Restoration Advisory Board Meeting Minutes
Ramsey County Public Works Complex
Monday, 21 May 2012 – 7:00 p.m.

Members Present: Deepa de Alwis, Tom Barounis, Paul Bloom, Mike Fix, Keith Maile, Robert Ramgren, Lois Rem, Lyle Salmela, and Kay Welsch
Members Absent: Karie Blomquist and Jan Heaberlin
Visitors Present: See attached sign-in sheet.

The meeting was called to order by Co-Chair Lyle Salmela at 7:00 p.m.

Review

- Agenda:
  Added the U.S. Fish & Wildlife Service (USFWS) to the agenda to discuss the new (February 28, 2012) Round Lake Conceptual Management Plan.

Round Lake Feasibility Study

Overview of Round Lake Feasibility Study Status
Matt Bowers (Wenck) distributed a handout (attached) that discussed the status of the Feasibility Study (FS) since the last RAB meeting, the progression of events between then and now, the project status within the overall Superfund Process, the currently presumed alternatives to be evaluated in the FS, and the anticipated next steps for this project. The RAB asked for clarification of the acronyms at the front of the handout, which were given as follows:

USEPA: United States Environmental Protection Agency
MPCA: Minnesota Pollution Control Agency
RAB: (TCAAP) Restoration Advisory Board
USFWS: United States Fish & Wildlife Service
MDNR: Minnesota Department of Natural Resources

The RAB asked if additional fish testing will be completed to supplement the referenced fish testing from the 1980's. Wenck indicated that no new fish testing was considered to be necessary for completing the FS. The MPCA indicated that although expedited fish testing would not be completed for purpose of the FS, Round Lake would eventually undergo additional fish testing under the normal MDNR testing program.

Metals Contamination in Round Lake Sediment and Setting Cleanup Goals
Paul Bloom (RAB) presented a slide show (attached) and discussed the nature of the sediment metals contamination, the use and calculation method for mean PEC-Q (Probable Effects Concentration Quotient), Level 1 vs. Level 2 Sediment Quality Targets (SQTs), and how the MPCA analyzed metals mean PEC-Q from different sample depths in sediment cores to arrive at a Preliminary Remediation Goal of 0.24 mean PEC-Q.

The RAB asked if water continues to flow through the ditch leading to Round Lake from TCAAP. Wenck indicated that the stormwater conveyance from TCAAP to Round Lake is actually a pipe, not a ditch. Stormwater continues to flow through the pipe; however, the source

of the industrial discharge was terminated in the 1980's. It was noted that some amount of metals are naturally present in ongoing urban stormwater runoff that enters Round Lake.

PCB Contamination in Round Lake Sediment and Setting Cleanup Goals

Lyle Salmela (RAB) distributed a handout (attached) and discussed the PCB contamination levels in fish and other reference information on safe fish consumption levels. Lyle noted that background mean PEC-Q could potentially be higher than 0.24, though Paul Bloom (RAB) indicated he believed the MPCA derivation is supported by the sediment data. With regard to the possibility that Round Lake is groundwater/spring fed, Paul Bloom stated that lakes in this area are generally groundwater fed, and that this is really only issue if attempting to install a clay cap. Also, this aspect can be readily evaluated in design. With regard to the idea that benthic organisms have adapted to the conditions in Round Lake, the MPCA noted that just because something can survive in an environment does not mean you want to live there, noting an analogy of humans living in Beijing, China, with the air quality issues they have. With regard to cleanup levels, Wenck noted that some of the differences in perspectives that are being seen in this meeting are because Round Lake contamination is more complicated than other past TCAAP cleanup work. Past cleanup work has been human-health driven and has been easier for the Army and USEPA/MPCA to find agreement on what needs to be done. Round Lake, which is ecological-risk driven, has been more difficult to find agreement on, and is part of why more public input is desirable. The RAB asked if the USFWS was thinking about draining the entire lake as part of drawdowns. Wenck stated that the USFWS does not have any plans that would drain the lake; however, one of the removal methods considered for the contaminated sediment involves draining the lake to allow excavation. This would be done by an Army contractor that would be implementing the sediment removal alternative, if that alternative were to be the selected remedy after completion of the Round Lake FS. Also, the lake may not be drained if dredging technology is used rather than frozen (winter) excavation, which will be a final design decision.

Round Lake FS Elements and Alternatives

Make Bares (MPCA) presented a slide show (attached) and discussed the MPCA's perspective on the elements and alternatives in the Round Lake FS, as well as a new alternative of Confined Aquatic Disposal (CAD). MPCA indicated that they do not feel that Monitored Natural Recovery (MNR) is a viable option for Round Lake in its entirety, but possibly as a component with other implemented actions. MPCA is concerned about the ability of MNR to achieve cleanup goals in a reasonable timeframe. MPCA also reviewed some of the types of dredging equipment that can be used.

USFWS Conceptual Management Plan for the Round Lake Unit

Gerry Shimek (USFWS) presented a slide show (attached) and discussed the new (February 28, 2012) Round Lake Conceptual Management Plan. The RAB asked how the lake drawdown is accomplished. Gerry indicated that removable stoplogs in the water control structure can be removed by the USFWS.

Questions from Public Visitors

Lyle Salmela asked for any questions from the public visitors to this meeting. A visitor noted that the USFWS had stated in a 1982 meeting that the fish in Round Lake consisted of "all fish but carp". Gerry Shimek (USFWS) indicated that he was not certain of that statement. If future fish testing is done, he would expect other larger species of fish (besides bullheads) to be found.

Wenck said that the Tier II Ecological Risk Assessment, in reference to the fish testing in the 1980's, had stated that bullheads were the only game fish species known in the lake. A visitor asked if contamination could migrate into the lake downstream of Round Lake (Valentine Lake), where people are fishing and wading/swimming. Wenck indicated that Round Lake, in essence, acted as a large sediment trap where the contamination has settled out. The USEPA stated that it is important to note that Round Lake has been a concern for ecological risk, but has not been a concern for human health risk, and that the lake downstream would not be expected to have any human health concerns. A visitor asked, should fishing be allowed by the USFWS in the future, whether that would include ice fishing. The USFWS indicted it would. A visitor asked about the potential changes to lake bathymetry with implementation of a remedy. The USFWS indicated that it is the USFWS and MDNR preference to keep bathymetry similar. A visitor commented that 70 years ago, before the federal government took ownership of the lake, Round Lake was "a lake", and that the process of "decommissioning" when TCAAP no longer needed Round Lake should not lead to something other than "a lake". The RAB stated that it's still going to be a lake. Lastly, there was discussion about the intent to conduct an informational public meeting once the USEPA, MPCA, and Army agree upon the list of alternatives that will be considered in the FS. The Army noted that this intent is being reiterated today, and has also been stated at a previous Arden Hills City Council meeting. The USEPA clarified that this meeting, to be held prior to completing the FS, is in addition to the statutorily-required meeting that is conducted after the FS is completed, i.e., for the Proposed Plan.

Engineering Evaluation/Cost Analysis (EE/CA) Soil Investigations
Since time was running short for this meeting, the RAB elected to just receive the Wenck handout on this topic (attached) without any presentation. Wenck noted that the soil excavation work is not planned until spring of 2013. Mike Fix (Army) said to contact him if anyone has any questions on this.

TCAAPRAB.ORG
The Army continues to update the webpage with dates of future RAB meetings and with meeting minutes, as well as any newsletters published. No other changes.

Election of Community Co-Chair
Noting that some RAB members had left the meeting early and that a quorum was no longer present, election of the RAB Community Co-Chair was not considered.

Date and Agenda for the Next Meeting
It was agreed that the primary role remaining for the RAB is to provide input to the remedy decision for Round Lake. It was agreed not to schedule any specific RAB meeting at this time; with future meetings to be scheduled as needed.

Adjournment
There being no further business, Lyle Salmela adjourned the meeting at 9:35 p.m.

Overview of Round Lake Feasibility Study (FS) Status

(Provided to Restoration Advisory Board at May 21, 2012 Meeting)

A. What was the project status at the last RAB meeting of April 6, 2009?

a. The current FS version at that time was dated Jan 2009 and was entitled "FS for Aquatic Sites" (it included other TCAAP aquatic sites)

b. Comments had just been received from USEPA, MPCA, RAB, USFWS, and MDNR

c. Army was in the process of preparing responses to those comments

B. What has happened between then and now?

a. June 2009: Army provided responses to the Jan 2009 FS comments

b. July 2009 – Feb 2010: Various meetings and correspondence regarding how to proceed with the FS, including discussion of ecological risk, future land use by USFWS, appropriate Preliminary Remediation Goals, and alternatives to be evaluated in the FS

c. Feb 2010: Adequate resolution of above issues was reached to allow the FS for Aquatic Sites to be revised

d. April 2010: The current version of the FS for Aquatic Sites was submitted (the April 2010 Draft Redlined Report), which had these key differences from the Jan 2009 version of the FS:
    i. The Preliminary Remediation Goal for Round Lake sediment was revised from 0.43 to 0.10 (mean PEC-Q)
    ii. The method of calculating mean PEC-Q was revised
    iii. The above two items resulted in much higher contaminated sediment quantities (and therefore costs) for the alternatives involving sediment removal and/or capping
    iv. The capping (only) alternative was replaced with a hybrid alternative of sediment removal and capping

e. July 2010: Comments received from USEPA, MPCA, RAB, USFWS, and MDNR, including USEPA/MPCA request for the Army to conduct additional sediment investigation in Round Lake

f. August 2010: Meeting among the stakeholders, at which:
    i. Army agreed to conduct the additional investigation work
    ii. It was agreed to split Round Lake from the other four aquatic sites (the separate FS for these other four aquatic sites was completed in Dec 2010)
    iii. It was agreed to suspend resolution of comments received on the Round Lake portion of the draft FS until after the additional investigation work was completed and evaluated

g. Sept 2010 – Jan 2011: Army prepared sediment investigation QAPP

h. Jan-March 2011: Sediment sampling completed through the ice:
    i. Sediment chemistry: Metals/PCBs at 134 locations
    ii. Toxicity testing (to benthic organisms): 12 locations
    iii. Core dating: 4 locations (used to estimate sedimentation rate)

i. May 2011: Chemical data and toxicity data from the additional investigation work distributed to stakeholders

j. June 2011: Meeting among the stakeholders, at which:
    i. New data was discussed
    ii. The prior Preliminary Remediation Goal of 0.1 (mean PEC-Q) was found to be too low (well within range of "background concentrations" in deeper sediments), and MPCA/USEPA agreed to undertake the task of proposing revised goal(s)
    iii. Core dating results weren't available yet

k. February 2012: Core dating investigation results distributed

l. February 2012: Meeting among the stakeholders, at which:
    i. MPCA/USEPA presented proposed Preliminary Remediation Goal of 0.24 (mean PEC-Q)
    ii. Agreed to eliminate silver as a Contaminant of Concern
    iii. Discussed new (Feb 28, 2012) USFWS Management Plan:
        1. Primary focus remains habitat for migratory waterfowl
        2. Remaining closed to wading, swimming, and boating
        3. Envisions increased public use: allowing fishing; also a public trail and fishing pier on south/west side of lake
        4. Shallower drawdown events (3 feet from normal elevation vs. 7 feet); with water level adjustments not occurring in every year
    iv. Army agreed to provide responses to the comments on the April 2010 FS (had been on hold during sediment investigation)

m. March 2012: Army provided responses to the USEPA, MPCA, RAB, USFWS, and MDNR comments on the April 2010 FS

n. April 2012: Comment Resolution Meeting, at which:
    i. Discussed Army responses to comments on the April 2010 FS
    ii. Army agreed to proceed with the Round Lake FS using the MPCA/USEPA-proposed Preliminary Remediation Goal (PRG) of 0.24 (mean PEC-Q) *(see attached figures)*
    iii. MPCA presented a new alternative, Confined Aquatic Disposal, which USEPA/MPCA requested the Army add to the list of alternatives evaluated in the FS
    iv. Prior to returning to revising the Round Lake FS, stakeholders agreed to investigate and further discuss:
        1. The potential need for fish testing
        2. Clarifying the list of alternates to be evaluated in the FS, including the elements/assumptions in each alternative
        3. How food chain effects (due to PCBs) were addressed in the Tier II Ecological Risk Assessment
        4. How the FS alternative evaluation criteria are applied (in particular, how an existing ecological risk is balanced against human health risk that would be introduced through implementation of a remedy, e.g., sediment hauling increasing traffic accident risk)

o. May 2012: Army presented a review of prior fish testing data (bullhead testing from 1981 and 1988) showing that a fish consumption advisory will likely be needed, and Army recommended proceeding with the FS with an assumed fish consumption advisory (USEPA has agreed)

C. Where is the Round Lake Project within the overall Superfund process?

a. See attached flowchart

D. What are the <u>currently presumed</u> alternatives to be evaluated in the FS?

a. No Action

b. Monitored Natural Recovery

c. Enhanced Monitored Natural Recovery

d. Sediment Removal/Disposal

e. Hybrid of Sediment Removal/Disposal and Capping

f. Hybrid of Sediment Removal/Disposal & Monitored Natural Recovery

g. Confined Aquatic Disposal

E. What do these alternatives consist of?

a. No Action
   i. The No Action alternative is required to be included as a baseline alternative (per USEPA Guidance)
   ii. No active remediation
   iii. Limited monitoring to verify no increase in ecological risk
   iv. Approximate Cost = $210,000 (per April 2010 FS)

b. Monitored Natural Recovery
   i. Similar to No Action, but with a specific goal for reduction of risk to a specific level at some point in the future
   ii. Reduce risk over time via transformation, sorption, sediment burial, and dispersion
   iii. More extensive monitoring to demonstrate progress
   iv. Approximate Cost = $440,000 (per April 2010 FS)

c. Enhanced Monitored Natural Recovery
    i. Accelerate the recovery process by engineering means
    ii. Place a thin layer (maybe 4 inches) of sand or organic soil over the contaminated area
    iii. This results in burial and likely some mixing (dispersion), both of which aid recovery
    iv. Cover material placement assumed to be via barge, but final method selection (& cover material type) during final design
    v. More extensive monitoring (similar to MNR alternative)
    vi. Approximate Cost = $1.8 million (per April 2010 FS)
    (Note: the contaminated area is somewhat different now, but similar in size, hence cost should remain similar to the above)

d. Sediment Removal/Disposal
    i. Remove contaminated sediment, dewater, and haul to offsite, permitted landfill disposal
    ii. Removal assumed to be via hydraulic dredge, but final method selection during final design
    iii. Approx. in-place contaminated sediment volume: 150,000 cy
    iv. Backfill to maintain existing bathymetry is assumed
    v. Removal to achieve unrestricted future use is assumed; hence no long-term monitoring/maintenance
    vi. Approximate Cost = $18 million
    (Note: the cost estimate from the April 2010 FS was adjusted based solely on contaminated sediment volume; hence the above is only a rough cost and subject to change)

e. Hybrid of Sediment Removal/Disposal and Capping
    i. Some contaminated sediment is removed (as described in the removal/disposal alternative), and the other areas are capped
    ii. Hybrid offers cost savings due to reducing offsite landfill disposal costs, yet some contaminated sediment left in-place
    iii. Contaminated sediment left in-place is covered with approximately 3-foot thick sand/organic soil cover
    iv. Bathymetry may be altered somewhat, but intent is to achieve a balance that keeps similar amounts of the shallower zones
    v. Some contamination left in-place; hence long-term monitoring is included
    vi. Quantities: to be determined based on the new depiction of contaminated areas and new bathymetry analysis
    vii. Approximate Cost = $11 million
    (Note: the relative cost savings amount from the April 2010 FS based on the hybrid alternative vs. complete removal/disposal was applied to the $18 million cost of the prior alternative; hence the above is only a rough cost and subject to change)

f. Hybrid of Sediment Removal/Disposal & Monitored Natural Recovery
    i. Some contaminated sediment is removed (as described in the removal/disposal alternative), and the other areas are addressed by MNR, presumably the deeper areas where sedimentation rates were shown to be higher
    ii. Hybrid offers cost savings due to reducing offsite landfill disposal costs, yet some contaminated sediment left in-place
    iii. More extensive monitoring (similar to MNR alternative)
    iv. Quantities: to be determined based on the new depiction of contaminated areas and decision on how much MNR area
    v. Approximate Cost = $10-$15 million
    (Note: the above is only a rough cost and subject to change)

g. Confined Aquatic Disposal: New alternative that MPCA will discuss

F. What are the next steps?

a. Stakeholders need to resolve the following items:
    i. Clarifying the list of alternates to be evaluated in the FS, including the elements/assumptions in each alternative
    ii. How food chain effects (due to PCBs) were addressed in the Tier II Ecological Risk Assessment
    iii. How the FS alternative evaluation criteria are applied (in particular, how an existing ecological risk is balanced against human health risk that would be introduced through implementation of a remedy, e.g., sediment hauling increasing traffic accident risk)

b. After resolution of the first item above (alternatives list), conduct an informational public meeting

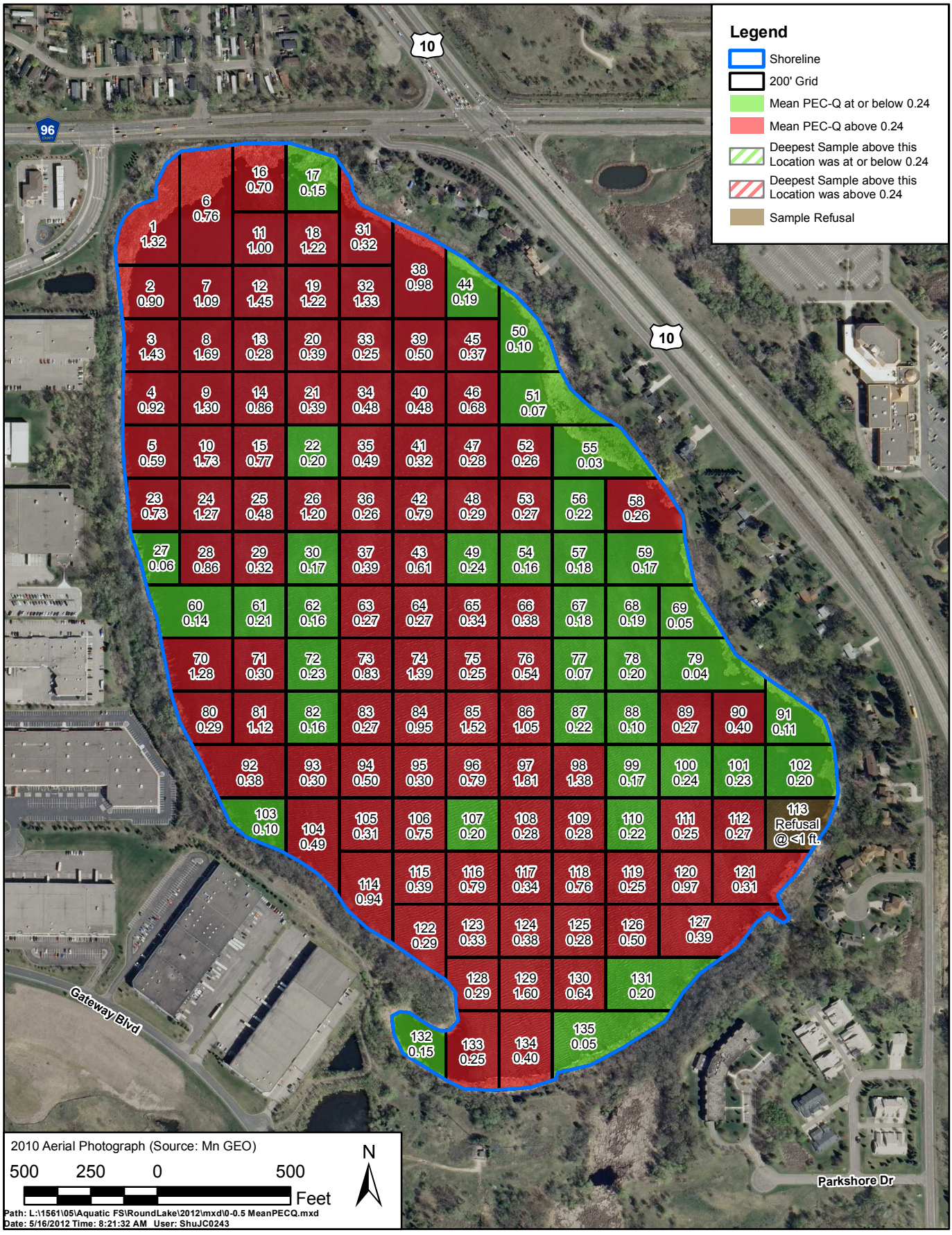
c. Army revises the Round Lake FS and submits for stakeholder review

d. Stakeholders provide comments; followed by comment resolution

e. Finalize the Round Lake FS

f. Proposed Plan and public notice/public meeting

g. Record of Decision, signed by USEPA, MPCA, and Army



ROUND LAKE SEDIMENT INVESTIGATION

Mean PEC-Q Results at 0-0.5 Feet

Engineers - Scientists
Business Professionals
www.wenck.com

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Maple Plain, MN 55359-0429
1-800-472-2232

MAR 2012

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ROUND LAKE SEDIMENT INVESTIGATION

Mean PEC-Q Results at 0.5-1 Feet

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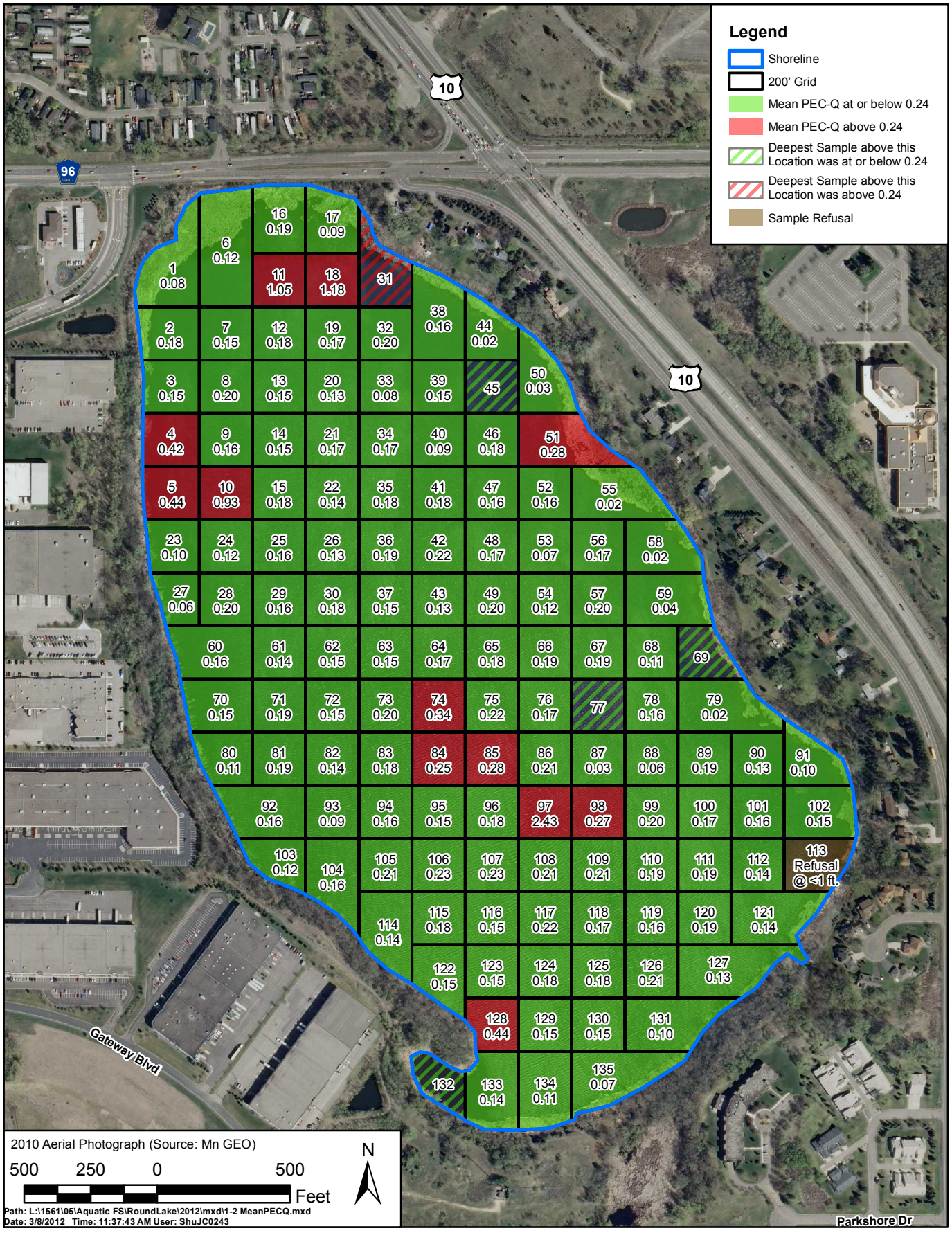
MAR 2012

Figure



ROUND LAKE SEDIMENT INVESTIGATION

Mean PEC-Q Results at 1-2 Feet

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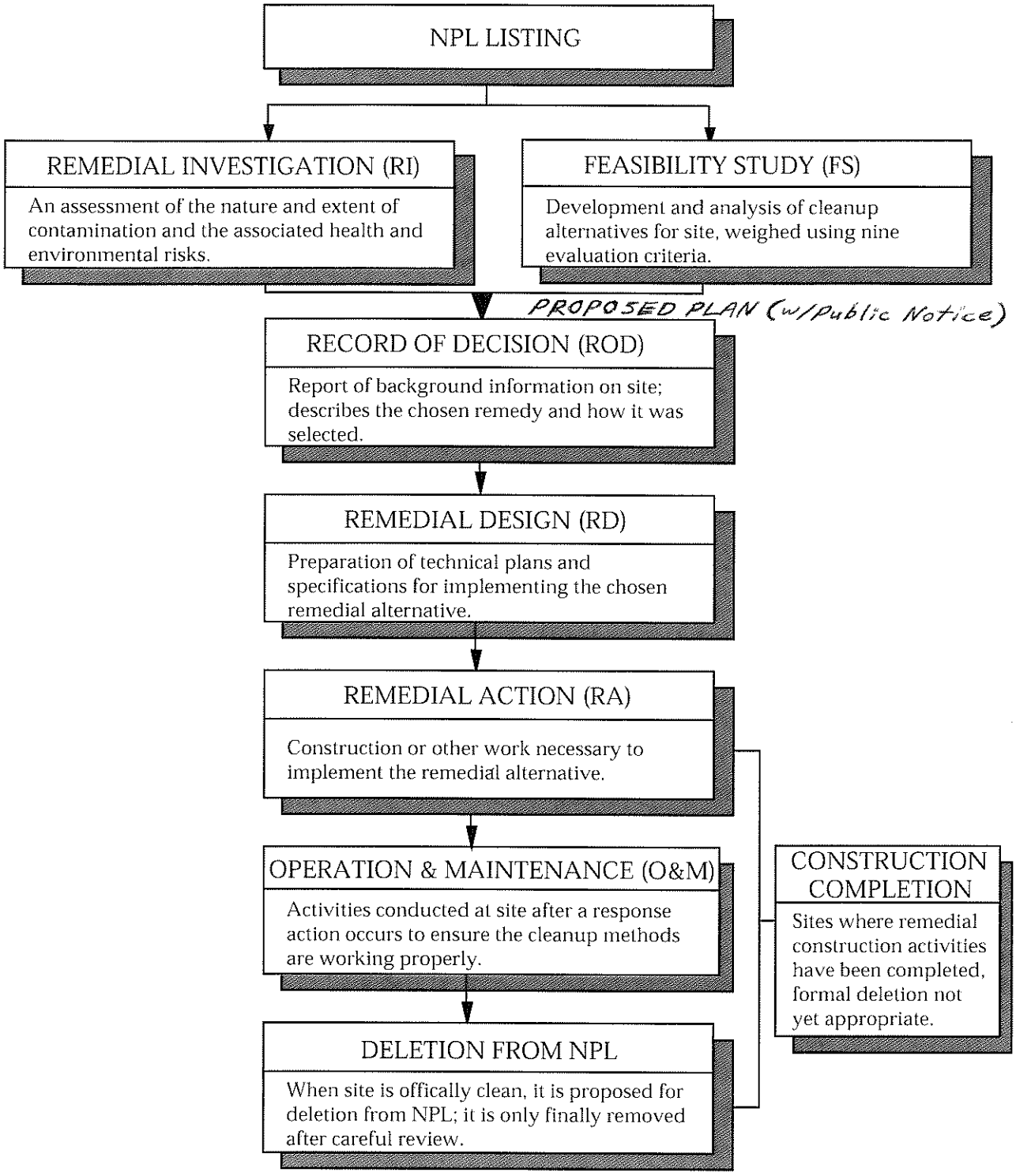
SUPERFUND REMEDIAL PROCESS

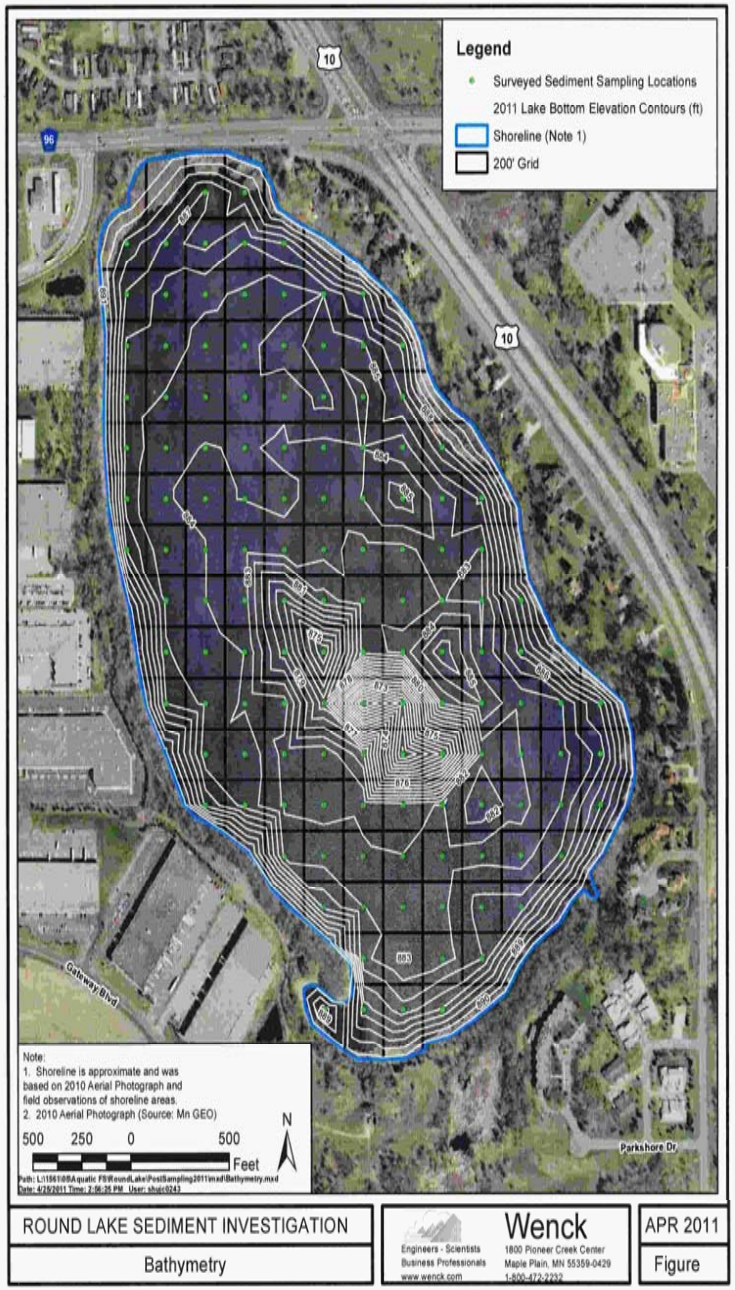


Metal Contamination in Round Lake Sediment and Cleanup Goals

Paul Bloom

RAB Meeting

May 21, 2012


Legend
Surveyed Sediment Sampling Locations
2011 Lake Bottom Elevation Contours (ft)
Shoreline (Note 1)
200' Grid
10
96
Gateway Blvd
Parkshore Dr
Note:
1. Shoreline is approximate and was based on 2010 Aerial Photograph and field observations of shoreline areas.
2. 2010 Aerial Photograph (Source: Mn GEO)
500 250 0 500
Feet
N
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APR 2011
Figure

Metals in core number 4 from NE portion of the lake (one of 134 cores)

Core #	Metal concentration, ppm						
004	Cadmium,	Chromium	Copper	Lead	Zinc	Arsenic	Nickel
0-0.5 ft	6.2	70.8	313.0	101.0	440	6.2	25.9
0.5-1 ft	6.6	101.0	732.0	100.0	619	8.6	26.2
1-2 ft	1.2	35.9	189.0	22.1	171.	4.1	22.8
2-3 ft	0.25	15.4	17.1	6.6	46.1	5.9	24.2
3-4	0.27	15.0	19.7	8.7	52.8	4.7	23.1
4-5 ft	0.33	15.3	22.7	7.1	49.5	4.4	21.0

Determining cleanup goals: Sediment Quality Targets SQT

- **The Level I SQTs are intended to identify contaminant concentrations below which harmful effects on sediment-dwelling organisms (i.e., benthic invertebrates) are unlikely to be observed.**

- **The Level II SQTs are intended to identify contaminant concentrations above which harmful effects on sediment-dwelling organisms are likely to be observed.**

Source: GUIDANCE FOR THE USE AND APPLICATION OF SEDIMENT QUALITY TARGETS FOR THE PROTECTION OF SEDIMENT-DWELLING ORGANISMS IN MINNESOTA

MPCA Sediment Quality Targets

	Cd	Cr	Cu	Pb	Zn	As	Ni
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
MPCA Level I SQT [6]	1.0	43.0	32.0	36	120.0	9.8	23.0
MPCA Level II SQT [6]	5.0	110.0	150.0	130	460.0	33.0	49.0
Residential SRV	25.0	87.0	100.0	300	8700.0	9.0	560.0

Probable Effect Concentration Quotient PEC-Q

$$PEC - Q = \frac{\text{chemical concentration (in dry wt.)}}{\text{PEC}}$$

$$PEC - Q = \frac{\text{chemical concentration (in dry wt.)}}{\text{Level II SQT}}$$

Mean PEC-Q

$$meanPEC - Q = \frac{\Sigma \text{ individual metal PEC-Qs}}{\text{n}}$$

Setting of Sediment Quality Targets Remediation Target (SQRT)

- "SQRTs could be set at mean PEC-Qs ≤ 0.1 if the site management goal is to provide a high level of protection for sediment-dwelling organisms"
- "The SQRTs Targets could be set at a mean PEC-Q of 0.6 if the immediate goal for the site is to reduce the potential for acute toxicity and permit natural recovery processes to further reduce contaminant concentrations"

Sediment Quality Targets and PEC-Q

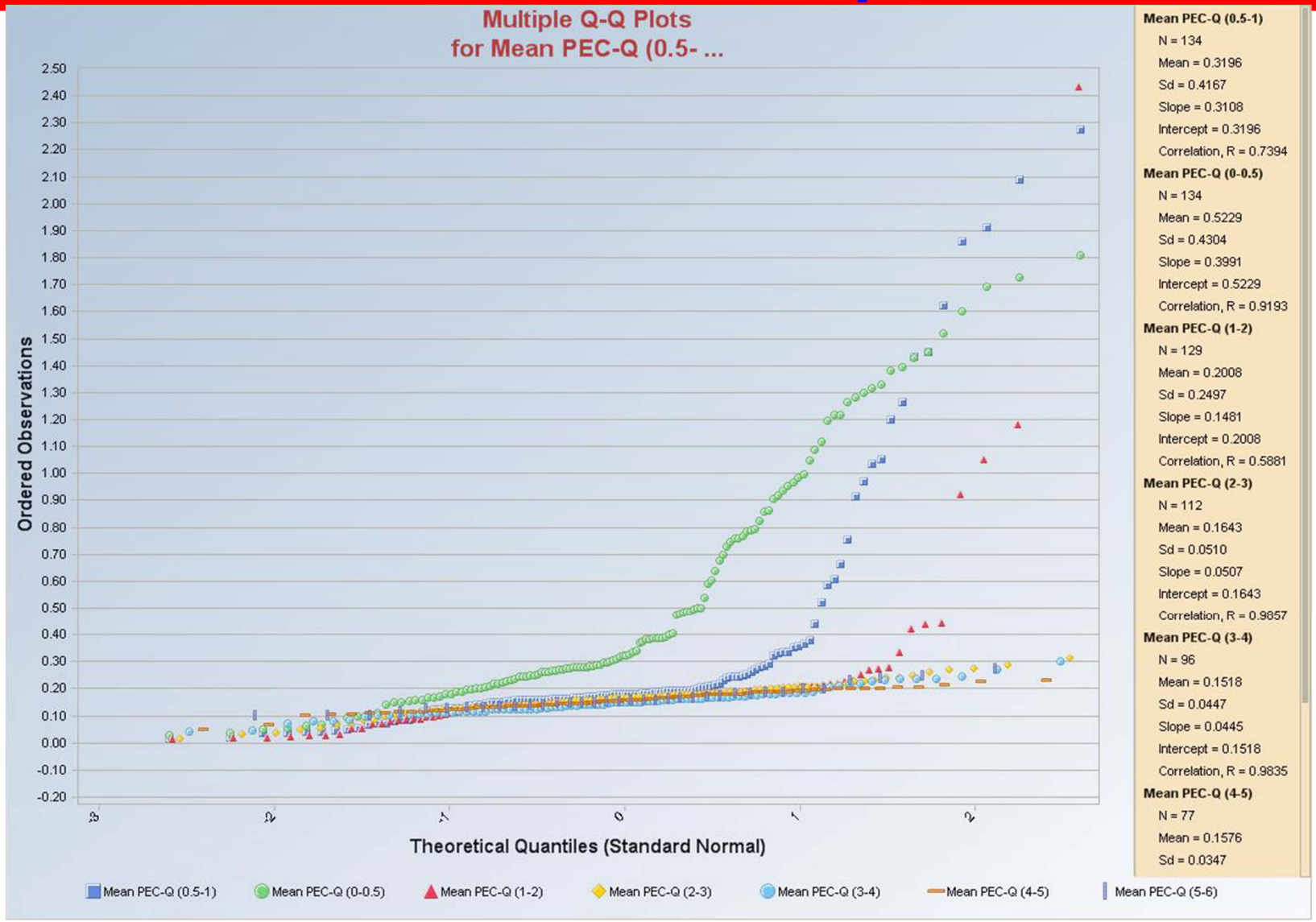
	Cd	Cr	Cu	Pb	Zn	As	Ni	Mean
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	PEC-Q
MPCA Level I SQT [6]	1.0	43.0	32.0	36	120.0	9.8	23.0	0.30
MPCA Level II SQT [6]	5.0	110.0	150.0	130	460.0	33.0	49.0	1.00
Residential SRV	25.0	87.0	100.0	300	8700.0	9.0	560.0	5.63

PEQ-C in 4 example cores

- Numbers 4 and 1 in NE of lake
- Number 30 shallow are near center
- Number 97 deep hole

Depth	Mean PEC-Q			
(ft)	4	1	97	30
0-0.5	0.92	1.32	1.81	0.17
0.5-1	1.43	0.121	2.09	0.26
1-2	0.42	0.084	2.43	0.18
2-3	0.16	NS	0.26	0.19
3-4	0.16	NS	0.23	0.14
4-5	0.15	NS	0.20	0.13
5-6	NS	NS	NS	0.15

Rank order plots of mean PEC-Q data from different depths



Proposed for Round Lake

- **Mean PEC-Q = 0.24**
- **For top 2 feet of sediment**

TCAAP RAB MEETING – MONDAY 5/21/2012

Lyle R. Salmela, REM, RAB Community Co Chair

WHAT WE KNOW

- COC – EPA and MPCA agree on where they are and at what concentrations
- USFWS has a conceptual management plan
- Agencies consensus that dredging could comply with regulations.

WHAT WE DON'T KNOW AND NEED TO KNOW MORE

1. Lake Hydrology
    a. Small runoff surface area – ground water or spring fed?
    b. How would dredging change lake water supply?
    c. What would the lake look like – would it start to dry up?
    d. Is dredging the best alternative?
2. COC Levels
    a. Is 0.24 PEC-Q or 0.30 PEC-Q closer to background?
    b. Have present benthic bugs evolved to adjust to present COC's?
    c. Are we over-regulating?
3. Dredging Changes to Bio-environment
    a. Has bio-env changed in 20-70 years, the life of TCAAP?
    b. What type of environment will emerge – DNR also questions?
4. Cost/Benefit
    a. Will the benefit justify the cost?
    b. What is the value of the lake as is or if dredged?
    c. Are we over-regulating?
5. USFWS Management Plan
    a. Could they manage the lake as is?
    b. MDH Fish Consumption Advisory - Do not eat if >1.89 ppm PCB's
    c. FDA & EPA – Appendix 5: FDA and EPA Safety levels in Regulations and Guidance (page 440) – All Fish – PCB's- 2.0 ppm (edible portion)

Minnesota Department of Health
Fish Consumption Advisory Program
April 2008

MEAL ADVICE CATEGORIES BASED ON LEVELS OF MERCURY IN FISH

	Level of Mercury in Fish (ppm)	Meal Frequency
Women not planning to become pregnant and men	**< = 0.16**	**Unrestricted**
	> 0.16 – 0.65	**1 meal / week**
	> 0.65 – 2.8	**1 meal / month**
	> 2.8	**DO NOT EAT**
Pregnant women, women who may become pregnant, and children under age 15	**< = 0.05**	**Unrestricted**
	> 0.05 – 0.22	**1 meal / week**
	> 0.22 – 0.95	**1 meal / month**
	> 0.95	**DO NOT EAT**

MEAL ADVICE CATEGORIES BASED ON LEVELS OF PCBs IN FISH

Level of PCBs in Fish (ppm)	Meal Frequency
< = 0.05	**Unrestricted**
> 0.05 – 0.22	**1 meal / week**
> 0.22 – 0.95	**1 meal / month**
> 0.95 – 1.89	**1 meal / 2 months**
> 1.89	**DO NOT EAT**

MEAL ADVICE CATEGORIES BASED ON LEVELS OF PFOS IN FISH

Level of PFOS in Fish (ppb)	Meal Frequency
< = 40	**Unrestricted**
> 40 - 200	**1 meal/ week**
> 200 – 800	**1 meal / month**
> 800	**DO NOT EAT**

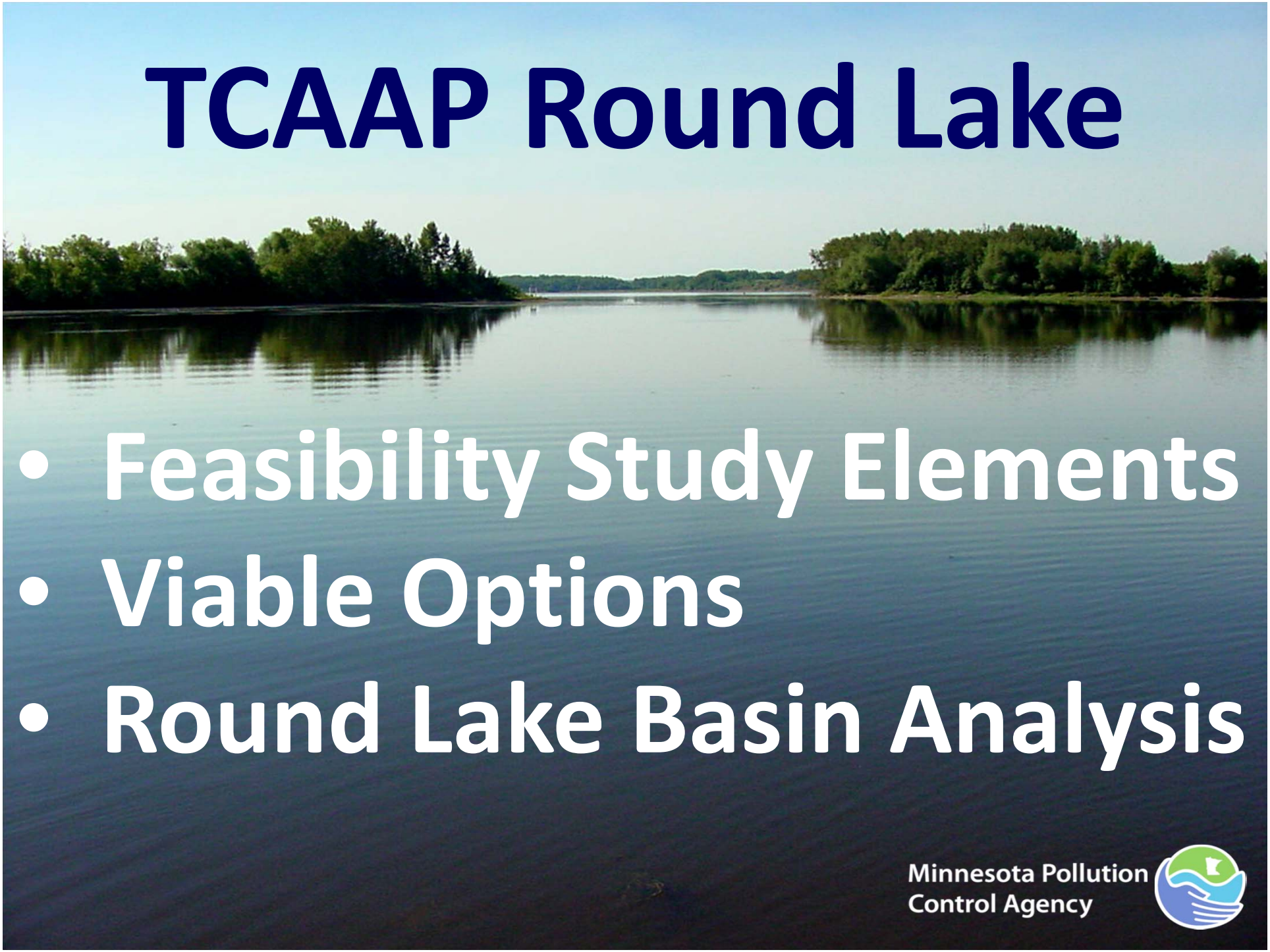
APPENDIX 5: **FDA and EPA Safety Levels in Regulations and Guidance**

This guidance represents the Food and Drug Administration's (FDA's) current thinking on this topic. It does not create or confer any rights for or on any person and does not operate to bind FDA or the public. You can use an alternative approach if the approach satisfies the requirements of the applicable statutes and regulations. If you want to discuss an alternative approach, contact the FDA staff responsible for implementing this guidance. If you cannot identify the appropriate FDA staff, call the telephone number listed on the title page of this guidance.

This appendix lists FDA and EPA levels relating to safety attributes of fish and fishery products published in regulations and guidance. In many cases, these levels represent the point at or above which the agency will take legal action to remove products from the market. Consequently, the levels contained in this table may not always be suitable for critical limits.

TABLE A-5 FDA AND EPA SAFETY LEVELS IN REGULATIONS AND GUIDANCE	
PRODUCT	LEVEL
READY-TO-EAT FISHERY PRODUCTS (MINIMAL COOKING BY CONSUMER)	Listeria monocytogenes - presence of organism in 25 gram sample.
ALL FISH	Salmonella spp. - presence of organism in 25 gram sample.
ALL FISH	1. Staphylococcus aureus - positive for staphylococcal enterotoxin; or 2. Staphylococcus aureus - level equal to or greater than 10^4/g (MPN).
READY-TO-EAT FISHERY PRODUCTS (MINIMAL COOKING BY CONSUMER)	Vibrio cholerae - presence of toxigenic O1 or O139 or non-O1 and non-O139 in 25 gram sample.
READY-TO-EAT FISHERY PRODUCTS (MINIMAL COOKING BY CONSUMER)	Vibrio parahaemolyticus - levels equal to or greater than 1 x 10^4/g (Kanagawa positive or negative).
POST-HARVEST PROCESSED CLAMS, MUSSELS, OYSTERS, AND WHOLE AND ROE-ON SCALLOPS, FRESH OR FROZEN, THAT MAKE A LABEL CLAIM OF "PROCESSED TO REDUCE VIBRIO PARAHAEMOLYTICUS TO NON-DETECTABLE LEVELS"	Vibrio parahaemolyticus - levels less than 30/g (MPN).
COOKED READY-TO-EAT FISHERY PRODUCTS (MINIMAL COOKING BY CONSUMER)	Vibrio vulnificus - presence of organism.
POST-HARVEST PROCESSED CLAMS, MUSSELS, OYSTERS, AND WHOLE AND ROE-ON SCALLOPS, FRESH OR FROZEN, THAT MAKE A LABEL CLAIM OF "PROCESSED TO REDUCE VIBRIO VULNIFICUS TO NON-DETECTABLE LEVELS"	Vibrio vulnificus - levels less than 30/g (MPN).
ALL FISH	Clostridium botulinum - 1. Presence of viable spores or vegetative cells in products that will support their growth; or 2. Presence of toxin.
CLAMS, OYSTERS, MUSSELS, AND WHOLE AND ROE-ON SCALLOPS, FRESH OR FROZEN	Microbiological - 1. E. coli or fecal coliform - 1 or more of 5 subs exceeding MPN of 330/100 g or 2 or more exceeding 230/100 g; 2. APC - 1 or more of 5 subs exceeding 1,500,000/g or 2 or more exceeding 500,000/g.
TUNA, MAHI-MAHI, AND RELATED FISH	Histamine - 500 ppm based on toxicity; 50 ppm defect action level.
ALL FISH	Polychlorinated Biphenyls (PCBs) - 2.0 ppm (edible portion).[1]
FINFISH AND SHELLFISH	Aldrin and dieldrin - 0.3 ppm (edible portion).
FROG LEGS	Benzene Hexachloride (BHC) - 0.3 ppm (edible portion).
OYSTERS	Carbaryl[1] - 0.25 ppm.
ALL FISH	Chlordane - 0.3 ppm (edible portion).
ALL FISH	Chlordecone - 0.4 ppm crabmeat and 0.3 ppm in other fish (edible portion).
ALL FISH	DDT, TDE, and DDE - 5.0 ppm (edible portion).
FARM-RAISED, FRESHWATER FISH	Diuron and its matabolites[1] - 2.0 ppm.
ALL FISH	Endothall and its monomethyl ester - 0.1 ppm.[1]
ALL FISH	Heptachlor and heptachlor epoxide - 0.3 ppm (edible portion).
ALL FISH	Mirex - 0.1 ppm (edible portion).
ALL FISH	Diquat - 0.1 ppm.[1]

TCAAP Round Lake



- Feasibility Study Elements
- Viable Options
- Round Lake Basin Analysis

Minnesota Pollution Control Agency

Elements of a Revised Feasibility Study

- Only options that meet Threshold Criteria can be evaluated against Balancing Criteria
- MNR should not be included
  - Clearly will not meet Threshold Criteria
    - Will not achieve PRGs within a reasonable time frame
    - Will not provide an uncontaminated BAZ
    - Will not meet USFWS management goals
    - New data does not support viability
  - MPCA will not comment on, or conduct further evaluation of MNR

Elements of a Revised Feasibility Study

- **Sediments that exceed PRGs within the BAZ are beyond the threshold for protection of ecological receptors and require a remedial action.**
  - **It is not appropriate or useful to describe the degree of risk above the PRG threshold, or to compare the relative contaminant concentrations or risk levels to other sites.**

Elements of a Revised Feasibility Study

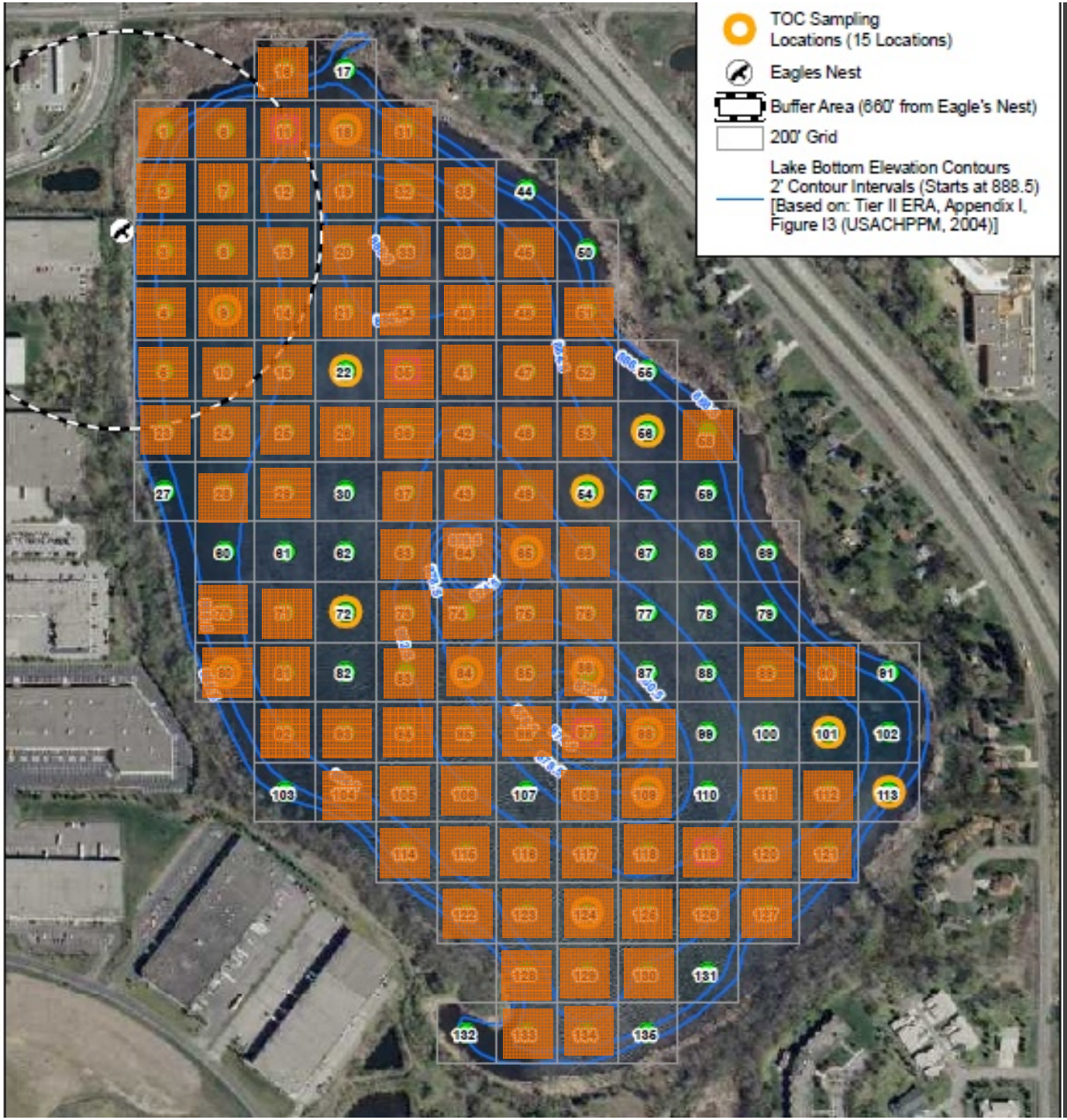
- Winter dry excavation should not be pursued as a method for contaminated sediment removal
  - Too many issues and uncertainties with:
    - Weather – Temperature and freezing
    - Weather - Snow and rain accumulation
    - Dewatering uncertainties
    - Access, traffic, and transportation issues

Focus the Feasibility Study to Include:

- Dredge with Off-Site Disposal
  - Mechanical Dredge with Hydraulic Transport to Dewatering Area
  - Hydraulic Dredge with Hydraulic Transport to Dewatering Area
- Limited Deep Capping with Dredging and Off-Site Disposal (as above)
- Dredge with Round Lake CAD Cell
  - Mechanical or Hydraulic Dredging
- Combination of the Options Above

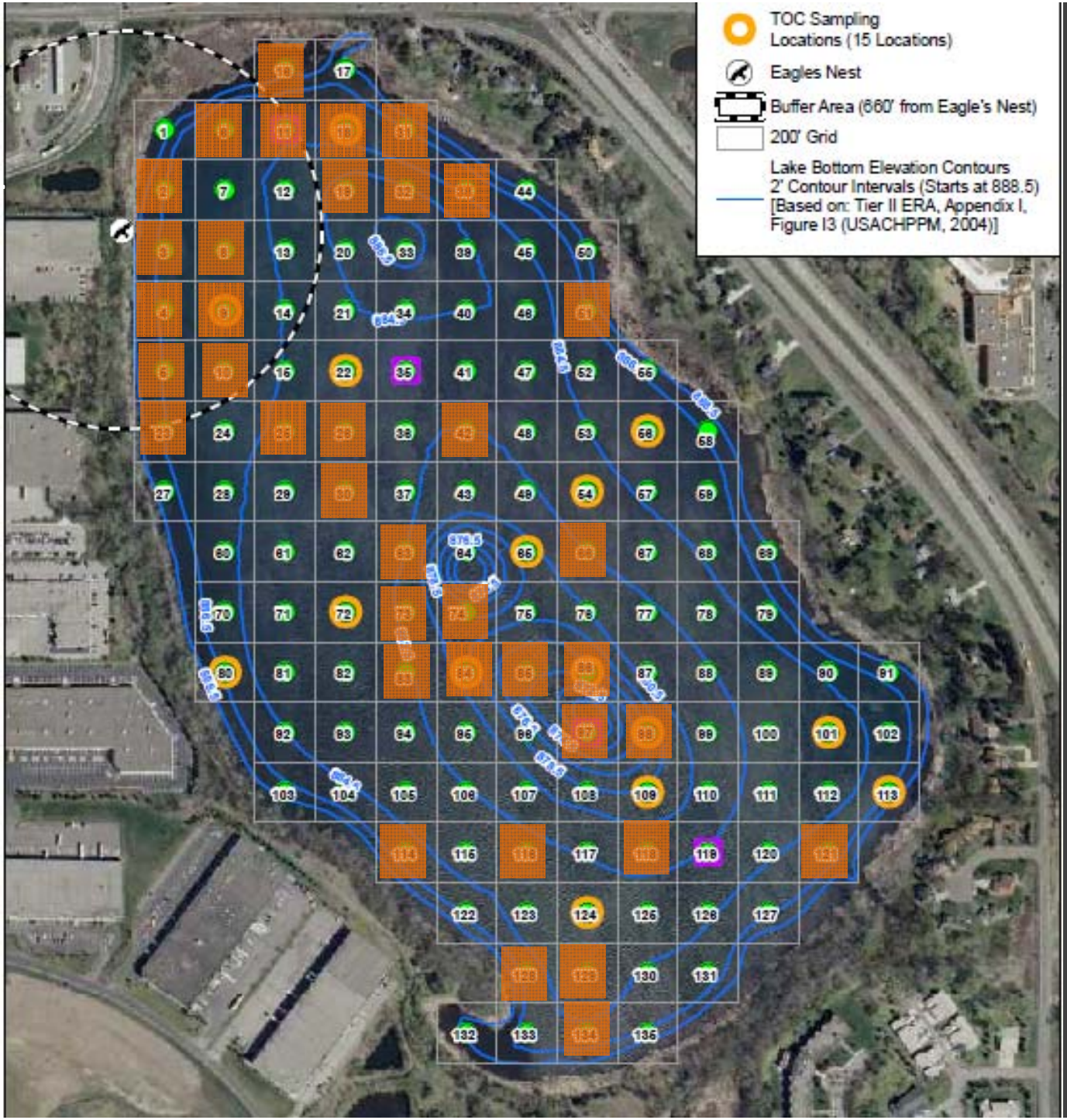
Metals

mPECq > 0.24
0-0.5 foot



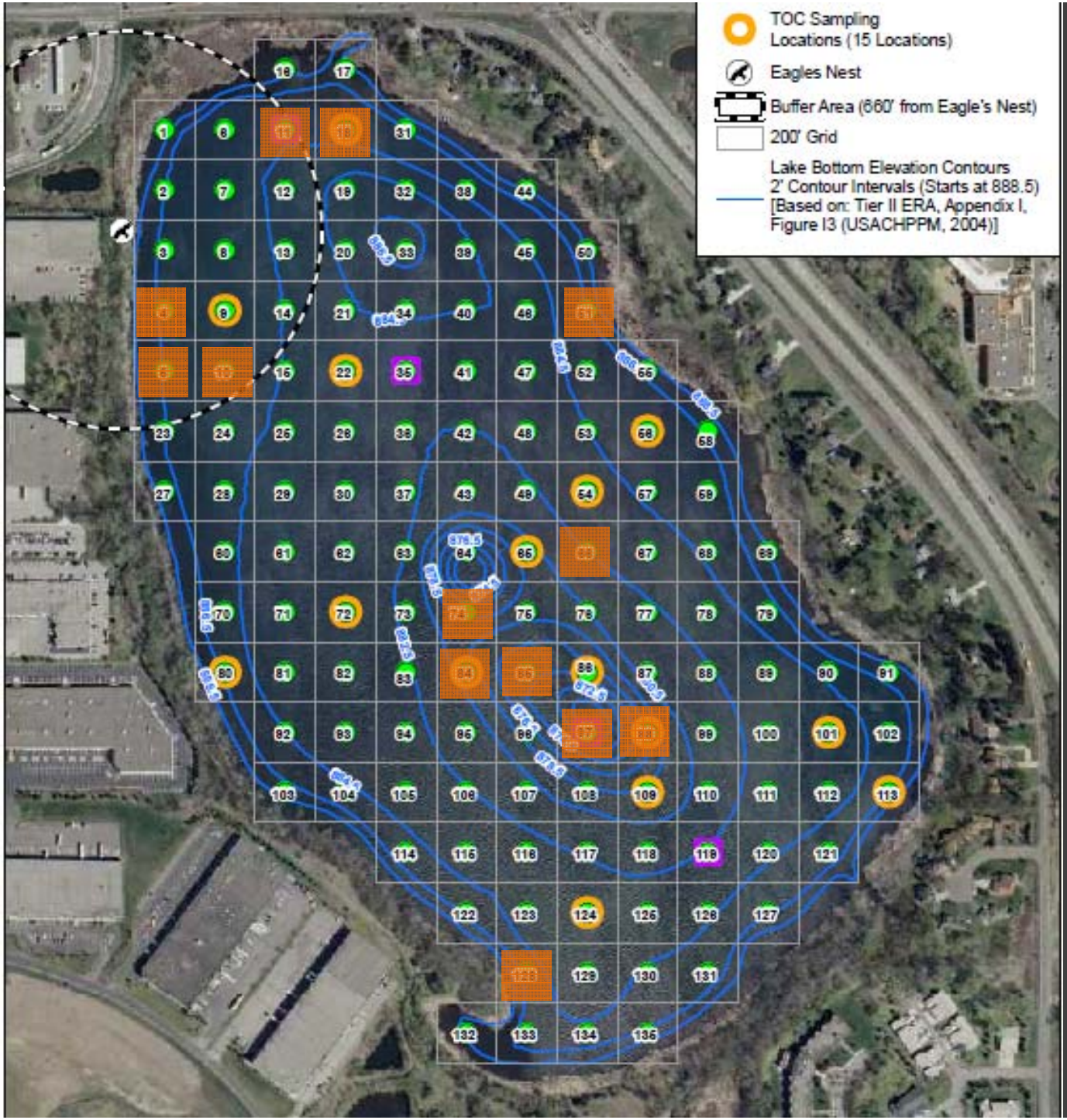
Metals

mPECq > 0.24
0.5-1 foot



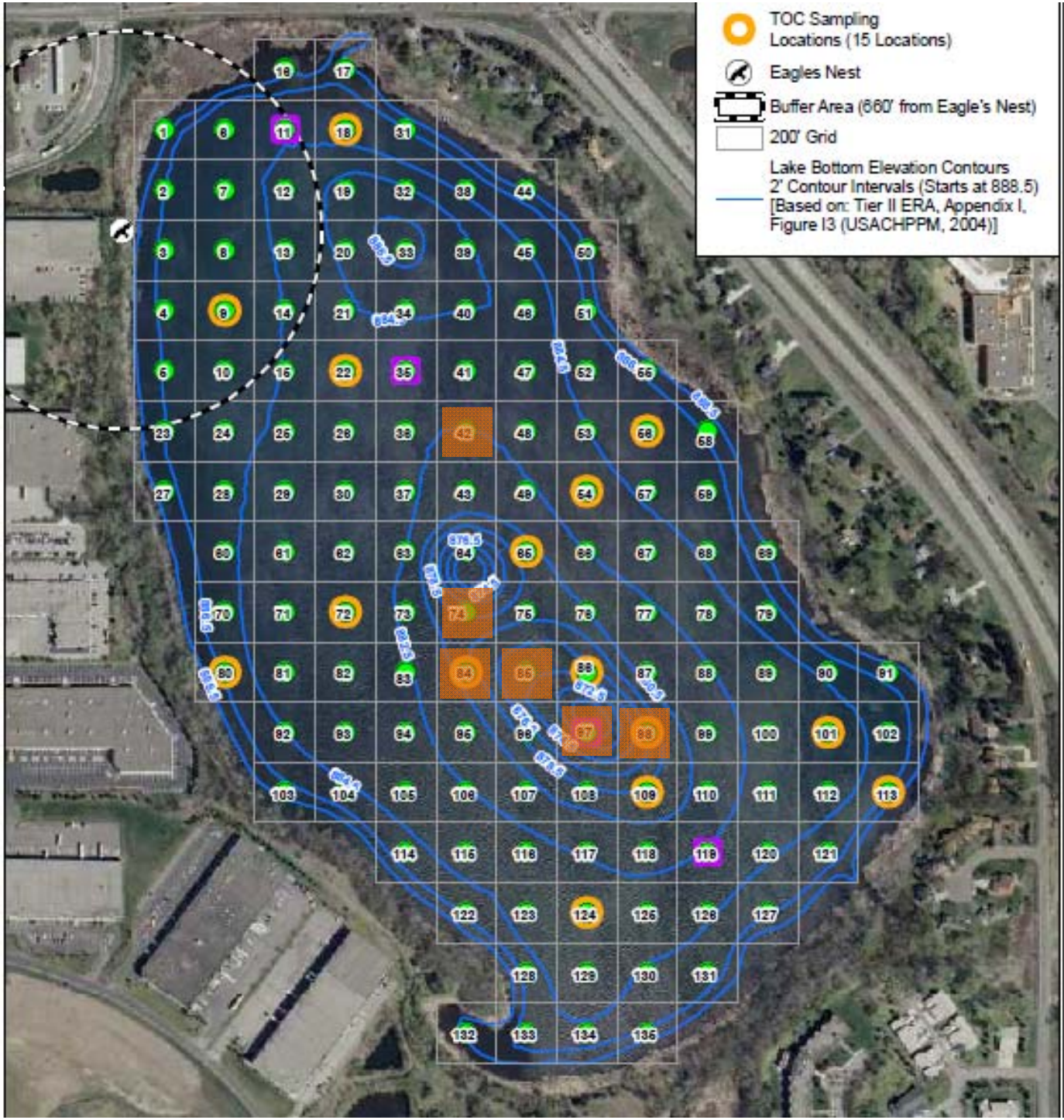
Metals

mPECq > 0.24
1-2 foot



Metals

mPECq > 0.24
>2 foot

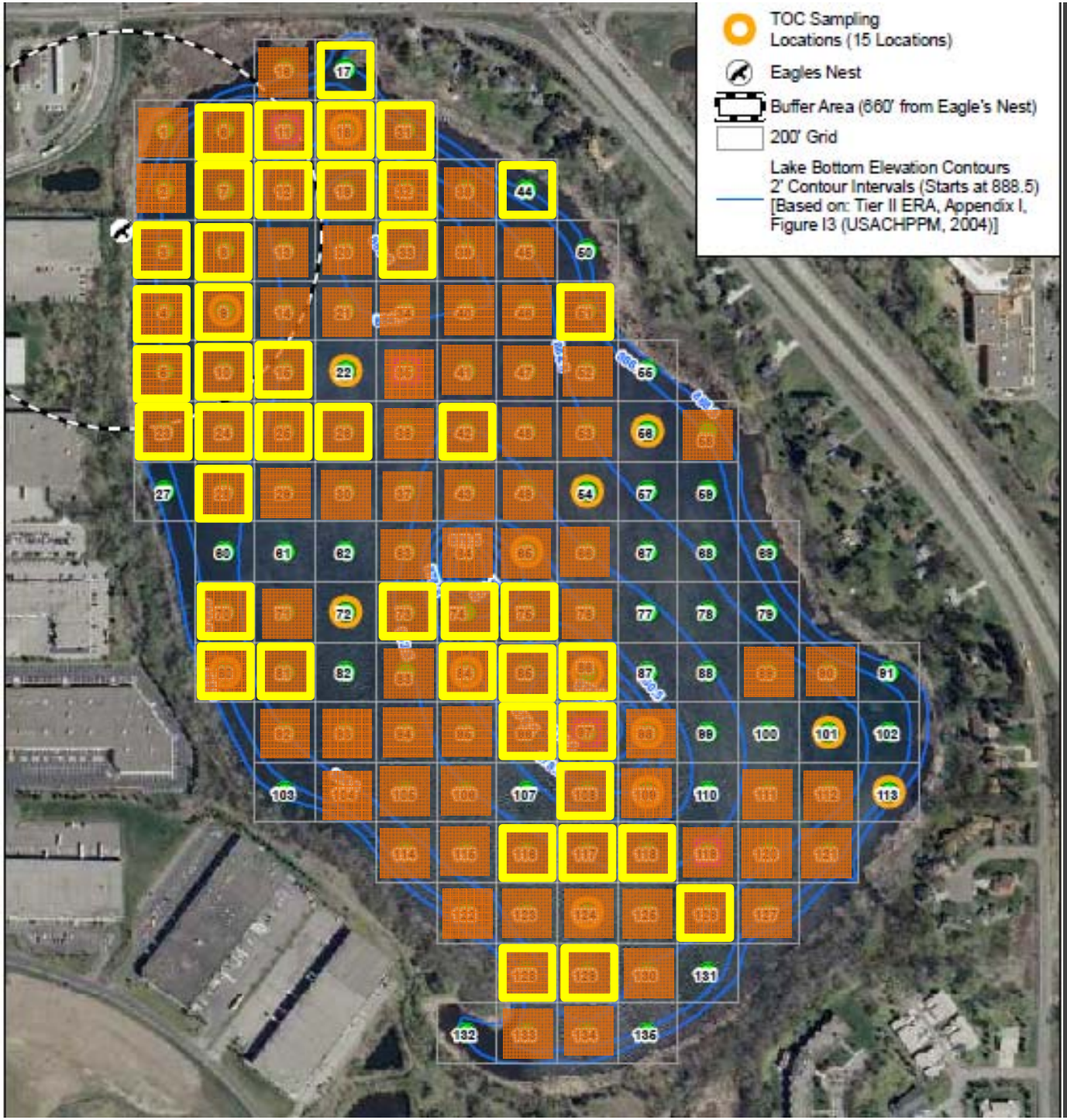


Metals

mPECq > 0.24
0-1 foot

Total PCBs

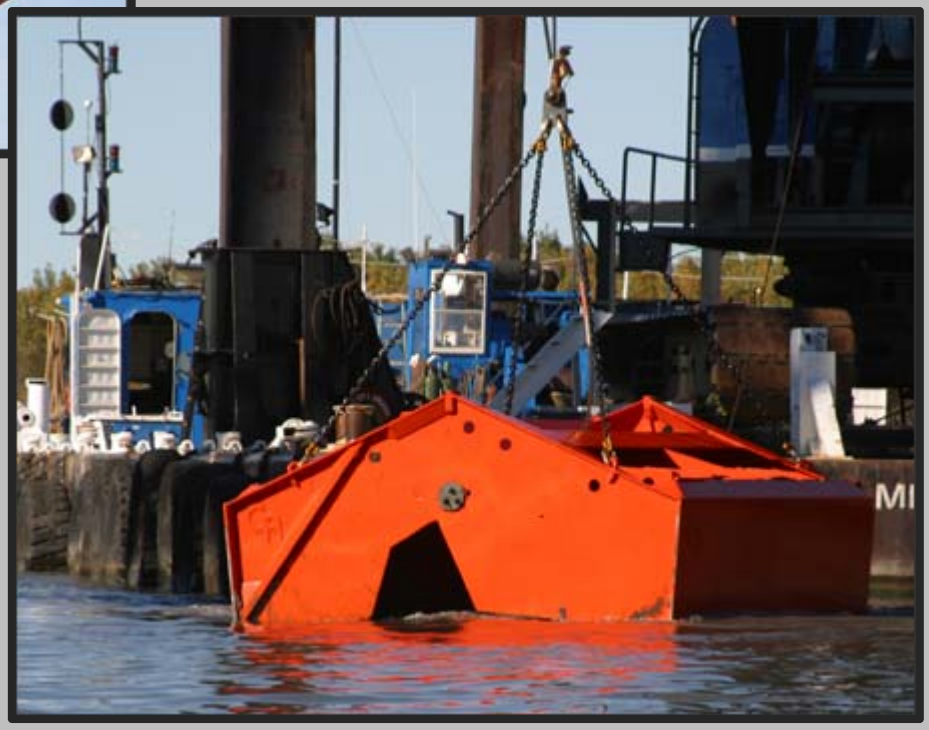
> Level I SQT
0-1 foot



Dredge with Off-Site Disposal Option

Mechanical Dredging with Hydraulic Transport

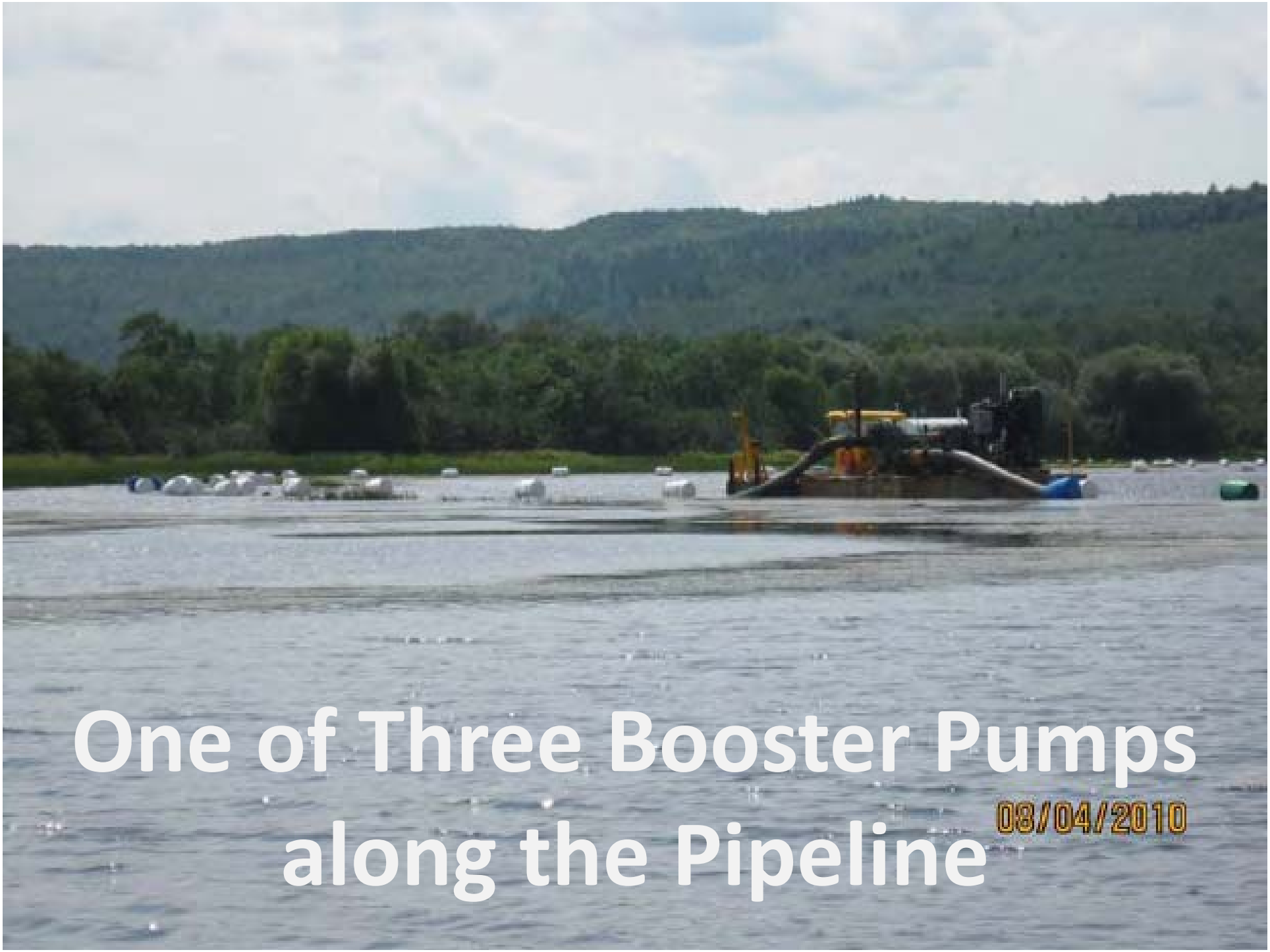
Cable Arm
Level Cut
Environmental Bucket



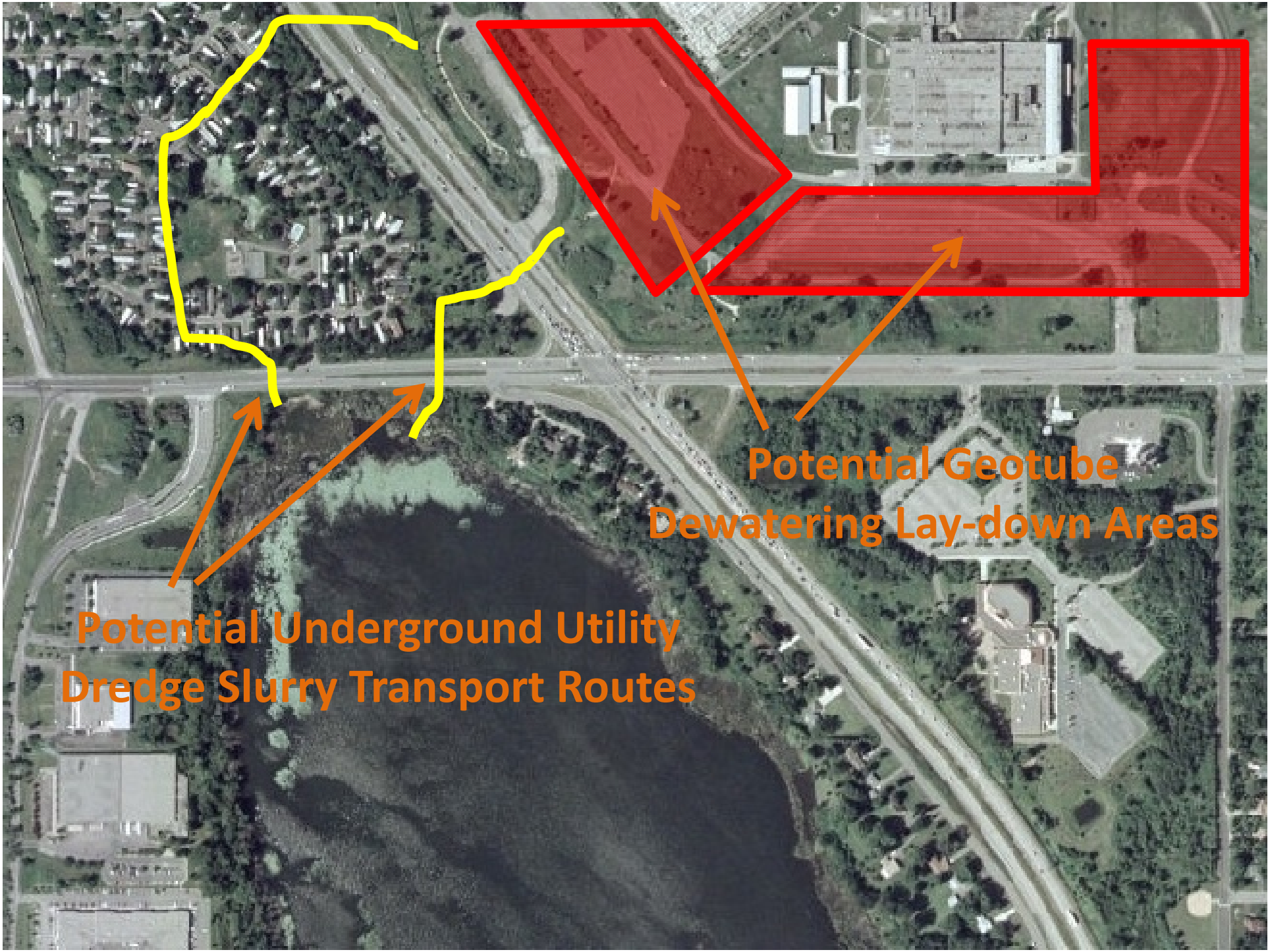
Level Cut Surface


Hydraulic Cutter Head Dredge
08/04/2010


08/19/2010



One of Three Booster Pumps along the Pipeline

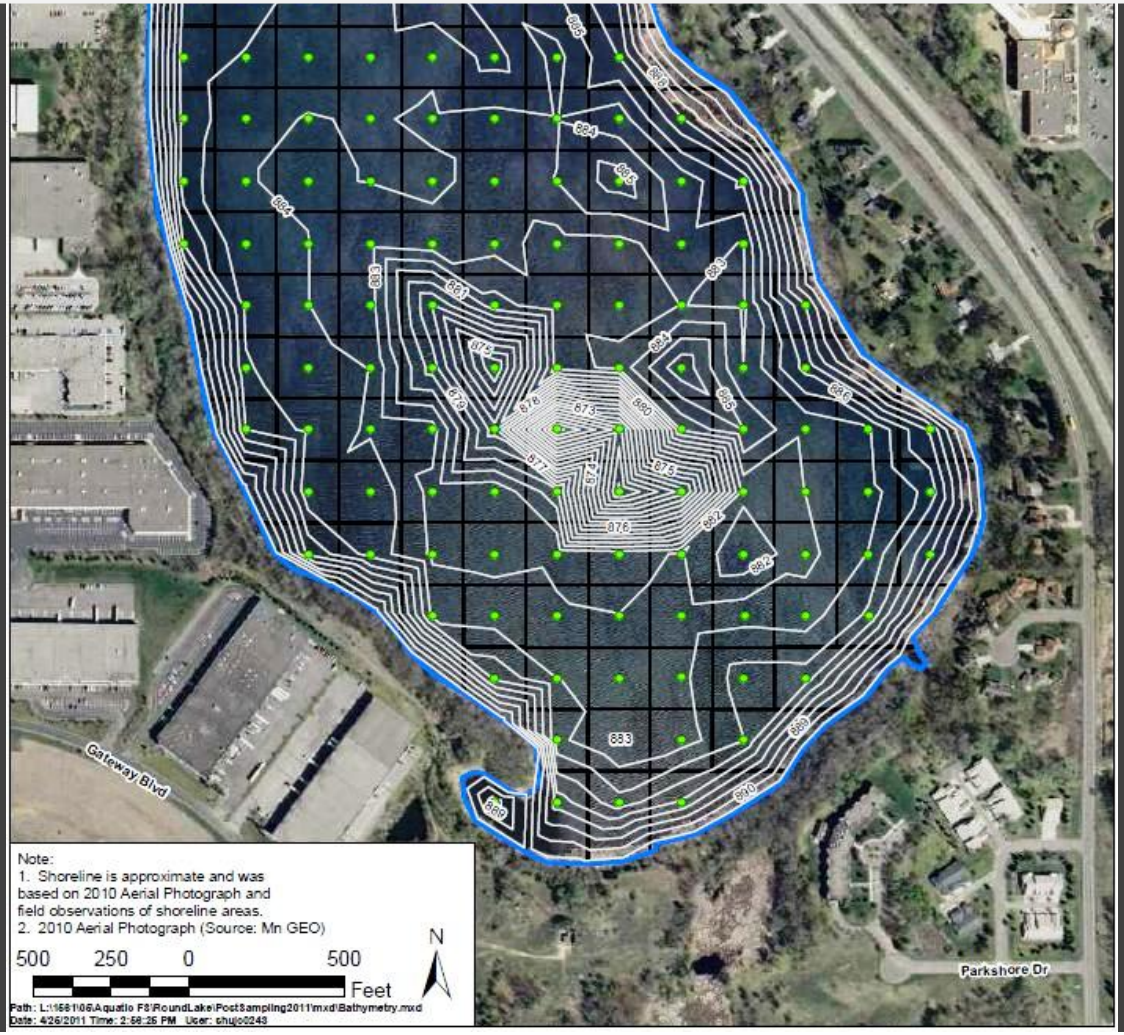

Potential Geotube
Dewatering Lay-down Areas
Potential Underground Utility
Dredge Slurry Transport Routes

Sediment Dewatering and Consolidation: Geotubes

Geotube Operations

Dredge Material Placement In CAD With Tremi Barge

Dredge with Round Lake CAD Option

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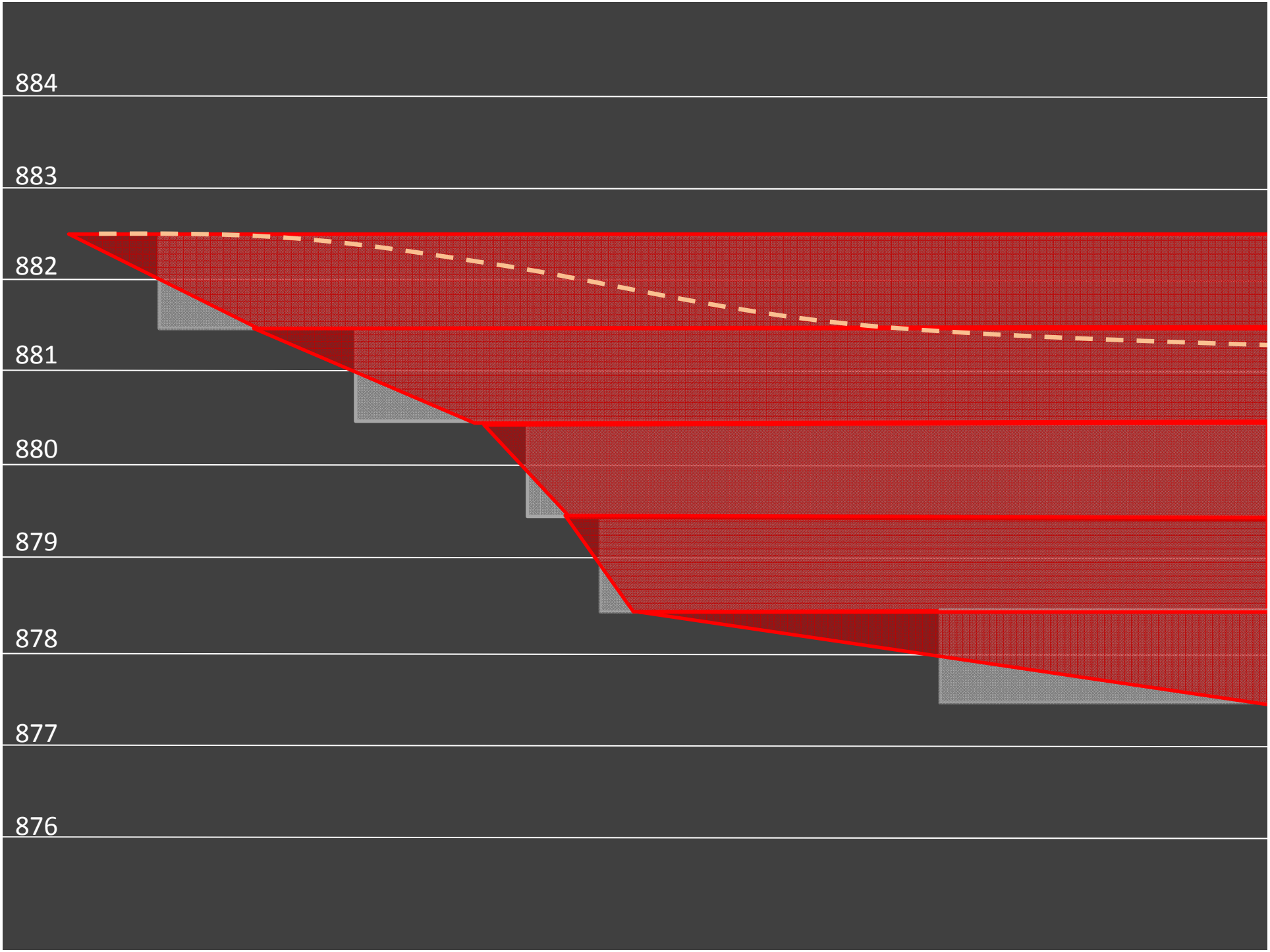
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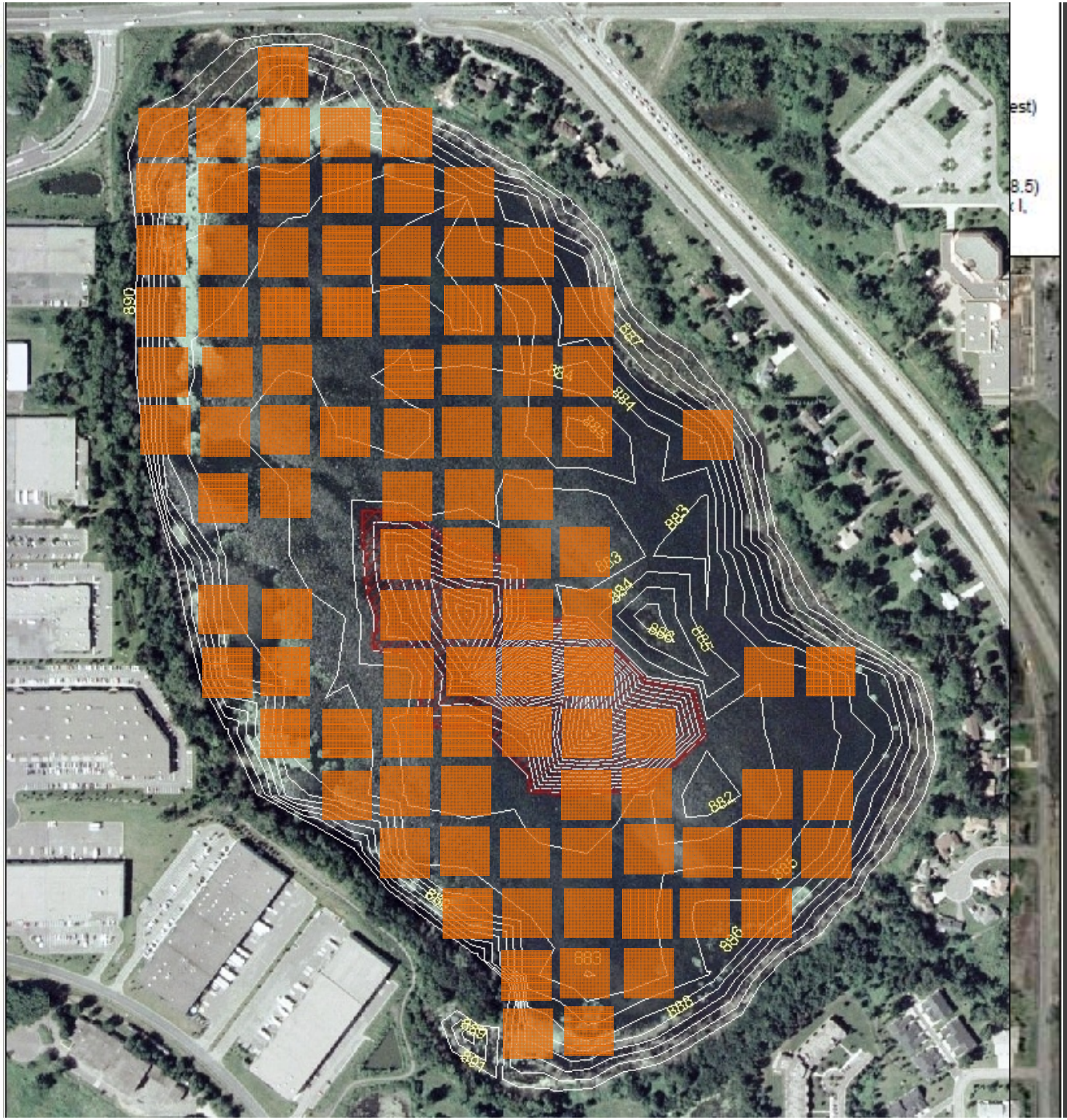
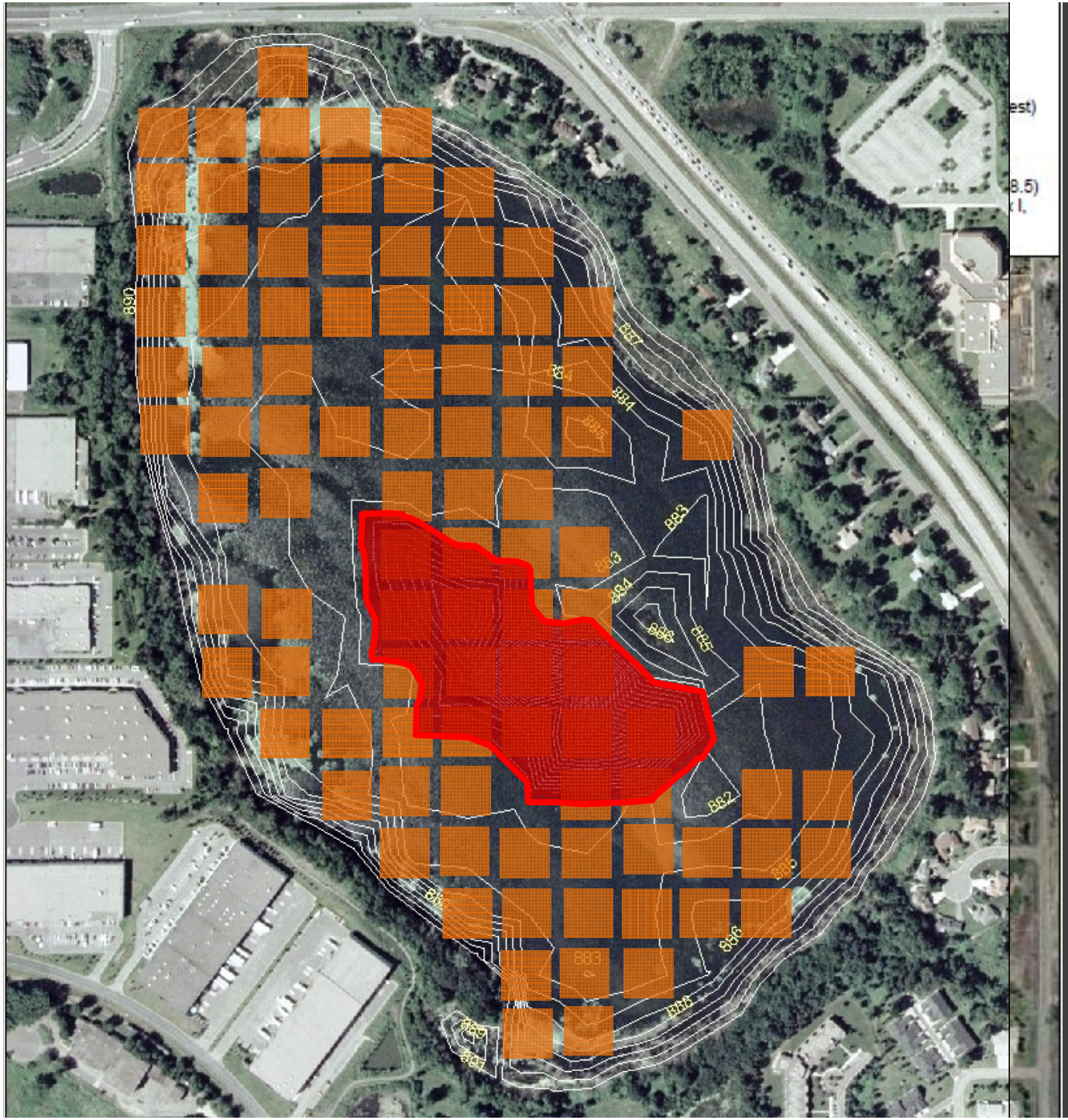
Metals

mPECq > 0.24
0-0.5 foot



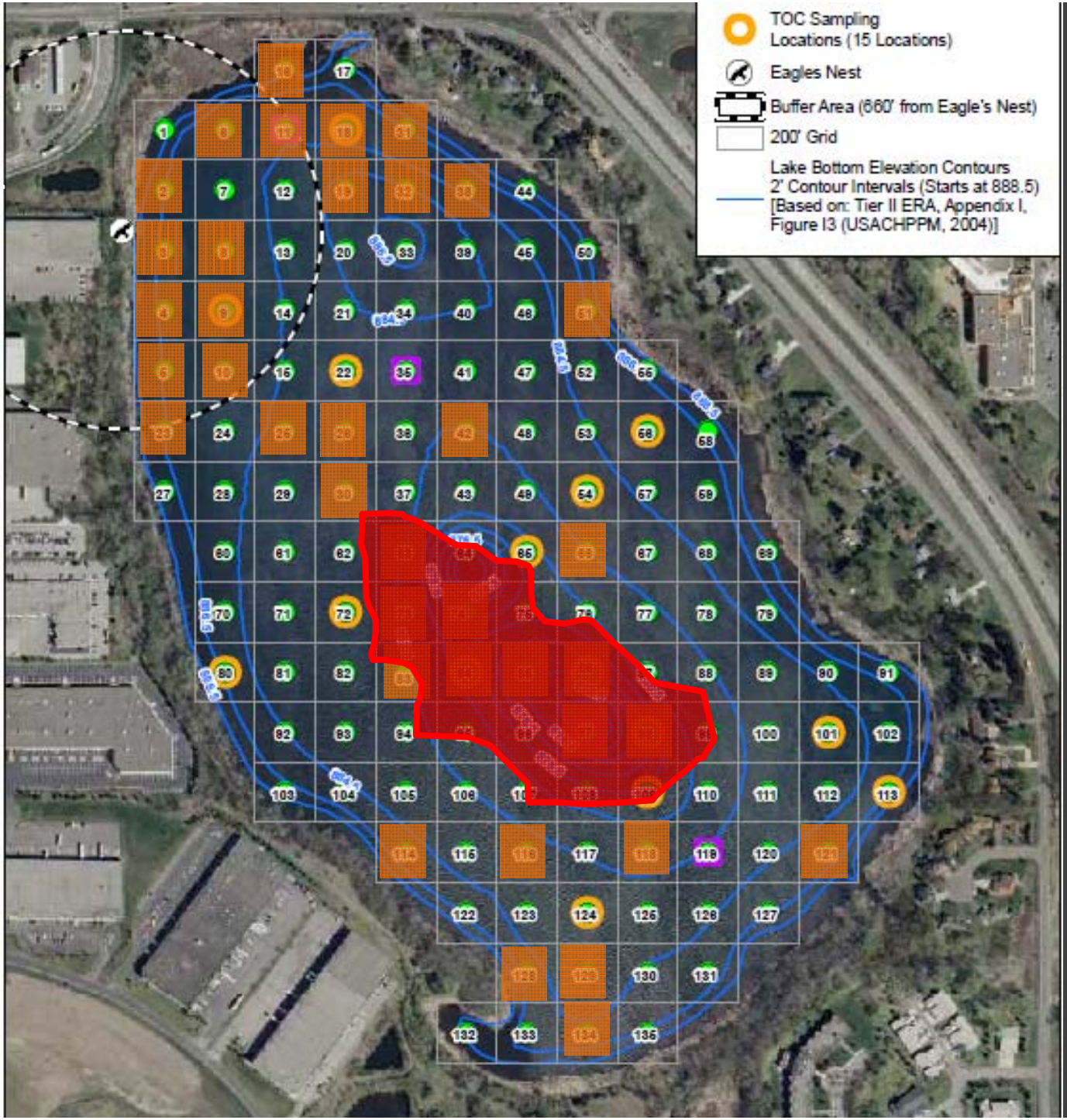
Metals

mPECq > 0.24
0-0.5 foot



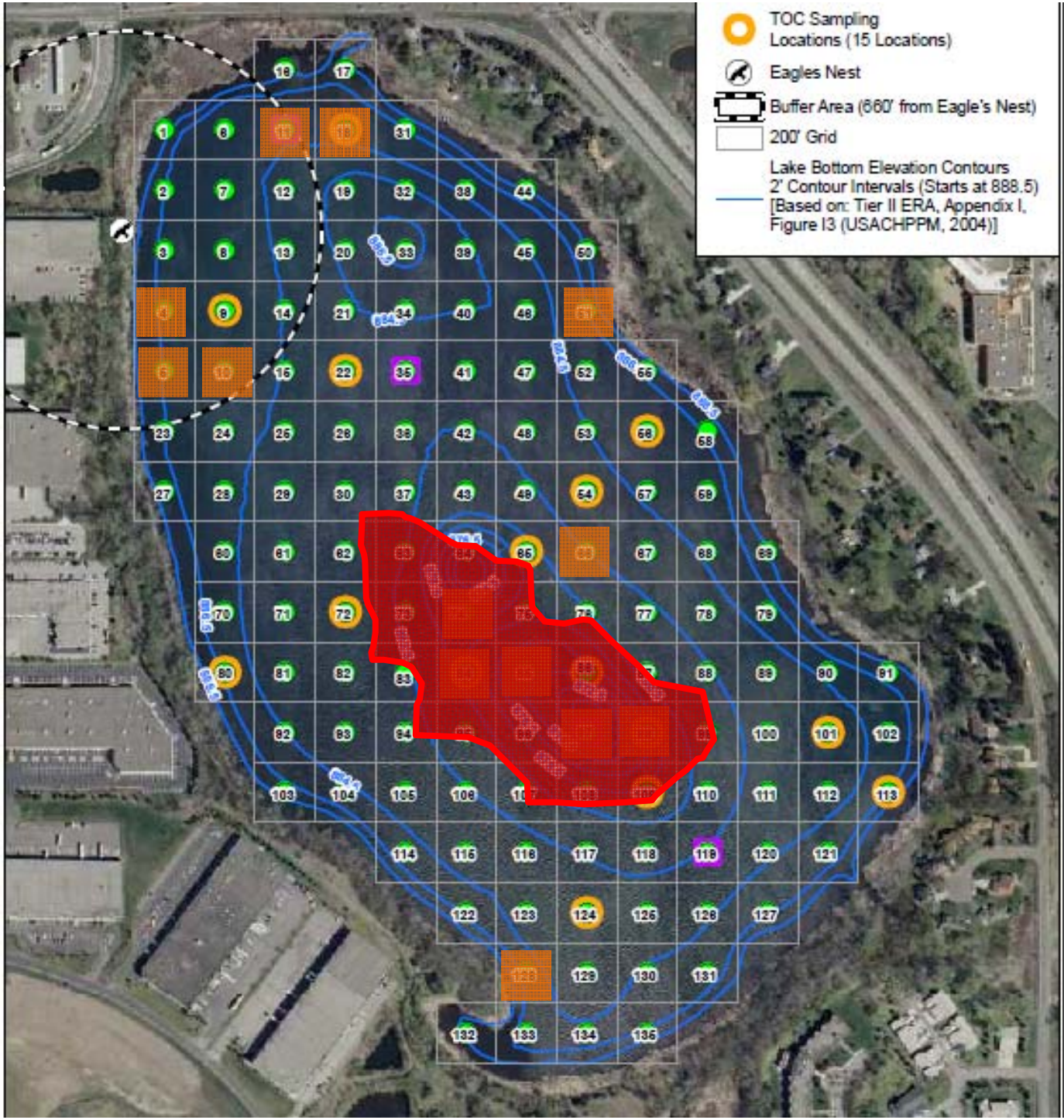
Metals

mPECq > 0.24
0.5-1 foot



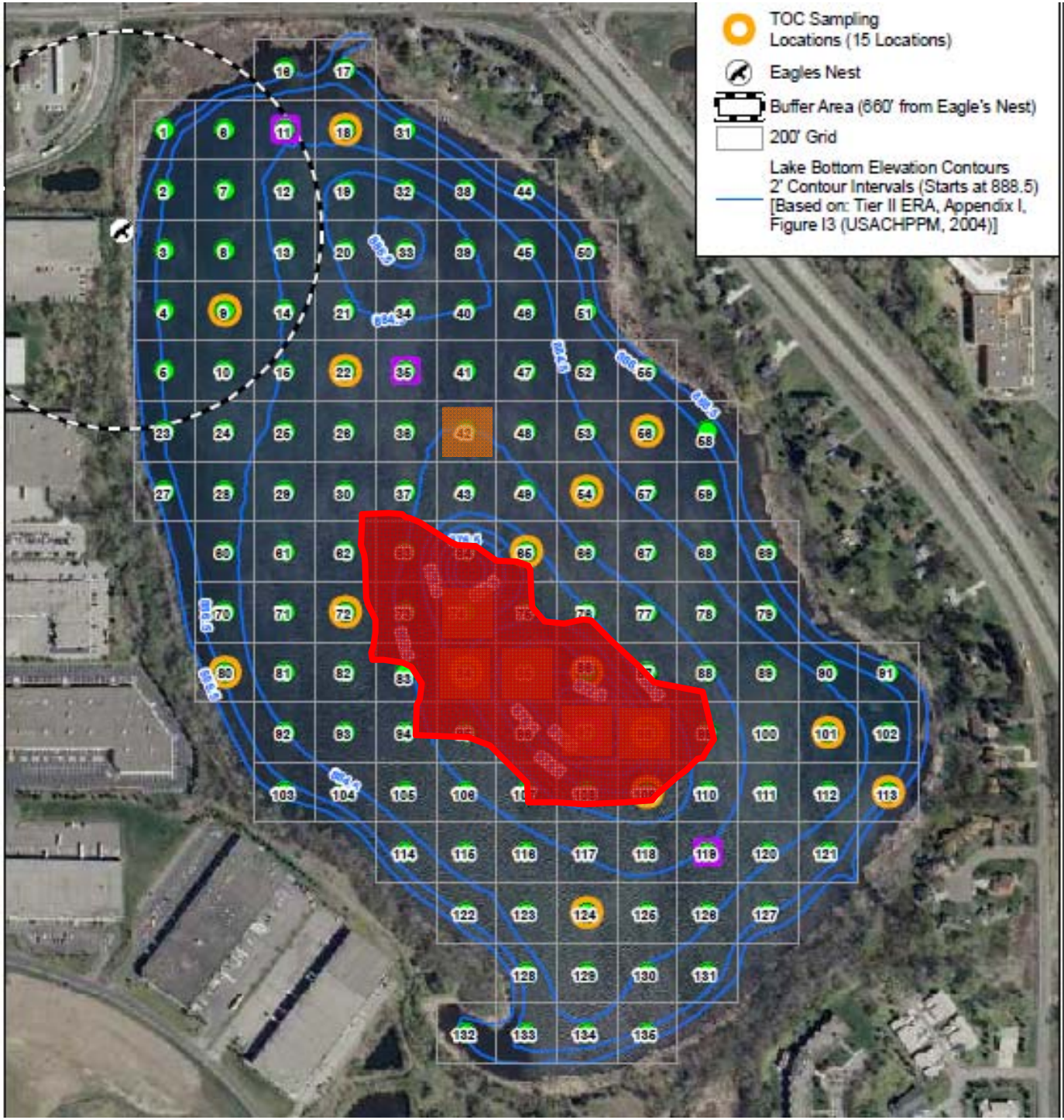
Metals

mPECq > 0.24
1-2 foot



Metals

mPECq > 0.24
>2 foot



Capacity of Deep Area Below Elevation 882.5

109,444 yd^3

Volume of Contaminated Sediment Excluding Deep Area Footprint

62,959 yd3 (0-0.5')
23,702 yd3 (0.5-1')
11,852 yd3 (1-2')

98,513 yd3 (Total)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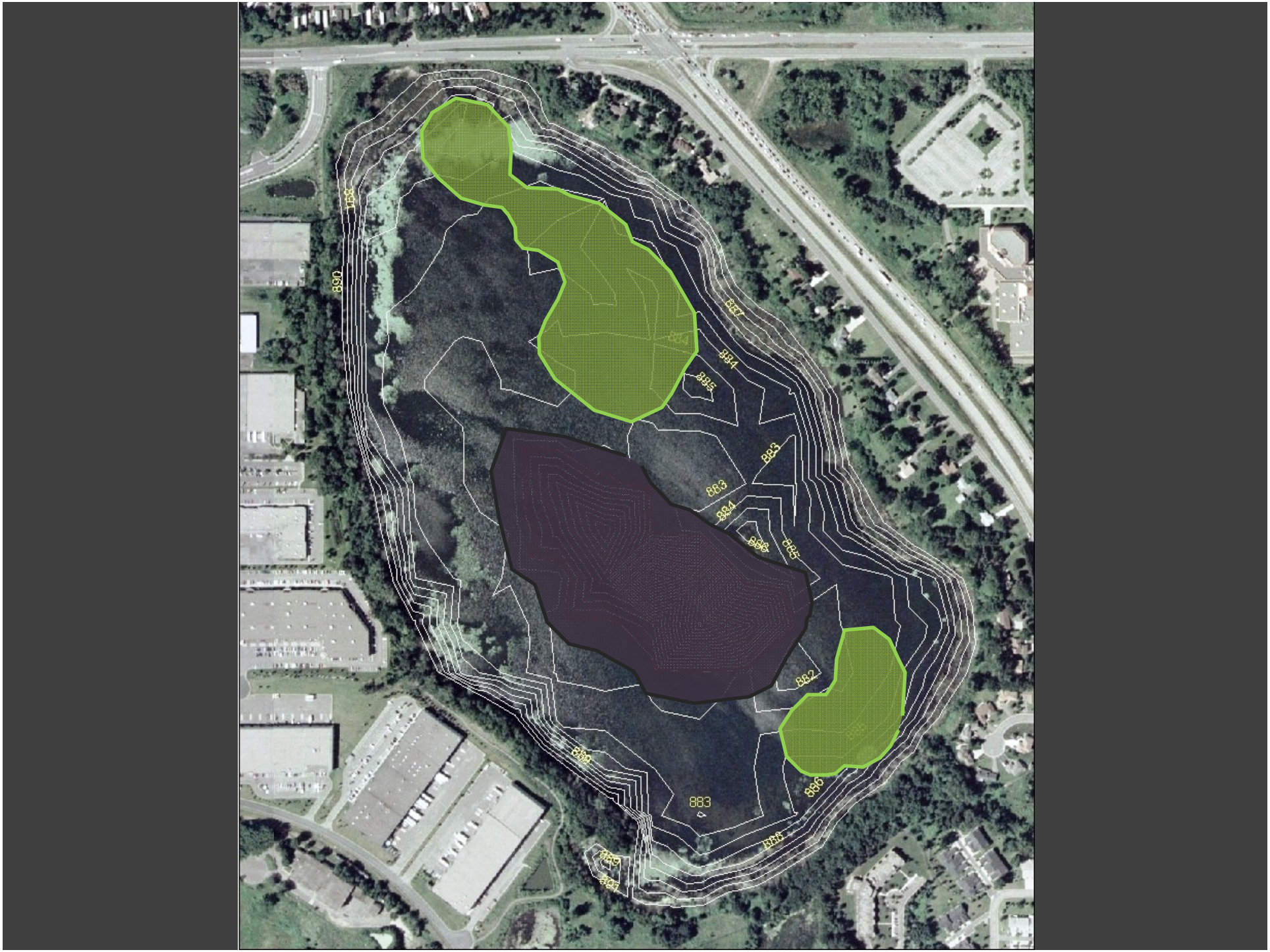
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Dredging with Off-Sit Disposal

- Advantages
  - No long-term monitoring, maintenance, or contingency planning
  - May be considered more permanent
- Disadvantages
  - Need to dewater and transport
  - Need borrow source of cover material
  - high relative cost

Dredging with Round Lake CAD

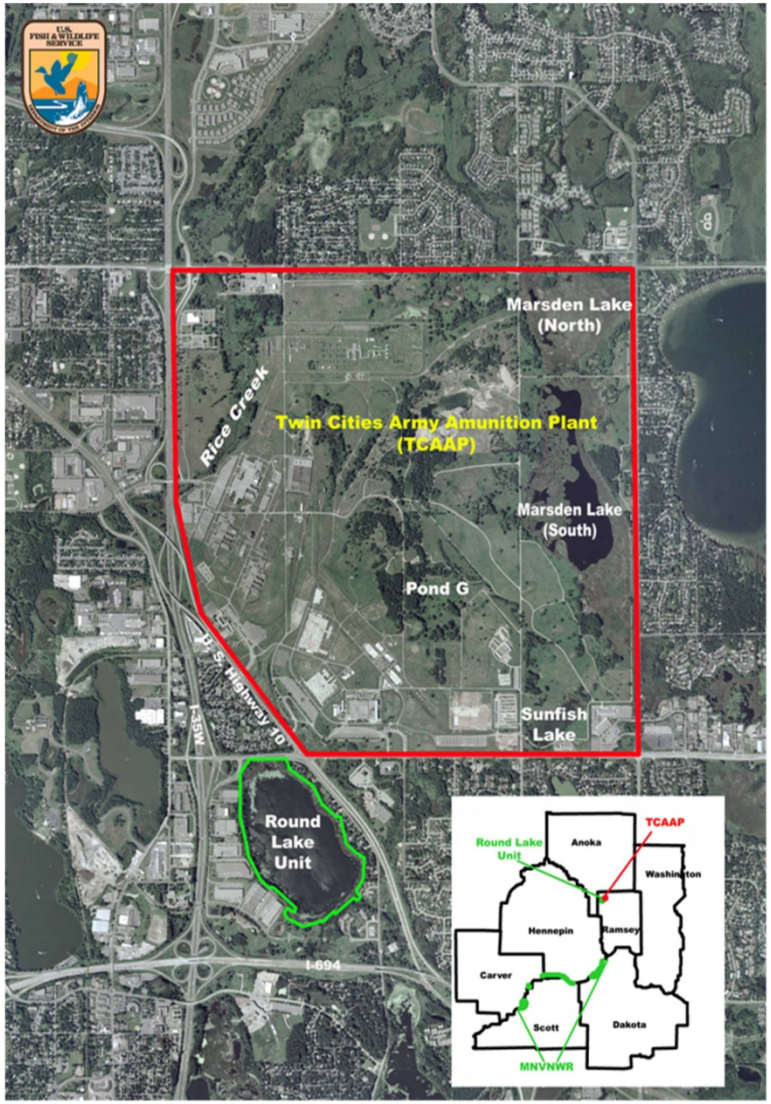
- Advantages
  - Contaminants addressed & contained within Site footprint
  - No off-site transport or dewatering
  - Cover and cap material from same basin
  - No truck transportation or traffic issues
  - Lower overall cost
- Disadvantages
  - Long-term monitoring, maintenance, or contingency planning
  - May be considered less permanent

Conceptual Management Plan
Round Lake Unit

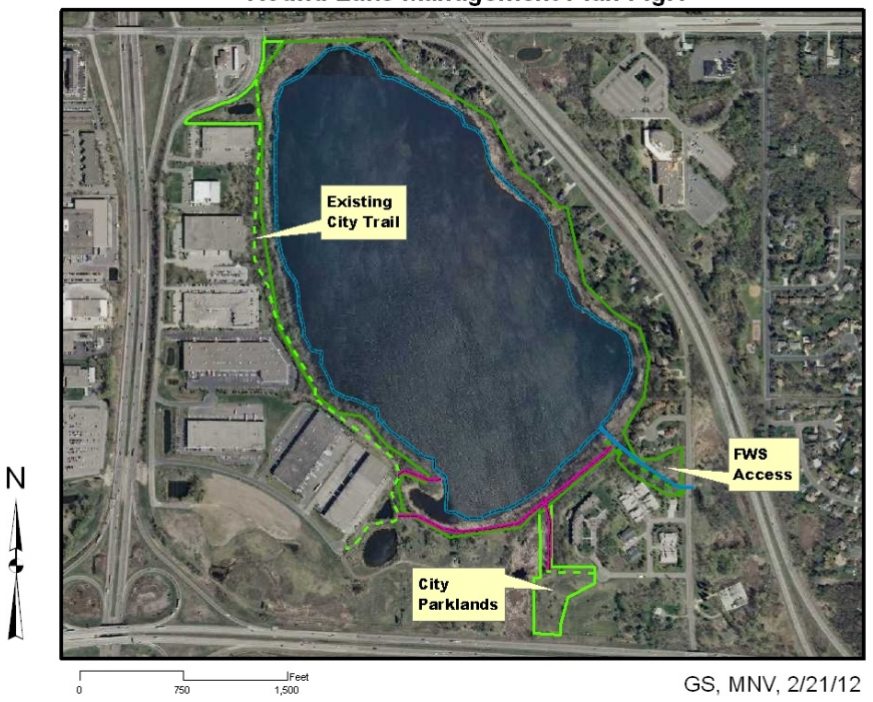
Gerry Shimek
Supervisory Wildlife Refuge Specialist
U.S. Fish & Wildlife Service
Minnesota Valley National Wildlife Refuge
And
Wetland Management District

PREVIEW

- Purpose
- Plan
  - Wildlife
  - Public Use
  - Operation & Management
- History



Round Lake Management Plan Fig.1



GS, MNV, 2/21/12

Conceptual Management Plan

- Purpose:
  - Provide framework for future management
  - Provide background for FS
- Updates & Refines
  - 1979, 1982, 1998 Plans; 2004 CCP; 2012
- “Conceptual”
  - “Caretaker” status – mid 1980s
  - Dependent on remediation

Plan Components

- Wildlife – Habitat
- Public Use
- Operation & Maintenance

Wildlife

- “Fish and wildlife first”
- Migratory birds: ducks (diving), marsh (over water), “songbirds”
- Resident: eagles, turtles, fish
- Habitat: ecosystem support (”food web”)
  - Aquatic vegetation, water quality
  - Landscape context

FEASIBILITY STUDY FOR AQUATIC SITES

Round Lake Bathymetry

Wenck

Wenck Associates, Inc. 1800 Pioneer Creek Center
Environmental Engineers Maple Plain, MN 55359-0429

2009

Figure 7-3

Water Management

- Purpose:
  - Optimize food species
    - Submerged species – light penetration
    - Emerged species – germination
  - Optimize vegetation density
    - Security, social interactions, nesting
  - Approximate natural processes

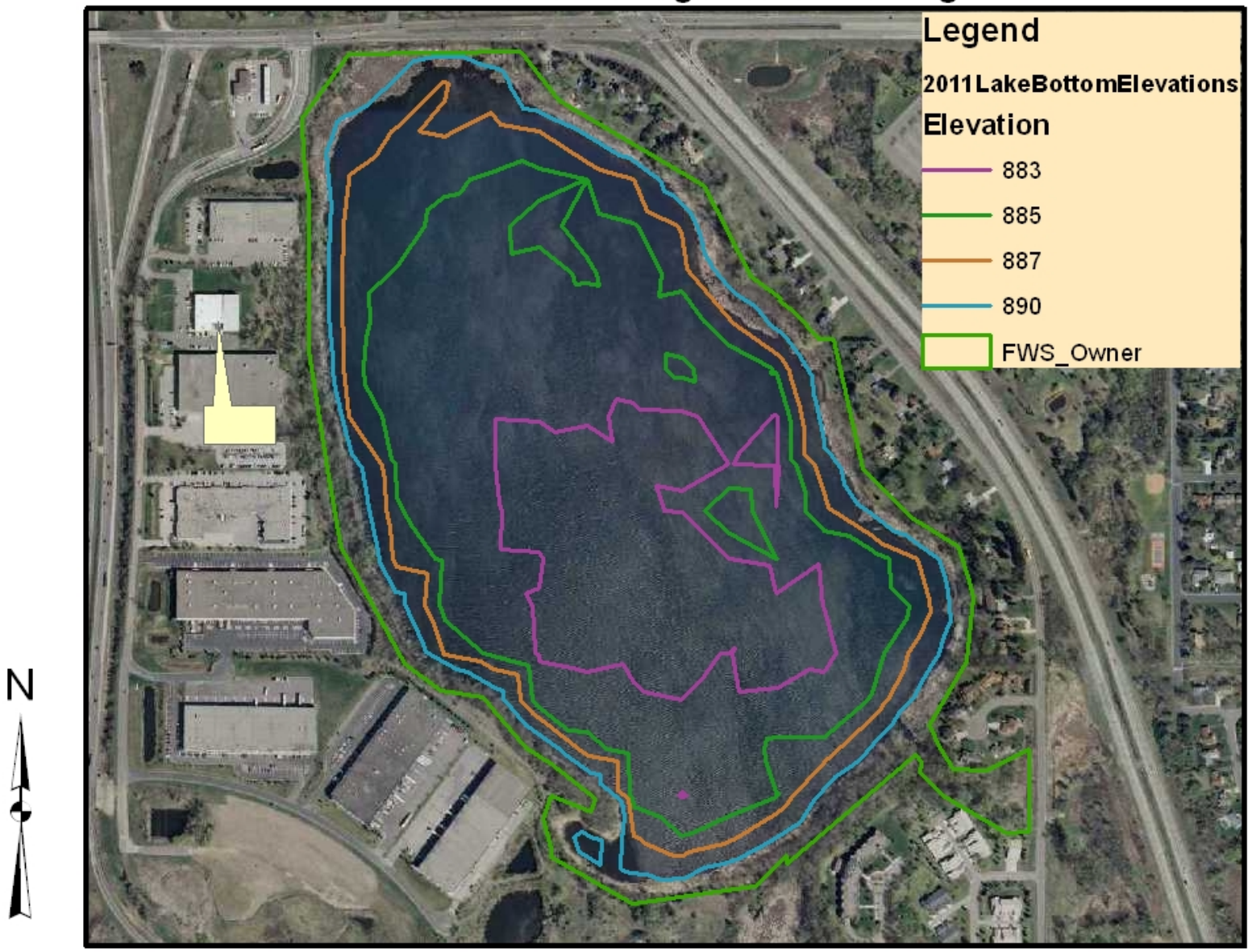
Water Management Concepts

- Early spring: lower water
  - Maximum light penetration, germination, consolidation
- Early summer: increase water levels
  - Over water nesters, optimize submergent & emergent
- Summer & early fall: hold for maturity
- Late fall: raise then lower
  - Early migrants, late migrants

Key Elevations

- 892: water damage to others
- 890: historical normal
  - Likely early fall target – “puddle ducks”
  - 6 – 7% emergent vegetation
- 887: existing WCS sill
  - 90% of basin covered with water
- 885 – 886: historic low water levels
- 883: depth of light penetration
  - Limit of submerged vegetation

Round Lake Management Plan Fig.5

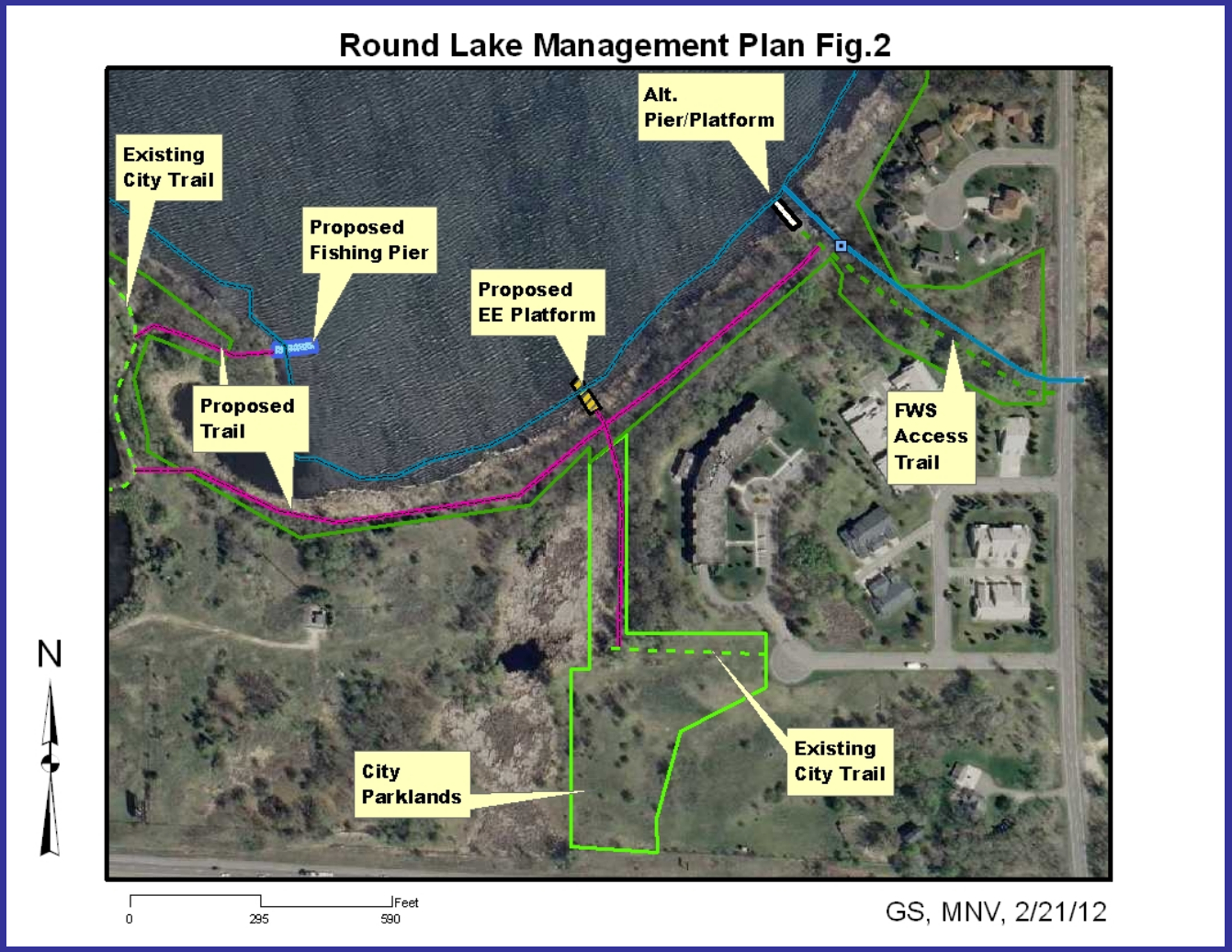


GS, MNV, 5/18/12

Public Use

- Priority Public Uses
  - Appropriate and compatible with Refuge mission and purpose
    - Environmental education & interpretation
    - Wildlife observation & photography
    - Fishing & ~~Hunting~~
  - Not appropriate or compatible
    - Boating, motorized vehicles, swimming
- Complement City & County Plans

Public Use


Round Lake Management Plan Fig.2
Alt. Pier/Platform
Existing City Trail
Proposed Fishing Pier
Proposed EE Platform
Proposed Trail
FWS Access Trail
City Parklands
Existing City Trail
N
Feet
0
295
590
GS, MNV, 2/21/12

Operations/Maintenance

- Infrastructure Maintenance
  - Water control structure & channel
  - Signage
  - Access road & trails
  - Platforms & Docks
  - Trespass & Vandalism
- Resource Monitoring (inc. Partnerships)
  - Water level & quality; Vegetation
  - Migratory birds; Fish; Resident wildlife

Discussion?

Our Mission:

Working with others to conserve, protect and enhance fish, wildlife, plants and their habitats for the continuing benefit of the American people

Minnesota Valley NWR

- 3815 American Blvd. E.
- Bloomington, MN 55425

- 952-854-5900
- minnesotavalley@fws.gov
- http://www.fws.gov/midwest/MinnesotaValley/index.html

- Gerry Shimek 952-858-0705
- gerry_shimek@fws.gov

Overview of Soil Investigations for Engineering Evaluation/Cost Analysis (EE/CA)

(Provided to Restoration Advisory Board at May 21, 2012 Meeting)

A. What are the areas of concern and contaminants?

a. See Figure:
   i. Site A
   ii. 135 Primer/Tracer Area
   iii. National Guard Environmental Baseline Survey (EBS) Areas

B. What is the status of the soil investigation work?

a. Army prepared a QAPP for conducting this work, which was approved by the USEPA and MPCA in February 2012

b. QAPP describes soil sampling on 15-foot sampling grids (similar to other TCAAP soil sites)

c. Purpose: to define the volume of soil that is above the action limit for each area (horizontal and vertical extent) for purposes of completing an Engineering Evaluation/Cost Analysis (EE/CA) Report

d. Current status: Sampling underway but not yet completed

C. What is the anticipated remedy?

a. Excavate, stabilize (if needed), haul to permitted landfill for disposal

b. Protective soil cover will also be evaluated, but not likely selected

D. What are the next steps?

a. Complete the soil sampling work

b. Prepare the EE/CA Report for Army review

c. USEPA/MPCA review and approve of EE/CA Report

d. Public notice of EE/CA Report availability for review

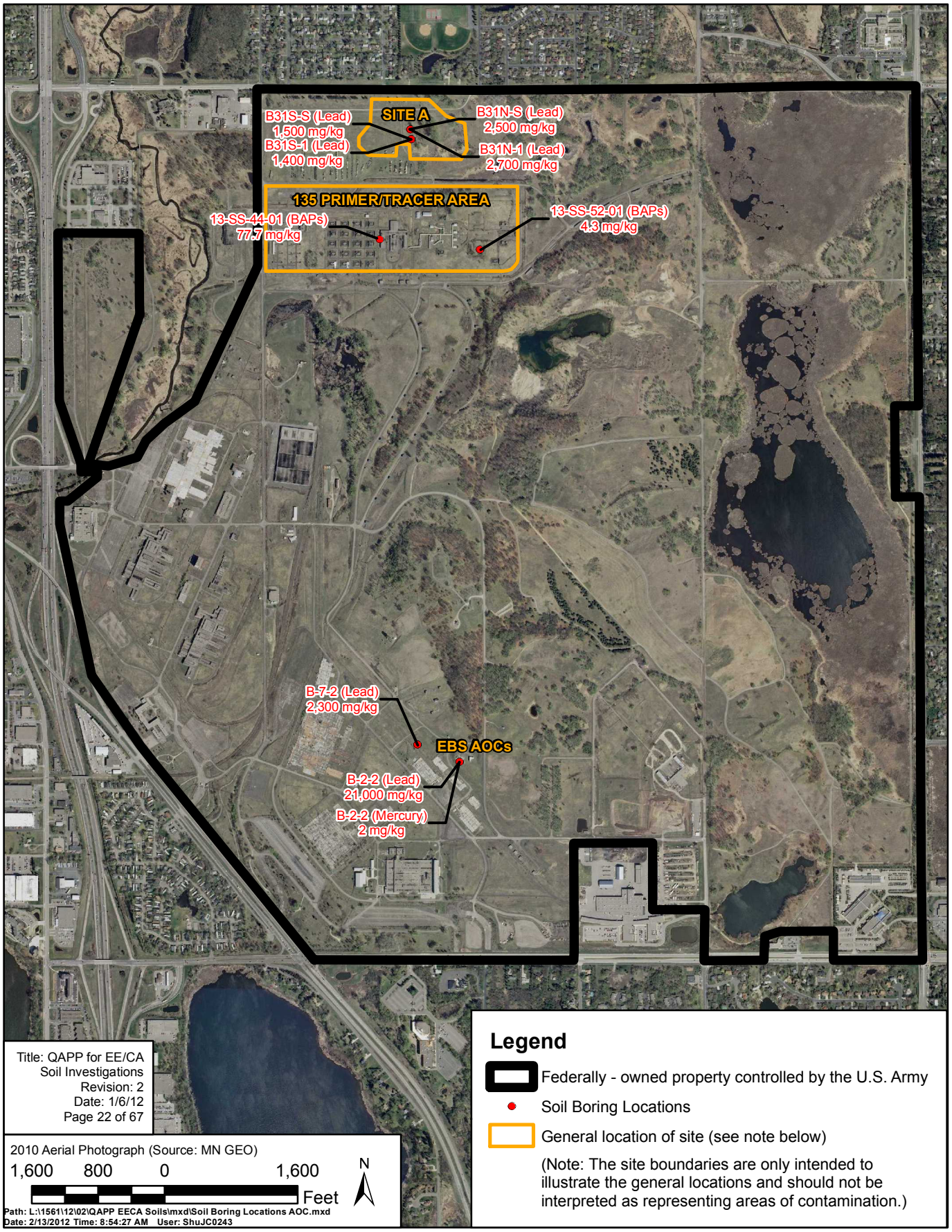
e. Army prepares an Action Memorandum, which documents the remedy decision

f. Removal Action Work Plan (this fall/winter)

g. Conduct removal action (Spring 2013)

h. Prepare the Removal Action Completion Report

i. Amendment OU2 Record of Decision to document the remedy



Title: QAPP for EE/CA Soil Investigations
Revision: 2
Date: 1/6/12
Page 22 of 67

2010 Aerial Photograph (Source: MN GEO)

1,600 800 0 1,600 Feet

N

Path: L:\1561\12\02\QAPP EECA Soils\mxd\Soil Boring Locations AOC.mxd
Date: 2/13/2012 Time: 8:54:27 AM User: ShuJC0243

Legend

- Federally - owned property controlled by the U.S. Army
- Soil Boring Locations
- General location of site (see note below)

(Note: The site boundaries are only intended to illustrate the general locations and should not be interpreted as representing areas of contamination.)

QAPP FOR EE/CA SOIL INVESTIGATIONS
SITE A AOCs, 135 PTA AOCs, EBS AOCs
Soil Boring Locations Indicating Areas of Concern

Engineers - Scientists
Business Professionals
www.wenck.com

Wenck
1800 Pioneer Creek Center
Maple Plain, MN 55359-0429
1-800-472-2232

JAN 2012

Figure 10C