hrs  at home
27       ½ hrs  with  Bollant
QUESTIONS AND ANSWERS REGARDING THE PLAN TO FILL RIVERBEND INDUSTRIAL PARK BY DREDGING LAKE WINONA

Question- What is the basic plan?
Answer- The plan is based on the premises that: 1) Winona is in dire need of industrial land, and 2) Lake Winona and its surrounding parkland are among Winona's most valuable assets. A hydraulic dredge would mine 1,300,000 cubic yards of sand from the east basin of Lake Winona. The sand would be pumped to Riverbend Industrial Park (the wooded area between Fleet Farm and Shive Road) where 81 acres would be filled with 950,000 cubic yards of the sand. The rest of the sand (350,000 cubic yards) would be stockpiled and later used to fill low portions of Schain Industrial Park (the field north of Homer Road just beyond MediaWerks) and to raise low-lying parkland and athletic fields around Lake Winona. Additionally, 180,000 cubic yards of soil and organic muck would be pumped out of the 14-acre bay adjacent to Winona Knits to form a two-foot deep layer of muck atop the sand at Riverbend. The muck would dry to about one foot deep, forming topsoil that could be used for landscaping.

Question- How do you know that there are sand deposits in Lake Winona?
Answer- Lake sediments were sounded to a depth of 30 feet at 40 locations in 1986. They showed that the east basin is underlain with sand that extends downward to great depths, but that the sand deposits are covered by a layer of soil (mainly agricultural soil washed in due to early, destructive farming practices) of varying thickness, and an uppermost layer of organic muck about two feet thick. The 1986 soundings were confirmed with five test hole borings made through the ice in 1995. Only the sand is suitable for fill. Dredging will be done where the soil layer is thinnest and the sand deposits are closest to the surface.

Question- How would the dredging be done?
Answer- A floating 12-inch hydraulic dredge will extend its cutter head downward, removing sand to to a depth of 30 feet. The overlying soil layer will cave in behind the cutterhead, remaining at the lake bottom.
The dredging company estimates that about 25% of the organic muck layer will be sucked up with the sand which will be piped under Mankato Avenue, along County Ditch No. 4 to Riverbend Industrial Park. The remaining 75% of the muck will settle to the bottom of the lake. The sand will drop out close to the outlet of the dredge pipe, but the water, silt and organics will flow to a basin where the silt and organics will settle out, to be mined later.

Question: What would the benefits be?
Answer: As a result of this dredging and previous dredgings, over one-half of the east lake will be at least 16 feet deep (too deep for weeds to grow). Decreased weeds will make the lake more attractive and should cause fish to grow faster by reducing the dense cover that protects stunted panfish from predators. Deepening the lake will increase its useful life span. Filling Riverbend and Schain Industrial Parks with sand (and providing utilities) will make them attractive to industry, ultimately resulting in jobs and an increased tax base for the City of Winona. The plan makes it possible to accomplish several vital projects for the approximate cost of the dredging alone. It is a window of opportunity that will never exist again. It is inevitable that Riverbend will be filled, but if it is filled with sand from some other source it will not be possible to ever dredge Lake Winona because there will be no place to put the dredged sediments.

Question: Wouldn't it be cheaper to fill Riverbend with sand from the Mississippi River (as was done at Fleet Farm)?
Answer: No, because the Corps would have to transport dredged sand to an off-loading area near Peerless Chain. The sand would then have to be pumped or trucked to Riverbend. This distance is greater than the average dredging distance from Lake Winona. This option would provide no benefit to Lake Winona.

Question: How long would it take to dredge the lake?
Answer: At least one year (spring through fall).
Question - Can the lake be used during dredging?
Answer - Yes.

Question - Will the dredged materials stink?
Answer - There may be a smell of hydrogen sulfide (like rotten eggs) in the immediate vicinity of the outfall of the dredge pipe, but it will quickly dissipate. Once in the disposal area, the sediments will not cause odor problems.

Question - Does the City have a permit to fill Riverbend?
Answer - Yes, after 20 years of negotiations with the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, U.S. Soil Conservation Service, Minnesota Department of Natural Resources, and Minnesota Pollution Control Agency. The City of Winona received its permit to fill Riverbend on January 17, 1995. Because Riverbend contains soils determined to be hydric (soils formed in water-saturated areas), it is classified as a wetland, even though the pumping station in County Ditch No 4 now keeps it drained. Because it is classified as a wetland, the City must mitigate for its loss by contributing $100,000 to a fund for wetland creation (elsewhere in the state). We think the money could be better spent controlling loosestrife and improving the marshes along the south side of both basins of Lake Winona, but this seems unlikely under present regulations.

Question - How do you know that the plan for dredging the lake and creating industrial land is feasible?
Answer - The plan has been refined over a 15-year period in consultation with Robers Dredging Company, J.F. Brennan Company, U.S. Army Corps of Engineers dredging personnel, and various other governmental agencies. City engineering staff and the Winona Port Authority have had considerable experience with dredging, as have Winona State University biologists, and members of the Lake Winona Committee.
Question - Does the City of Winona have a permit to dredge Lake Winona?
Answer - No. A permit is contingent upon testing to determine if Lake Winona sediments have prohibitive levels of toxic substances in them. Core samples have been taken at 7 locations where dredging would be done. The cores were segmented, and duplicate samples from each segment were sent to different laboratories for analysis. Analytical analyses were performed for 12 inorganics (mainly heavy metals), 9 PCBs (polychlorinated biphenyls), total organic carbon, total solids, total volatile solids, 19 pesticides, and 16 polynuclear aromatic hydrocarbons. Sediments were also characterized physically. The tests cost the City $25,000. The laboratory report will be sent to the Corps of Engineers for interpretation and a decision whether or not to issue a permit.

Question - Aren't Lake Winona sediments polluted with lead?
Answer - Earlier tests have shown elevated lead levels near the mouths of storm sewers. This is to be expected because lead from leaded gasoline washed into Lake Winona for many years. However, the lead exists as lead carbonate which is virtually insoluble in hard water (like Lake Winona). If lead does find its way into fish, it would be concentrated in bones, not flesh. Lake Winona fish are safe to eat.

Question - Hasn't Lake Winona been dredged before?
Answer - Yes, several times from 1913 to 1952, mainly to create Lake Park, the Huff Street causeway, part of Highway 61, and the land that the hospital, high school, Maxwell Athletic Field, and many homes are built upon.

Question - Won't the lake fill again with sediment?
Answer - Today, the sediment input to East Lake Winona is minimal, mainly from storm sewers. The Lake initially filled with soil washed in with floods from Gilmore Valley and West Burns Valley because of poor land management. Sediment from Gilmore Valley is now intercepted by Boller Lake. West Burns Valley Creek is now flanked by levees and flows...
directly into the Mississippi River. West Lake Winona acts as a trap for sediment from Woodlawn Cemetery and the surrounding valley. Organic sediments are produced constantly in Lake Winona from dead weeds, plankton, and fish, but they accumulate very slowly. About two feet of this organic muck (technically called sapropel) have formed in the last 50 years.

Question- Would the West Lake be dredged also?
Answer- Not as part of the proposed project because: 1) it contains no significant sand deposits near enough to the surface to be dredged, 2) there are no basins nearby where sediment could be legally pumped, and 3) the great distance to Riverbend would make the cost prohibitive. If not dredged, the West Lake will fill very slowly (decades) with soil from the cemetery watershed and with organic sediments formed within the lake.

Question- What would the project cost?
Answer- Site preparation, mitigation costs, and dredging would total almost $3,500,000. Unfilled and without permits, 81 acres of Riverbend Industrial Park is worth $40,500. With permits, filled and supplied with utilities it will be worth $2,025,000. The 350,000-cubic yard stockpile of sand for Lake Park and Schain Industrial Park will have an additional value of at least $735,000.

Question- How would the project be financed?
Answer- There are no state or federal grants available. It would have to be financed by a city sales tax and/or bonding.

Question- Will the silt and organics be valuable as top soil?
Answer- They will be sterile for a year or two, but after they have aged they will make good soil, as evidenced by the productivity of Winona’s public gardens located on old dredge spoil.
Question: Will the dredging make Lake Winona into a crystal clear, walleye-filled lake that never has weed or algae problems?
Answer: No, because Lake Winona is highly eutrophic (enriched), mainly because it receives nutrient-rich storm sewer effluent from about one-half of Winona and part of Goodview. Consequently, it supports weeds, algae, and a huge fish population. Severe winter kills of fish in 1965 and 1969 led to a reclamation project in 1973 to restore the lake as a sportfishery, especially for children, the elderly, and the handicapped. Presently, Lake Winona is "on a life support system"; winter kills are prevented by artificial aeration at two sites. The lake now has four fishing piers and is encircled by an asphalted path used extensively for walking, jogging, bicycling, and rollerblading. The reclamation project has been very successful, but weeds are a problem because the lake is so rich and shallow (78% of the east basin is no deeper than 10 feet). Weeds grow to a depth of 15 feet, providing so much cover for panfish that they are overabundant and stunted. Dredging will increase the volume of the lake and make a large area too deep for weeds to grow. It should stimulate fish growth and may make artificial aeration unnecessary in the east basin.