



# LOWER MINNESOTA RIVER WATERSHED DISTRICT

## Executive Summary for Action

Lower Minnesota River Watershed District Board of Managers Meeting

Monday, January 7, 2019

### Agenda Item

#### Item 6. A. - Dredge Management

#### Prepared By

Linda Loomis, Administrator

#### Summary

**i. Funding for dredge material management**

There have been no actions since the Board approved Resolution 18-21 at the December Board meeting.

**ii. Vernon Avenue Dredge Material Management site**

Staff has received the preliminary wetland report and the Threatened and Endangered Species Report. The city has requested the District to address a wetland area in the middle of the site. This area is a depression left after removal of material by Rachel Contracting that has filled in with water. Staff will work with the site manager and others taking material from the site to make sure this doesn't happen again.

An eagle nesting site was noted that will be further investigated. The presence of eagle's nesting should not impact operation of the site; it will just limit timing activities to avoid nesting season.

Legal Counsel has prepared a new agreement between the LMRWD and LS Marine. It is included in this packet for your review. Staff would like to wait until LS Marine has had an opportunity to review the agreement before the LMRWD Board approves it, so staff is asking that no action be taken at this meeting, but wait until the February meeting. If Managers have any comments or concerns they can be directed to the Administrator.

**iii. Private Dredge Material Placement**

The LMRWD has received a Certificate of Insurance from Ries Farms, listing the LMRWD as an additional insured. Ries Farms has been contracted by the River Terminal Operators to remove the private dredge material.

#### Attachments

2019 Property Management Agreement

#### Recommended Action

No action recommended

# Property Management Agreement

This Agreement is made effective as of the \_\_\_ day of \_\_\_\_\_, 2019, and supersedes the original agreement of October 9, 2014, by and between Lower Minnesota River Watershed District ("LMRWD"), a public body organized under Minnesota Statutes Chapters 103B and 103D (hereinafter "Owner"), and LS Marine, Inc., an independent contractor (hereinafter "Manager").

The parties hereto agree as follows:

**1. DESCRIPTION OF THE PROPERTY**

This Agreement is made with respect to the following Property: LMRWD (MN-14.2 RMP) Placement Site - which is shown on the attached **Exhibit A** ("Property").

**2. RESPONSIBILITIES OF THE MANAGER**

Beginning on the date set forth in paragraph 6, the Manager will provide to Owner the following services (collectively, the "Services"):

**A. Site Management Manual**

Manager has developed, and Owner has approved, a manual (hereinafter "Management Manual") for the management of the Property to be used as a guideline for overall Property management with respect to the intake of dredge material (hereinafter "material or materials"), management of onsite material, development and management of overall Property plan and sale/export of material from the Property. The Management Manual is attached as **Exhibit B**. After consultation with the Manager, the Owner in its sole discretion may amend the Management Manual from time to time. Any such amendments shall thereafter be part of the Management Manual.

**B. Compliance with Permits**

Manager will ensure compliance with all applicable permit conditions and laws as they relate to the Property and material that is imported to or exported from the Property. In addition, Manager will coordinate with Owner to ensure that all compliance reporting is tracked and completed.

**C. Testing Protocols**

As defined in applicable permits and as to be defined in the Management Manual, Manager will ensure all imported and exported materials comply with Minnesota Pollution Control Agency guidelines for analytical and gradational testing of material. Manager will keep files of all testing reports for proper reporting and provide copies of

reports to Owner. Manager will only allow placement of material on the Property that meets Level 1 criteria as established by the Minnesota Pollution Control Agency's *'Managing Dredge Materials -- in the State of Minnesota'* dated April 2014.

- D. **Inventory of Materials**  
Manager will track inventory of all material imported, stockpiles and exported from the Property on a project-by-project basis and report inventory quantities to the Owner on a quarterly basis or as requested.
- E. **US Army Corps of Engineers Placement**  
Manager will coordinate with the US Army Corps of Engineers (hereinafter "COE") as to all material imported to the Property by the COE and will direct the COE as to where to place and stockpile the material on the Property. All material imported to the Property by the COE will be handled in accordance with the Management Manual.
- F. **Third Party Placement**  
Manager will coordinate with third party users (hereinafter "Private Users") who may be allowed by Owner to place material on the Property and will direct the Private Users as to where to place and stockpile the material on the Property, so as not to comingle Private Users' material with COE material. Manager will also coordinate with Private Users as to their use of the Property and timely removal of their placed material from the Property. All material imported and exported to the Property by Private Users will be handled in accordance with the Management Manual.
- G. **Existing Owner Contracts and Obligations**  
Manager will work with Owner on existing offers and contracts the Owner has in place with regards to the Property and the removal and sale of material from the Property. Manager will manage the setup and use of the Property and exporting of the material under the existing offers and contracts to ensure the material is able to be efficiently exported while adhering to the conditions of the Management Manual.
- H. **Marketing**  
In accordance with the Management Manual, Manager will actively advertise and market onsite material (except for material placed by Private Users) for sale and develop the sale price of the material based onsite and market conditions. All sales will be made to parties other than the Manager or persons (entities) related to the Manager.

Payment for all sales shall be by check made payable to the Owner. Manager shall allow all qualified buyers (as defined in the Management Manual) to purchase material.

**3. PAYMENT**

The Manager will be paid the lesser of \$12,500.00 or 50% of the gross profit in each Pay Period generated and collected by Owner from the sales of material (except for material placed by Private Users) from the Property for payment of the Manager's Services under this Agreement. Gross profit will be defined as revenues collected in each Pay Period less costs incurred in that Pay Period for sales and use taxes, development, maintenance and onsite operation of the Property, including but not limited to:

- A. Construction and maintenance of berms, ponds, roads, loading points from the river, onsite and offsite access roads; and
- B. Other activities and improvements needed to comply with applicable laws and permits.

Pay Period(s) will run from August 1 to July 31, annually during the term of this contract. A financial report shall be provided by Manager to Owner within thirty (30) days after the end of each Pay Period and payment shall be due to Manager within 30 days of receipt and approval of the financial report by Owner.

**4. RELATIONSHIP OF PARTIES**

It is understood by the parties that Manager is an independent contractor with respect to the relationship between the parties.

**5. WARRANTY**

Manager shall provide its Services and meet its obligations under this Agreement in a timely and workmanlike manner, using knowledge and recommendations for performing the Services which meet generally acceptable standards as established by Owner, US Army Corps of Engineers, Minnesota Pollution Control Agency and the City of Savage. Manager will provide a standard of care equal to, or superior to, industry standard care on similar projects.

**6. TERM**

This Agreement shall commence on the Effective Date and will terminate on July 31, 2022. However, the Agreement may be terminated at any time by either party with cause provided at least 60 days prior written notice is delivered in writing by the terminating party to the other party.

**7. INDEMNIFICATION/INSURANCE**

Manager agrees to indemnify and hold Owner harmless from all claims, losses, expenses and fees, including attorney fees, costs, and judgments that may be asserted against Owner that result from the action or omissions of Manager and/or Manager's employees, agents or representatives. Manager shall comply with the terms related to insurance as shown on the attached **Exhibit C**.

**8. DEFAULT**

The occurrence of any of the following shall constitute a default under this Agreement:

- A. The failure to make required payment when due.
- B. The insolvency or bankruptcy of either party.
- C. The subjection of any of either party's property to any levy, seizure, general assignment for the benefit of creditors, application or sale for or by any creditor or government agency.
- D. The failure to make available or deliver the Services in a time and manner provided for in this Agreement.

**9. REMEDIES**

In addition to any and all other rights a party may have available according to law, if a party defaults by failing to substantially perform any provision, term or condition of this Agreement (including without limitation the failure to make a monetary payment when due), the other party may terminate the Agreement by providing written notice to the defaulting party. This notice shall describe with sufficient detail the nature of the default. The party receiving such notice shall have 15 days from the effective date of such notice to cure the default(s). Unless waived by a party providing notice, the failure to cure the default(s) within such time period shall result in the automatic termination of this Agreement.

**10. FORCE MAJEURE**

If performance of this Agreement or any obligation under this Agreement is prevented, restricted, or interfered with by causes beyond either party's reasonable control ("Force Majeure"), and if the party unable to carry out its obligations gives the other party prompt written notice of such event, then the obligations of the party invoking this provision shall be suspended to the extent necessary by such event. The term Force Majeure shall include, without limitation, acts of God, fire, explosion, vandalism, storm, flood or other similar occurrence, orders or acts of military or civil authority, or by national emergencies, insurrections, riots, or wars, or strikes, lock-outs, work stoppages, or other labor disputes, or supplier failures. The excused party shall use reasonable efforts under the circumstances to avoid or remove such

causes or non-party shall use reasonable efforts under the circumstances to avoid or remove such causes of non-performance and shall proceed to perform with reasonable dispatch whenever such causes are removed or ceased. An act or omission shall be deemed within the reasonable control of a party if committed, omitted, or caused by such party, or its employees, officers, agents, or affiliates.

**11. ARBITRATION**

Any controversies or disputes arising out of or relating to this Agreement shall be resolved by binding arbitration in accordance with the then-current Commercial Arbitration Rules of the American Arbitration Association. The parties shall select a mutually acceptable arbitrator knowledgeable about issues relating to the subject matter of this Agreement. In the event the parties are unable to agree to such a selection, each party will select an arbitrator and the two arbitrators shall in turn select a third arbitrator, all three of whom shall preside jointly over the matter. All documents, materials, and information in the possession of each party that are in any way relevant to the dispute shall be made available to the other party for review or copying no later than 30 days after the notice of arbitration is served. The arbitrator(s) shall not have the authority to modify any provision of this Agreement or to award punitive damages. The arbitrator(s) shall have the power to issue mandatory orders and restraining orders in connection with the arbitration. The decision rendered by the arbitrator(s) shall be final and binding on the parties, and judgment may be entered in conformity with the decision in any court having jurisdiction. The agreement to arbitration shall be specifically enforceable under the prevailing arbitration law. During the continuance of any arbitration proceeding, the parties shall continue to perform their respective obligations under this Agreement.

**12. NOTICE**

Any notice or communication required or permitted under this Agreement shall be sufficiently given if delivered in person or by certified mail, to the address set forth below or to such other address as one party may have furnished to the other in writing.

Lower Minnesota River Watershed District  
112 East 5th Street, Suite 102  
Chaska, Minnesota 55318  
Attn: Administrator  
naiadconsulting@gmail.com

With a copy to:      Legal counsel of the Lower Minnesota River  
Watershed District:  
John C. Kolb  
Rinke Noonan  
P.O. Box 1497  
St. Cloud, MN 56302-1497

LS Marine, Inc.  
3625 Talmage Circle, Suite 202  
St. Paul, MN 55110  
Attn: Taylor Luke

**13. ENTIRE AGREEMENT**

This Agreement, including Exhibits, contains the entire agreement between the parties, and there are no other promises or conditions in any other agreement whether oral or written concerning the subject matter of this Agreement. This Agreement supersedes any prior written or oral agreements between the parties.

**14. AMENDMENT**

This Agreement may only be modified or amended in writing and executed by all parties.

**15. SEVERABILITY**

If any provision of this Agreement will be held to be invalid or unenforceable for any reason, the remaining provisions will continue to be valid and enforceable. If a court finds that any provision of this Agreement is invalid or unenforceable, but that by limiting such provision it would become valid and enforceable, then such provision will be deemed to be written, construed, and enforced as so limited.

**16. WAIVER OF CONTRACTUAL RIGHT**

The failure of either party to enforce any provision of this Agreement shall not be construed as a waiver or limitation of that party's right to subsequently enforce and compel strict compliance with every provision of this Agreement.

**17. GOVERNING LAW**

This Agreement shall be construed in accordance with the laws of the State of Minnesota.

**18. SURVIVAL OF ORIGINAL AGREEMENT**

The original agreement of October 9, 2014, expired by its own terms July 31, 2017. However, both Owner and Manager have continued in good faith under

the terms of the original agreement as if it had been renewed. Owner and Manager agree to honor the terms of the original agreement as if it had been extended through the date of this Agreement.

**19. SIGNATORIES**

This Agreement shall be effective of as of the date first written above.

**Lower Minnesota River  
Watershed District**

**LS Marine, Inc.**

By: \_\_\_\_\_

By: \_\_\_\_\_

TITLE: \_\_\_\_\_

TITLE: \_\_\_\_\_

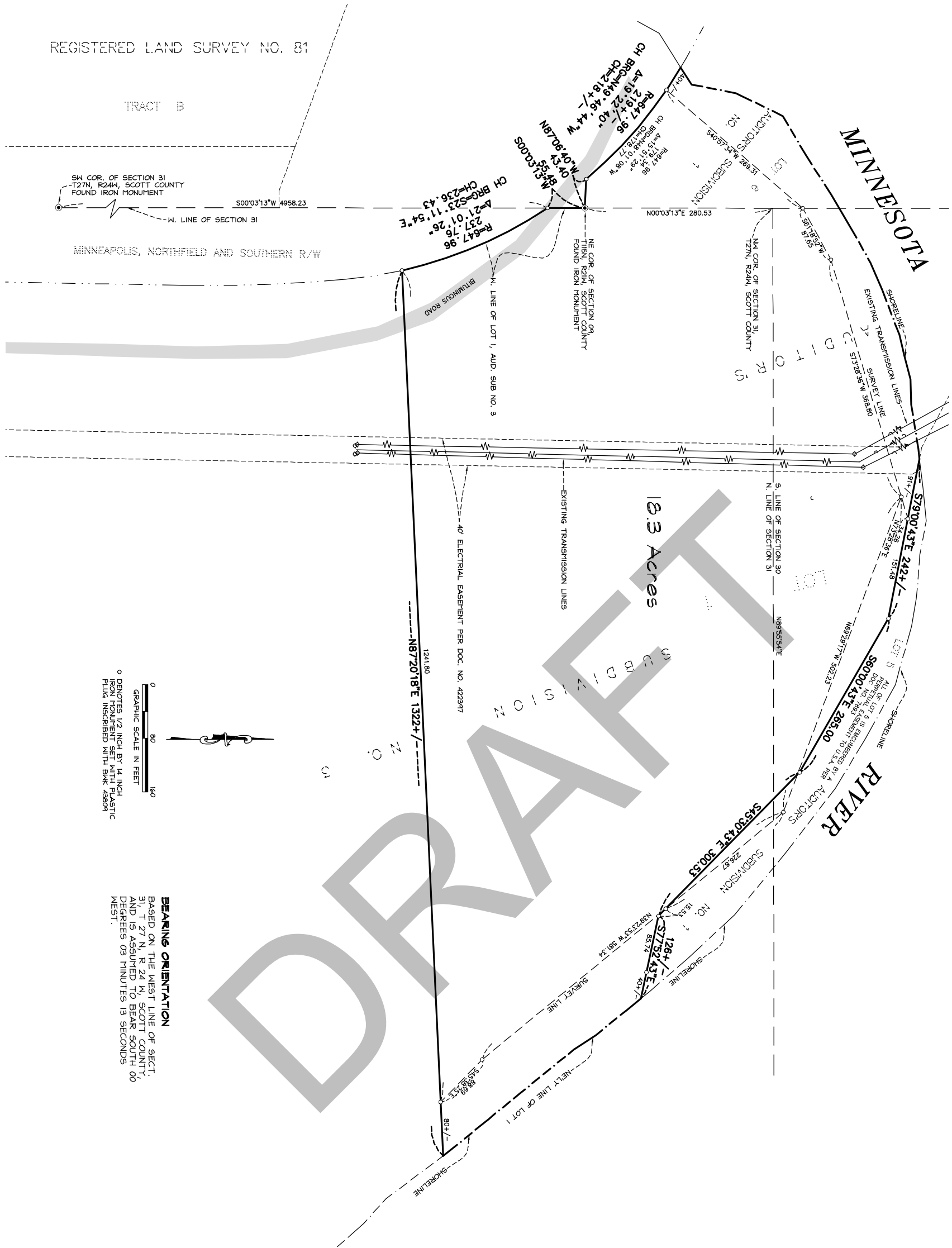
DRAFT



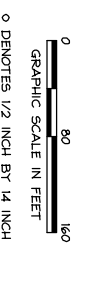
**EXHIBIT A**  
**PLACEMENT SITE**

DRAFT

# CERTIFICATE OF SURVEY



REGISTERED LAND SURVEY NO. 81



**BEARING ORIENTATION**  
 BASED ON THE WEST LINE OF SECT.  
 31, T 27 N, R 24 W, SCOTT COUNTY,  
 AND IS ASSUMED TO BEAR SOUTH 00  
 DEGREES 03 MINUTES 13 SECONDS  
 WEST.

**SUGGESTED LAND DESCRIPTION**  
 Lot 6, AUDITOR'S SUBDIVISION NO. 1, SAVAGE, MINNESOTA, a duly recorded plat, Scott County, Minnesota and that part of Lot 1, AUDITOR'S SUBDIVISION NO. 3, SAVAGE, MINNESOTA, a duly recorded plat, Scott County, Minnesota lying northerly of the following described line and its westerly extension: Commencing at the northeast corner of section 21, West Scott County, Minnesota, thence South 00 degrees 03 minutes 13 seconds West, assumed bearing, along the westerly line of said Lot 1 a distance of 55.48 feet; thence southeasterly 237.76 feet along the westerly line of said Lot 1 and along a non-tangential curve concave to the southwest having a radius of 647.96 feet and a central angle of 21 degrees 01 minutes 26 seconds, the chord of said curve is 236.43 feet in length and bears South 23 degrees 11 minutes 54 seconds East to the point of beginning of the line to be described; thence North 87 degrees 20 minutes 18 seconds East 1322 feet more or less to the shoreline of the Minnesota River, said shoreline also being the northeasterly line of said Lot 1, and said line terminating thereat.

**CERTIFICATION**  
 TO: Cargill, Inc., Lower Minnesota River Watershed District and Commercial Partners Title LLC  
 I hereby certify that this is a true and correct representation of a survey of the boundaries of the land above described and of the location of all buildings, if any, thereon, and all visible encroachments, if any, from or on said land. And that all recorded easements if any, listed in Schedule B, Section 2 of the Commitment for Title Insurance No. 283083 First Supplemental dated January 31, 2006, located on this survey, and that I was shown on this survey, and that I was shown on Licensed Land Surveyor under the laws of the State of Minnesota.

*Timothy D. Larson*  
 Timothy D. Larson,  
 Professional Land Surveyor  
 Minnesota License Number 43809  
 05 May, 2006

DATE:	REVISIONS
FEB 2006	
DRAWN BY: LARSON	
CHECKED BY: STROEING	
SURVEY BY: REINECCIUS	

CLIENT  
**LOWER MN WATERSHED DISTRICT**

**Bonestroo** Engineers - Architects  
**Williamson** Surveyors  
**Kotsmith**

3721 23RD STREET SOUTH  
 ST. CLOUD, MN 56301  
 TEL 320.251.4553 FAX 251.6252  
 WEB SITE www.bonestroo.com

**Bonestroo**  
**Rosene**  
**Anderlik &**  
**Associates**

COPYRIGHT © 2006 BY BONESTROO WILLIAMSON KOTSMITH

**EXHIBIT B**  
**MANAGEMENT PLAN**

DRAFT

# Cargill East River (MN – 14.2 RMP) Dredge Material Site Management Plan

---

Lower Minnesota River Watershed District

January 2013

## Table of Contents

1.0	Background.....	1
1.1	Purpose and Need Statement.....	1
1.2	Economic Evaluation.....	1
2.0	Existing Cargil East River –MN14.2 RMP Site Conditions.....	4
2.1	Site Layout and Storage Capacity.....	4
2.2	Summary of Existing Access Points.....	6
2.3	Estimated Channel Dredging Volumes and Frequencies.....	6
2.4	Quantity and Distribution of Dredged Sediment Onsite.....	8
2.5	Sediment Quality.....	8
2.6	Regulatory Requirements.....	11
3.0	Potential Existing Site Improvements.....	12
3.1	Material Management Plan.....	14
4.0	Material Use.....	15
4.1	No Action.....	15
4.2	Beneficial Uses.....	16
4.2.1	Engineered Use.....	19
4.2.2	Agriculture/Product Uses.....	20
4.2.3	Environmental.....	21
4.2.4	Cost/Benefit.....	21
4.2.5	Regulatory Requirements.....	23
4.2.6	Local Opportunity and Market Demand for Beneficial Use Projects.....	24

4.3	Off-Site Disposal.....	24
4.4	Material Use Summary.....	26
5.0	Alternative Management Scenarios.....	27
5.1	Alternative A: District maintains role as local sponsor .....	27
5.2	Alternative B: District operates and manages the Cargill East River (MN-14.2 RMP) site and other dredge material placement sites purchased and funded by the State of Minnesota .....	27
5.3	Alternative C: District ends role as local sponsor.....	28
6.0	references .....	29

**Tables**

Table 1:	Minnesota River Freight Traffic – 2007 to 2010 (Tons x 1,000).....	2
Table 2:	1999 Minnesota River Sediment Sampling Results .....	10
Table 3:	Average Retail Prices .....	17
Table 4:	Dredge Material Sediment type.....	18
Table 5:	Hauling Costs .....	22
Table 6:	Required Permits and Clearances .....	23

**Figures**

Figure 1:	Cargill East River (MN-14.2 RMP) Site Location Map ( <i>Corps, 2007</i> ).....	4
Figure 2:	Cargill East River (MN-14.2 RMP) Existing Site Map.....	5
Figure 3:	Cargill East River (MN-14.2 RMP) Preliminary Site Configuration for Material Storage and Management .....	13
Figure 4:	Landfills Accepting Dredge Materials Within 30 Miles of Cargill East River (MN-14.2 RMP) site .....	25

## **Appendices**

Appendix A: Chemical Analyses Data for the Minnesota River

Appendix B: 2009 and 2011 Dredge Soil Stockpile Sampling – Savage Stockpile Facility

Appendix C: 2012 Dredge Soil Stockpile Sampling – Savage Stockpile Facility

## **1.0 BACKGROUND**

In the 1950's, the United States (U.S) Congress ordered the U.S. Army Corps of Engineering ("Corps") to deepen the Minnesota River channel from four to nine feet from the confluence with the Mississippi River to river mile (R.M.) 14.7 in Savage, Minnesota so that barges could transport grain and other materials out of and transport goods into Minnesota. The congressional order required the Corps to partner with a local regulatory entity to serve as the local sponsor.

Pursuant to statutory authority, five counties (Hennepin, Ramsey, Dakota, Scott and Carver) petitioned for the establishment of the Lower Minnesota River Watershed District ("District"). On March 23, 1960, the Minnesota Water Resources Board, now the Board of Water and Soil Resources ("BWSR"), established the District. Since the 1960's, the District has been and continues to be the State's local sponsor to work with the Corps to maintain the 9-ft channel. In 2007, the Corps developed a Dredge Material Management Plan (DMMP) for the Minnesota River above the Interstate 35W Bridge (Corps, 2007), to address concerns which surfaced in 1988. Concerns ranged from capacity at dredge material placement sites to complaints by industrial users about the condition of the channel. The DMMP identified 11 potential placement sites, with the following only six sites emerging as practical and cost effective locations requiring detailed evaluation: Cargill West Field Site (MN-14.8-RMP); Cargill East River (MN-14.2-RMP); Cargill East (MN-13.5-RMP); Below Cargill (MN-12.4-RMP); Kraemer (MN-12.1-RMP); and NSP (MN-10.1-RMP). After alternative formulation and detailed analysis and evaluation of sites individually and in combination with others, the Cargill East River (MN-14.2 RMP) site and the Kraemer (MN-12.1-RMP) site were the Corps' recommended alternative. In 2007, the District acquired the Cargill East River (MN-14.2 RMP) site. Because of an ownership change which resulted in higher fees for use of the Kraemer (MN-12.1-RMP) site, the Cargill East River (MN-14.2 RMP) site has been exclusively used for dredge material placement.

### **1.1 Purpose and Need Statement**

The Districts' Third Generation Watershed Management Plan documents funding and management concerns associated with their role as local sponsor. The purpose of this dredge material site management plan is to review options for managing the Cargill East River (MN-14.2 RMP) site and deposited material and to review the financial liability of the local sponsor role on the District.

### **1.2 Economic Evaluation**

The Minnesota River is a significant branch of the inland navigation system. Several of the world's largest grain marketing companies operate terminals on the River. These terminals serve as important nodes in the flow of grain from the Upper Midwest to domestic and foreign markets. In addition to grain, other miscellaneous commodities move through Minnesota River terminals and docks. The Corps' DMMP Table 1-1 lists the terminals located on the Minnesota River (Corps, 2007). In addition to the terminals listed below, six fleeting areas exist on the River to serve the terminals with a total capacity of 90 barges.



<b>Table 1-1 Terminals on the Minnesota River</b>		
<b>Name</b>	<b>River Mile</b>	<b>Purpose</b>
Cargill Co.	14.7 (R)	Ship grain; receive salt, fertilizer
Harvest States Coop	14.6 (R)	Ship grain
Bunge Corp.	14.5 (R)	Ship grain
Richards / Shiely Dock	14.4 (R)	Receive asphalt (Richards), sand, gravel, limestone (Shiely)
Port Cargill		
Molasses Dock	13.3 (R)	Receive molasses
Fertilizer Dock	13.1 (R)	Receive dry fertilizer, salt, limestone, etc.
General Dock	13.0 (R)	Receive general cargo (metal products and lumber)
Elevator C Dock	12.9 (R)	Ship grain
U.S. Salt	11.1 (R)	Receipt and transfer of salt, coal, stone, etc.
Northern States Power	8.6 (R)	Coal unloading dock (no longer used)
Source: Port Series No. 69, Port of Minneapolis - St. Paul, MN and Ports on Upper Mississippi River (Miles 300 to 860 AOR), Revised 1994, NDC 94-P-6, U.S. Army Corps of Engineers		

Since 2007, the traffic level on the River has averaged over 2 million tons. The primary commodities moved on the River are farm products (wheat, corn, soybeans, oats and barley) bound for Gulf of Mexico ports. These account for approximately 64 percent of total traffic on the River. Other commodities include dry fertilizer, salt, sand and gravel, metal products, and other miscellaneous commodities. Table 1 presents Minnesota River traffic data for recent years.

**Table 1: Minnesota River Freight Traffic – 2007 to 2010 (Tons x 1,000)**

Commodity	2007	2008	2009	2010	Average	Percent Total
Food and Farm Products						
Grain (Wheat, corn, oats)	1,084	1,258	216	1,532	1,023	48.1%
Soybeans	308	516	273	223	330	15.5%
Other	23	5	2	3	8	0.4%
Fertilizers	42	32	86	150	78	3.6%
Crude Materials	626	711	781	628	687	32.3%
Total Tons (times 1,000)	2,083	2,522	1,358	2,536	2,125	100.00%
Source: Waterborne Commerce Statistics						

Grain terminals on the Minnesota River serve as the access point to foreign markets for producers in Minnesota and the Dakotas. Producers rely on this route as an important option in marketing their grain. This route is often the least cost alternative compared to other marketing outlets: the Pacific Northwest, the Great Lakes through Duluth, the Gulf via rail, or domestic markets. Therefore, maintaining navigability of the Minnesota River is crucial in allowing producers to get the best price for their grain. Without this option, grain will move along other, more costly routes. The higher costs would be passed on to the producer in the form of lower prices offered by the grain companies.

The analysis presented here uses data obtained for the current Upper Mississippi River - Illinois Waterway (UMR-IWW) Navigation Study. Transportation costs were estimated for a sample of commodity movements using the UMR-IWW navigation system and for alternate routings and destinations that would bypass the system. Among the many movements evaluated were grain shipments from the Minnesota River to various destinations for domestic use and export. Transportation costs were estimated for moving grain from the producer to market using the water-based route through the Minnesota River terminals and using alternate routings. Rate savings range from \$1.40 to \$20 per ton, averaging \$12 per ton. Other commodities have savings ranging from \$2 to \$13 per ton, with an average of \$9 per ton.

By applying the savings of \$12 per ton to approximately 1.023 million tons of grain annually from Minnesota River terminals, the resultant benefits would be about \$12.3 million annually. For the other commodities, moving an average of 1.103 million tons at a savings of \$9 per ton results in transportation cost savings benefits of \$9.9 million. Total annual savings for traffic moving on the Minnesota River are estimated at \$22.2 million.

## 2.0 EXISTING CARGILL EAST RIVER –MN14.2 RMP SITE CONDITIONS

### 2.1 Site Layout and Storage Capacity

The existing Cargill East River (MN 14.2 RMP) site is located along the shoreline just downstream from the Port Richards slip (see Figure 1). The total area of the available site excluding the wooded perimeter buffer is approximately 11 acres, and the usable storage area within the site considering the use of sufficiently sized perimeter dikes is approximately 7 to 8 acres. The District has indicated that the dredging work completed to date for placement onto the site has been mechanically excavated sediment that was offloaded from barges at the north river access point and then physically spread within the site for drying, limited distribution and stockpiling (see Figure 2).

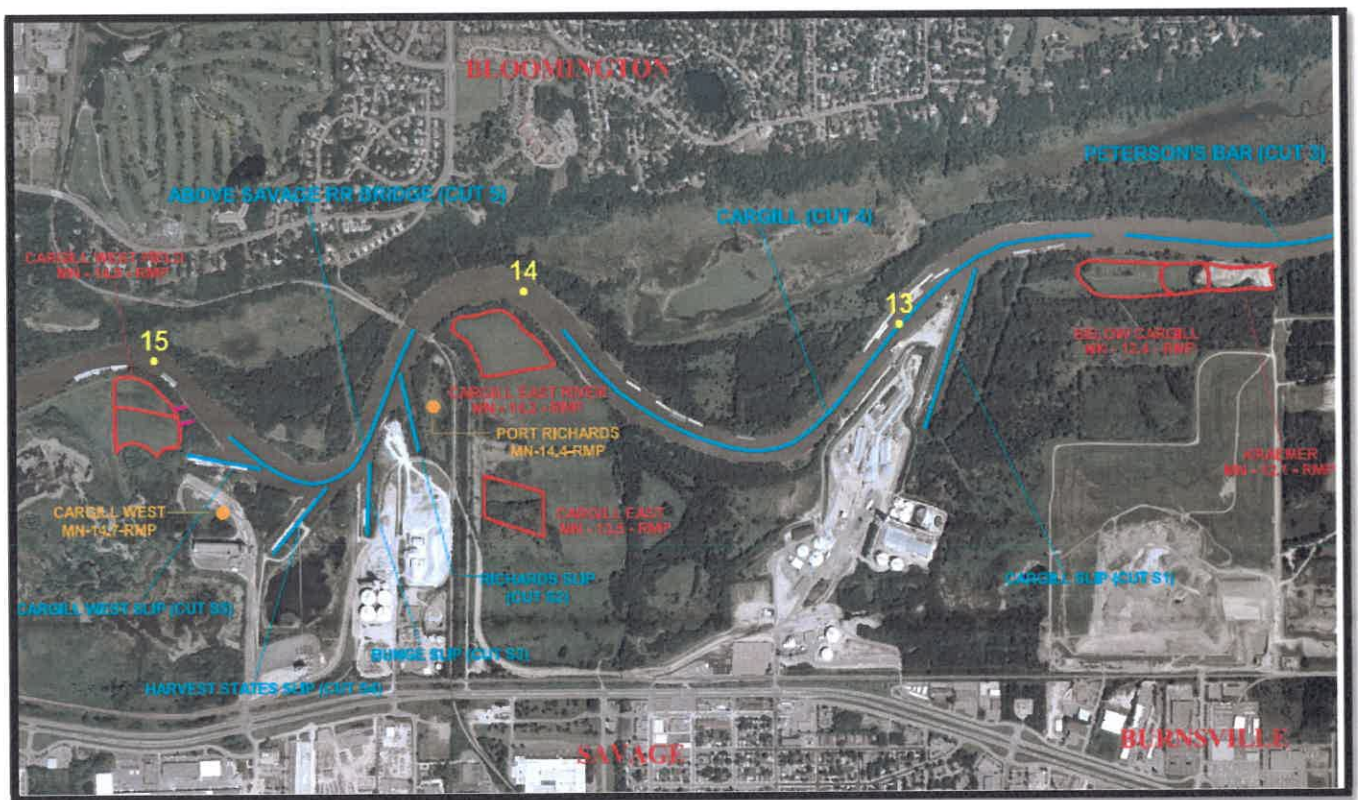
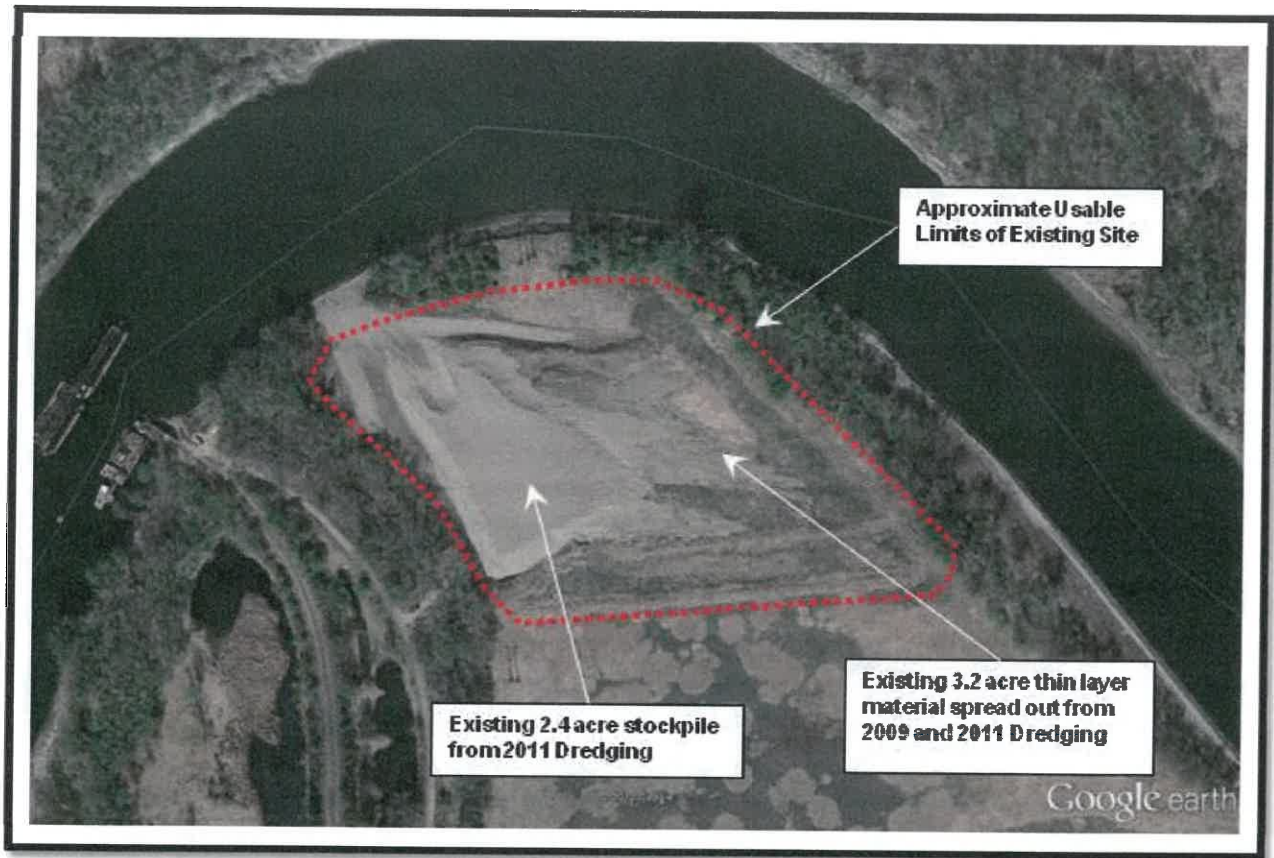


Figure 1: Cargill East River (MN-14.2 RMP) Site Location Map (*Corps, 2007*)





**Figure 2: Cargill East River (MN-14.2 RMP) Existing Site Map**

According to the DMMP, two areas would be required for placement of dredge material at the Cargill East River (MN-14.2 RMP) site if finer grained material from the private barge slips were to be stored on this site in addition to the material dredged from the main channel of the river. For the main channel material, an area of 7 acres would be required to accommodate a job of 35,500 cubic yards with material stockpiled to a depth of 15 feet. For the barge slip material, an area of 4 acres would be required to accommodate a job of 20,000 cubic yards with material placed to a depth of 10 feet. It was stated in the DMMP that there was enough area at the Cargill East River (MN-14.2 RMP) site to have an 11 acre site with a division to separate the sand from the fine placement areas. Other than material required for a containment dike, no permanent on-site storage is planned.

However, based on the Corps' assumption of a 7 acre area accommodating a 15 ft. high sand stockpile and a 4 acre area to accommodate a 10 ft. high stockpile of silty material (if private barge slips were to be included), then the 11 acre site would be able to store a maximum of 233,933 cubic yards. However, this assumption may be over estimating site capacity since it assumes a total stockpile area of 11 acres with no outside embankment slope for stability, erosion control and site access. If a safe outside embankment slope of 3:1 (3 ft. horizontal and 1 ft. vertical) is used, then the maximum site storage capacity according to the above Corps scenario would be approximately 193,600 cubic yards assuming dredged material is used to construct the perimeter dikes.

## **2.2 Summary of Existing Access Points**

The primary access points to the site presently include the river access at the north end of the site and the access road off Vernon Ave. located at the southwest corner of the site. The river site is primarily used to offload mechanically dredged material from barges to be placed onto the site. The Vernon Ave. access road currently allows limited land based site access, but could be extended and further developed to allow for site management and material loading.

## **2.3 Estimated Channel Dredging Volumes and Frequencies**

In order to estimate sediment storage requirements for the Cargill East River (MN-14.2 RMP) site, historical and navigational dredging estimates were used. Based on historical dredging data presented in the DMMP (Corps, 2007) and currently available data, estimated Corps dredging volumes projected to be placed onto the Cargill East River (Mn 14.2 RMP) site are summarized below. However, projecting future dredging requirements is difficult because of the many variables and unknowns that influence channel maintenance. Actual future dredging quantities may be significantly different from the projections, which could either lengthen or shorten the life expectancy and maintenance required for the site. To arrive at the projected quantities, comparisons were made between the projections used during the Great River Environmental Action Team (GREAT) Study and historic dredging data collected between 1976 and 1998. Adjustments were made to the average quantities per year using estimates based on historic records and experiences during recent years (See the DMMP Tables 3-1 and 3-2). Based on the adjusted dredging quantities shown, approximately 21,800 cubic yards per year on average are estimated to be removed in total from Dredge Cuts #3 (Peterson's Bar), #4 (Cargill) and #5 (Savage Bridge) through 2025.

<b>Table 3-1 Projected Dredging Quantities for Minnesota River Study : 1999-2025</b>						
Cut #	Cut Name	Location	Avg./Job	Frequency	Number of Events	27-Year Projection
1	Mouth of the MN River	0.0-1.1	18,000	11%	3	54,000
2	4-Mile Cut-off	3.4-4.4	9,000	11%	3	27,000
3	Peterson's Bar	11.3-12.4	27,000	55%	15	405,000
4	Cargill	12.5-13.6	7,200	11%	3	21,600
5	Savage Br.	14.3-14.7	20,250	31%	8	162,000
S1	Cargill East Slip	12.7	14,400	55%	15	216,000
S2	Richards Asphalt Slip	14.4	0	0%	0	0
S3	Bunge Slip	14.5	4,500	44%	12	54,000
S4	Harvest States Slip	14.6	5,800	53%	14	81,200
S5	Cargill West Slip	14.7	11,300	43%	12	135,600
Total 27-Year Projection =						1,156,400

<b>Table 3-2 Evaluation of Corps Dredging Quantities</b>				
MPFWG (Most Probable Future with GREAT) Projections from GREAT				
Cut #	Cut Name	40-Year Projection	Avg/Yr 2001-2025	27 Yr. DMMP Qty.
1	Mouth of the MN River	117,500	2,900	78,300
2	4-Mile Cut-off	80,000	2,000	54,000
3	Peterson's Bar	387,500	9,500	256,500
4	Cargill	35,500	800	21,600
5	Savage Br.	101,500	2,500	67,500
Total Projections		722,000	17,700	477,900
Adjusted Projections				
Cut #	Cut Name	Actual Avg 76-98	Adjusted Avg/Yr	27 Yr. DMMP Qty.
1	Mouth of the MN River	1,409	2,000	54,000
2	4-Mile Cut-off	191	1,000	27,000
3	Peterson's Bar	10,381	15,000	405,000
4	Cargill	665	800	21,600
5	Savage Br.	6,901	6,000	162,000
Total Projections		19,547	24,800	669,600

## 2.4 Quantity and Distribution of Dredged Sediment Onsite

According to the navigational dredging records for the Lower Minnesota River provided by the Corps, approximately 109,485 cubic yards of dredged material has been placed onto the Cargill East River (MN-14.2 RMP) site from 2008 through 2011 (USACE 2012). More specifically, in 2008 there were approximately 16,803 cubic yard, 29,627 cubic yard in 2009, 15,886 cubic yard in 2010 and 47,169 cubic yard in 2011. Therefore, the annual average for 2008 through 2011 of 27,371 cubic yards is higher than the estimated long term (27 year period) annual dredging volume of 21,800 cubic yards for Dredge Cuts 3, 4, and 5.

It is important to note that these dredging quantities originated from Dredge Cuts 3, 4 and 5 instead of only originating from Dredge Cut 5 as was indicated in the Corps DMMP. Also, the estimated dredging volume stated above has likely decreased in volume on-site as a result of dewatering and consolidation over time. In order to determine the actual dredged material quantity currently on-site, a topographic survey would have to be completed.

## 2.5 Sediment Quality

The Corps has historically obtained representative sediment core samples for specific Minnesota River locations to complete physical and chemical analysis prior to dredging. In 1999, updated sediment core samples were obtained that included seven (7) sample locations between River Mile 11.0 and 14.6. The analyses included physical characteristics such as grain size, total organic carbon, total solids, total volatile solids and percent moisture. The chemical analyses included PCBs, pesticides and heavy metals. (See Appendix A)

Based on this historical data, sediment characteristics vary from location to location and from year to year. In general, the sediment from the main channel dredging on the Minnesota River can be characterized as predominantly sand, containing an average of 1% to 4% silt and clays, depending on the dredge cut. This is based on analysis of sediment samples from historic dredging locations. Recent samples have been obtained in 2009 and 2012 from the dredged material presently deposited on the Cargill East River (MN-14.2 RMP) site. The sediment analysis work completed in 2009 by Braun Intertec included one sample analysis composited from six separate stockpile locations for metals, nutrients, PCBs and total organic carbon (See Appendix B). The purpose of the 2009 chemical analysis was to evaluate whether the stockpiled dredged material may require special management and disposal. The 2012 analysis also completed by Braun Intertec, included a total of four samples, two of which were from the 2009 dredged material and two from the 2011 dredged material (See

Appendix C). Each of the four samples was analyzed for grain size distribution and organic content.

The results of the composite sample indicated that no values exceeded the Minnesota Pollution Control Agency (MPCA) Dredged Material Level 1 Soil Reference Values (SRV). However, it should be noted that the testing was not completed in accordance with MPCA dredged material sampling guidance which typically requires in-situ sampling prior to dredging. (See Table 2 for Sampling Results) The 2012 sampling analysis results for grain size indicated that samples 1 and 2, which represented the 2011 dredging work, consisted of poorly graded sand with silt and included 3.8% to 6.1% fine grained particles passing through the #200 Sieve. Samples 3 and 4, which represented the 2009 dredging work, consisted of silty sand and included 18% passing through the #200 Sieve, which indicates a greater fine grained or silt sized component. ( See Appendix C for Sieve analysis results)



Table 2: 1999 Minnesota River Sediment Sampling Results

Sample Identifier Record # River Mile	MN-1 78497 0.1	MN-13 Mouth of Minnesota	MN-3 78485 3.8	MN-4 4-Mile Cutoff	MN-5 78500 4.4	MIN-6 78501 11.0	MIN-7 78502 11.5	MIN-8 78503 12.0	MIN-9 78504 12.3	MIN-10 78505 12.36-12.9	MIN-11 78506 13.5	MIN-12 78507 14.7	Comments	MOE LEL	Great Lakes Moderate	Great Lakes Heavy	Mississippi River - above Lake Pegun	Wisc Draft
Location	Mouth of Minnesota	Mouth of Minnesota	4-Mile Cutoff (slip drain)	4-Mile Cutoff	4-Mile Cutoff (above 484)	Blw Peterson's Bar	Blw Peterson's Bar	Peterson's Bar	Peterson's Bar	Cargill Slip	Above Savage RR Bridge	Above Savage RR Bridge	1999 Maximum					
Year	1970	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999						
Metals																		
As (arsenic)	mg/kg	1.30	1.51	5.84	3.53	1.19	1.43	1.16	1.89	1.89	1.81	1.30	5.64	6	3	8	11	
Cd (cadmium)	mg/kg	0.10	0.12	0.09	0.30	0.17	0.03	0.03	0.03	0.03	0.03	0.03	0.89	0.6	6	6	1.4	
Cr (chromium)	mg/kg	4.05	3.88	9.5	9.17	5.60	3.67	3.30	2.90	3.81	3.82	3.75	9.5	26	25	75	20	107
Cu (copper)	mg/kg	2.2	1.87	10.4	7.37	3.97	2.17	1.67	2.24	2.11	2.04	1.72	10.4	16	25	50	17	103
Hg (mercury)	mg/kg	<0.0048	<0.0048	0.0109	0.0085	<0.0048	<0.0048	<0.0048	<0.0048	0.0052	0.0059	0.0055	0.0198	0.2	1	1	0.49	0.1
Mn (manganese)	mg/kg	784	217	188	426	357	2.35	154	2.35	2.42	931	113	899	400	300	550	731	
Ni (nickel)	mg/kg	9.15	6.84	24.8	18.4	12.3	7.42	6.12	7.92	6.27	6.14	6.14	24.8	16	20	50	18	109
Pb (lead)	mg/kg	6.6	6.2	15.1	17.9	6.4	4.7	4.7	6.3	6.3	6.3	6.3	15.1	31	40	80	25	50
Zn (zinc)	mg/kg	12.0	9.33	10.4	30.1	18.3	9.26	8.12	11.1	12.3	12.3	8.47	46.5	120	99	250	81	100
Other																		
Cyanide, Total	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.1	0.1	0.25	<2	19
Ammonia (total)	mg/l	0.39	0.44	0.41	0.47	0.33	0.41	0.21	0.3	0.25	0.26	0.25	0.55					
Physioid																		
Total Organic Carb	%	0.02	0.03	0.02	0.50	0.19	0.02	0.01	0.02	0.03	0.03	0.04	0.72				2.9	
Moisture	%	0.2	0.3	0.1	1.3	0.2	0.1	0.2	0.2	0.2	0.2	0.2	2.2					
Total Solids	%	99.6	99.7	97.8	98.7	99.3	99.6	99.4	99.4	99.4	99.6	99.6	99.7					
Volatile Solids	%	0.43	0.4	0.33	2.31	0.95	0.26	0.40	0.23	0.35	0.35	0.41	2.92	8	5	8		
Grain Size Analysis																		
3 FT																		
1 1/2																		
3/4																		
3/8																		
3																		
4																		
10																		
16																		
20																		
30																		
40																		
50																		
60																		
70																		
80																		
100																		
140																		
200																		

## 2.6 Regulatory Requirements

All proposed placement operations including the discharge of an effluent into navigable waters or adjacent wetlands are required by Section 404(b) of the Clean Water Act to undergo a detailed impact analysis. If an evaluation finds that a site complies with guidelines, the site may be used. Section 404(t) of the Act requires that the Corps comply with State regulatory requirements when placing material below the ordinary high water level or discharging an effluent. The Minnesota Department of Natural Resources (MnDNR) has a long-term permit and Memorandum of Understanding (MOU) with the Corps that provides details on complying with Section 404(t) for the placement of dredged material. The use of selected sites on the Minnesota River has been approved by the MnDNR (Cargill East, Kraemer, NSP, and Hwy. 77 Bridge).

The Corps also has a long-term agreement with the MPCA for water quality certification when material or effluent is discharged below the ordinary high water level. Since the Corps controls the type of equipment used for a particular dredging job and controls the effluent when hydraulic dredging is required, the Corps is responsible for acquiring water quality certification from the MPCA for the placement site areas.

As required by the City of Savage's zoning ordinance, the District was granted a conditional use permit to manage the Cargill East River (MN-14.2 RMP) site located in a floodway district for the expressed purpose of managing dredge material. New sites that may be identified will require coordination with the MnDNR, MPCA and the City of Savage.

### 3.0 POTENTIAL EXISTING SITE IMPROVEMENTS

Optimizing the existing Cargill East River (MN-14.2 RMP) site is essential since there is currently an unconfirmed quantity of consolidated material on site and the overall usable size of the site is limited. It was reported that the 2009 dredged material, which contain a higher percentage of fine grained silts (approx. 18% passing through the #200 sieve), was difficult to manage during the offloading and spreading process due to higher water contents and slower dewatering rates. The existing site configuration is clearly more receptive to accepting primarily sand as observed from the 2011 dredged material (See Figure 2). The existing berms that have been constructed on site have been estimated to be approximately four (4) feet in height and are only functional for containing mechanically placed sediment. Preliminary analysis of the visible dredged material currently on-site indicates that a sandy stockpile that is approximately 10 ft. in height occupies approximately 2.4 acres; and thinner layers of dredged material that have been physically distributed using dozers and conventional excavating equipment occupy an additional 3.2 acres. Available Corps dredging records indicate that approximately 109,485 cubic yards of dredged material was placed on the Cargill East River (MN-14.2 RMP) site in four separate work efforts (2008, 2009, 2010 and 2011). Although the overall percentage of sand content was generally high, it is highly probable that some level of consolidation and volume reduction has occurred.

Accurate estimates of on-site material can be determined by completing a topographic survey of the site and evaluating compared pre-dredge topography, which was fairly level and generally ranged from elevation 701 to 702. In order to fully utilize the available space and to maximize site storage capacity on the site, several options should be considered. The current site usage has been restricted to accepting mechanically excavated sediment which typically would contain 10 to 15 percent, dredged material solids and 85 to 90 percent water because of limitations related to the perimeter dikes and the inability of the site to retain hydraulically dredged slurry. A properly designed confined dewatering facility would allow the sediment to settle out within one or more dewatering cells and would allow regulatory compliant effluent water to be discharged back to the River. Since the existing dikes are reported to be approximately four ft. high and not configured as enclosed cells with water control outlet structures, hydraulic dredging is not currently a feasible dredging method for this site.

As described above, mechanically dredged material off-loaded from barges must be physically distributed throughout the site in order to utilize available storage space. This placement and distribution method requires double handling and therefore is not as efficient and cost effective as hydraulic dredging methods would be if a suitably designed confined dewatering facility with multiple cells were constructed. Hydraulically dredged slurry could be routed into selective cells or compartments depending on the total volume and the estimated silt percentage of the targeted navigational dredging area. Additionally, mechanically dredged sediment could also be placed within a designated cell if designed appropriately.

It is recommended that the DMMP includes the evaluation of various dike configurations to optimize site storage capacity, efficient distribution and containment, and efficiency of access for eventual site storage management and beneficial use applications. A preliminary conceptual site configuration layout is included for reference purposes. Since material used for dike construction can be considered permanent site material, the utilization of existing dredged material currently on-site should be evaluated for use in constructing perimeter and interior dikes in an effort to optimize the management of existing dredged material. The original site assessment completed by the Corps estimated site usage based on constructing dikes that would be capable of storing dredged material up to a 10 or 15 ft. height above existing grade. However, it should be noted that depending on the total height of any perimeter dike configuration, that the horizontal footprint occupied by the dike may limit or reduce the available space for dredged material storage. For example, a 15 ft. high perimeter dike with a 3:1 slope (3 ft. horizontal to 1 ft. vertical) and a 10 ft. top width would occupy a bottom site footprint width of 100 ft. Therefore, various dike height and cell configurations should be evaluated. Once the containment dikes are constructed, newly placed dredged material would be then considered temporary site material and subject to management guidelines.

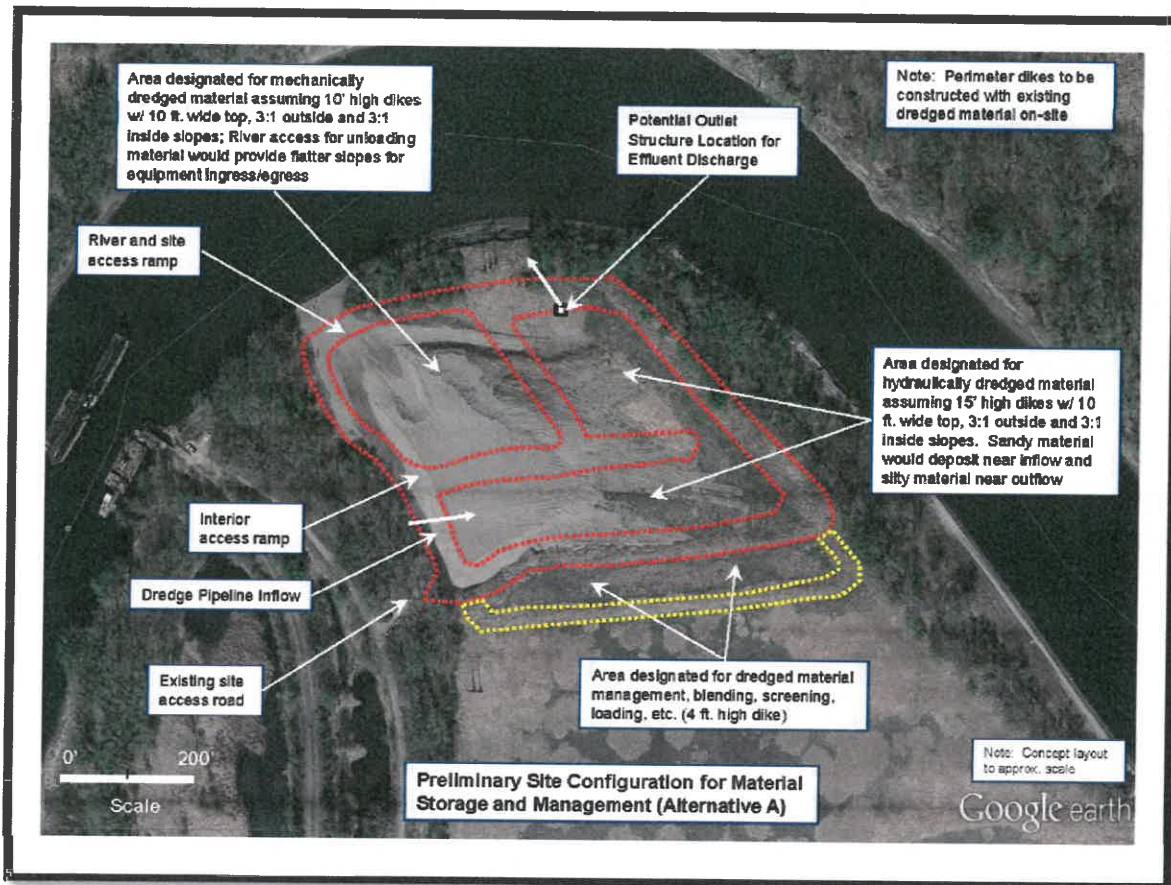


Figure 3: Cargill East River (MN-14.2 RMP) Preliminary Site Configuration for Material Storage and Management

### 3.1 Material Management Plan

A Material Management Plan should be developed as a guide for short and long term site management for dredged materials currently on-site and for all future dredged materials planned for placement and storage at the existing Cargill East River (MN 14.2 RMP) site. The existing Draft “*Operational Manual for Material Management at LMRWD’s Dredge Disposal Site*” (Draft Plan) developed by the District should be revised as necessary (LMRWD 2012). The Draft Plan begins to address major site concerns and anticipated site requirements for the management of dredge materials placed on the site by Corps dredging activities on the Lower Minnesota River and to market excess materials for sale to interested parties.

The Draft Plan should evaluate physical and environmental alternatives to enhance and optimize the ability to store, dewater and access dredged material in a manner that allows optimum material management and off-site deployment. Verification of materials placed on the site will be performed by the site manager at the completion of each project. Quarterly reports on inventory will track: 1. Materials placed (by type), 2. Materials removed (by type), and 3. Total materials on-site. These reports will be maintained and provided to District personnel by the site manager on a quarterly basis.

The District will coordinate with the Corps regarding future acceptance of dredged material with regard to dredging schedule, anticipated volume of material and the physical and environmental characteristics of the targeted material. The method of dredging and subsequent material placement will also be determined prior to dredging to allow for strategic site placement and to facilitate subsequent material management.

On-site material management should include, at a minimum, periodic gradation and sediment quality tests and inventory management to measure and validate all material brought in by barge counts and material pile surveys. Materials removed from the site over land will be authenticated by truck counts with standard cubic yard capacities applied to individual trucks.

Marketing efforts undertaken will primarily consist of maintaining on-going contact with material brokers/contractors and other outside sources to be determined. Pricing for materials will be established in accordance with current market price. Upon sale of material, management will ticket and invoice the transaction. Paper receipts for all sales will be totaled and copies submitted to the District quarterly. Site operating costs will be totaled and reported quarterly to the District.

## **4.0 MATERIAL USE**

The District, as the local sponsor, has a continuing role in providing new placement sites or insuring that the placement sites selected in the Corps' 2007 DMMP have capacity when required for dredged material placement. The District should act as a site manager, or acquire agreements with local contractors to become placement site managers with the responsibility for insuring that capacity exists at each placement site. Material placed into sites should be removed as soon as practicable. Material with higher concentrations of fines will require a longer period to dewater and may need to be mixed with coarser sand to provide a more useable product. The Corps will assist the District in actively promoting the beneficial use of dredged material.

The following sections discuss material use options for the site. The options include: no action or maintaining the status quo with the Cargill East River (MN-14.2 RMP) site; identifying and managing beneficial uses of the dredge material; and lastly, hauling the material off-site for disposal.

### **4.1 No Action**

The No Action option represents the option of allowing the current site to reach its capacity and acquiring no additional placement sites. Under this scenario, the site will gradually reach a point where no additional dredged material can feasibly be offloaded from barges and stockpiled in a safe manner due to the limited size of the site and the absence of sufficient impounding dikes to allow for hydraulically dredged material to be received. In its current state, the site has approximately 7 to 8 acres of space that can realistically accommodate and store mechanically dredged material assuming a maximum stockpile height of 15 feet. As described previously in Section 3.0, there is an existing 2.4 acre stockpile on-site that is reported to be approximately 10 feet in height, plus a 3.2 acre area of a 2 to 3 feet thick area of material that has been physically distributed throughout the site. These dredged material deposits that area visible on aerial site images would require a site topographic survey to conform actual on-site volumes. The Corps has indicated that approximately 109,485 cubic yards of dredged material (measured in-situ) was placed on this site from 2008 through 2011, which has likely reduced in volume over time as a result of dewatering and consolidation. However, based on visible sediment observed via aerial photo reconnaissance as describe above, the approximate material volume on-site in the range of 60,000 cubic yards, which means a significant amount of previously placed material has become re-vegetated and is difficult to delineate and estimate without completing a detailed topographic survey of the site.

If we assume that a 7 acre area can be stockpiled to a maximum 15 ft. height throughout the site by physically hauling, dozing and distributing material, then the site potentially can store approximately 170,000 cubic yards of mechanically dredged material before reaching its maximum storage limit.



For conservative estimating purposes, if we assume that there are 80,000 to 100,000 cubic yards of consolidated dredged material currently on-site and the remaining potential storage capacity of the site assuming a 15 ft. maximum stockpile height and no further improvements or actions, approximately 70,000 to 90,000 cubic yards of additional mechanically dredged material could potentially be stored before having to take action to remove some of the material to create storage capacity. Based on the information presented above, it would take 3.2 to 4.1 years for the site to reach capacity.

## 4.2 Beneficial Uses

Beneficial reuse involves using dredged sediments as a resource material in a productive way. While the term “beneficial” indicates some benefit is gained by a particular use, the term has come to generally mean any reuse of dredged material. Beneficial uses of dredged material can minimize, or eliminate, the need for traditional disposal of dredged material. As part of overall sediment management, regulatory agencies generally support the productive reuse of dredged material.

The potential uses for dredged material depend on the type of dredged material, location of dredging, how it is dredged and the overall suitability of the material for use. Legislation and local conditions must also be considered. Three broad categories of use are often distinguished: engineering uses, agricultural/product uses and environmental uses. In each of these cases, criteria must be established that ensure that sufficient testing is completed to adequately evaluate the suitability of the dredged materials, that the potential use site is located within reasonable proximity to where the dredging activity is planned and that a thorough physical and chemical evaluation is completed of the dredge materials.

### **How will beneficial reuse alternatives be assessed?**

Beneficial use projects involve coordination between the dredged material generator, regulators of dredged material placement, and other interested parties including federal, state and local natural resource management agencies, public interest groups, and local residents.

The decision process for identifying the most appropriate match for dredge material reuse involves analysis of the sediment to determine compatibility with needs in the area. It is necessary to determine the following items during the decision process:

- Contaminant Status of Materials
- Site Selection
- Technical Feasibility
- Environmental Acceptability
- Market Demand and Cost/Benefit
- Legal Constraints

Limited dredged material characterization was conducted to establish contaminant status of the dredged material and determine whether a particular dredged material may be suitable for a proposed reuse. As previously noted, sediment core samples were obtained from different areas of the Cargill East River (MN-14.2 RMP) site and analyzed for various contaminants, as well as for particle size, total organic carbon, and total nutrients.

The 2009 Sediment Analysis Report (Braun) indicates that the on-site dredged material samples that were analyzed did not contain elevated or harmful levels of contaminants or metals and did not exceed MPCA Level 1 Soil Reference Values (SRV). Therefore, removing and reusing the sediment will not likely require special conditions or restrictions beyond those typically imposed on dredging projects. The Report also indicates that the targeted dredged material consists of varying percentages of sand and silt. Historic uses of these materials in the region include the following:

**Sand:** Fine grained sand is generally easy to compact, affected little by moisture, and not subject to frost action. Minnesota Department of Transportation (MnDOT) quality standards refer to this fine grain sand as Mason Sand. It is typically used in children’s sand boxes and sand volleyball courts. Mason Sand is also used as an additive to the cement used to make mortar for laying bricks, filling gaps in pavement and also as a base under delicate materials such as liners.

**Silt:** Silt of this grain size is typically used in ponds, for water control and containment and for berm strengthening. Silt is inherently unstable, particularly when moisture is increased, with a tendency to become quick (soft) when saturated. It is relatively impervious, difficult to compact, highly susceptible to frost heave, easily erodible and subject to piping and boiling.

**Clay:** The permeability of clay is very low; it is subject frost heave, expansion and shrinkage with changes in moisture. However, clay has good nutrient holding capability and is considered to be a valuable additive to topsoil in the correct proportion. However, very little clay is typically contained in the dredged material obtained from the Lower Minnesota River.

Retail prices for these materials vary depending on quality and availability. Table 3 below indicates average retail prices for these products within the Minneapolis area:

**Table 3: Average Retail Prices**

Top Soil	\$20-25 CY (Screened) \$10-15 unscreened
Fill Material	\$8-10 CY
Sand (used to grade or mix with topsoil)	\$34 per ton*
*The number of cubic yards in a ton of sand generally varies from 1.3 to 1.6 tons per cubic yard depending on density and water content of material.	



In addition, combinations of the above materials have been found to have beneficial applications for agricultural and landscaping purposes, particularly when small percentages of sand, clay and even leaf compost are blended with primarily silt sized soil.

**What are the beneficial reuse options for the Lower Minnesota River sediment?**

The technical feasibility of connecting a dredging project to a beneficial reuse project requires overall project coordination, timing and physical location of activities. It is important to consider proximity of dredged material source to the ultimate reuse site, associated handling and trucking of material, and available access to the Cargill East River (MN-14.2 RMP) site. It is also necessary to ensure that the amount and type of dredged material is compatible with the specific reuse project requirements. The suitability of a particular dredged material type for a specific use will depend largely on the intended use of the land after the dredge material is placed on it. Table 4 below identifies the potential beneficial reuse option associated with the type of sediment present in the Lower Minnesota River.

**Table 4: Dredge Material Sediment type**

Beneficial Use Options	Consolidated (Stiff) Clay	Silt	Sand (fine and coarse)
<b>Engineered Uses</b>			
Land creation	x	x	x
Land improvement	x	x	x
Capping	x		
Replacement Fill			x
<b>Agriculture &amp; Product Use</b>			
Agriculture/Topsoil		x	
Construction materials	x	x	x
Road construction and maintenance			x
<b>Environmental Enhancements</b>			
Habitats Enhancement	x	x	x
Fisheries Improvement	x	x	x
Wetland Restoration	x	x	?
Source: U.S. EPA and USACE, Beneficial Use Planning Manual 2007			

#### 4.2.1 Engineered Use

Land Creation and Improvement: Land created within a project area would be limited to uses compatible with fine-grained materials present at the Cargill East River (MN-14.2 RMP) site. These materials are more suitable for recreational uses, such as parks and trails.

Dredged material may also be used to improve the quality of soil or where improvements are necessary to the slope and/or elevation of the land. Proven methods have been developed for land improvement by filling with the fine material, such as silts and clays, produced by dredging. Land improved using fine material is generally of lower strength than land improved using coarse-grained material. Potential applications include recreation areas, playing fields, golf course, parks, light residential development or light commercial storage areas.

*County Planning Department* (various locations). Identify potential for new parks planned within and smaller maintenance projects within recreational areas that will continue to occur. If dredged sediment is used for a recreation project it may be difficult to coordinate the timing of each individual project with the availability of the dredged sediment.

*Parks and Recreation Department* (various locations). Confirm whether any new or existing parks may likely have improvement projects occurring within the next two to 10 years that may require fill material.

Capping: Dredged material can be applied as a means of isolating the contaminated sediment from the surrounding environment. Upland capping of abandoned quarries is the most suitable use within the project area. Confirm any existing Brownfield projects within the Minneapolis area that may utilize dredged material for capping purposes.

Replacement Fill: Dredged material may be used as a replacement fill when the physical qualities of dredged sediment are superior to soils in the surrounding area. Peat and clayish soils can be removed from fill material and replaced by sand or other granular dredged material to improve physical properties needed to meet building requirements (USACE, 2006).

*Minneapolis-St. Paul International Airport Runway Expansion*. Confirm whether any nearby airports are in the process of planning an extension of existing runway facilities. This application could be potentially utilize significant quantities of dredged material for the construction runway expansion and safety zones at the end of runways.

*Local Solid Waste Authorities.* Local Solid Waste Authorities may be potential recipients of dredged material.

#### 4.2.2 Agriculture/Product Uses

As an alternative to permanent placement in sediment basins, sediment could be used to increase yields on eroded or low-yielding soils. Dredged material may be used for land improvement when the quality of existing land is not adequate for a planned use or where the elevation of the land is too low to prevent occasional flooding. Additional options include land grading or filling of gullies and farmed depressions, and construction of terraces, pond embankments, or other on-farm uses of clean fill.

*Topsoil:* Dredged material is commonly composed of silt, sand, clay and organic matter, all important components of topsoil. Dewatering and conditioning of dredged material can result in a product that can be used in topsoil creation or structural enhancement. For horticultural use, sediment may be mixed with other materials to produce a manufactured topsoil superior to any of its individual components. Dredged material from rivers and reservoirs consists primarily of eroded topsoils and organic matter that may be used on land of poor agricultural quality to improve the soil structure. In some cases, the mixed soil product has been suitable for sale or free distribution to the public. The advantages of such an operation are that environmental benefits are obtained at both ends; topsoil does not have to be taken from new subdivisions, scattered construction sites or farmland; the Cargill East River (MN-14.2 RMP) site can provide large quantities of soil with consistent quality, with limited need for trucking material to arrive at most placement sites.

**Local Soil and Water Conservation District (various locations).** SWCD manages erosion and sediment control programs, agricultural programs, stormwater programs, as well as conservation and education programs. The local Soil and Water Conservation District coordinates conservation efforts within the county. Currently SWCDs do not have a large project involving berm construction that could use the dredged material. The organization indicated that local farms could potentially be users of dredged material as supplementary topsoil on farmlands. However, because the sediment would not be available for approximately three to four years, it is not feasible to identify topsoil needs for individual farms and commit to the material. In addition, it is unlikely to get one landowner to take all of the sediment available which could cause logistical complications caused by the need to coordinate with multiple end users.

Construction Materials: Some dredged material can be used as construction material. In many cases, dredged material consists of a mixture of sand and clay fractions, which may require some type of separation and moisture control process.

Local Construction Companies (various locations). Depending on the sediment type and processing requirements, dredged material may be used as concrete aggregates (sand and gravel); backfill material or in the production mortar (sand); raw material for brick manufacturing (clay with less than 30 percent sand); ceramics, such as tile (clay) pellets for insulation or lightweight backfill or aggregate (USACE, 2006). Many construction companies make use of excavated material on their project site and do not have storage capacity to take substantial amounts of the dredged material. Therefore, it is necessary to coordinate the availability of dredged material with local construction projects.

### Road Construction and Maintenance:

*Minnesota Department of Transportation* (various locations): MnDOT local road projects may be a potential recipient of dredged material to use during road construction projects. MnDOT road construction projects typically make use of excavated materials on site. If it is determined that excess fill is needed, it would be difficult to estimate the required amount until the time of construction activity. In addition, the scale of these projects would not be large enough to take on all of the dredged sediment, resulting in a need to coordinate the availability of dredged material and transporting material to numerous MnDOT projects within the region.

#### **4.2.3 Environmental**

Dredged material can be used to enhance or create various wildlife habitats. Native vegetation established in these areas then provides food and cover for wildlife. Nesting meadows and habitat for large and small mammals and songbirds can be developed on upland or floodplain (seasonally flooded) dredged material placement sites. Strategic placement of dredged material can replenish eroding natural wetland shorelines or nourish subsiding wetlands by serving as an erosion barrier or providing shoreline stabilization ( Great Lakes Commission 2001).

Dredged material sediment can be used to stabilize eroding natural wetland shorelines or nourish subsiding wetlands. Dewatered dredged material can also be used to construct erosion barriers and other structures that aid in restoring a degraded or impacted wetland (USACE 2006).

*Habitat Enhancement* (various locations, distance varies): Properties located along the Minnesota River can be good candidates for habitat enhancement projects. This habitat could be created on property located within close proximity to the dredge placement site to minimize the need for loading and hauling away material. Property owners would work in coordination with the District in order to implement these projects.

**The Natural Resources Conservation Service (NRCS)** (various locations) often conducts land rehabilitation and resource conservation projects. Coordination with the NRCS may identify potential projects that could be partners for a beneficial reuse project.

#### **4.2.4 Cost/Benefit**

Although difficult to quantify, intangible benefits should always be taken into account when assessing overall costs and benefits. The actual costs of a proposed project are balanced with the value of the benefits including the potential for an improved environment, aesthetic enhancement, and a more viable local community. Implementing a beneficial reuse option often means saving valuable primary resources and avoids creating more borrow pits. In addition, the combination of two projects (dredging project and reuse project) can create a cost-effective solution by accomplishing two things at once, such as maintaining depth and developing a natural habitat area.

However, the economic consequences for each particular use of dredged material must be thoroughly evaluated and all costs and benefits, both long-term and short-term, must be weighed. Where possible, local pricing estimates should be used for estimating the cost of activities associated with the beneficial use project. These numbers are supplemented with 2009 RS means, an annually updated construction cost information handbook.

Screening soil: The need for and degree of screening dredged material will depend on the end use of the sediment. A coarse screening may be necessary to remove rocks and debris from sediment. A fine screening may be necessary to separate topsoil, gravel and sand. Fine screening would use a screen with smaller holes resulting in a slower, costlier, more time consuming process. The screening process would cost approximately \$6 to \$9 per cubic yard, depending on the extent of coarse or fine screening that is necessary.

Loading of Truck: A front end loader would be required to load dump trucks for hauling sediment to the beneficial use project site. Depending on the conditions at the dewatering/storage site, either a wheel mounted or crawler mounted front-end loader will be used. A track mounted loader would be used on areas with a steep slope, while a wheel mounted loader would be used in areas sensitive to surface disturbance. Wheel mounted loaders are typically more expensive to maintain, therefore, it would be a more expensive option. RS Means indicates that the estimated cost for loading sediment using a front end loader would be \$9.35 per 5 CY (bucket capacity) for a track mounted loader or \$25.50 per 3 or 5 CY (bucket capacity depends on model of loader) for a wheel mounted loader. Cost of loading one 16.5 CY dump truck would cost about \$30 for a track mounted loader and \$80 for a wheel mounted loader.

Hauling Sediment: Costs are frequently lower when distances from the dredge material placement site to reuse placement site are reduced. For preliminary analysis purposes, it is assumed that sediment will be hauled from the Cargill East River (MN-14.2 RMP) site. Hauling costs can vary depending on amount being hauled, permitted speed on roads and total trip distance. A 16.5 cubic yard dump truck and average speed limit of 35 miles per hour was assumed for cost estimate purposes. Table 5 below indicates the average cost of hauling.

**Table 5: Hauling Costs**

Truck Size	Round Trip Distance at 35 MPH	Price per Loose CY
16.5 Cubic Yard	20 miles	\$ 7.05
16.5 Cubic Yards	30 miles	\$ 9.05
16.5 Cubic Yards	40 miles	\$12.65
Source: (RS Means Site Work and Landscape Cost Data 2009)		

Therefore, hauling sediment to a beneficial use project site located 10 miles from the Cargill East River (MN-14.2 RMP) site would cost approximately \$2,327 per truck load. A project located 20 miles away from the site would cost approximately \$8,349 per truck load to transport sediment. Trucking prices would vary depending on the capability of the end user to load and haul the dredge materials with their own equipment and staff.

#### 4.2.5 Regulatory Requirements

Permits for the beneficial reuse of dredged material outside of the dewatering/storage area will be coordinated with federal, state, and local agency reviews as required by U.S. EPA, Corps, MPCA and any other local agencies. These permits could include:

**Table 6: Required Permits and Clearances**

Permit	Granting Agency	Applicable Portion of Project
Conditional Use Permit	County	For construction activity outside of uses permitted by right.
Minnesota Water Permit	MPCA	Applicable if proposed project results in fill or discharge any pollutant into, or adjacent to surface waters, withdraw surface water, otherwise alter the physical, chemical or biological properties of surface waters.
Erosion and Sediment Control Plan	County	Required at site of Beneficial Use Project.
Section 404/401	Corps and MPCA	Required if project occurs within Waters of the U.S.
Federal/State Threatened and Endangered Species	U.S. Fish and Wildlife Service	A site survey would be necessary for the project area. Permit requirements would be identified at later date.

Considerations for placement of dredged material and any required easements would be coordinated with the county and property owners. The county will first review a plan for the activity to ensure the proposed project satisfies the requirements of local zoning ordinances. In addition, a Performance Bond may be required by the county to ensure satisfactory completion of the project.

All activity associated with loading and hauling dredged sediment for beneficial reuse will be in compliance with the existing Conditional Use Permit and/or Erosion and Sediment Control Plan and associated conditions put in place for approval of a dewatering/storage site by County. The Conditional Use Permit would cover construction equipment accessing the parcel (s) to load and haul sediment, access across adjacent parcels to and from the dewatering/storage site to roads and necessary mitigation to rehabilitate the site. Conditions set forward in the Conditional Use Permit and Erosion and Sediment Control Plan for the dewatering site would also apply to Beneficial Reuse operations at the dewatering site including possible limits on hours of equipment use and trucking operation activity and avoidance of areas for resource protection.

Permits for the beneficial reuse of sediment outside of the dewatering/storage area would be the responsibility of the project proponent or end user. It is assumed that any beneficial reuse of the dredged materials would not adversely affect regulated wetlands and waters, and therefore would not require federal or state permits beyond those obtained for the dredging and dewatering operations. Local permits may be required, particularly where the placement of dredged material is part of a land disturbing project. Local permit requirements will be project specific.

#### **4.2.6 Local Opportunity and Market Demand for Beneficial Use Projects**

There are multiple potential beneficial reuse options that have been identified for dredged material. However, few of the potential reuse options have a confirmed market demand to absorb or use most or all of the potential volume of material that could be dredged from the Lower Minnesota River. Most of the specific reuse options would involve small quantities of material in comparison to targeted dredging volumes. The ability of many of the following reuse options to “mesh” with any navigational channel dredging project will require a balance of timing, cost, need, and the ability to screen, wash and/or blend the dredged material with other material on the site to enhance market value. Distance is another key factor in evaluating the feasibility of a particular reuse option; transporting sediment by truck is typically cost-prohibitive over long distances.

It is important to note that during the recent economic downturn, the demand for construction materials has decreased and that decreased will likely continue until the current economy recovers and construction activity shows an increasing trend. Discussion with local contractors including Frattalone Companies, S.M. Hentges, and Veit has confirmed that there is a small market for beneficial reuse of dredged material. If the material meets analytical and geotechnical specifications, it has greater potential to be used as fill at a construction site. The practicality of reuse would still depend on the dredge work having concurrent timing with and close proximity to local construction projects. Contractors who typically work with dredged material have more interest in offering their services to haul the material off-site at the District’s expense than purchasing the sediment for reuse.

#### **4.3 Off-Site Disposal**

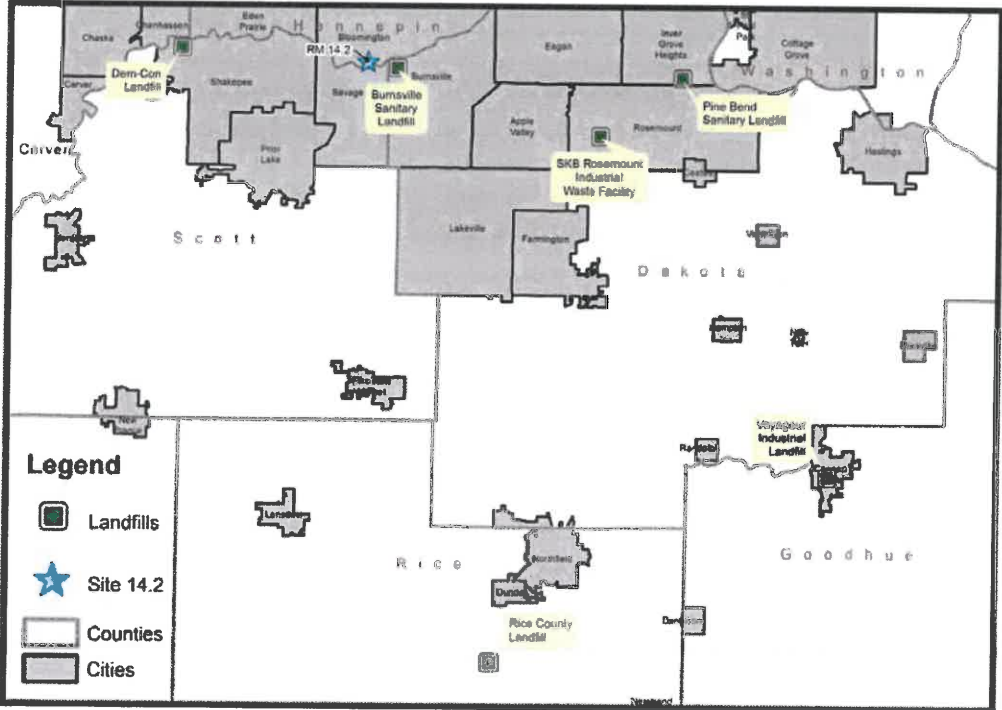
Off-Site disposal of dredged material is a consideration for landfills which accept mixed municipal solid waste or industrial waste. Landfills may also accept contaminated dredged material when properly permitted to do so by MPCA. Figure 4 shows the locations of landfill within 30 miles of the Cargill East River (MN-14.2 RMP) site which can accept sediment. The nearest facility is the Burnsville Sanitary Landfill, just less than 2 miles away.

Costs of off-site disposals at these facilities can vary. The Burnsville Sanitary Landfill would charge \$8.50 to \$12 per ton, with up front fee of \$680 for the material. On the opposite side of the cost range, the Pine Bend Sanitary Landfill in Inver Grove Heights charges \$45 per ton with an additional \$28 per ton in taxes. The amount of tons in each cubic yard of dredge material varies depending on sediment types and water content. Generally, there is approximately 1.5 to 2.0 tons per cubic yard of sediment leading to disposal cost ranges of \$13.20 to \$146 per cubic yard (plus loading and trucking).

There may be some discounts imposed at landfill facilities based on volume of business and if the material can be used as daily cover. SKB Rosemount Industrial Waste Facility suggested that their price is negotiable and can be discounted for repeat business, and if the dredged material is used as daily cover their price could be reduced by roughly 33%. Most of disposal facilities indicated discounted rate if the material could be used for daily cover. The potential for using the material as daily cover depends on the timing of disposal and the characteristics of the dredged sediment.

Since the Burnsville Sanitary Landfill is the closest and most cost effective, a preliminary estimate of dredged material hauling and disposal costs would include approximately \$1.87 per cubic yard for loading and \$7.05 per cubic yard for hauling as described in the Beneficial Use Section 4.2.4 above (RS. Means); and the estimated Burnsville Sanitary Landfill disposal cost would be \$8.50 per ton or approximately \$13.20 per cubic yard. Therefore, the cost of loading, hauling and disposing of dredged material at the closest landfill without factoring any additional cost savings would be approximately \$22.12 per cubic yard. Since the Cargill East River (MN-14.2 RMP) site has been estimated to potentially store as much as 193,600 cubic yards (or more) of dredged material, a total site cleanout that includes disposal at the nearby Burnsville Sanitary Landfill would be approximately \$4.3 million based on the estimated costs summarized above.

**Figure 4. Landfills Accepting Dredge Materials Within 30 Miles of Cargill East River (MN-14.2 RMP) site**





#### **4.4 Material Use Summary**

After review of the options available to the District for material use, the option with the least uncertainty the option of hauling the material off-site. As noted, hauling the material off-site would cost the District approximately \$4.3 million to clear the Cargill East River (MN-14.2 RMP) site. Fund required to cover the expense would have to be generate by a special assessment against the benefitted property or an ad valorem levy.

## **5.0 ALTERNATIVE MANAGEMENT SCENARIOS**

Removal of snags and boulder between the mouth of the Minnesota River and the mouth of the Yellow Medicine River at RMP 237.0 was authorized by the US Congress in 1867. In 1892, the Rivers and Harbors Act authorized the maintenance of a 4-foot navigation channel from the mouth of the Minnesota River to RMP 25.6. The existing 9-foot navigation channel on the Minnesota River from its mouth to RMP 14.7 was authorized by the Rivers and Harbors Act of 1958, Public Law 85-500, in accordance with Senate Document 144, 84th Congress, 2nd Session. The enabling legislation required local contributions including provision for dredge material placement sites. The District was created to act as the local sponsor. As the local sponsor, the District is required to furnish “without cost to the United States all lands, easements, and rights-of-way necessary for the construction of the project and for subsequent maintenance when and as required.”(Strandberg, 1962)

A one-time special assessment against benefitted properties in the District was done in support of the Corps’ initial construction of the 9-foot channel. This was supplemented in 1980 by a District-wide ad valorem levy. The balances from those activities were kept in a special fund (the 9-Foot Channel Fund). The 9-foot Channel Fund was used for implementation activities that address commercial navigation purposes, such as the purchase of the Cargill East River (MN-14.2 RMP) site and management of the Kraemer (MN-12.1-RMP) and the Cargill East River (MN-14.2 RMP) dredge material placement sites. Over the years, the 9-Foot Channel Fund has been depleted. The status of the 9-foot Channel Fund and disagreements between District managers about how to generate revenue has caused District managers to evaluate alternative management scenarios for the 9-foot Channel and the Cargill East River (MN-14.2 RMP) dredge material placement site. The following sections explore the potential management scenarios.

### **5.1 Alternative A: District maintains role as local sponsor**

Alternative A consists of the District maintaining its role as the local sponsor. The District would generate funds to operate and manage the Cargill East River (MN-14.2 RMP) site and to purchase additional dredge placements sites, if necessary. Alternative A will require the District to use funding mechanisms afforded them by Minnesota Statutes 103B and 103D to generate fund.

### **5.2 Alternative B: District operates and manages the Cargill East River (MN-14.2 RMP) site and other dredge material placement sites purchased and funded by the State of Minnesota**

Alternative B consists of the District serving as the operator and manager of the Cargill East River (MN-14.2 RMP) site and other dredge placements sites for the 9-foot Channel. Alternative B would be fully funded by the State of Minnesota

### **5.3 Alternative C: District ends role as local sponsor**

Alternative C consists of the District ending its role as the local sponsor. If this alternative is chosen, the District will notify the appropriate agencies to take the proper regulatory actions.

## 6.0 REFERENCES

Dem-Con Companies "Beneficial Use of Dredge Material Use and Disposal." *Personal Conversation with Mike Ryan, HDR Engineering, Inc.* Minneapolis, MN, January 8, 2013.

Great Lakes Commission. *Waste to Resource: Beneficial Use of Great Lakes Dredged Material.* December 04, 2001. [www.glc.org/benuse/](http://www.glc.org/benuse/) (accessed March 25, 2010).

Frattalones Companies "Beneficial Use of Dredge Material Use and Disposal." *Personal Conversation with Mike Ryan, HDR Engineering, Inc.* Minneapolis, MN, January 8, 2013.

Lower Minnesota River Watershed District. "Operation Manual for Material Management at LMRWD Dredge Disposal Site R.M 14.2." Chaska, 2012.

*Rivers and Harbors Act 1958.* Public Law 85-500 (85th Congress, S.3910, July 3, 1958).

"RS Means Site Work and Landscape Cost Data." Kingston, MA, 2009.

S.M. Hentges "Beneficial Use of Dredge Material Use and Disposal." *Personal Conversation with Mike Ryan, HDR Engineering, Inc.* Minneapolis, MN, January 8, 2013.

Steve Opstad, interview by Mike Ryan HDR Engineering Inc. *SKB Rosemont Industrial Waster Facility* (January 8, 2013).

U.S. Army Corps of Engineers - St. Paul District. "Dredged Material Management Plan/ Environmental Assessment, Minnesota River above I-35W Bridge." Scott, Hennepin and Dakota Counties, Minnesota, 2007.

U.S. EPA and U.S. Army Corps of Engineers. "Beneficial Use Planning Manual." 2007.

USACE. *Beneficial Uses of Dredged Material.* 2006.

<http://el.erdc.usace.army.mil/dots/budm/intro.cfm?Topic=Intro> (accessed April 3, 2010).

—. "Minnesota River Channel Coordinator." *Email to Peter Berrini, HDR Engineering, Inc.* Fountain City: U.S. Army Corps of Engineers, St. Paul District, December 17, 2012.

Veit Company "Beneficial Use of Dredge Material Use and Disposal." *Personal Conversation with Mike Ryan, HDR Engineering, Inc.* Minneapolis, MN, January 8, 2013.

W. B. Strandberg (U.S. Army Corps of Engineers, St. Paul District, St. Paul, MN) Letter to: A. W. Hubbard (Lower Minnesota River Watershed District, Minneapolis, MN) 1962 September 13

**Appendix A: Chemical Analyses Data for the Minnesota River**

**EXHIBIT C**  
**INSURANCE**

Prior to the execution of this Agreement, Manager shall furnish to Owner copies of insurance certificates evidencing that it maintains the following coverages or any higher amounts as required by law or regulation. All policies shall name owner as an additional insured:

Types of Insurance	Limits
Workers' Compensation	Statutory
Employers' Liability	\$1,000,000 each occurrence
Commercial General Liability, including Contractual Liability	Bodily injury and death: \$2,000,000 each occurrence
Automobile Liability	Property damage: \$2,000,000, Combined single limits

Owner shall be included as an additional insured on Manager's general liability policy. Manager, or its representative, shall provide Owner with at least thirty (30) days prior written notice of cancellation or non-renewal of any insurance coverage. The general liability insurance coverage will be written on an occurrence rather than on a claims' made basis and will remain in effect during the Term. Coverage amounts may be met by excess or umbrella policies so long as written on an occurrence rather than on a claims' made basis.