



MEMORANDUM

TO: CITY COUNCIL

FROM: STEPHEN ROHLF, BUILDING AND ZONING ADMINISTRATOR

DATE: SEPTEMBER 21, 1998 SR

SUBJECT: FINAL UPDATE ON LAKE ORONO

Sediment Removal and Disposal

The "Final Excavation Quantities" map attached shows the actual cubic yards of material removed from the various locations in lake. The "Final Disposal Quantities" map shows how many actual cubic yards of sediment were placed on each of the disposal sites. The targeted amount of sediment to be removed from the lake was **109,000** cubic yards. The actual total amount of sediment removed was **120,152** cubic yards.

The additional material above the targeted amount was removed from the area where the Elk River first empties into Lake Orono, creating additional room for future sedimentation. This additional sediment removal was able to be accomplished because time and money permitted and alternative disposal sites were able to be found. The various permitting government agencies were also very gracious about allowing alterations to their permits.

Some city owned parcels benefited from the disposal of sediment from the lake. Roughly 4,000 cubic yards of material high in organic matter were placed on an EDA site south of Highway 10 and will be used as topsoil supplement. In addition, another stockpile of material high in organic matter was disposed of on city park land in the plat of Riverplace. The soil in this plat is fairly sandy and the residents there are free to use the material as a topsoil supplement. Whatever remains of this stockpile after the spring of the year 2000 will be used on the park property itself.

The original project included shaving the tops off of several of the sand bars in the lobe of the lake just north of the Highway 10 bridge. The material from these sand bars was to be left in the lake. This work would have constituted some 6,000 cubic yards of grading, however, MPCA denied this portion of the project through their permit.

Unfinished Tasks

There are a few final items that are still need to be accomplished before the Lake Orono project is totally completed. The following are the unfinished tasks for the project and the estimated time of their completion:

- Establishing benchmarks (winter of '99) - Specific locations for monitoring the future sedimentation of lake will be established.

- Plantings at Orono Cemetery (spring of '99) - The erosion control at Orono Cemetery includes willow staking and planting bushes that are proposed to be accomplished next spring. The Sherburne County Tree Board is interested in doing this work. The final settlement of grant money for this erosion control can not happen until all the work is completed. The erosion control at Orono Cemetery was ranked number one in the state by the Minnesota Board of Water and Soil Resources to receive a "Special Projects" grant.
- Final planting at the Bickman and Hartman disposal sites (spring of '99) - Alfalfa will be the final cover placed on the Bickman site and red clover will be seeded on Hartman's. The sites have already been adjusted for acidity and fertilizer. To save money the Street Department will likely do the planting.
- Final grading and seeding of the Tim Smith disposal site (spring of '99) - Veit is responsible for the grading and the city will probably do the seeding.
- Removal of silt fence (summer of '99) - After the vegetation on the disposal sites and access areas from the lake are well established, Veit will remove silt fence used for erosion control.

Future Lake Work

The following are staff's recommendations regarding the sedimentation and water quality of Lake Orono in the future:

- Cooperate with the Elk River Watershed Board on improving water quality and controlling erosion in the Elk River. It would be logical for someone from the Lake Orono Improvement Association to represent the City of Elk River on this board. John Weicht has already been appointed to the Sherburne County Water Plan Committee, which is another body with whom the city should stay active.
- Continue joint City/ Lake Orono Improvement Association meetings to work on lake and river issues.
- Develop ongoing plans for Lake Orono and the Elk River to monitor fecal coliform, sedimentation, etc..

Individual Lake Projects

Numerous property owners on the lake took advantage of the lake being drained to do improvements to their shorelines. Only ten of these individual projects, ranging from sediment removal to retaining walls, were for work that required a DNR permit. As of the date of this memo, all but one of the individual projects that required a DNR permit are completed and resolved.

LAKE IMPROVEMENT EXPENSES

LAKE ORONO SEDIMENTATION AND WATER QUALITY STUDY

6/96 to 10/97

\$39,800 - original estimate from Wenck and Associates
\$29,000 - revised estimate from Wenck using volunteers
\$25,407 - amount paid to Wenck for study

COSTS

\$25,407 - Wenck & Associates
\$6,600 - B & Z Staff time (estimated)
\$3,994 - Sherburne Soil and Water Conservation District testing and labor
??????? - Volunteer time and equipment
\$36,001 - Actual cost of study not including volunteer time and equipment

CONTRIBUTIONS

?????? - Lake Association volunteer time
\$9,000 - Sherburne County cash contribution
\$5,000 - Elk River Lion's Club cash contribution
\$3,994 - Sherburne Soil and Water Conservation District testing and labor
\$1,000 - Lake Orono Improvement Association cash contribution (outstanding)
\$6,600 - City of Elk River B & Z Staff time (estimated)
\$10,407 - City of Elk River cash contribution
\$36,001 - Not including volunteer time

LAKE ORONO SEDIMENTATION REMOVAL PROJECT

Summary

\$750,000 - Feasibility Study estimated cost (does not include staff or volunteer time)
\$705,118 - Actual cost of items covered in feasibility study (items included in feasibility study number in following detail are noted by *)

\$725,097 - Total of all cost for dredging project

\$373,097 - City contribution (includes \$57,200 assessed to city and \$14,950 in-kind)
\$352,000 - Total amount assessed for project (does not includes \$57,200 assessed to city)

\$376,604 - Adjusted city contribution [minus \$13,500 Orono Cemetery grant (estimated) plus \$17,007 city lake study contribution (\$10,407 cash & \$6,600 staff time)]

Detail

PROJECT ANALYSIS AND DESIGN

10/97 to 12/97

\$2,559 - Wenck and Associates
\$270 - Aerial photos of lake 10/15/97 & 10/17/97
*\$28,916 - Engineering plans & specifications and bid letting
\$2,400 - B & Z staff time (estimated)
\$34,145

PERMITS ACQUISITION

1/1/98 to 8/3/98

*\$2,439 - Wenck and Associates
*\$500 - DNR permit
*\$85 - MPCA permit
\$3,600 - B & Z staff time (estimated)
*\$1,700 - Phase I Archaeological Survey at Orono Cemetery disposal site
*\$1,549 - Legal disposal site agreements
\$9,873

PROJECT CONSTRUCTION

8/4/98 to 10/31/98

Engineering

*\$8,824 - Construction staking,
*\$27,829 - Inspection
*\$6,132 - Administration
\$42,785

Miscellaneous

*\$902 - Postage & publishing
*\$28 - Garbage service for lake clean-up day
\$2,200 - Bickman staging area agreement
*\$1,023 - Westwood storm sewer erosion control (sod & rip-rap)
*\$823 - Prairie grass seed
*\$11 - PH testing at Bickman's
*\$58 - Aerial photos prior to refilling lake
*\$12 - Copies
*\$7,500 - Bond issuance (estimated)
*\$3,206 - Engineering assessment role
\$15,763

Street Department

\$450 - Manpower hosting lake cleanup drop-off
\$450 - Removing barrels and other debris from the lake
\$160 - Putting up fencing at Orono Cemetery
\$400 - Patching the parking lot at the Elk River Bowl
 \$50 - Patching the drive at the Orono Cemetery
\$350 - Backhoe time removing sediment at Westwood Subdivision storm sewer outlet
 \$50 - Putting up warning signs on public property adjacent to the lake
\$180 - Controlling spillway at dam
\$360 - Repair of Orono Beach boat ramp
\$600 - Repair storm sewer rip-rap adjacent to City Hall
\$500 - Future seeding at Bickman, Hartman, and Smith disposal sites (estimated)
\$3,550

Building & Zoning Department

\$5,400 - Time spent on project during construction (estimated)

Veit & Co., Inc.

*\$612,581 - River diversion and sediment excavation and disposal

Sherburne County Tree Board

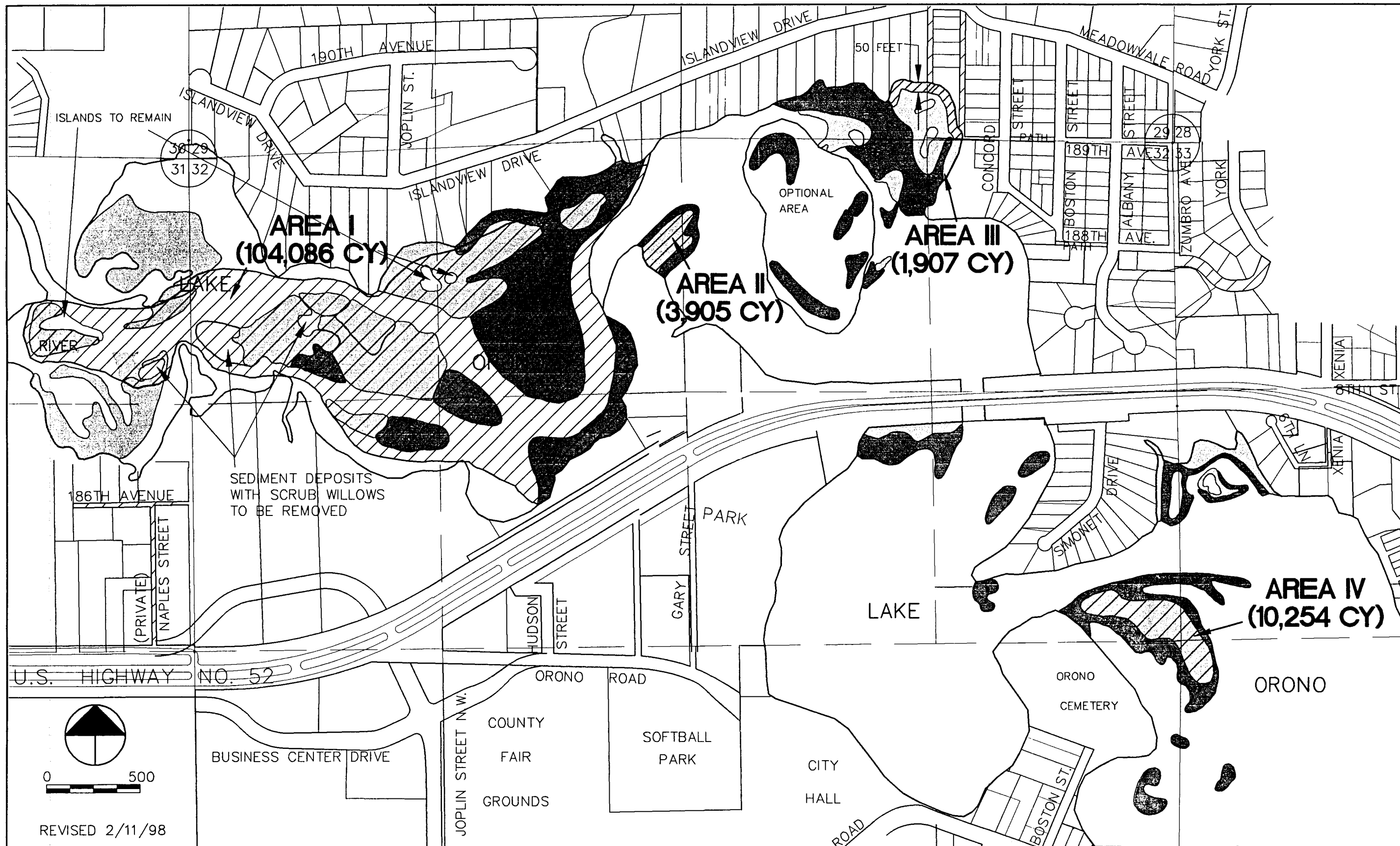
*\$1,000 - Plantings for Orono Cemetery erosion control, if job is accepted (estimated)

Summary of Project

The goal for the Lake Orono Improvement Project was to remove 109,000 cubic yards of sediment from the lake with most of the effort being concentrated in the west end. The feasibility study estimated the cost of this work at \$750,000. Lastly, the permits for the project required the work to be completed no later than October 31, 1998.

The total sediment removed from the lake was 120,152 cubic yards with the additional yardage coming from the west end. The cost of the project was \$705,118 (feasibility numbers). Lake Orono was restored to its full depth on October 31, 1998.

The feedback from the lake owners, disposal site owners, and permitting governmental agencies is all positive. Safety hazards have been eliminated and navigable depth has been restored to all four lobes of the lake. In addition, numerous lake owners took advantage of the situation to improve their shorelines. Now if the projects last for more than a couple of years it can be considered a success.



**AREA I
(104,086 CY)**

**AREA II
(3,905 CY)**

**AREA III
(1,907 CY)**

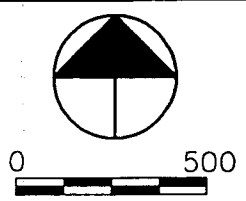
**AREA IV
(10,254 CY)**

SEDIMENT DEPOSITS
WITH SCRUB WILLOWS
TO BE REMOVED

OPTIONAL
AREA

ISLANDS TO REMAIN

50 FEET

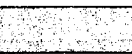




REVISED 2/11/98

CONSTRUCTION NOTES

- 1 : SLOPES FROM ALL SHORELINES SHALL BE A MINIMUM OF 6:1 OR FLATTER
- 2 : ALL AREAS IN WORK ZONE NOT SHADED SHALL REMAIN UNEXCAVATED
- 3 : 1 TO 2 FEET OF MATERIAL TO BE REMOVED TO MAKE AVERAGE WATER DEPTH 3 FEET
- 4 : OPTIONAL AREA TO BE KNOCKED DOWN NOT REMOVED

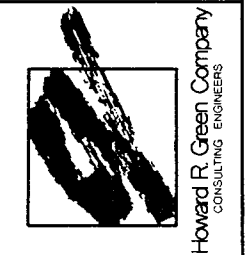
LEGEND

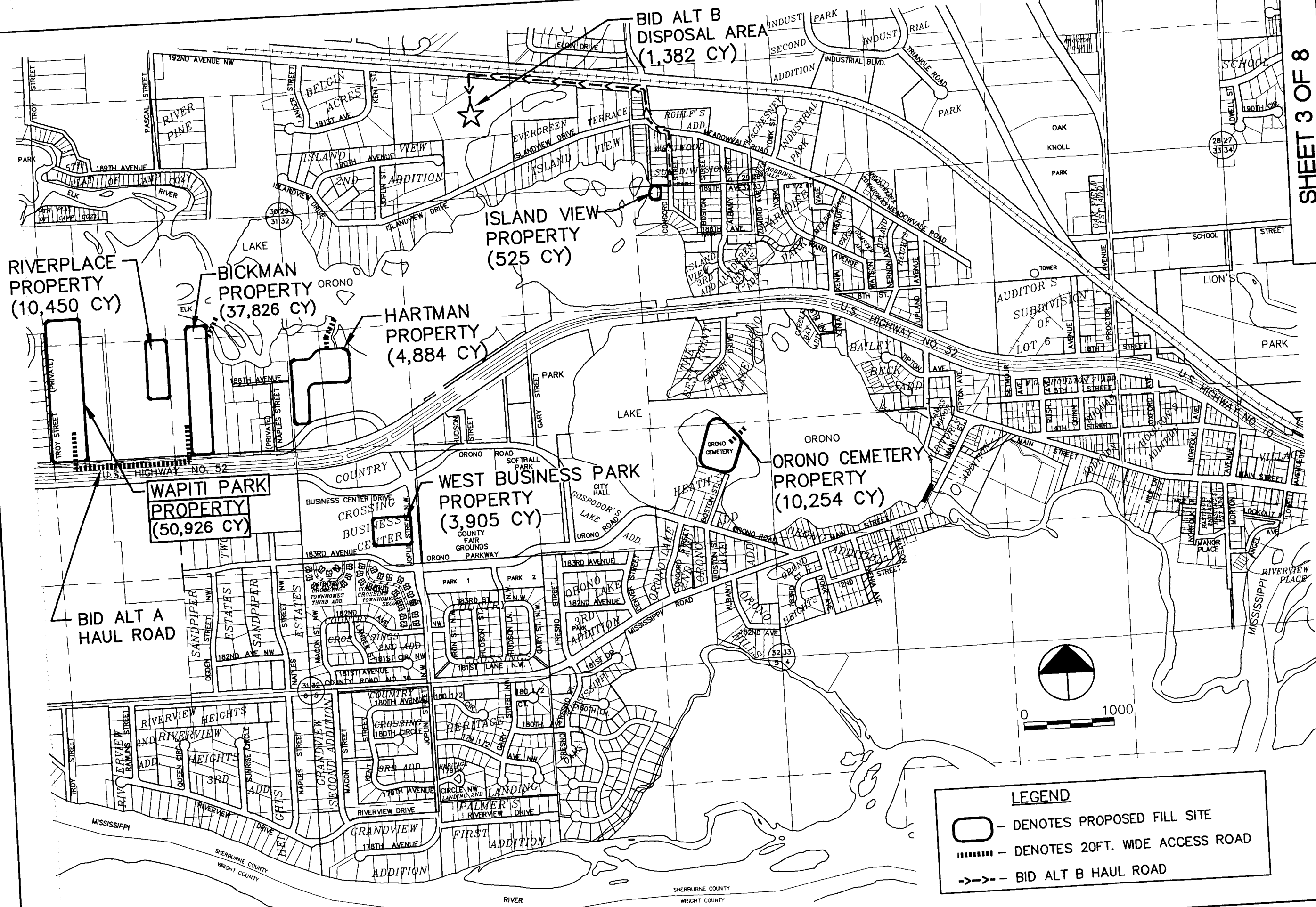
-  - EXPOSED SEDIMENT DEPOSITS WHEN LAKE WAS LOWERED 2 FT. BELOW NORMAL
-  - EXPOSED SEDIMENT DEPOSITS WHEN LAKE WAS LOWERED 4 FT. BELOW NORMAL
-  - SEE CONST. NOTE NO. 3

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE 2/19/98 REG. NO. 15316

**LAKE ORONO
SEDIMENT REMOVAL IMPROVEMENT
FINAL EXCAVATION QUANTITIES
SHEET 1 OF 2**



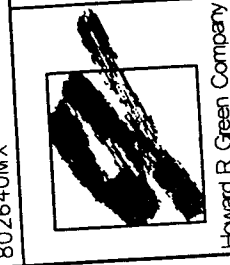


SHEET 3 OF 8

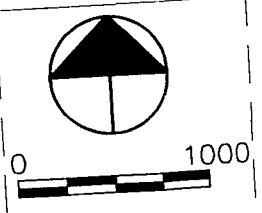
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DATE _____ REG. NO. 18568

**LAKE ORONO
SEDIMENT REMOVAL IMPROVEMENT
FINAL DISPOSAL QUANTITIES**



802640MX



- LEGEND**
- DENOTES PROPOSED FILL SITE
 - DENOTES 20FT. WIDE ACCESS ROAD
 - BID ALT B HAUL ROAD

SHERBURNE COUNTY
WRIGHT COUNTY