



TECHNICAL MEMORANDUM

To: Trey Jonas
Permitting Technician

Veronica Sannes
Permitting Technician

From: Justin Klabo, PE
Senior Water Resources Engineer

Luke LaMoore
Water Resources EIT

Re: **Wildhurst Trail Dredging Submittal**

Date: August 21, 2024

EXCEPTION REQUEST

The purpose of this memorandum is to document the dredging process Twin Cities Outdoor Services (TCOS) is proposing for this project, which uses an alternative method (Envirotubes / geotextile bags) for spoil containment not stated in the MCWD's Dredging Rule. AE2S and TCOS request that MCWD review this memorandum for exception approval because the Envirotubes provide equivalent or better water quality performance and pose minimal risk to bursting when used correctly.

PROJECT BACKGROUND

Six properties along Wildhurst Trail in Orono, MN share a shallow channel for access to Lake Minnetonka (See **Figure 1** in **Appendix A**). These properties use this channel to access the rest of the lake with their boats, pontoons, and other watercraft. This shallow channel has silted in over time, reducing the channel depth and making access difficult. There is no known past dredging done in this channel. Historical imagery dating back to 1991 was used for this determination, applying aerial time increments about every 10 years. When looking at channel width, the aerials from 1991 and 2002 look reasonably similar to present conditions as they can given the quality of the resolution/frame shifting, and from a channel depth perspective it is near impossible to identify a difference based on these aerials. A dredging permit was issued in 1989 by the DNR, but again that impact does not appear to be noticeable from the aerials. See **Appendix D** for the historical aerials and 1989 dredging permit.

TCOS developed a dredging plan that is shown in **Appendix A**, which would include lowering the middle of the channel to approximately 923.6 for a navigation width of 15 feet. Based on survey completed by TCOS, this would involve lowering the middle of the channel from about 1

to 3 feet, with shallower dredging depths to blend the channel into the existing channel bottom beyond the 15-foot width.

TCOS has partnered with AE2S to complete the dredging permit process for this location. The project is proposing to use hydraulic dredging and Envirotubes for spoil containment. See **Appendix A** for the site plan.

DREDGING METHOD – HYDRAULIC DREDGING

The dredging work will be done using hydraulic dredging methods. Based on information provided by TCOS, they will use a DINO Six, a lightweight sediment removal system designed to access confined water bodies. Effectively a pontoon, the DINO Six needs only a few feet of water depth to make navigation possible, and since it works from the water there is no damage to shoreline or land tracks. Sediment is excavated by a cutter head and moved to the inlet of the submersible pump, which pumps the slurry to the spoil containment system. The cutter head is controlled by hydraulics, once the operator has positioned the cutter head, the cutter head cannot move unless the DINO Six itself moves. This provides excellent dredging precision as the only way for the cutter head to move off its current elevation would be if wave action rocked the DINO Six, which is unlikely given the project location is a sheltered channel. Operation of the cutter head and submersible pump is done aboard the DINO Six. The Dino Six itself is moved using guy-wires set to anchor points along the shoreline. When the DINO Six completes sediment removal in the current area these anchor points (thus the DINO Six) are repositioned to the next area. The operator on the DINO Six controls its movement along the guy-wires.

SPOIL CONTAINMENT SYSTEM – SEDIMENT CONTAINMENT BAGS

Envirotubes, which are geotextile sediment containment bags, will be used as the spoil containment system and is a commonly used technique for dewatering sediment-water slurry that is generated from the hydraulic dredging operations. Slurry is pumped directly into the bags, and these bags allow water to flow through the fabric while trapping the sediment. Depending on the sediment composition, polymer can also be added to speed up the dewatering process. **Appendix B** contains a previous project example using Envirotubes, and **Appendix C** contains a product data sheet for the geotextile fabric used in Envirotubes.

Figure 1 shows the approximate location of where the Envirotubes will be staged. Polyethylene plastic liners will be placed underneath the bags, creating a barrier between the bags and the underlying lawn. The liner ensures all water that came from the lake goes back into the lake and prevents oversaturation/drowning of existing vegetation. The liner also ensures the monitoring is only measuring load from the Envirotube and not also picking up trace sediment from the underlying lawn. Discharge water from the tubes will travel back to the access channel where the

dredging is occurring via overland flow over the liner. This method of spoil containment removes the need for earthwork and has minimal impact on surrounding landscape. Additional detail on water quality effluent is described in the **Effluent Water Quality** section on the following page.

Once the sediment sufficiently dewater, all sediment will be removed and hauled off. Additional detail on material disposal is described later in this memorandum in the **Material Disposal** section.

As shown in **Figure 1 (Appendix A)**, both Envirotube locations are within the 100-year floodplain; however, the location of the sediment / Envirotubes is temporary, and all dredging material will be removed from the floodplain once the sediment is dewatered. Placing the Envirotube near the shore also reduces the potential that discharge water will produce any negative impacts on the lake outside the dredging area or on adjacent property owners. Further, in the highly unlikely event that a major flood does occur in the short time that the Envirotubes are still dewatering, another benefit of the Envirotubes over an earthen dike is that the Envirotubes entirely contain the sediment and the bag will not wash out during a flood event. In the event flood water does reach the bag, flood water may enter the bag due its semi-permeability, but any solids leaving the bag are only what might remain after settling and flocculation (i.e. the standard process of the Envirotube). The only effect flood water has on the bags is the potential for additional water to enter the bag and will not affect the sediment treatment. See the **Safety/Risk of Failure** section for additional information.

Finally, the loss in storage volume in the floodplain due to bag location is inconsequential, less than 0.001 ft. See Appendix E for calculation details and assumptions.

CONSIDERATIONS

Effluent Water Quality

The water quality of the effluent shall conform to the 32 mg/L TSS standard as seen in Minn. R. 7050.0222 and BWSR's Public Drainage Manual (Appendix 9). This 32 mg/L of TSS is for Use Classification 2b, matching the classification of Lake Minnetonka. Monitoring of the effluent shall be conducted, much like with other projects that have used Envirotubes.

Multiple projects in Minnesota and other geographies have used Envirotubes. One such project was the city of Archie, Missouri found in **Appendix B**. Using hydraulic dredging and Envirotubes for spoil containment, data from the receiving water where the Envirotubes discharged to dropped in turbidity from 15 NTU prior to dredging to less than 10 NTU after dredging, suggesting that the discharge effluent from the Envirotubes will be sufficiently clean to meet water quality standards.

One of the other advantages to Envirotubes is their ability to provide adequate discharge effluent water quality in space-constrained areas, which is the case on this project. Earthen dikes often require much larger footprints and are extremely prone to resuspension from wind and localized flow patterns.

Monitoring Plan

To verify the quality of the effluent, monitoring by TCOS will be conducted. The monitoring device is a handheld instrument that operated by TCOS staff, where results can be recorded and proven using a photo. Results will be sent to MCWD via email for comparison with applicable water quality standards. Timeline for results will vary, monitoring and results will be conducted every day for the first 1-2 weeks of active dredging, decreasing in frequency to once a week when dredging is complete and the Envirotubes are dewatering.

Effluent Contingency Plan

Should the project at any point exceed the water quality standard. The following steps shall be taken:

- Pumping into the bags is ceased
- The polyethylene plastic sheet underneath the bags will be raised over the bag, creating an impermeable container (same as an earthen embankment)
- The system will further settle sediment now with no outlet
- Once monitoring reflects an acceptable water quality reading, the plastic sheet can be lowered to allow discharge
- Additional erosion control BMPs shall be placed to slow down the discharge if needed

Safety/Risk of Failure of the Sediment Containment Bag

For safety of the Envirotube, the technical specification is seen in **Appendix C**. The two notable metrics are the ASTM D-4833 puncture test, which reports a puncture force of 280 lbs, and the ASTM D-3786 Mullen Burst test, which reports a breaking pressure of 1200 psi. For context, the puncture test is done with an 8mm diameter rod, as in 280 lbs of force on an 8mm diameter rod broke the material. For the Mullen Burst test, the fabric is locked in place between two plates. One of the plates has a hole in the center. Glycerin is pumped through this hole against the fabric with increasing pressure until the fabric breaks and the pressure is recorded.

Typical forces seen on the bags are: weight of a worker on the bag, the pressure that the slurry is pumped into the bag, and the weight of the slurry itself inside the bag. A conservative estimate of pressure from the weight of a man on the bag as 300 lbs and all their weight on one foot (20 square inches) which the resultant is 15 psi. The discharge pressure of the slurry is typically also 15 psi during operation but may go as high as 60 psi. The max pressure of the slurry itself inside the bag is less than 6 psi (assuming a unit weight of slurry roughly equivalent to unit weight of soil which is 120 pounds per cubic foot, and a max depth of material of 6 feet

which is the approximate bag dimension to be used onsite). With this in mind it is unlikely typical forces seen onsite will be able to break the bag unless done intentionally (like when dewatering is complete and the bag needs to be cut for sediment to be removed).

The bags are designed to be walked on to promote even distribution of slurry into the bag, which further supports the conclusion that the bags have sufficient strength as well as provides a built-in means for TCOS to routinely inspect the bag and discharge effluent.

As redundancy, a secondary protection method will be installed. In this case, two rows of silt fence will be placed downstream of the Envirotube. These serve to both capture any sediment that may still be in the water leaving the bag and mitigate erosion by slowing down the water leaving the bag. The plastic sheet will be shingled with this silt fence to minimize the chance of water flowing over underlying soil.

MATERIAL DISPOSAL

Over the course of 2-6 weeks the slurry will lose its water and become a much stiffer and drier cake (see photographs below). The dewatered sediment will then be removed and hauled off by cutting the bag open and using conventional earthwork equipment to load the material into dump trucks. There is no permanent spoil storage for this project and all material will be hauled off, demonstrating that there is no long-term impacts to floodplains or the lake.



RESTORATION

Given the minimal disturbance of hydraulic dredging and the Envirotubes, restoration of the project area should be minimal. All sediment containment bags will be removed from the site. The DINO Six, pumping pipes, silt fence, and other project apparatus will be removed upon project completion. Where the bags/plastic liner rest and where silt fence installed, seeding and stabilization will be conducted as needed if the underlying vegetation does not survive, along with any other areas disturbed during mobilization.

CONCLUSIONS AND SUMMARY

The Envirotubes are capable of providing equivalent or better water quality performance through demonstrated success on similar projects and based on information from TCOS, they have minimal risk of safety issues. The City of Orono has used this product in the past, and the City Engineer confirmed they have no issues with using this product for spoil containment (See **Appendix F**). Therefore, the Envirotubes meet the intent of the earthen dikes specified in the MCWD Dredging Rule and are eligible for an exception.

LIST OF APPENDICES

Appendix A – Site Plan

Appendix B – Envirotubes Water Quality Case Study: Archie, Missouri

Appendix C – Envirotubes Structural Data Sheet

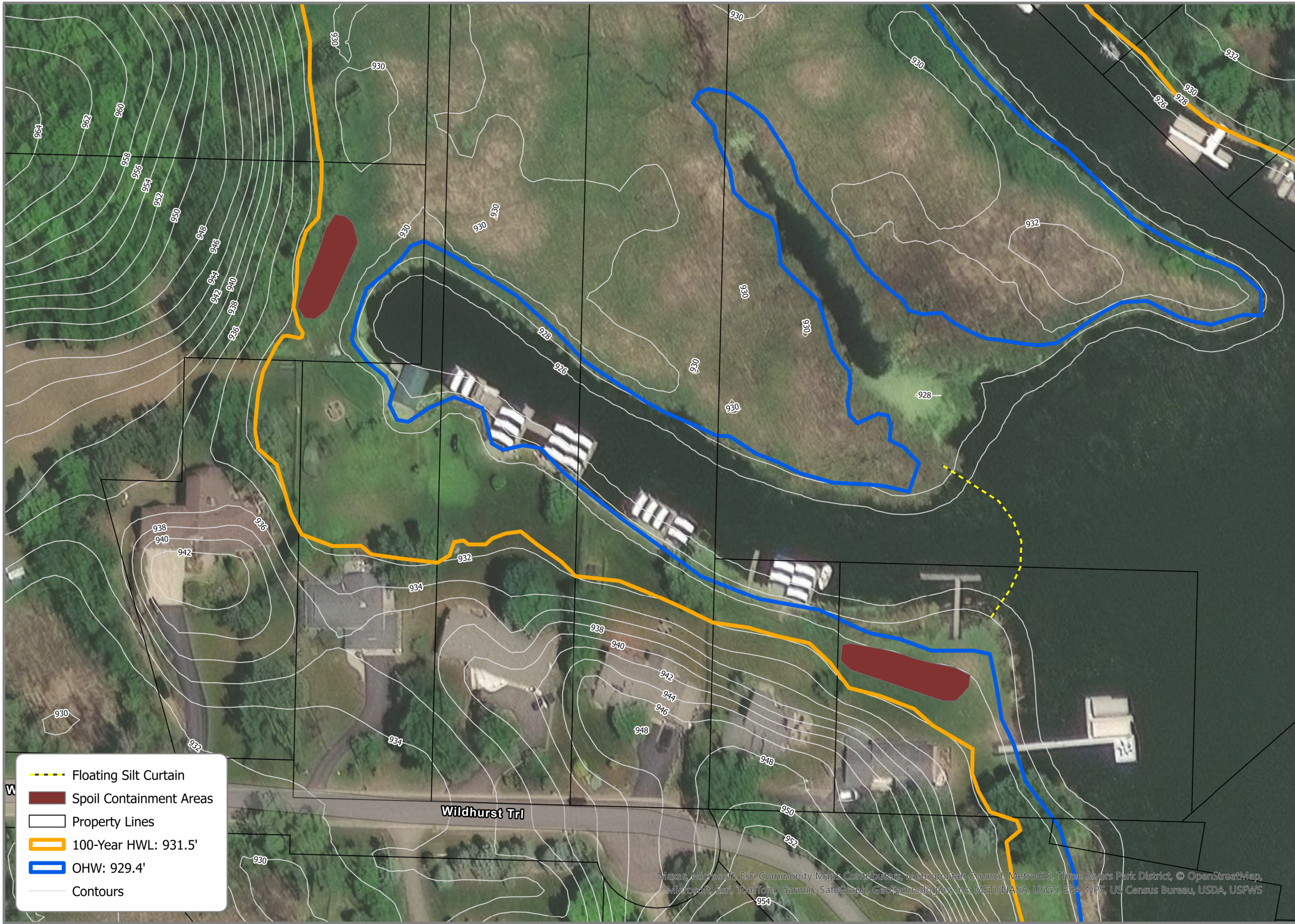
Appendix D – Historical Aerials and 1989 Dredging Permit







Appendix E – Flood Storage Loss Calculation

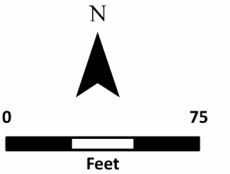
Appendix F – Orono City Engineer Email Regarding Envirotubes

Appendix G – Homeowner Permissions

APPENDIX A – SITE PLAN



-  Floating Silt Curtain
-  Spoil Containment Areas
-  Property Lines
-  100-Year HWL: 931.5'
-  OHW: 929.4'
-  Contours



1 inch equals 75 feet



Locator Map Not to Scale

Orono
Hennepin County, MN

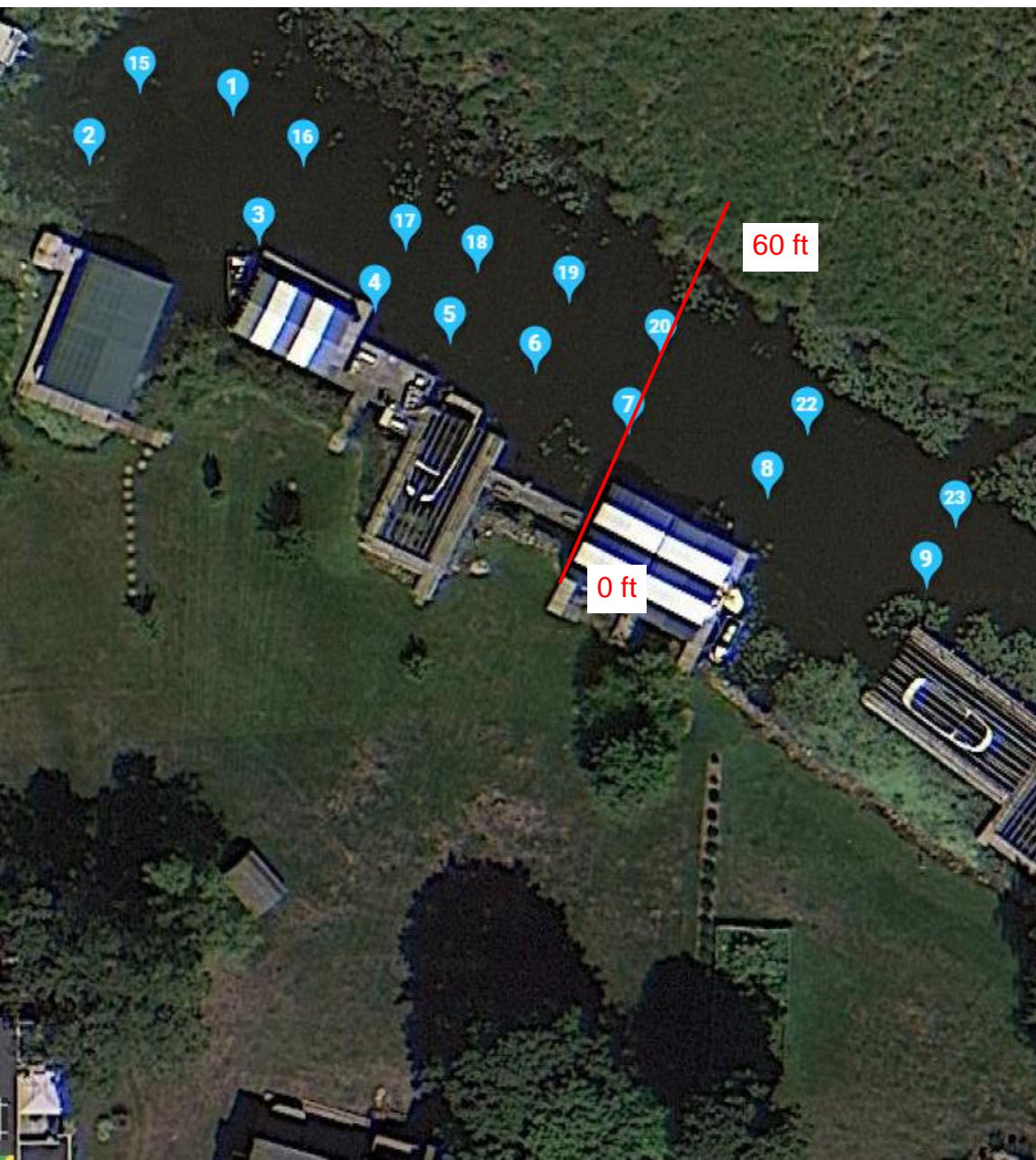
Figure 1
**WILDHURST
DREDGING PROJECT
- SITE PLAN**

WILDHURST DREDGING
PROJECT/TCOS

Date: 7/1/2024



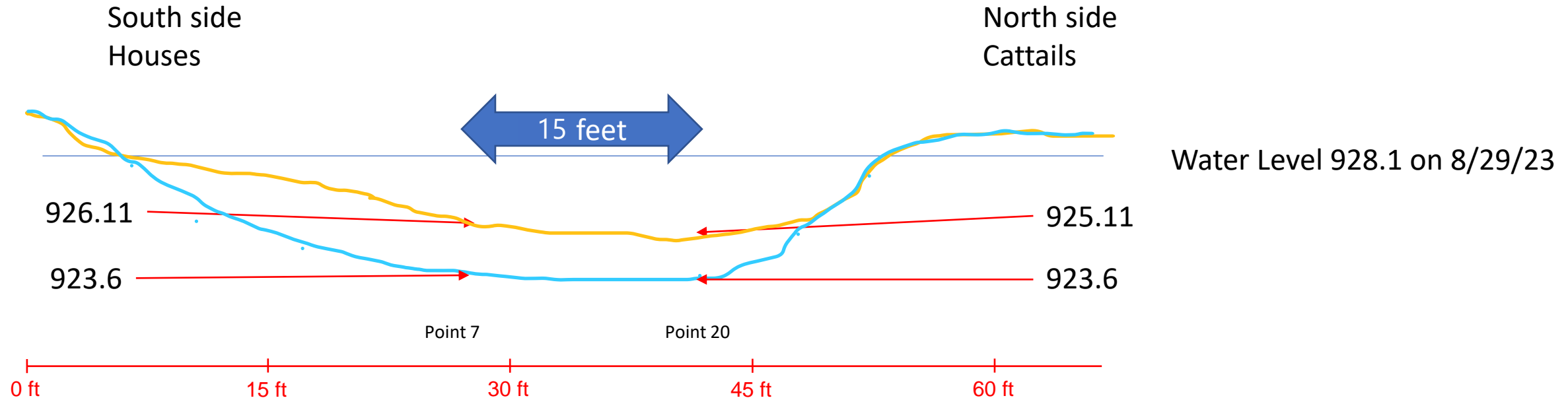
Maxar, Microsoft, Esri Community Maps Contributors, Metropolitan Council, MetroGIS, Three Rivers Park District, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS



point #	Water Depth Feet	Bottom Elevation	removal Depth Change
1	3.00	925.11	1.51
2	2.00	926.11	2.51
3	2.00	926.11	2.51
4	1.50	926.61	3.01
5	2.00	926.11	2.51
6	2.00	926.11	2.51
7	2.00	926.11	2.51
8	2.50	925.61	2.01
9	1.33	926.78	3.18
10	2.00	926.11	2.51
11	2.00	926.11	2.51
12	1.50	926.61	3.01
13	1.50	926.61	3.01
14	2.00	926.11	2.51
15	2.00	926.11	2.51
16	1.67	926.44	2.84
17	2.50	925.61	2.01
18	3.00	925.11	1.51
19	3.00	925.11	1.51
20	3.00	925.11	1.51
21	3.00	925.11	1.51
22	3.00	925.11	1.51
23	3.00	925.11	1.51
24	3.00	925.11	1.51
25	2.50	925.61	2.01
26	3.00	925.11	1.51
27	2.50	925.61	2.01
28	2.50	925.61	2.01
29	3.00	925.11	1.51
30	3.00	925.11	1.51
31	3.50	924.61	1.01

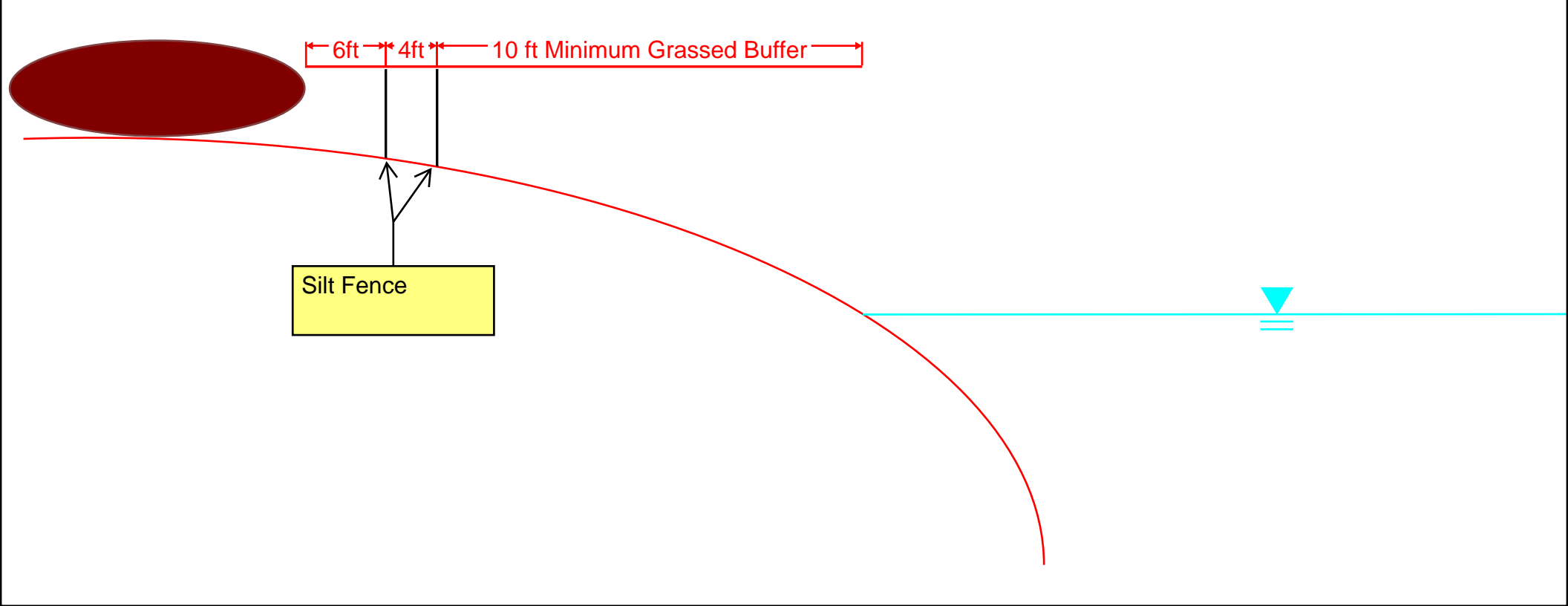
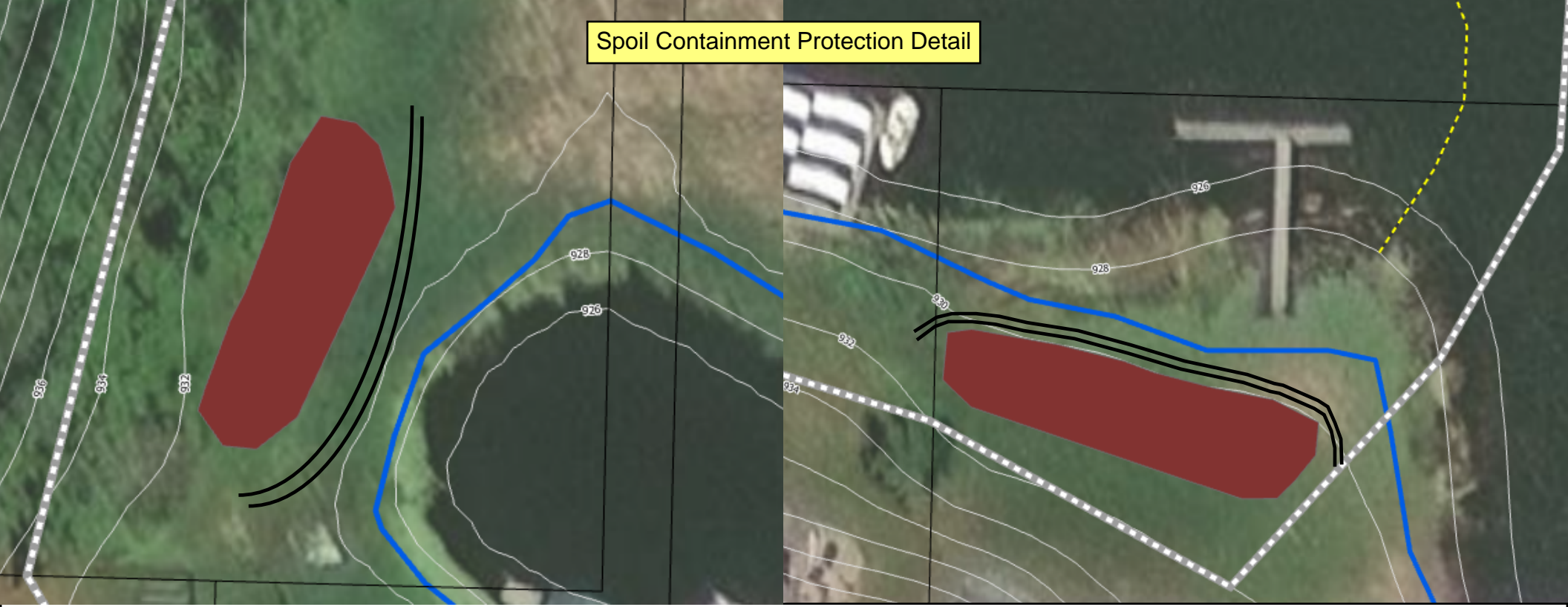


Cross Section of Channel - Wildhurst



Dredge out the water way to a depth of 923.6 feet leaving a 3:1 slope towards the cattails to the north and a less severe slope to the south towards the houses. With in boat parking structures sediment to be removed to 924.6 at the waterway side sloping up towards the shore gradually to allow boats access. Along outside of docks a depth of 924.6 slowing down to main channel, and up towards shore.

Spoil Containment Protection Detail



6ft 4ft 10 ft Minimum Grassed Buffer

Silt Fence



APPENDIX B – ENVRIOTUBES WATER QUALITY CASE STUDY: ARCHIE, MISSOURI

Sediment Removal from Potable Water Reservoir

The city of Archie, Missouri receives its potable water supply from a small river. The river water is pumped into a primary settling pond and flows by gravity into a secondary settling pond. The river water that was filling the ponds contained sediment which reduced the capacity of the ponds, deposited organic material, created algae growth and other organic chemical problems. Manganese deposits were forming on the equipment and plumbing in the plant. These problems were affecting the odor and taste of the water.

According to Rick Blundell, the Water Plant Superintendent for the City of Archie, copper sulfate had to be added to the ponds to retard growth. Carbon treatment had to be used to cleanse the water of taste and suspended undesirables. Even though the city was spending more time and money to treat the water, the taste and odor remained a problem. The settling ponds had to be cleaned.

The problems Blundell faced in choosing the method to clean the ponds are typical to this type of project. If he chose to drain the ponds and remove the sediment, the pond would be out of service, leaving water supply unavailable to the city. Also, the contractors that were contacted would not guarantee the dam against leaks. If he chose to dredge the ponds, he had no space available to place a spoil area for the dredge slurry.



CLEANING THE POND:

Archie Water Plant Superintendent Rick Blundell shows dewatered sediment removed from the pond.

THE SOLUTION

The final method researched by Rick was to use Envirotubes to contain and dewater the slurry, returning the water to the ponds. This solution would remedy the problems the project presented and would cost no more than the other methods. The job could be done easily with an economical number of tubes over a short period of time. The process would include pumping mud into the tubes and allowing them to decant clean water back into the pond. This was not a very large job and the procedure was simple enough that Rick decided the city would operate with their own personnel.

Industrial Fabrics, Inc. furnished the package for the job. This package included the dredging equipment and pipeline rental, Envirotubes constructed of 4x6 geotextile, polymer, training, and all parts so the city could do the project.



DREDGE AND DIRT:

The dredge is small enough to fit in most ponds.

Quick Quote

"This project could not have been done with hydraulic dredging, without the use of Envirotubes."

- City of Archie Missouri

THE RESULTS

The water quality improved as soon as the job began. The dam has remained secure and there is no more need for carbon treatment. There is no detectable manganese, the black coating is disappearing and the copper sulfate treatment of the pond is minimal. Intake water amounts, from the reservoir to the plant changed from 15NTU in 2001 to 5-8NTU in 2002. This project could not have been done with hydraulic dredging, without the use of the Envirotubes.



THE RESULTS:

Water is filtered out, leaving dried solid materials inside the Envirotubes.



COST-EFFECTIVE SOLUTION:

Fabricated from 4 x 6 reinforcement geotextile, Envirotubes offer the benefit of being less expensive than other cleaning methods.



Technical Memorandum
Re: Wildhurst Trail Dredging Submittal
August 21, 2024

APPENDIX C – ENVIROTUBES STRUCTURAL DATA SHEET



INDUSTRIAL FABRICS, INC.
Since 1981

HEADQUARTERS
510 O' Neal Lane
Baton Rouge, LA 70819

225-273-9600 (Phone)
225-273-0440 (Fax)
www.ind-fab.com (Web)

PRODUCT DATA SHEET

FAB 4x6

FAB 4x6 is manufactured using high tenacity polypropylene yarns that are woven to form a dimensionally stable network, which allows the yarns to maintain their relative position. **FAB 4x6** resists ultraviolet deterioration, rotting and biological degradation and is inert to commonly encountered soil chemicals.

PROPERTY	TEST METHOD	MARV ENGLISH	MARV METRIC
Tensile Strength (Grab)	ASTM D-4632	600 x 700 lbs	2670 x 3114 N
Elongation	ASTM D-4632	15 x 15%	15 x 15%
Wide Width Tensile	ASTM D-4595	4800 x 7200 lbs/ft	70 x 105 kN/m
Wide Width Elongation	ASTM D-4595	14 x 9%	14 x 9%
Wide Width Tensile Strength at 5% Strain	ASTM D-4595	1200 x 2640 lbs/ft	17.5 x 38.5 kN/m
Puncture	ASTM D-4833	280 lbs	1246 N
Mullen Burst	ASTM D-3786	1200 psi	8270 kPa
Trapezoidal Tear	ASTM D-4533	180 x 275 lbs	801 x 1223 N
UV Resistance (at 500 hrs)	ASTM D-4355	80%	80%
Apparent Opening Size (AOS)*	ASTM D-4751	40 US Std. Sieve	0.425 mm
Permittivity	ASTM D-4491	.26 sec ⁻¹	.26 sec ⁻¹
Water Flow Rate	ASTM D-4491	20 gpm/ft ²	810 l/min/m ²
Roll Sizes		15' x 300'	4.57 m x 91.5 m

*Maximum average roll value.

This information is provided for reference purposes only and is not intended as a warranty or guarantee. Industrial Fabrics, Inc. assumes no liability in connection with the use of this information.

APPENDIX D – HISTORICAL AERIALS AND 1989 DREDGING PERMIT

Ruler

Line Path Polygon Circle 3D path 3D polygon

Measure the distance between two points on the ground

Map Length:	97.97	Feet
Ground Length:	98.00	
Heading:	6.75 degrees	

Mouse Navigation

Ruler

Line Path Polygon Circle 3D path 3D polygon

Measure the distance between two points on the ground

Map Length: 97.97 Feet

Ground Length: 98.00

Heading: 6.75 degrees

Mouse Navigation

Ruler

Line Path Polygon Circle 3D path 3D polygon

Measure the distance between two points on the ground

Map Length:	97.97	Feet
Ground Length:	98.00	
Heading:	6.75	degrees

Mouse Navigation



Ruler

Line Path Polygon Circle 3D path 3D polygon

Measure the distance between two points on the ground

Map Length: 97.97 Feet

Ground Length: 98.00

Heading: 6.75 degrees

Mouse Navigation Save Clear

PERMIT APPLICATION



TO WORK IN PROTECTED WATERS OR WETLANDS
(INCLUDING DAM SAFETY)

OFFICE USE ONLY	
P.A. NO.	
-	
<input type="checkbox"/> SWCD	<input type="checkbox"/> C/C
<input type="checkbox"/> W.D.	<input type="checkbox"/> USCOE

▶▶ Please read instructions before attempting to complete this application.

I. Applicant's Name (Last, First, M.I.) Dave & Cheryl Hawkins	Authorized Agent (if applicable) Marine Environmental Services	Telephone Number & area code (612) 472-4689
Address (Street, RFD, Box Number, City, State, Zip Code) 993 Wildhurst Trail Orono, MN 55364		

II. LOCATION OF PROPOSED PROJECT (BE SURE TO INCLUDE SKETCH SHOWING HOW TO GET TO THE SITE)					
Government Lot(s)	Quarter Section(s) NW 1/4 NE 1/4	Section(s) No. 7	Township(s) No. 117	Range(s) No. 23	Lot, Block, Subdivision
Fire No., Box No. or Project Address 993 Wildhurst Trail Orono			County Hennepin	Project will affect <input checked="" type="checkbox"/> Lake <input type="checkbox"/> Wetland or <input type="checkbox"/> Watercourse (name & number, if known)	

III. TYPE OF WORK PROPOSED (CHECK ONE)			IV. TYPE OF PROJECT (CHECK ONE)			
<input checked="" type="checkbox"/> excavate	<input type="checkbox"/> repair	<input type="checkbox"/> shoreline	<input type="checkbox"/> shore-protection	<input type="checkbox"/> obstruction	<input type="checkbox"/> dam	
<input type="checkbox"/> fill	<input type="checkbox"/> remove	<input checked="" type="checkbox"/> channel	<input type="checkbox"/> harbor	<input type="checkbox"/> bridge	<input type="checkbox"/> other	
<input type="checkbox"/> drain	<input type="checkbox"/> abandon	<input type="checkbox"/> sand blanket	<input type="checkbox"/> permanent dock	<input type="checkbox"/> culvert	(specify)	
<input type="checkbox"/> construct	<input type="checkbox"/> other (specify)	<input type="checkbox"/> riprap	<input type="checkbox"/> wharf			
<input type="checkbox"/> install						

V. ESTIMATED PROJECT COST \$ 20,000.00	VI. LENGTH OF SHORELINE AFFECTED (IN FEET): 540'
--	--

VII. VOLUME OF MATERIAL FILLED OR EXCAVATED (IN CUBIC YARDS): 1500 cubic yards

VIII. BRIEF EXPLANATION OF PROJECT: (EXPLAIN WHAT PROJECT CONSISTS OF AND HOW WORK WILL BE DONE)
Channel with an area of 25' x 540' to be dredged down to 923.6' and area approximately 25' x 75' to be dredged down to same out into Forest Lake to provide navigable access into Forest Lake. Mud will be removed by mechanical means and hauled away by dump truck.

IX. PURPOSE OF PROJECT: (Explain why this project is needed)
Owner(s) presently do not have navigable access to the lake.

X. ENVIRONMENTAL IMPACT (Anticipated changes to the water and related land resources, including unavoidable but detrimental effects)
Anticipate no changes to the area. Low term turbidity due to dredging actions.

XI. ALTERNATIVES (Other alternatives to the action proposed)
None foreseen.

XII. I hereby make application pursuant to Minnesota Statutes Chapter 105.42 and all supporting rules for a permit to work in or affect the above named protected water(s) in accordance with all supporting maps, plans, and other information submitted with this application. The information submitted and statements made concerning this application are true and correct to the best of my knowledge.

STATE OF Minnesota
COUNTY OF Scott
Subscribed and sworn to before me this

Signature of Owner or Authorized Agent <i>Cheryl Hawkins</i>	Date 6-1-89
Signature of Leasee <i>Cheryl Hawkins</i>	Date 6-1-89

1st day of JUNE 19 89
My commission expires 6-11-91

Signature of Notary
Arnon Petersen

- Distribution:
White: DNR
Blue: SWCD
Green: Watershed District
Goldenrod: City or County
Pink: Army Corps of Engineers
Canary: Applicant



PROTECTED WATERS PERMIT

P.A. Number 89-6470

Pursuant to Minnesota Statutes, Chapter 105, and on the basis of statements and information contained in the permit application, letters, maps and plans submitted by the applicant and others supporting data, all of which are made a part hereof by reference, PERMISSION IS HEREBY GRANTED to the applicant named below to change the course, current, or cross section of the following:

Protected Water <u>Lake Minnetonka (27-133) Forest Lake #18</u>	County <u>Hennepin</u>
Name of Applicant <u>Dave & Cheryl Hawkins</u>	Telephone Number (include Area Code) <u>(612)472-4689</u>
Address (No. & Street, RFD, Box No., City, State, Zip Code) <u>993 Wildhurst Trail, Orono, MN 55364</u>	
Authorized to: <p style="text-align: center;">mechanically remove approximately 1200 cubic yards of material from an existing channel to facilitate navigational access to Lake Minnetonka proper. Channel dimensions shall be approximately 600' in length, maximum bottom width of 15', and 3:1 sideslopes (horizontal:vertical) with a bottom elevation no lower than 923.6'. All work shall be in conformance with revised plans received October 30, 1989.</p>	
Purpose of Permit: <u>Navigational access</u>	Expiration Date of Permit <u>June 30, 1990</u>
Property Described as: <u>SE$\frac{1}{4}$ SE$\frac{1}{4}$ NW$\frac{1}{4}$ Section 7, Township 117 North, Range 23 West</u>	County <u>Hennepin</u>
As Indicated: (8) <u>Does not apply</u>	As Indicated: (11) <u>the ordinary high water elevation, 929.4' (NGVD, 1929)</u>

This permit is granted subject to the following GENERAL and SPECIAL PROVISIONS:

GENERAL PROVISIONS

1. This permit is permissive only and shall not release the permittee from any liability or obligation imposed by Minnesota Statutes, Federal Law or local ordinances relating thereto and shall remain in force subject to all conditions and limitations now or hereafter imposed by law.
2. This permit is not assignable except with the written consent of the Commissioner of Natural Resources.
3. The Regional Hydrologist shall be notified at least five days in advance of the commencement of the work authorized hereunder and shall be notified of its completion within five days thereafter. The notice of permit issued by the Commissioner shall be kept securely posted in a conspicuous place at the site of operations.
4. No change shall be made, without written permission previously obtained from the Commissioner of Natural Resources, in the dimensions, capacity or location of any items of work authorized hereunder.
5. The permittee shall grant access to the site at all reasonable times during and after construction to authorized representatives of the Commissioner of Natural Resources for inspection of the work authorized hereunder.
6. This Permit may be terminated by the Commissioner of Natural Resources at any time he deems it necessary for the conservation of water resources of the state, or in the interest of public health and welfare, or for violation of any of the provisions of this permit, unless otherwise provided in the Special Provisions.
7. Construction work authorized under this permit shall be completed on or before date specified above. Upon written request to the Commissioner by the Permittee, stating the reason therefore, an extension of time may be obtained.
8. The excavation of soil authorized herein shall not be construed to include the removal of organic matter (as indicated above) unless the area from which such organic matter is removed, is impervious, or is sealed by the application of bentonite after excavation.
9. In all cases where the doing by the permittee of anything authorized by this permit shall involve the taking, using, or damaging of any property rights or interests of any other person or persons, or of any publicly owned lands or improvements thereon or interests therein, the permittee, before proceeding therewith, shall obtain the written consent of all persons, agencies, or authorities concerned, and shall acquire all property, rights and interests necessary therefore.



**MINNEHAHA CREEK
WATERSHED DISTRICT**

P.O. Box 387
Wayzata, Minnesota 55391

(FOR OFFICE USE ONLY)

Permit Application No. _____
Date Received _____
Notice Sent _____
Agenda Date _____

APPLICATION FOR PERMIT

(See Reverse Side For Instructions)

(Do Not Write Above This Line)

1. Owner: Dave & Cheryl Hawkins
(Print or Type)
993 Wildhurst Tr. Orono, MN
(Address) (City)
612-472-4689 55364
(Telephone) (Zip)
[Signature]
(Owner Signature)

2. Owner's Representative JoLynn Mosher Bush
1919 Dupont Ave. S. #2B Mpls., MN
(Address) (City)
612-874-6386 55403
(Telephone) (Zip)

P.E. R.L.S. L.A. Other

3. Permit Requested For: (Check All Appropriate Boxes)

B. Stormwater Management Plan

- Commercial
- Industrial
- Institutional or Highway
- Residential

D. Wetland Alteration

E. Dredging

F. Shoreline/Bank Improvement

G. Stream/Lake Crossing

C. Floodplain Alteration

4. Project Location: Orono | Henn. | NW 1/4 NE 1/4 | 7 | 117 | 23
(City) (County) (1/4 Sec) (Sec) (Township) (Range)

5. Describe the Project: Remove mud from a channel approximately 25' x 540' and out into Forest Lake for 75' to provide navigable access to homeowners dock(s). Project will consist of approximately 1500' cubic yards of material removed.

6. If This Project Requires Municipal Approval or Review, Attach Documentation of Municipal Review.

7. Body of Water, Stream or Wetland Affected by Runoff From This Site: Forest Lake & Wildhurst Tr. Channel
Distance From Project: _____

8. Schedule For Construction, Implementation of Temporary Erosion Controls, Substantial Completion and Restoration: Spoils will be removed from the site by the contractor (Marine Environmental Services).

Please call (612) 473-4224 if assistance in completing this form is required. In submitting this form, the applicant acknowledges all requirements for permit approval as determined by the published Rules dated February 20, 1986.

LOCAL UNIT OF GOVERNMENT COMMENTS

PART B

Section I (To be completed by applicant)

Name of Applicant Dave & Cheryl Hawkins	Address (Street, RFD, Box No., City, State, Zip Code) 993 Wildhurst Trail Orono, MN 55364
--	--

PROJECT LOCATION	Quarter Section(s)	Section(s)	Township(s)	Range(s)	County(ies)
	NW $\frac{1}{4}$ NE $\frac{1}{4}$	7	117	23	Hennepin

Project will affect: (name and number of lake, wetland, or watercourse)
Wildhurst Trail Channel and Forest Lake

I hereby submit this application for permit to:
(mark proper box)

appropriate water work in protected waters

Signature of Applicant <i>[Signature]</i>	Date 2-1-89
--	----------------

Section II (To be completed by local unit of government)

The following local unit of government comments and/or recommendations are submitted for consideration by the Department of Natural Resources in the disposition of the referenced permit application. **(YOUR RESPONSE MUST BE SUBMITTED TO THE DNR WITHIN 30 DAYS.)** Water Appropriation Permit Applications and Protected Waters Permit Applications are to be sent to the DNR Regional Office. SEE REVERSE SIDE FOR CORRECT MAILING ADDRESSES.

Was the proposed project field inspected by this local unit of government? NO YES (if Yes, give viewer's name)

Viewer's Name	Title		
Authorized Signature	Title	Date	Telephone No. (Area Code) () -
Name of responding Soil and Water Conservation District, Watershed District, City or County			
Address (of the above named local unit of government)			

APPENDIX E – FLOOD STORAGE LOSS CALCULATION

Assumptions:

- All storage areas are simplified to vertical walls (volume is calculated as just area*depth)
- Forest Lake is hydraulically connected to the main body of Lake Minnetonka (proven based on aerial imagery)
- Envirotubes are perfectly level (proper install procedure)

Total footprint of Envirotubes: 13,500 square feet

Elevation of Envirotubes: 930.0 feet

Floodwater Depth around Envirotubes (100-year HWL – 931.5, source – MCWD): 1.5 feet

Volume Occupied by Envirotubes within Floodwater Zone = Total footprint of Envirotubes *
Floodwater Depth around Envirotubes = $13,500 * 1.5 = 20,250$ cubic feet

Total footprint of Lake Minnetonka: 14,500 acres (source – City of Orono/Wikipedia)

Normal water level of Lake Minnetona: 926.0 feet (source – LiDAR)

Floodwater Depth of Lake Minnetonka = $931.5 - 926.0 = 5.5$ feet

Floodwater volume of Lake Minnetonka = $5.5 \text{ feet} * 14,500 \text{ acres} (633,000,000 \text{ square feet}) =$
 $3,473,910,000$ cubic feet

Total Floodwater volume plus Envirotube displacement volume = $3.48 \text{ billion cubic feet} + 20,250$
cubic feet = $3,473,930,250$ cubic feet

New Floodwater depth of Lake Minnetonka = Total floodwater volume plus Envirotube
displacement volume - total footprint of Lake Minnetonka = $3,473,930,250 \text{ cubic feet} / 14,500$
acres = 5.50003 feet

Technical Memorandum
Re: Wildhurst Trail Dredging Submittal
August 21, 2024

APPENDIX F – ORONO CITY ENGINEER EMAIL REGARDING ENVIROTUBES

From: Corey Truebenbach <ctruebenbach@tcoscorp.com>
Sent: Tuesday, June 4, 2024 11:07 AM
To: Lucas LaMoore; Justin Klabo; Tim Vlach
Subject: FW: Dredging Permit Variance/exception letter - Wildhurst Trail
Attachments: [TCOS_DredgingSubmittal20240530.pdf](#)

One of the homeowners did forward this to the city of Orono. This was his response. Looks like we will need some stockpiling permits also from the city. But they are in support of this method.

Thank you,
Corey Truebenbach
952-212-4151
Twin City Outdoor Services

----- Original message -----

From: Matt Johnson <matt@minnetonkamatt.com>
Date: 6/3/24 5:44 PM (GMT-06:00)
To: Corey Truebenbach <ctruebenbach@tcoscorp.com>
Subject: Fwd: Dredging Permit Variance/exception letter - Wildhurst Trail

See Below....

Matt Johnson
Minnetonka Matt Team
Compass - Lake Minnetonka
612-801-7580

Begin forwarded message:

From: Adam Edwards <aedwards@oronomn.gov>
Subject: RE: Dredging Permit Variance/exception letter - Wildhurst Trail
Date: June 3, 2024 at 10:13:50 AM CDT
To: Matt Johnson <matt@minnetonkamatt.com>
Cc: Melanie Curtis <MCurtis@oronomn.gov>, Laura Oakden <loakden@oronomn.gov>

Matt,

I have no concerns with the use of sediment containment bags as a method of dewatering. It is one of the methods we consider for city projects when we have to dredge storm ponds.

You will need stockpile permits from the city for the project for any of the parcels that are used for dewatering. Looks like two per the plans you provided. Per the plan it looks like the sediment will be hauled off site. If the sediment is used on site land alteration/ grading permits may be required. I've CC'd Melanie who can assist with those requirements.

Adam



Adam T. Edwards, P.E.
City Administrator / City Engineer
2750 Kelley Parkway | Orono, MN 55356
(952) 249-4600
aedwards@oronomn.gov
<http://www.ci.orono.mn.us>

From: Matt Johnson <matt@minnetonkamatt.com>
Sent: Friday, May 31, 2024 3:43 PM
To: Adam Edwards <aedwards@oronomn.gov>
Subject: Fwd: Dredging Permit Variance/exception letter - Wildhurst Trail

Matt Johnson
Minnetonka Matt Team
Compass - Lake Minnetonka
612-801-7580

Begin forwarded message:

From: Corey Truebenbach <ctruebenbach@tcoscorp.com>
Subject: Dredging Permit Variance/exception letter
Date: May 31, 2024 at 3:20:41 PM CDT
To: Matt Johnson <matt@minnetonkamatt.com>

APPENDIX G – HOMEOWNER PERMISSIONS

Address	Owners	E-Mail	Phone	6/7 Updated Sent	Permission Letter Received
1003 Wildhurst Trl	Matt Johnson	mjohnson@ci.orono.mn.us	Matt) 612-801-7580	x	x
999 Wildhurst Trl	Tony and Alison Stinar	Tonystinar@gmail.com , Alisonstinar@gmail.com	Tony) 763-355-4854	x	x
997 Wildhurst Trl	Brian and Ann Turbeville	Brian@wc-print.com	Ann) 612-875-1315 Ann) 612-875-1318	x	x
995 Wildhurst Trl	Tom and Laurie Fleck	TomFleck1@gmail.com	Tom) 612-618-8091 Laurie) 952-380-6332	x	x
993 Wildhurst Trl	Brad Pfaff	Brad@grnway.biz	612-419-5311	x	x
975 Wildhurst Trl	Corey and Annette Olson	lakeole@gmail.com	Corey) 507-208-2010	x	

I, Brad PFAFF (name) grant permission to Twin City Outdoor Services to apply for a dredging permit with the Minnehaha Creek Watershed District.

The dredging permit is intended for sediment removal work to be conducted at the following properties in 2024 summer season:

- 903 Wildhurst Trail
- 999 Wildhurst Trail
- 997 Wildhurst Trail
- 995 Wildhurst Trail
- 993 Wildhurst Trail
- 975 Wildhurst Trail

Watercraft Description:

For 993 (address) Wildhurst Trail the watercraft currently docked in the space, include:

- houseboat Type of watercraft (e.g., pontoon boat, houseboat, fishing boat)
- 19 Length
- 4' Draft (distance from waterline to lowest point of boat)

This information is requested by Minnehaha Creek Watershed District during the permitting process.

Name:

Brad PFAFF

Address:

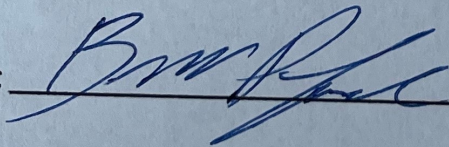
993 Wildhurst Trail

Email:

Brad@grnway.biz

Sincerely,

Signed:



Date:

6-12-2024

I, Tom Fleck (name) grant permission to Twin City Outdoor Services to apply for a dredging permit with the Minnehaha Creek Watershed District.

The dredging permit is intended for sediment removal work to be conducted at the following properties in 2024 summer season:

• 1003 Wildhurst Trail	• 995 Wildhurst Trail
• 999 Wildhurst Trail	• 993 Wildhurst Trail
• 997 Wildhurst Trail	• 975 Wildhurst Trail

Watercraft Description:

For 995 (address) Wildhurst Trail the watercraft currently docked in the space, include:

- Deck Boat Type of watercraft (e.g., pontoon boat, houseboat, fishing boat)
- 22' 6" Length
- 2' 10" Draft (distance from waterline to lowest point of boat)

This information is requested by Minnehaha Creek Watershed District during the permitting process.

Name:	<u>Tom Fleck</u>
Address:	<u>995 WILDHURST TR. ORONO, MN 55364</u>
Email:	<u>TomFleck1@gmail.com</u>

Sincerely,

Signed:  Date: 7-1-2024

I, Brian Turbeville (name) grant permission to Twin City Outdoor Services to apply for a dredging permit with the Minnehaha Creek Watershed District.

The dredging permit is intended for sediment removal work to be conducted at the following properties in 2024 summer season:

• 1003 Wildhurst Trail	• 995 Wildhurst Trail
• 999 Wildhurst Trail	• 993 Wildhurst Trail
• 997 Wildhurst Trail	• 975 Wildhurst Trail

Watercraft Description:

For 997 (address) Wildhurst Trail the watercraft currently docked in the space, include:

- pontoon Type of watercraft (e.g., pontoon boat, houseboat, fishing boat)
- 25' Length
- 20" Draft (distance from waterline to lowest point of boat)

This information is requested by Minnehaha Creek Watershed District during the permitting process.

Name:	<u>Brian Turbeville</u>
Address:	<u>997 Wildhurst Trail</u>
Email:	<u>Brian@WC-Print.com</u>

Sincerely,

Signed:  Date: 6/10/2024

I, Tony Stinar (name) grant permission to Twin City Outdoor Services to apply for a dredging permit with the Minnehaha Creek Watershed District.

The dredging permit is intended for sediment removal work to be conducted at the following properties in 2024 summer season:

• 1003 Wildhurst Trail	• 995 Wildhurst Trail
• 999 Wildhurst Trail	• 993 Wildhurst Trail
• 997 Wildhurst Trail	• 975 Wildhurst Trail

Watercraft Description:

For 999 (address) Wildhurst Trail the watercraft currently docked in the space, include:

- Wakeboard Type of watercraft (e.g., pontoon boat, houseboat, fishing boat)
- 25 ft. Length
- 27 in. Draft (distance from waterline to lowest point of boat)

This information is requested by Minnehaha Creek Watershed District during the permitting process.

Name:	<u>Tony Stinar</u>
Address:	<u>999 Wildhurst Trl, Mound, MN 55364</u>
Email:	<u>tonystinar@gmail.com</u>

Sincerely,

Signed: 

Date: 6/17/24

I, MATT & SUSANNE JOHNSON (name) grant permission to Twin City Outdoor Services to apply for a dredging permit with the Minnehaha Creek Watershed District.

The dredging permit is intended for sediment removal work to be conducted at the following properties in 2024 summer season:

• 1003 Wildhurst Trail	• 995 Wildhurst Trail
• 999 Wildhurst Trail	• 993 Wildhurst Trail
• 997 Wildhurst Trail	• 975 Wildhurst Trail

Watercraft Description:

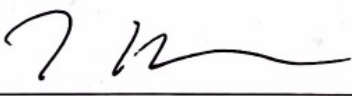

For 1003 (address) Wildhurst Trail the watercraft currently docked in the space, include:

- Runabout (42) Type of watercraft (e.g., pontoon boat, houseboat, fishing boat)
- 23' Length
- 4-5' Draft (distance from waterline to lowest point of boat)

This information is requested by Minnehaha Creek Watershed District during the permitting process.

Name:	MATT & SUSANNE JOHNSON
Address:	1003 WILDHURST TRAIL
Email:	MATT @ MINNETONKAMATT . COM

Sincerely,

Signed:  Date: 6/11/2024


I, Matt & Susanne Johnson (name) grant permission to Twin City Outdoor Services to apply for a dredging permit with the Minnehaha Creek Watershed District.

The dredging permit is intended for sediment removal work to be conducted at the following properties in 2024 summer season:

- 1003 Wildhurst Trail
- 999 Wildhurst Trail
- 997 Wildhurst Trail
- 995 Wildhurst Trail
- 993 Wildhurst Trail
- 975 Wildhurst Trail

Watercraft Description:


For 1003 (address) Wildhurst Trail the watercraft currently docked in the space, include:

- Runabout (x2) Type of watercraft (e.g., pontoon boat, houseboat, fishing boat)
- 23' Length
- 4-5' Draft (distance from waterline to lowest point of boat)

This information is requested by Minnehaha Creek Watershed District during the permitting process.

Name: Matt Johnson
Address: 1003 Wildhurst Trail
Email: Matt@MinnetonkaMatt.com

Sincerely,

Signed:  Date: 6/11/24