

Technical Memo



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Exceptional outcomes.

To: Clearwater River Watershed District Board of Managers

From: Rebecca Carlson Kluckhohn, District Engineer

Copy: Cole Loewen, District Administrator

Date: 23 August 2016

Subject: Inspection, Operation & Maintenance Plan
Cedar Lake Restoration Project

This memo describes the proposed inspection schedule and operation and maintenance plans for two of the best management practices (BMPs) that comprise the Cedar Lake Watershed Protection & Improvement Project.

BACKGROUND:

In 2002 citizens began to notice severe algal blooms in Cedar Lake, a high value recreational lake with exceptional clarity and fisheries habitat. Those observations, coupled with a sharp rise in average summer phosphorus and chlorophyll-*a* prompted additional monitoring. Through intensive lake and watershed monitoring, CRWD identified the major source of nutrients to the lake: three nutrient impaired shallow lakes (Swartout, Albion and Henshaw Lakes) in the upper watershed and impaired wetlands discharged excess amounts of soluble phosphorus to Cedar Lake. The CRWD's TMDL Study for the three upstream lakes confirmed the findings; this study was approved by EPA in 2009. The MPCA approved a Watershed Wide Implementation plan in 2009.

CRWD identified a suite of in-lake and watershed BMPs to improve water quality in the impaired shallow lakes to protect Cedar Lake. Implementation of these projects began in 2007 (CRWD Project 06-01). Between 2007 and 2013, CRWD implemented as many capital and programmatic BMPs as possible with available funding and landowner participation, but additional load reductions were needed to meet water quality goals.

The CRWD identified two additional BMPs to reduce loads:

- The East Swartout Lake Restoration Soluble Phosphorus Filter and
- The Highway 55 Project

The Board of Water and Soil Resources awarded CRWD a grant for implementation of both BMPs in 2013. Both BMPs target reductions to the largest watershed sources of nutrient to Cedar and Swartout Lakes by installing filters to remove soluble phosphorus currently exported from degraded wetlands and lakes.

Both BMPs target treatment of baseflow and the 1.25-inch event to provide the maximum cost/ benefit while preserving upstream hydrology. The BMPs target reductions from the largest watershed sources of nutrients, providing 80% of the necessary watershed load reductions to Swartout Lake (800 lbs/yr), and 40% of the necessary watershed load reductions to Cedar Lake (480 lbs/ yr).

EAST SWARTOUT LAKE RESTORATION SOLUBLE PHOSPHORUS FILTER:

This BMP (shown in Appendix A) is located on the western edge of the Minnesota Department of Natural Resources' (DNR) Swartout Wildlife Management Area (WMA) and this plan will need to be reviewed and approved by the DNR prior to implementation. Once the plan is approved, the CRWD plans to notify the area hydrologist, the area wildlife manager and the area fisheries supervisor prior to annual maintenance.

This project element contains three main components:

- Two adjustable weirs,
- A passive soluble phosphorus filter, and
- A fish migration barrier.

Weir Operation:

Weir #1 is located upstream (offline of main channel) and weir #2 is located downstream, nearer to County Road 6. Both weirs have aluminum stop logs with slides that are lockable. These are shown in Attachment 1, along with copies of the as-built drawings for the BMP.

	Season	# of stop logs in place		Note
		Weir #1 (upstream)	Weir #2 (downstream)	
Swartout Lake Elevation 1,016.5-1,017.5	Spring	0 logs- remove plug	4 logs	Optimal system operation
	Summer	0 logs	4 logs	
	Fall	0 logs	4 logs	
	Winter	4 logs- Install Plug, leave in place for winter	0 (avoid ice damage)	
Swartout Lake Elevation >1,017.5	Spring	0 logs- remove plug	4 logs	System submerged/ backwater
	Summer	0 logs	4 logs	
	Fall	0 logs	0-4 logs	
	Winter	4 logs- Install Plug, leave in place for winter	0 (avoid ice damage)	
To Offline System- dry out filter	Recommend late fall to coincide with winter operation(Oct. / Nov. weather permitting- for 48 hrs. or as needed)	4 logs	0	Install plug at filter outlet, run submersible pump

Inspection & Monitoring:

The District will monitor the function of the iron sand filter by measuring water quality and flow monthly during the flow season. Inflow will be measured above weir #2 and outflow will be measure at the drain tile outlet below weir #2. District staff will also perform monthly visual observation of the filter, weirs, drain tile outlet, and vegetation. Such monitoring is performed without heavy equipment and will not disturb vegetation or wildlife in the wetland.

A full project inspection will be conducted annually—or more frequently when needed. District will notify the DNR prior to this spring-summer inspection to provide the opportunity for joint inspections.



Upstream weir with stop logs installed (facing east)



Iron-enhanced sediment filtration system (facing south)

System Operation:

The system is passive and typically only requires annual adjustment of the weirs. The District will off-line the filter for the winter by increasing the elevation of weir #1 (the one that is parallel to the wetland outlet channel) and blocking off the drain tile outlet from the filter. This will prevent flow from entering the filter in the winter- though will not keep the filter dry over the winter. The filter will be dewatered to encourage aeration of the filter media. To do so, once the filter is offline, pumping will occur to drain ponded water from the filter. This will typically be done over a two-day period during the late fall, low flow period (October/ November), after which time pump equipment will be removed. Pumping will occur during the week to minimize impact to weekend use of the WMA.



Weir locking pin for aluminum stop logs

An additional pump is required in the channel area between the weir and the liner to achieve full drawdown. Following drawdown, fill system via outlet pipe.

In the spring, once tailwater conditions have subsided, weirs #1 and #2 would be adjusted to their operational height. These activities can be done without heavy equipment and will minimally disturb vegetation or wildlife in the wetland. Stoplog surface should be cleaned and prepared before installation. The District will notify the DNR when/if it adjusts the weir heights and when annually off-lining occurs.

Maintenance:

The District annually compiles inspection findings and recommendations for maintenance in its Operation and Maintenance Report. The Board of Managers then votes to approve expenditures.

Vegetation: The filter itself will not be seeded. Significant amounts of volunteer vegetation are not expected to grow on the filter within a five year period. This is based on observation of similar systems in other watershed districts. It is important to note that current research is not clear as to whether the growth of the volunteer vegetation on the filter will hinder system performance. Volunteer vegetation has not presented problems at the oldest system in Minnesota, located in Ramsey Washington Watershed District.

If vegetation does grow on the filter, the system will be monitored to determine if the vegetation is hindering system performance. If it is hindering performance, hand removal of the volunteer vegetation on the filter itself may be needed on a 5 to 10 year interval. Because vegetative removal is by hand and is not done using heavy equipment, disturbance to the WMA is minimal. The filter is located entirely outside the wetland area and there would be no disturbance to the wetland.

Around the filter the District has seeded native vegetation as part of project installation. Currently the District retains a native vegetation maintenance contractor to manage this seeding to promote robust native growth. Current management is primarily hand-removal and spot spraying to minimize competition from non-native species. It is expected this level of management will continue for a couple years until full establishment, at which time management will shift to selective removal of non-natives as needed. This management is done by hand, without heavy equipment and is outside the wetland area, so minimal disturbance to the WMA is expected.

Iron-Sand Filter: Should monitoring show that the sand filter permeability is significantly reduced or phosphorus sorption capacity and project phosphorus load reduction goals are no longer being achieved, the District will contemplate replacement of the filter material and drain tile as necessary. Any such replacement will involve the input/approval of the DNR. Though measured sediment loads at this location are low, replacement of the filter may be required through the life of the project (30 years).

CRWD will be monitoring performance of other soluble filters in the District, some of which were designed with crushed limestone as the filter media. If CRWD finds this to be a more effective media than iron/sand, and the iron/sand loses treatment capacity, the CRWD will coordinate with the DNR to evaluate costs and benefits of replacing the iron-sand filter with crushed limestone. Monitoring data evaluated annually and reported in the District's annual report will direct replacement schedule.

Weirs: Clean and prepare surface of stop logs and weirs prior to log installation.

Fish Barrier: A fish migration barrier has been in place at this location since 2009. The barrier will be replaced with a new barrier installed on top of weir #2. The current design for this barrier involves movable fingers to allow debris to pass without impacting hydrology. The barrier will require inspection at least weekly in the spring melt and after rain events throughout the summer. These barriers can generally be cleaned with a rake if needed, without the use of heavy equipment.

Little or no disturbance of wetland vegetation is anticipated; maintenance needs for the replacement fish barrier should be less than for the previous barrier.

Emergency /Unforeseen Maintenance:

Should the system require emergency or unforeseen maintenance, the District will work cooperatively with the DNR to provide notice and determine the best course of action. If inspection and operation indicates that modifications to this plan are required, the District will work with the DNR to modify the plan as needed.

CEDAR LAKE HIGHWAY 55 BYPASS CHANNEL AND LIMESTONE FILTER BERM:

This BMP, shown in Appendix B, is comprised of 3 main elements:

- A low-flow treatment channel
- A permeable limestone filter berm
- A sheet pile weir on the main, existing channel

There are no active operational elements of this BMP, so only inspection and maintenance will be necessary.

Inspection and Maintenance:

Inspection of the BMP will occur annually as part of the District's annual inspection program.

Channel

The low-flow channel should be free flowing, free of debris and maintained in its design cross section. Any debris found to be causing an issue should be removed. The existing channel, especially the bridged portion immediately downstream of the BMP, should be inspected for free flowing condition. Any obstruction could negatively impact BMP performance and may need to be removed.

The channel banks should be inspected for erosion. Both the channel banks and a small portion of the upland area adjacent to the banks were seeded with native vegetation as part of project installation. Currently the District retains a native vegetation maintenance contractor to inspect and maintain this seeded area to promote robust native growth; this practice should continue.

Permeable filter weir

Visual inspection of the limestone filter berm shall focus on maintaining the berm free of nuisance vegetation and flowing freely. Removal and treatment of nuisance vegetation is expected over time. Clogging of the filter berm will be evidenced by major differences in water surface elevation from upstream to downstream.

The berm should be inspected for settling, with a survey of the entire berm every 3 to 5 years to verify the berm is functioning at design elevation. Wetland soils in the area may cause minor settling in some areas of the berm. Dissolution of the limestone to bind with the phosphorus may cause shifts in elevation which may require addition of limestone to the surface of the berm.



Note – Riprap shown in picture was reinstalled below top of sheet pile weir



Sheet pile weir

The sheet pile weir should be inspected for erosion, replacing riprap along the bank tie-in areas as needed. The signage along the weir to warn snowmobiles of its presence should be inspected to ensure they are anchored properly and remain visible for winter conditions. Any debris that blocks the weir should be removed when discovered. As part of the surveying schedule of the limestone filter berm, the weir and surrounding riprap should be surveyed to ensure the weir is functioning at design elevation.

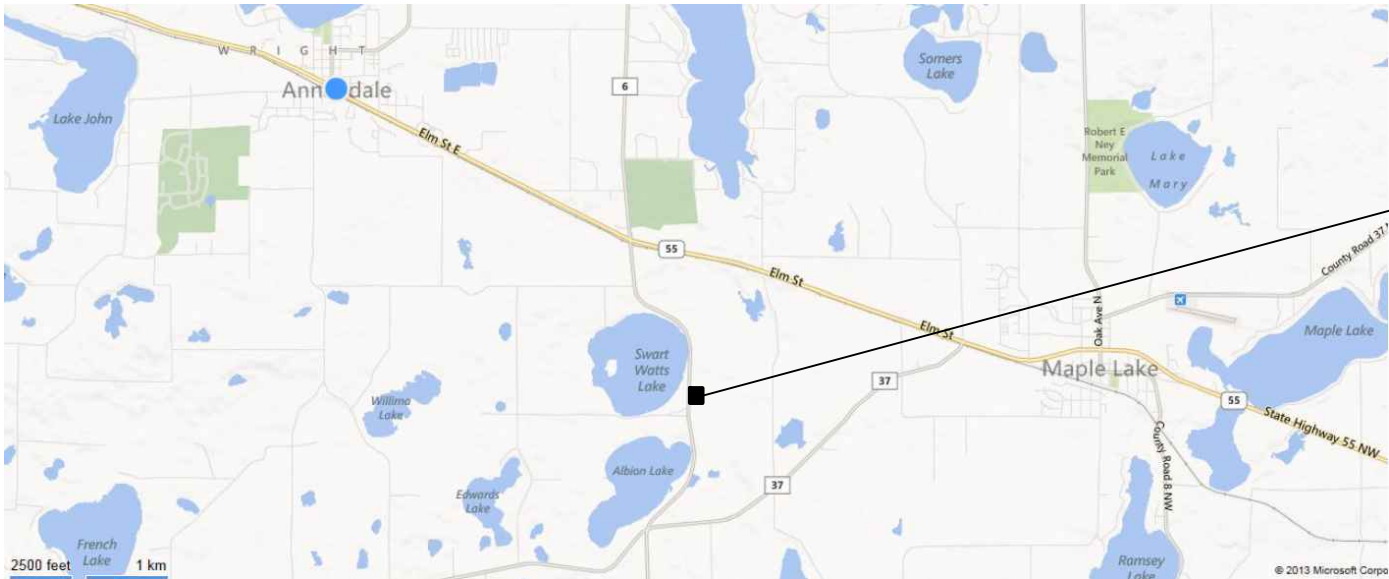
APPENDIX A

CONTRACT DRAWINGS

EAST SWARTOUT STORMWATER IMPROVEMENTS

CLEARWATER RIVER WATERSHED DISTRICT

DECEMBER 2014



PROJECT LOCATION MAP

INDEX OF SHEETS

G-101	TITLE SHEET
C-101	EXISTING CONDITIONS & REMOVAL PLAN
C-201	SWPPP PLAN
C-202	EROSION & SEDIMENT CONTROL PLAN
C-301	GRADING PLAN
C-801	DETAILS
C-802	DETAILS
C-803	DETAILS



ENLARGED PROJECT LOCATION MAP

INDEX OF CHANGE ORDERS

C.O. #1	DEWATERING & SITE STABILIZATION FOR INSTALLATION OF IESF SYSTEM
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PAGE

C-802



WARNING:


THE CONTRACTOR SHALL BE RESPONSIBLE FOR CALLING FOR LOCATIONS OF ALL EXISTING UTILITIES. THEY SHALL COOPERATE WITH ALL UTILITY COMPANIES IN MAINTAINING THEIR SERVICE AND/OR RELOCATION OF LINES.


THE CONTRACTOR SHALL CONTACT GOPHER STATE ONE CALL AT 651-454-0002 AT LEAST 48 HOURS IN ADVANCE FOR THE LOCATIONS OF ALL UNDERGROUND WIRES, CABLES, CONDUITS, PIPES, MANHOLES, VALVES OR OTHER BURIED STRUCTURES BEFORE DIGGING. THE CONTRACTOR SHALL REPAIR OR REPLACE THE ABOVE WHEN DAMAGED DURING CONSTRUCTION AT NO COST TO THE OWNER.

CALL BEFORE YOU DIG
GOPHER STATE ONE CALL
TWIN CITY AREA: 651-454-0002
TOLL FREE 1-800-252-1166

RECORD PLANS	
CONTRACTOR: <u>PETERSON COMPANIES</u>	
DATE: <u>08/12/16</u>	
RECORD DRAWINGS ARE BASED ON INFORMATION OBTAINED THROUGH ON SITE OBSERVATION OF CONSTRUCTION AND FIELD SURVEY DATA COLLECTED BY <u>AJN</u>	

REV	REVISION DESCRIPTION	DWN	APP	REV DATE
1	FOR BID	MJS	KBM	12/10/14
0	FOR REVIEW	MJS		12/5/14

SEAL
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME <u>KEVIN B. MATTSO</u>
SIGNATURE 
DATE <u>12/10/14</u> LICENSE # <u>48386</u>

PRIME CONSULTANT

© Wenck Associates, Inc. Consulting Engineers 1800 PIONEER CREEK CENTER MAPLE PLAIN, MN 55359 763-479-4200 763-479-4242

PROJECT TITLE
EAST SWARTOUT STORMWATER IMPROVEMENTS
CLEARWATER RIVER WATERSHED DISTRICT

SHEET TITLE			
TITLE SHEET			
DWN BY MJS	CHK'D RAK	APP'D KBM	DWG DATE DEC 2014
PROJECT NO. 0002-205	SHEET NO. G-101	SCALE AS SHOWN	REV NO. 1



- GENERAL NOTES**
1. SALVAGE AND REINSTALL ALL SIGNS AS DIRECTED BY ENGINEER (INCIDENTAL).
 2. ALL QUANTITIES ARE APPROXIMATE AND MAY VARY TO ALLOW COMPLETION OF WORK.
 3. PRIVATE UTILITIES ARE SHOWN IN GENERAL LOCATIONS. CONTRACTOR TO COORDINATE WITH PRIVATE UTILITY OWNERS PER GOPHER STATE ONE REQUIREMENTS.
 4. NOTIFY ENGINEER IMMEDIATELY OF ALL EXISTING SEWER AND WATER SERVICE CONFLICTS.
 5. CONTRACTOR TO STRIP AND SALVAGE EXISTING TOPSOIL.
 6. REVIEW ALL TREE REMOVALS WITH ENGINEER.

REV	REVISION DESCRIPTION	DWN	APP	REV DATE
1	FOR BID	MJS	KBM	12/10/14
0	FOR REVIEW	MJS		12/5/14

SEAL

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

PRINT NAME KEVIN B. MATTSO

SIGNATURE [Signature]

DATE 12/10/14 LICENSE # 48386

PRIME CONSULTANT

 **Wenck**

Wenck Associates, Inc.
Consulting Engineers
1800 PIONEER CREEK CENTER
MAPLE PLAIN, MN 55359

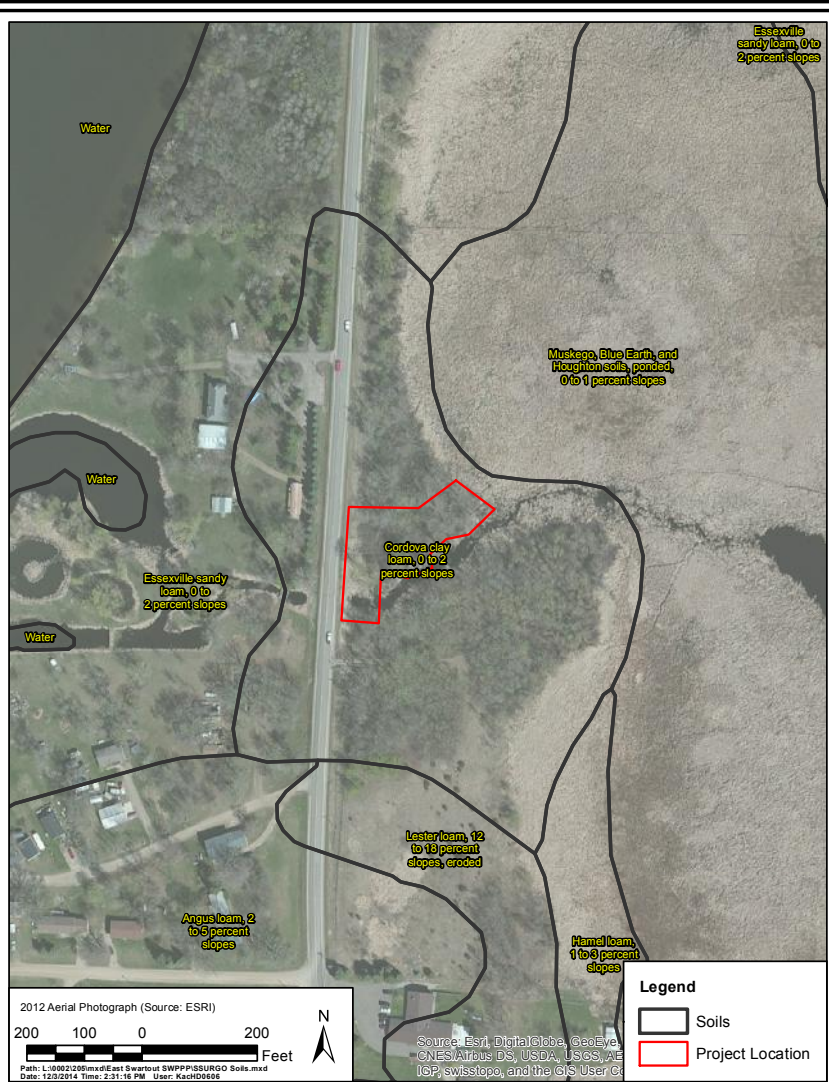
Web Site: www.wenck.com
763-479-4200
763-479-4242

PROJECT TITLE

**EAST SWARTOUT
STORMWATER IMPROVEMENTS**


**CLEARWATER RIVER
WATERSHED DISTRICT**

SHEET TITLE			
EXISTING CONDITIONS & REMOVAL PLAN			
DWN BY MJS	CHK'D RAK	APP'D KBM	DWG DATE DEC 2014
PROJECT NO. 0002-205	SHEET NO. C-101	SCALE AS SHOWN	REV NO. 1



CLEARWATER RIVER WATERSHED DISTRICT

SSURGO Soils

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DEC 2014
Figure 3

Cumulative Impervious Surface
Existing impervious surface - 0.00 acres
Proposed impervious surface - 0.00 acres

Total Area Disturbed by Construction - 0.75 acres

Construction Dates: February 2015 - December 2015

Party Responsible for Long Term Operation and Maintenance of the Site - OWNER

Clearwater River Watershed District
75 Elm St E, Box 481
Annandale, MN 55301 320-274-3935

Party Responsible for Implementation of the SWPPP - CONTRACTOR (TBD)

CERTIFICATION
In accordance with Part III.A.2 of the General Permit Authorization to Discharge Stormwater Associated with Construction Activity under the NPDES, the preparer of this document was trained under the University of Minnesota Erosion and Sediment Control Certification Program. Mr. Louis Sigtermans' certification in Design of SWPPP is valid through May 31, 2017.

UNIVERSITY OF MINNESOTA

Louis H Sigtermans
Saint Paul, MN

Design of Construction SWPPP (May 31, 2017)

EROSION AND SEDIMENT CONTROL PRACTICES

Prior to any site disturbance the erosion prevention measures, including rock construction entrances and silt fence, will be installed at the site as shown on Sheets C-202.

All exposed soil areas within 7 days or as soon as possible must have temporary erosion protection (slash mulch, erosion control blanket, seed) or permanent cover year round.

CONTRACTOR shall implement appropriate construction phasing, vegetative buffer strips, horizontal slope grading, and other construction practices that minimize erosion when practical.

The normal wetted perimeter of any temporary or permanent drainage ditch that drains water from a construction site, or diverts water around a site, must be stabilized within 200 lineal feet from the property edge, or from the point of discharge to any surface water. Stabilization must be completed within 24 hours of connecting to a surface water. Pipe outlets must be provided with temporary or permanent energy dissipation within 24 hours of connection to a surface water.

Sediment control practices must minimize sediment from entering surface waters, including curb and gutter systems and storm sewer inlets. The following measures will be taken as sediment control practices in order to minimize sediments from entering surface waters:

1. Installation of sediment control practices on all down gradient perimeters prior to land disturbing activities.
2. Minimize vehicle tracking by use of the rock construction entrances.
3. Street sweeping of tracked sediment when necessary.

Dewatering is anticipated for the excavation work of this project. Discharge filtration should be incorporated into the dewatering activities. Energy dissipation shall be provided at all discharge points to prevent scour.

Because the project is less than 5 acres, temporary sedimentation basins are not required.

Record Retention

The SWPPP, all changes to it, and inspection and maintenance records must be kept on-site during construction. The OWNER must retain a copy of the SWPPP along with the following records for three (3) years after submittal of the Notice of Termination.

1. Any other permits required for the project;
2. Records of all inspection and maintenance conducted during construction;
3. All permanent operations and maintenance agreements that have been implemented, including all right of way, contract, covenants and other binding requirements regarding perpetual maintenance; and
4. All required calculations for design of the temporary and permanent stormwater management systems.

Pollution Prevention Measures

Solid Waste
Solid waste, including but not limited to, collected asphalt and concrete millings, floating debris, paper, plastic, fabric, construction and demolition debris and other waste must be disposed of properly and must comply with MPCA disposal requirements.

Hazardous Materials
Hazardous materials, including but not limited to oil, gasoline, paint and any hazardous substance must be properly stored including secondary containments, to prevent spills, leaks or other discharge. Restricted access to storage areas must be provided to prevent vandalism. Storage and disposal of hazardous waste must be in compliance with MPCA regulations.

Washing of Construction Vehicles
External washing of trucks and other construction vehicles must be limited to a defined area of the site. Runoff must be contained and waste properly disposed of. No engine degreasing is allowed on site.

Concrete Washout Area
Concrete washout is not anticipated for this project.

Inspections

The inspection log will be completed by the CONTRACTOR for the construction site. Inspections at the site will be completed as follows:

- Once every seven (7) days during active construction and,
- Within 24 hours after a rainfall event greater than 0.5 inches in 24 hours.

The individual performing inspections must be trained as required by part IV.E of the Permit. CONTRACTOR to provide OWNER with proof of training. Inspections must include stabilized areas, erosion prevention and sediment control BMPs, and infiltration areas. Corrective actions must be identified and date of correction must be noted as identified in Section IV.E. of the Permit.

Final Stabilization

All areas disturbed by construction will receive seed and mulch or sod according to the plans and specifications and within the specified vegetative time schedule. Final stabilization will occur when the site has a uniform vegetative cover with a density of 70% over the entire disturbed area. All temporary synthetic erosion prevention and sediment control BMPs (such as silt fence) must be removed as part of the site final stabilization. All sediment must be cleaned out of conveyances and temporary sedimentation basins if applicable.

Notice of Termination (NOT) must be submitted within 30 days of final stabilization.

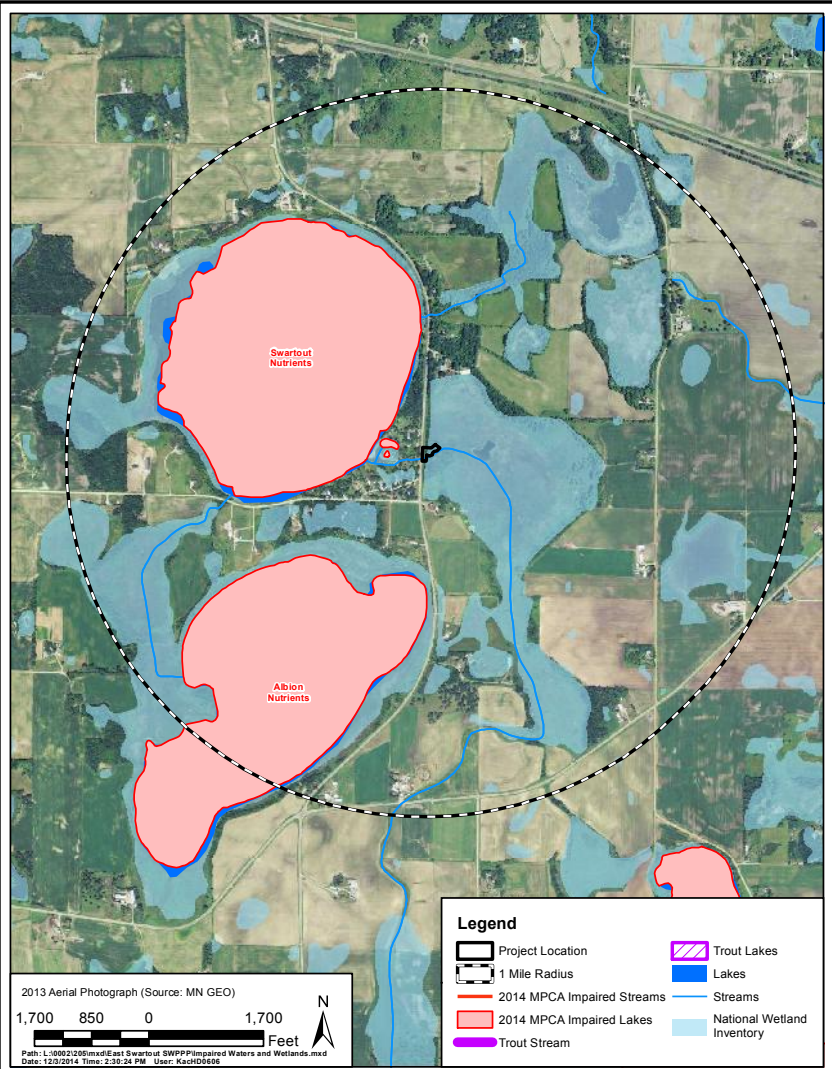
IMPAIRED WATERS, SPECIAL WATERS, AND WETLANDS

This Project is not located within 1 mile of a special water. This Project is located within 1 mile of an impaired waters (Figure 4 this sheet):
Albion Lake impaired for Nutrients
Swartout Lake impaired for Nutrients

Because of the proximity of the project to an impaired water during construction:


1. All exposed soil areas must be stabilized as soon as possible to limit soil erosion but in no case later than seven (7) days after the construction activity in that portion of the site has temporarily or permanently ceased.
2. Temporary sediment basins are required to handle runoff for common drainage locations that serve an area with 5 or more acres disturbed at one time.

This Project will temporarily impact wetlands. A wetland delineation has been performed and wetland permits have been obtained.



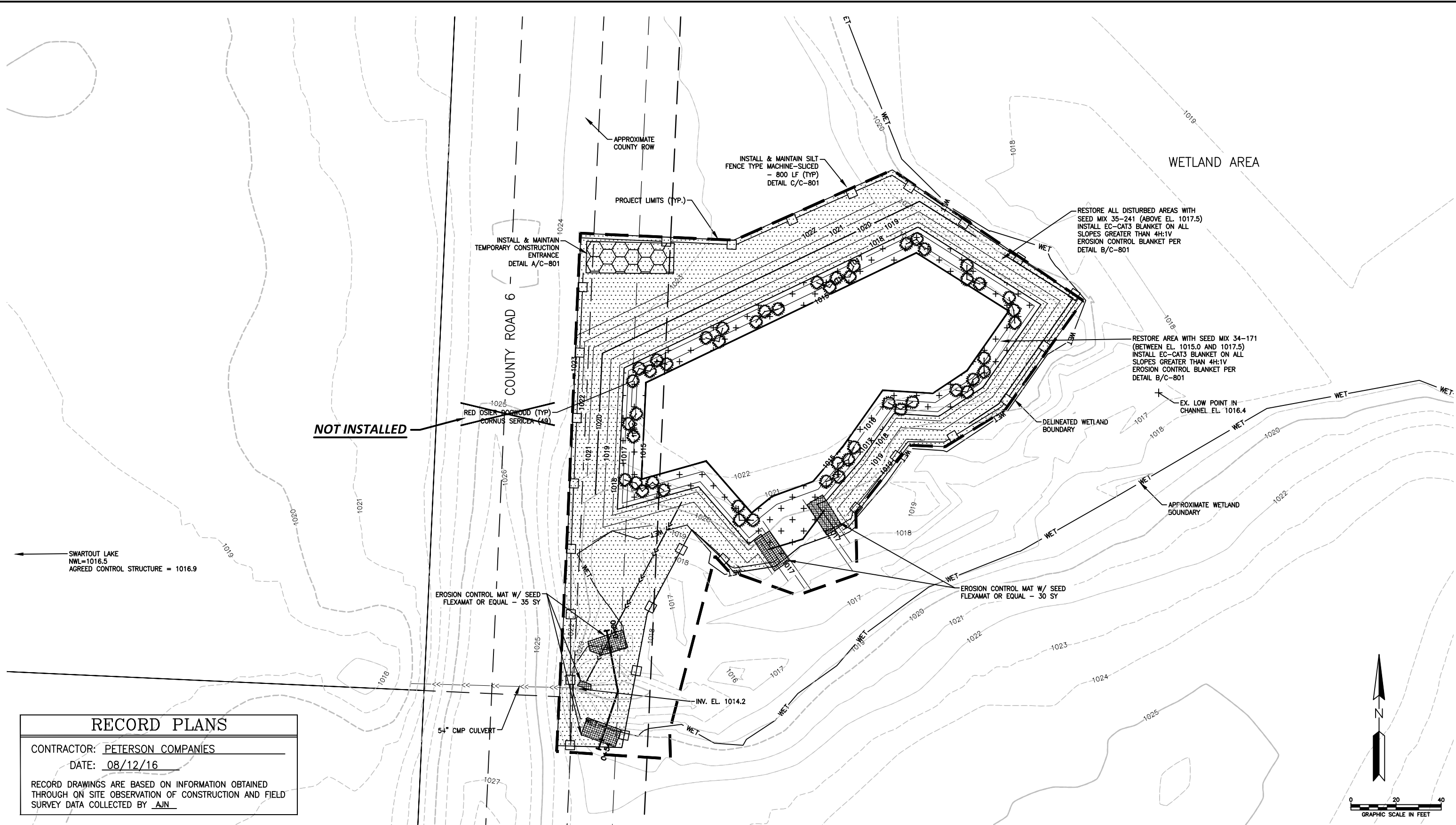
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303(d) Impaired Waters and Wetlands Map

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DEC 2014
Figure 4

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RECORD PLANS

CONTRACTOR: PETERSON COMPANIES

DATE: 08/12/16

RECORD DRAWINGS ARE BASED ON INFORMATION OBTAINED THROUGH ON SITE OBSERVATION OF CONSTRUCTION AND FIELD SURVEY DATA COLLECTED BY AJN

EROSION CONTROL NOTES

- ALL EXPOSED SOIL AREAS MUST BE STABILIZED AS SOON AS POSSIBLE TO LIMIT SOIL EROSION BUT IN NO CASE LATER THAN SEVEN (7) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED.
- RESTORE ALL DISTURBED AREAS ABOVE ELEV. 1015.0 WITH 4" TOPSOIL AS SPECIFIED.
- PERMANENT RESTORATION SHALL OCCUR AT THE EARLIEST POSSIBLE STAGE.
- ALL QUANTITIES ARE APPROXIMATE AND MAY VARY TO ALLOW COMPLETION OF WORK.
- PRIVATE UTILITIES ARE SHOWN IN GENERAL LOCATIONS. CONTRACTOR TO COORDINATE WITH PRIVATE UTILITY OWNERS PER GOPHER STATE ONE REQUIREMENTS.

REV	REVISION DESCRIPTION	DWN	APP	REV DATE
1	FOR BID	MJS	KBM	12/10/14
0	FOR REVIEW	MJS		12/5/14

SEAL

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

PRINT NAME KEVIN B. MATTSO

SIGNATURE

DATE 12/10/14 LICENSE # 48386

PRIME CONSULTANT

Wenck Associates, Inc.
Consulting Engineers
1800 PIONEER CREEK CENTER
MAPLE PLAIN, MN 55359

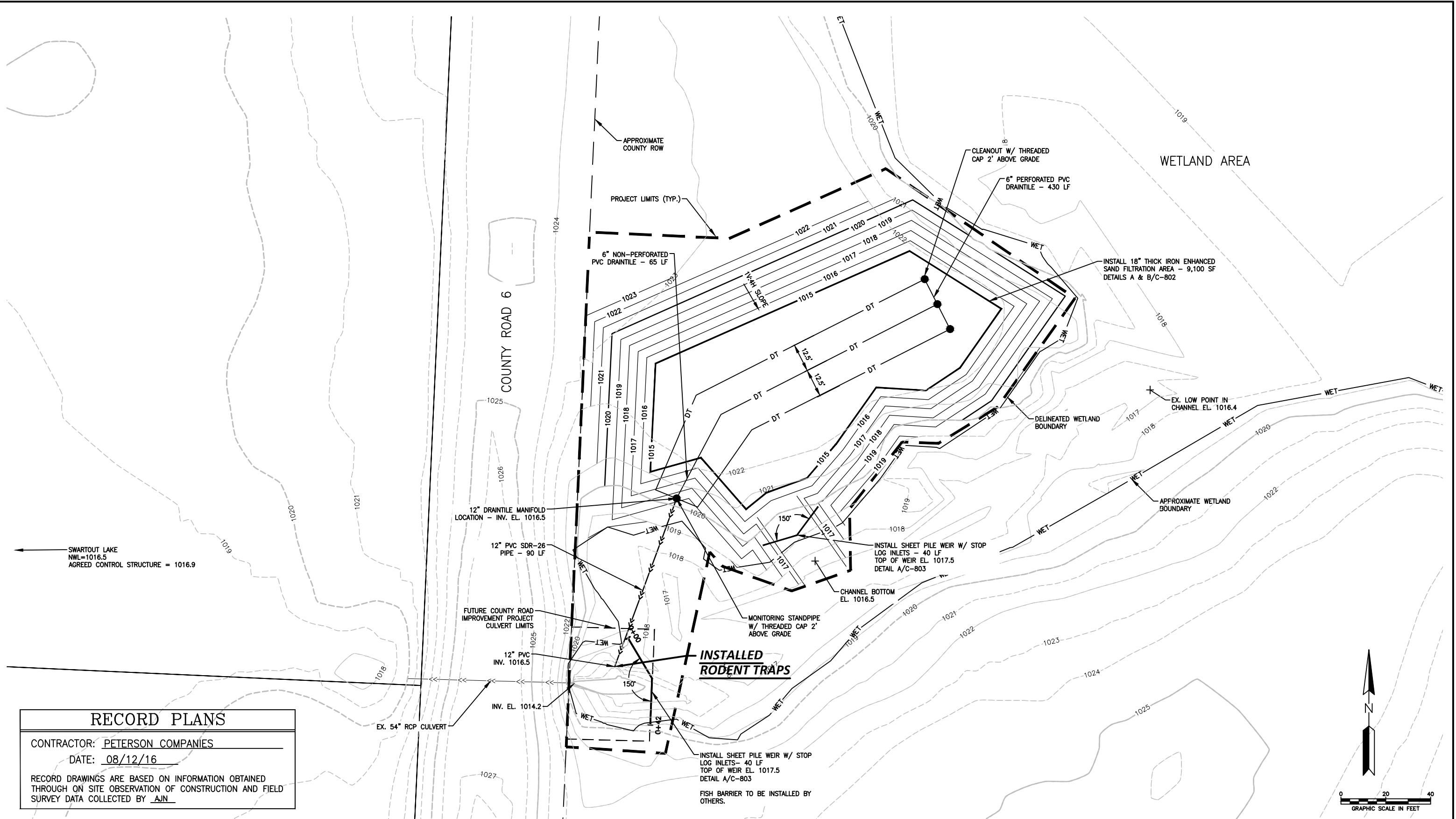
763-479-4200
763-479-4242

PROJECT TITLE

EAST SWARTZOUT
STORMWATER IMPROVEMENTS


CLEARWATER RIVER
WATERSHED DISTRICT

SHEET TITLE			
EROSION & SEDIMENT CONTROL PLAN			
DWN BY	CHK'D	APP'D	DWG DATE
MJS	RAK	KBM	DEC 2014
PROJECT NO.		SCALE	
0002-205		AS SHOWN	
SHEET NO.		REV NO.	
C-202		1	



RECORD DRAWINGS ARE BASED ON INFORMATION OBTAINED
THROUGH ON SITE OBSERVATION OF CONSTRUCTION AND FIELD
SURVEY DATA COLLECTED BY AJN

1. SALVAGE AND REINSTALL ALL SIGNS AS DIRECTED BY ENGINEER (INCIDENTAL).
2. ALL QUANTITIES ARE APPROXIMATE AND MAY VARY TO ALLOW COMPLETION OF WORK.
3. PRIVATE UTILITIES ARE SHOWN IN GENERAL LOCATIONS. CONTRACTOR TO COORDINATE WITH PRIVATE UTILITY OWNERS PER GOPHER STATE ONE REQUIREMENTS.
4. NOTIFY ENGINEER IMMEDIATELY OF ALL EXISTING SEWER AND WATER SERVICE CONFLICTS.
5. CONTRACTOR TO STRIP AND SALVAGE EXISTING TOPSOIL.
6. REVIEW ALL TREE REMOVALS WITH ENGINEER.

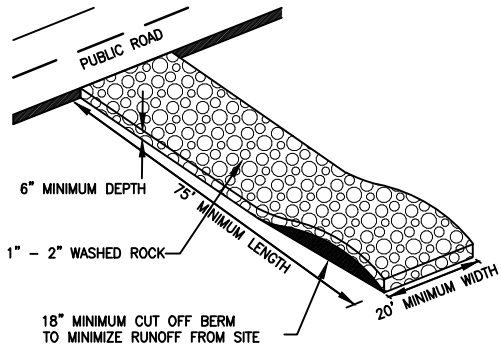
						SEAL
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						PRINT NAME <u>KEVIN B. MATTSON</u>
1	FOR BID	MJS	KBM	12/10/14		SIGNATURE <u></u>
0	FOR REVIEW	MJS		12/5/14		DATE <u>12/10/14</u> LICENSE # <u>48386</u>
REV	REVISION DESCRIPTION	DWN	APP	REV DATE		

DATE 12/10/14 LICENSE # 48386

763-479-4200

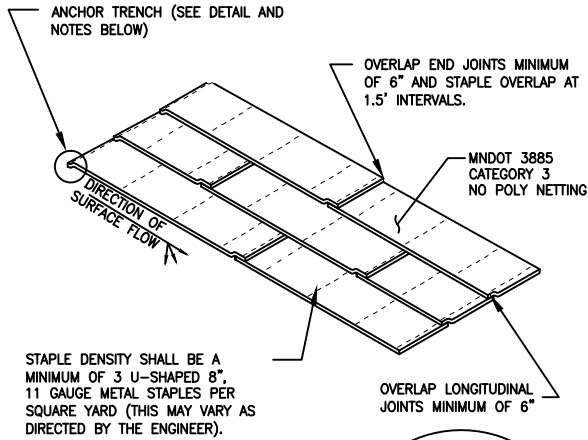
CLEARWATER RIVER
WATERSHED DISTRICT

DWN BY MJS	CHK'D RAK	APP'D KBM	DWG DATE DEC 2014
			SCALE AS SHOWN
PROJECT NO. 0002-205		SHEET NO. C-301R1	
		REV NO. 1	



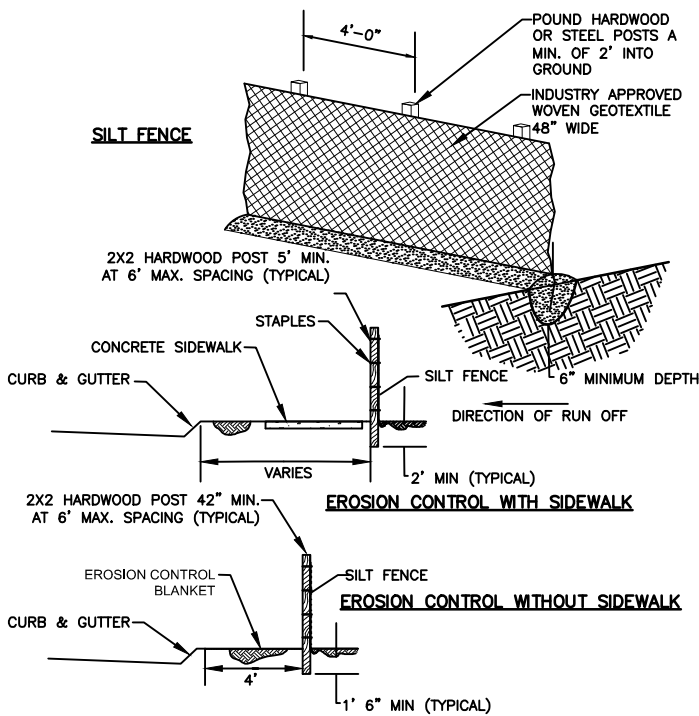
NOTE:
FILTER FABRIC SHALL BE PLACED UNDER ROCK
TO STOP MUD MIGRATION THROUGH ROCK.

A TEMPORARY CONSTRUCTION ENTRANCE DETAIL



ANCHOR TRENCH
1. DIG 6" X 6" TRENCH
2. LAY BLANKET IN TRENCH
3. STAPLE AT 1.5' INTERVALS
4. BACKFILL WITH NATURAL SOIL AND COMPACT
5. BLANKET LENGTH SHALL NOT EXCEED 100'
WITHOUT AN ANCHOR TRENCH

B EROSION CONTROL BLANKET DETAIL



C SILT FENCE DETAIL

RECORD PLANS

CONTRACTOR: PETERSON COMPANIES

DATE: 08/12/16

RECORD DRAWINGS ARE BASED ON INFORMATION OBTAINED
THROUGH ON SITE OBSERVATION OF CONSTRUCTION AND FIELD
SURVEY DATA COLLECTED BY AJN

REV	REVISION DESCRIPTION	DWN	APP	REV DATE
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0	FOR REVIEW	MJS	KBM	XX/XX/XX

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PROFESSIONAL ENGINEER UNDER THE LAWS OF THE
STATE OF MINNESOTA.

PRINT NAME KEVIN B. MATTSON

SIGNATURE [Signature]

DATE 12/10/14 LICENSE # 48386

PRIME CONSULTANT



PROJECT TITLE

**EAST SWARTZOUT
STORMWATER IMPROVEMENTS**

**CLEARWATER RIVER
WATERSHED DISTRICT**

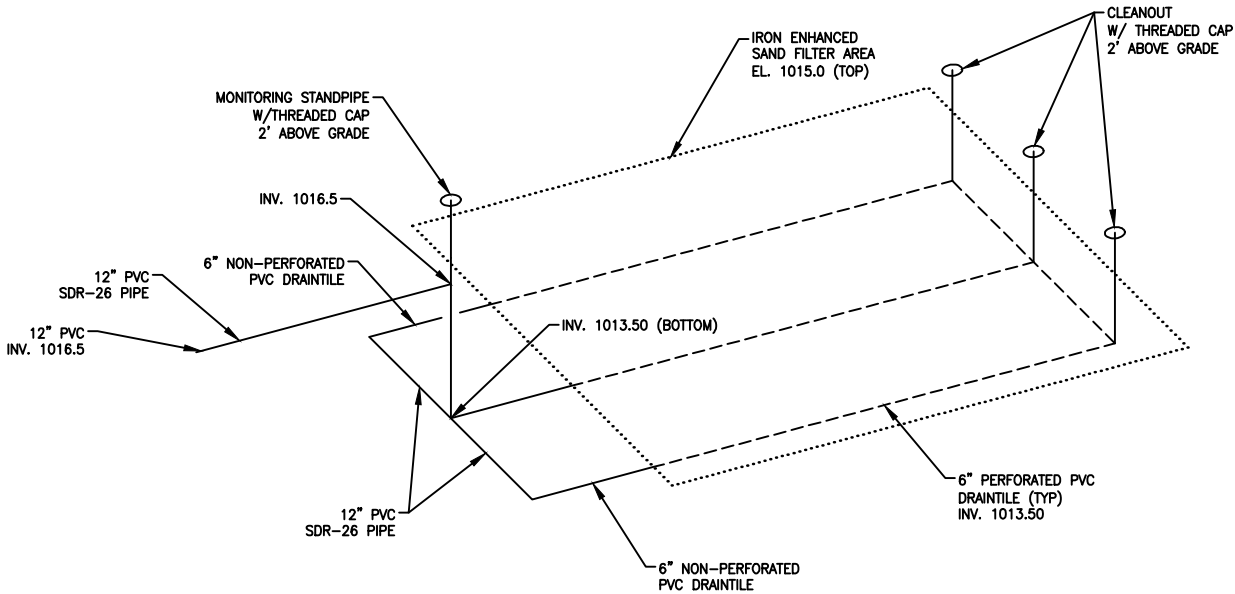
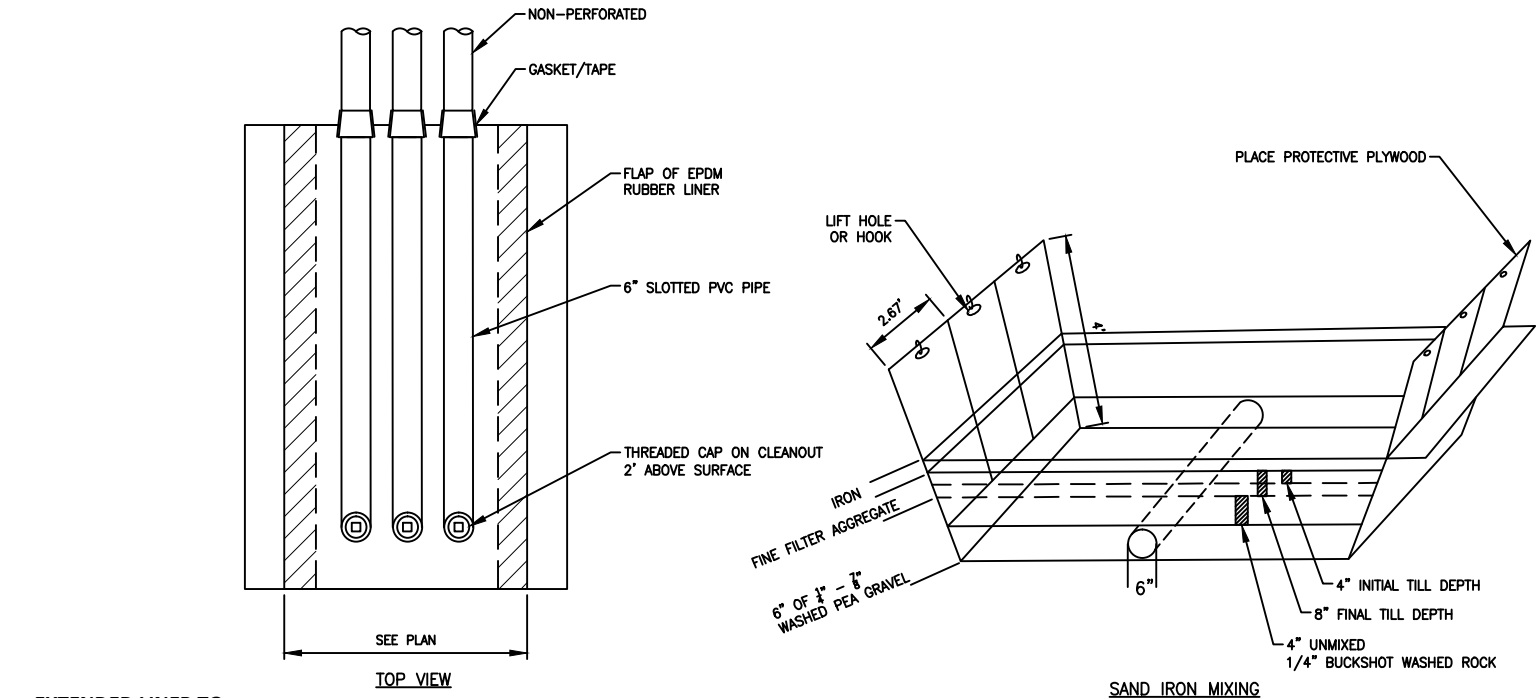
SHEET TITLE

DETAILS

DWN BY	CHK'D	APP'D	DWG DATE	SCALE	AS SHOWN
MJS	RAK	KBM	DEC 2014		
PROJECT NO.	SHEET NO.				
0002-205	C-801				1

Plot Date & Time: 15 August 2016 5:35 PM

\\A0002\205\East Swartout\CVC-801_DETAILS.dwg



SUGGESTED CONSTRUCTION SEQUENCE

1. DEWATER.
2. EXCAVATE 1.5' DEEP FILTER AREA.
3. COMPACT IN-PLACE SUBSOIL.
4. ROLL OUT 45 MIL EPDM LINER.
5. INSTALL 6" DIAMETER SLOTTED PVC PIPE AND CLEANOUTS.
6. PLACE 1/4" - 7/8" WASHED PEA GRAVEL TO A DEPTH OF 6".
7. PUT TEMPORARY PROTECTIVE PLYWOOD IN PLACE (OR OTHER METHOD APPROVED BY ENGINEER TO PREVENT PUNCTURE OF EPDM).
8. PLACE 1/4" BUCKSHOT WASHED ROCK TO A DEPTH OF 4".
9. PLACE IRON/FINE FILTER AGGREGATE MIX TO A DEPTH OF 8".
10. PLACE 3.7 LBS/SF (PER 8" THICK SECTION) IRON FILINGS [ETI-CC-1004(-8+50) CONNELLY GPM, INC. OR APPROVED EQUAL] ON TOP OF FINE FILTER AGGREGATE.
11. TILL IN IRON FILINGS TO 4" DEPTH USING SMALL GARDEN STYLE TILLER.
12. HAND MIX SIDES NEAR 2.67' X 4' PROTECTIVE PLYWOOD.
13. SET TILLER DEPTH TO 8" AND MIX AGAIN WITH SAME PROCESS.
14. REMOVE PROTECTIVE PLYWOOD AND RAKE SURFACE FLAT.
15. STAKE LINER DOWN EVERY TWO FEET.

CHANGE ORDER #1

INSTALLED ADDITIONAL SITE STABILIZATION INCLUDING 1.5" WASHED ROCK, GEOTEXTILE FABRIC, & DRAINTILE APPROXIMATELY 12" THICK UNDERNEATH IESF SYSTEM.

RECORD PLANS

CONTRACTOR: PETERSON COMPANIES

DATE: 08/12/16

RECORD DRAWINGS ARE BASED ON INFORMATION OBTAINED THROUGH ON SITE OBSERVATION OF CONSTRUCTION AND FIELD SURVEY DATA COLLECTED BY AJN

REV	REVISION DESCRIPTION	DWN	APP	REV DATE
1	FOR BID	MJS	KBM	12/10/14
0	FOR REVIEW	MJS	KBM	XX/XX/XX

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PRINT NAME KEVIN B. MATTSO

SIGNATURE [Signature]

DATE 12/10/14 LICENSE # 48386

PRIME CONSULTANT



Wenck
Consulting Engineers

1800 PIONEER CREEK CENTER
MAPLE PLAIN, MN 55359

763-479-4200
763-479-4242

PROJECT TITLE

**EAST SWARTOUT
STORMWATER IMPROVEMENTS**

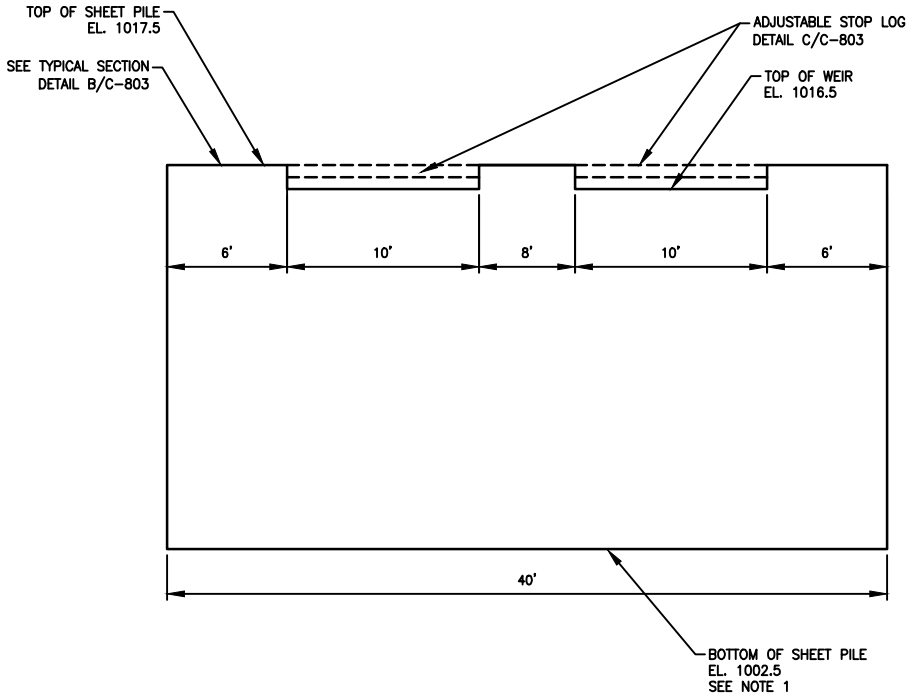
**CLEARWATER RIVER
WATERSHED DISTRICT**

SHEET TITLE

DETAILS

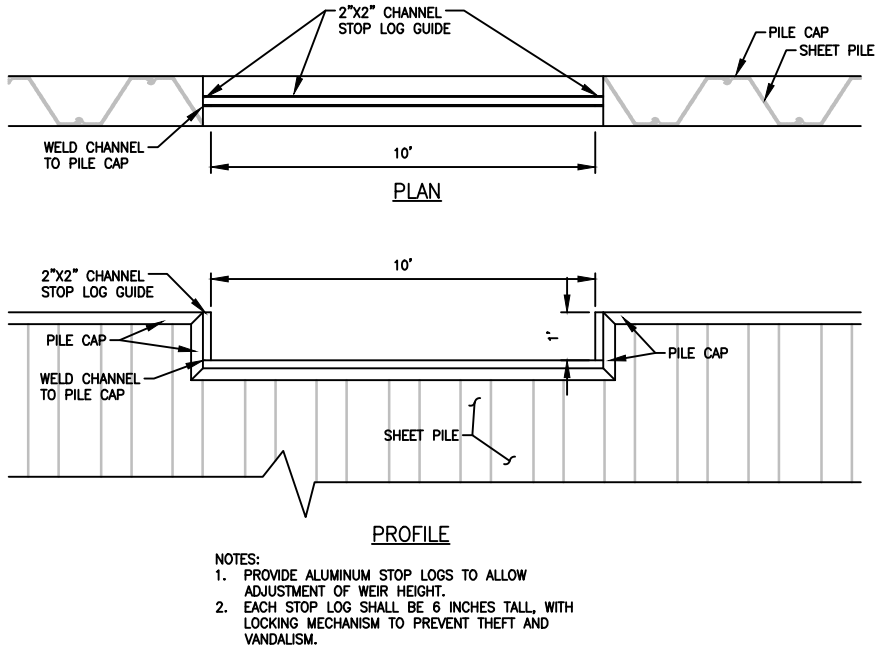
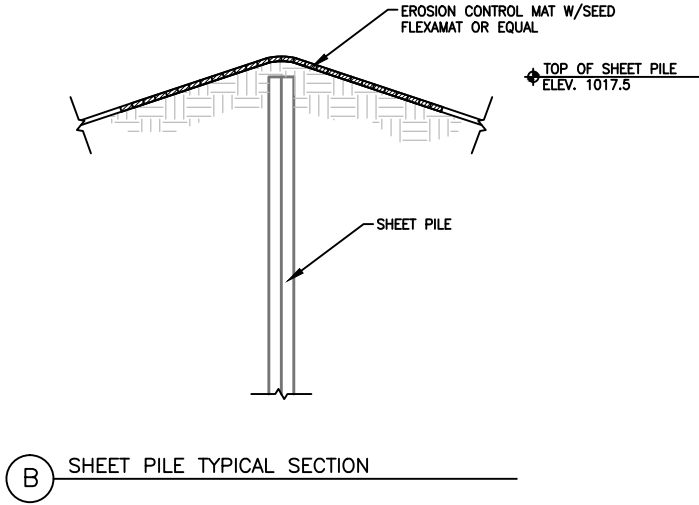
DWN BY MJS	CHK'D RAK	APP'D KBM	DWG DATE DEC 2014
PROJECT NO. 0002-205	SHEET NO. C-802	SCALE AS SHOWN	REV NO. 1

Plot Date & Time: 12 August 2016 5:35 PM



NOTES:
1. BOTTOM OF SHEET PILE SHALL BE 15 FEET BELOW PROPOSED GRADE OR TO REFUSAL, WHICHEVER COMES FIRST

A WEIR DETAILS



NOTES:
1. PROVIDE ALUMINUM STOP LOGS TO ALLOW ADJUSTMENT OF WEIR HEIGHT.
2. EACH STOP LOG SHALL BE 6 INCHES TALL, WITH LOCKING MECHANISM TO PREVENT THEFT AND VANDALISM.

RECORD PLANS

CONTRACTOR: PETERSON COMPANIES
DATE: 08/12/16

RECORD DRAWINGS ARE BASED ON INFORMATION OBTAINED THROUGH ON SITE OBSERVATION OF CONSTRUCTION AND FIELD SURVEY DATA COLLECTED BY AJN

REV	REVISION DESCRIPTION	DWN	APP	REV DATE
1	FOR BID	MJS	KBM	12/10/14
0	FOR REVIEW	MBM	KBM	XX/XX/XX

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PRINT NAME KEVIN B. MATTSO

SIGNATURE [Signature]

DATE 12/10/14 LICENSE # 48386

PRIME CONSULTANT



PROJECT TITLE
**EAST SWARTOUT
STORMWATER IMPROVEMENTS**

CLEARWATER RIVER
WATERSHED DISTRICT

SHEET TITLE

DETAILS

DWN BY	CHK'D	APP'D	DWG DATE
MJS	RAK	KBM	DEC 2014
PROJECT NO.	SHEET NO.	SCALE	REV NO.
0002-205	C-803	AS SHOWN	1

APPENDIX B

Plot Date & Time: 12 August 2016 3:09 PM

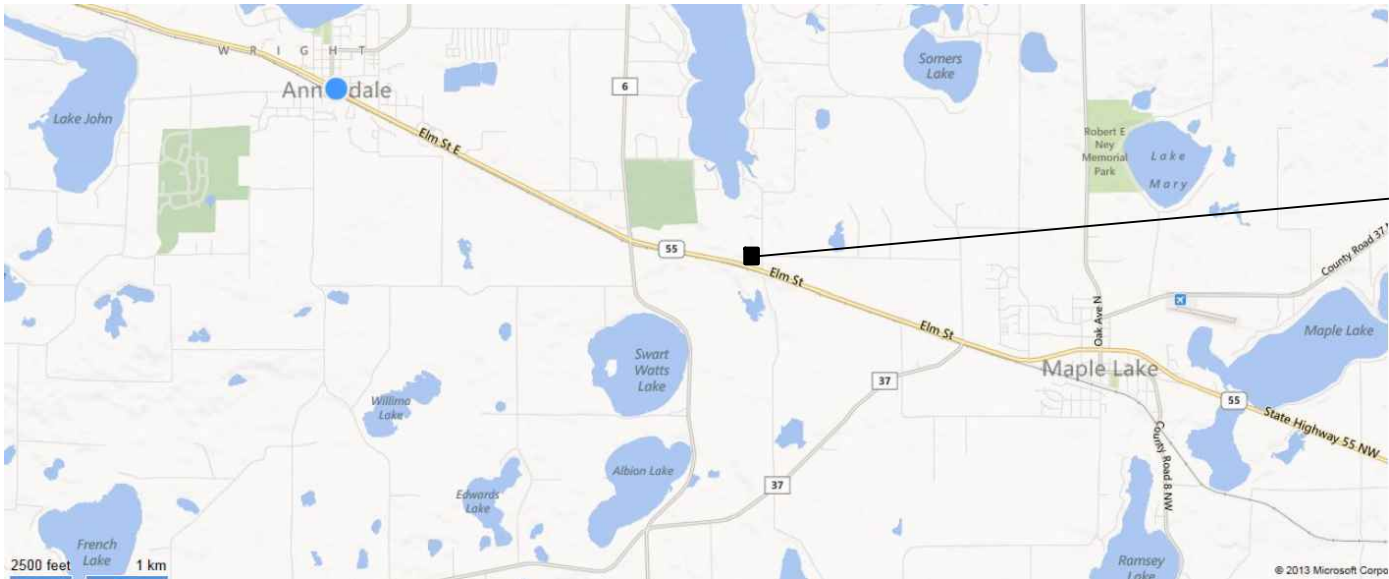
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CONTRACT DRAWINGS

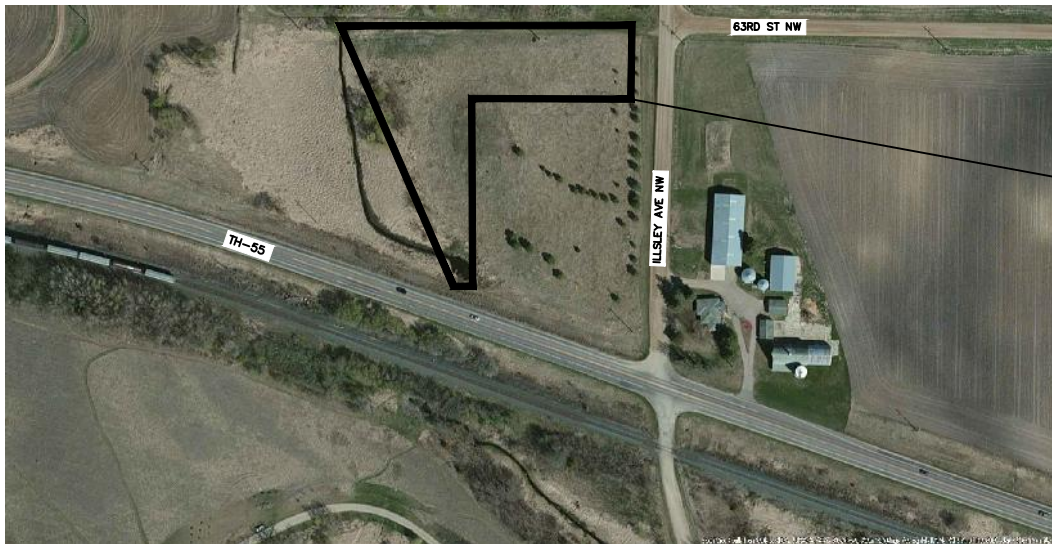
CEDAR OLD HIGHWAY 55 STORMWATER IMPROVEMENTS

CLEARWATER RIVER WATERSHED DISTRICT

DECEMBER 2014



PROJECT LOCATION MAP



ENLARGED PROJECT LOCATION MAP

PROJECT LOCATION

PROJECT LOCATION

INDEX OF SHEETS

G-101	TITLE SHEET
C-101	EXISTING CONDITIONS & REMOVAL PLAN
C-201	SWPPP PLAN
C-202	EROSION & SEDIMENT CONTROL PLAN
C-301	GRADING PLAN
C-801	DETAILS

INDEX OF CHANGE ORDERS

C.O. #1 INSTALL SHEET PILING & RESTORATION

PAGE

C-103



WARNING:


THE CONTRACTOR SHALL BE RESPONSIBLE FOR CALLING FOR LOCATIONS OF ALL EXISTING UTILITIES. THEY SHALL COOPERATE WITH ALL UTILITY COMPANIES IN MAINTAINING THEIR SERVICE AND/OR RELOCATION OF LINES.


THE CONTRACTOR SHALL CONTACT GOPHER STATE ONE CALL AT 651-454-0002 AT LEAST 48 HOURS IN ADVANCE FOR THE LOCATIONS OF ALL UNDERGROUND WIRES, CABLES, CONDUITS, PIPES, MANHOLES, VALVES OR OTHER BURIED STRUCTURES BEFORE DIGGING. THE CONTRACTOR SHALL REPAIR OR REPLACE THE ABOVE WHEN DAMAGED DURING CONSTRUCTION AT NO COST TO THE OWNER.

CALL BEFORE YOU DIG
GOPHER STATE ONE CALL
TWIN CITY AREA: 651-454-0002
TOLL FREE 1-800-252-1166

RECORD PLANS	
CONTRACTOR: <u>NORTHERN LINES CONTRACTING</u>	
DATE: <u>08/12/16</u>	
RECORD DRAWINGS ARE BASED ON INFORMATION OBTAINED THROUGH ON SITE OBSERVATION OF CONSTRUCTION AND FIELD SURVEY DATA COLLECTED BY <u>SKH</u>	

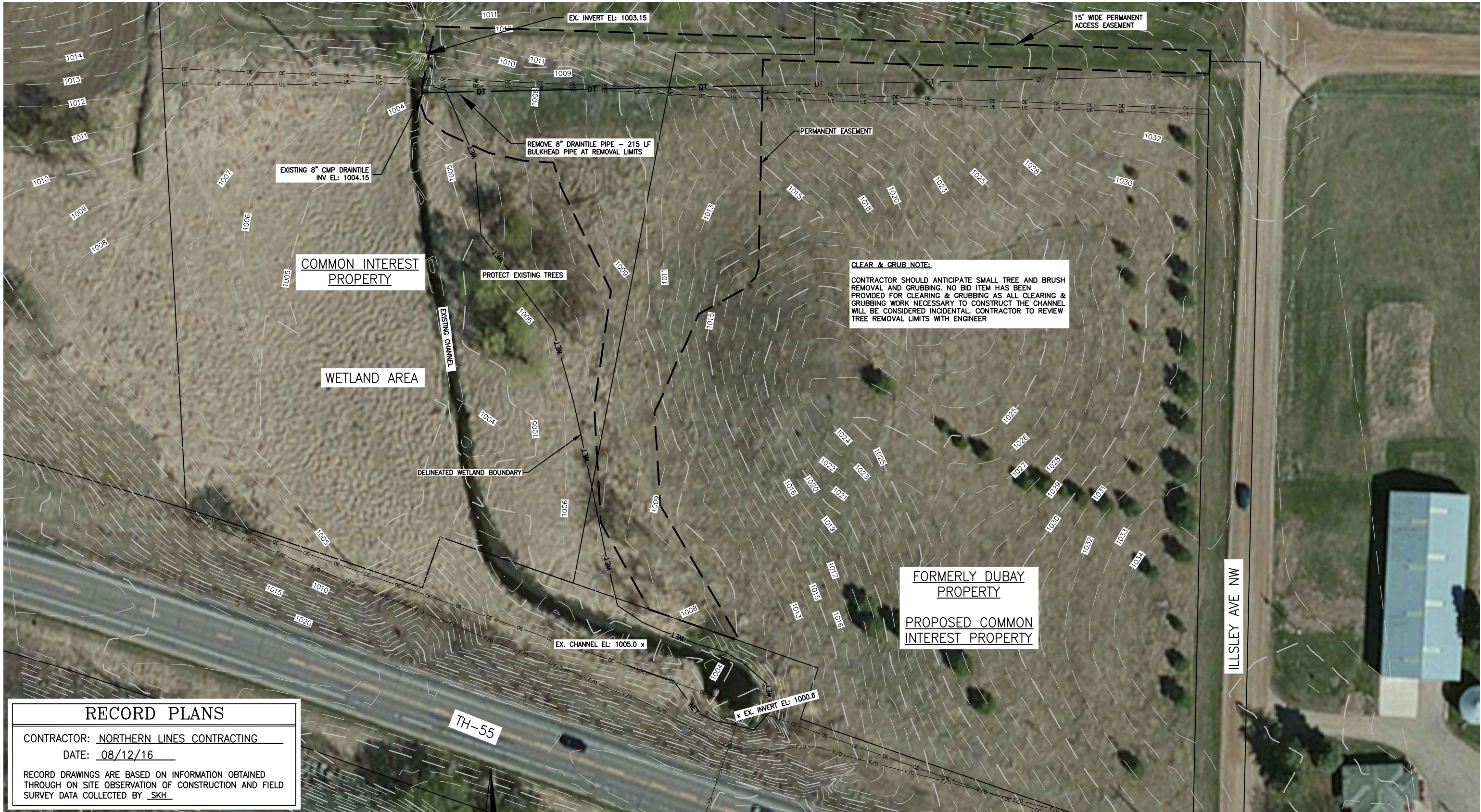
REV	DESCRIPTION	DWN	APP	REV DATE
1	FOR BID	KBM	KBM	12/10/14
0	FOR REVIEW	KBM		12/5/14

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PRINT NAME <u>KEVIN B. MATTSO</u>	
SIGNATURE 	
DATE <u>12/10/14</u> LICENSE # <u>48386</u>	

PRIME CONSULTANT	
	
1800 PIONEER CREEK CENTER MAPLE PLAIN, MN 55359	
763-479-4200 763-479-4242	

PROJECT TITLE	
CEDAR OLD HIGHWAY 55 STORMWATER IMPROVEMENTS	
CLEARWATER RIVER WATERSHED DISTRICT	

SHEET TITLE			
TITLE SHEET			
DWN BY KBM	CHK'D KBM	APP'D KBM	DWG DATE DEC 2014
PROJECT NO. 0002-205		SHEET NO. G-101	
			REV NO. 1

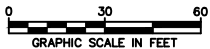


RECORD PLANS

CONTRACTOR: NORTHERN LINES CONTRACTING
DATE: 08/12/16
RECORD DRAWINGS ARE BASED ON INFORMATION OBTAINED THROUGH ON SITE OBSERVATION OF CONSTRUCTION AND FIELD SURVEY DATA COLLECTED BY SKH

GENERAL NOTES

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1	FOR BID		KBM	12/10/14
0	FOR REVIEW		KBM	12/5/14

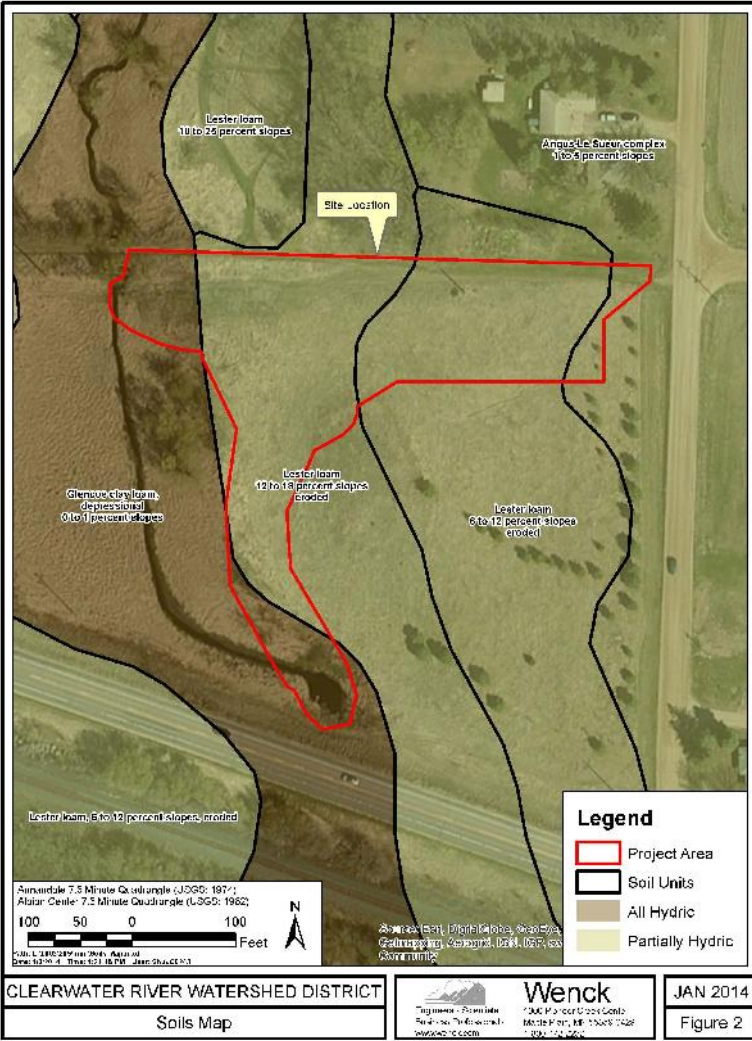
SEAL
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME <u>KEVIN B. MATTSOIN</u>
SIGNATURE <u>[Signature]</u>
DATE <u>12/10/14</u> LICENSE # <u>48386</u>

PRIME CONSULTANT

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1800 PIONEER CREEK CENTER MAPLE PLAIN, MN 55359
Web Site: www.wenck.com
763-479-4200
763-479-4242

PROJECT TITLE	
CEDAR OLD HIGHWAY 55 STORMWATER IMPROVEMENTS	
CLEARWATER RIVER WATERSHED DISTRICT	

SHEET TITLE			
EXISTING CONDITIONS & REMOVAL PLAN			
DWN BY KBM	CHK'D RAK	APP'D KBM	DWG DATE DEC 2014
PROJECT NO. 0002-205		SHEET NO. C-101	
		REV NO. 1	



Cumulative Impervious Surface
Existing impervious surface - 0.00 acres
Proposed impervious surface - 0.00 acres

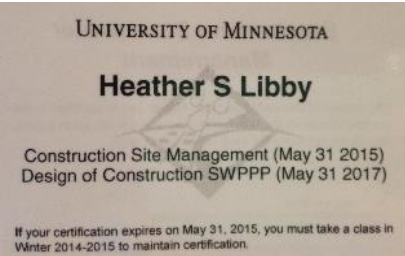
Total Area Disturbed by Construction - 1.5 acres

Construction Dates: February 2015 - December 2015

Party Responsible for Long Term Operation and Maintenance of the Site - OWNER
Clearwater River Watershed District
75 Elm St E, Box 481
Annandale, MN 55301 320-274-3935

Party Responsible for Implementation of the SWPPP - CONTRACTOR (TBD)

CERTIFICATION
In accordance with Part III.A.2.a.i. of the General Permit Authorization to Discharge Stormwater Associated with Construction Activity under the NPDES, the preparer of this document was trained under the University of Minnesota Erosion and Sediment Control Certification Program. Ms. Heather Libby's certification in Design of SWPPP is valid through May 31, 2017.



EROSION AND SEDIMENT CONTROL PRACTICES

Prior to any site disturbance the erosion prevention measures, including rock construction entrances and silt fence, will be installed at the site as shown on Sheets C-202.

All exposed soil areas within 7 days or as soon as possible must have temporary erosion protection (slash mulch, erosion control blanket, seed) or permanent cover year round.

CONTRACTOR shall implement appropriate construction phasing, vegetative buffer strips, horizontal slope grading, and other construction practices that minimize erosion when practical.

The normal wetted perimeter of any temporary or permanent drainage ditch that drains water from a construction site, or diverts water around a site, must be stabilized within 200 lineal feet from the property edge, or from the point of discharge to any surface water. Stabilization must be completed within 24 hours of connecting to a surface water. Pipe outlets must be provided with temporary or permanent energy dissipation within 24 hours of connection to a surface water.

Sediment control practices must minimize sediment from entering surface waters, including curb and gutter systems and storm sewer inlets. The following measures will be taken as sediment control practices in order to minimize sediments from entering surface waters:

1. Installation of sediment control practices on all down gradient perimeters prior to land disturbing activities.
2. Minimize vehicle tracking by use of the rock construction entrances.
3. Street sweeping of tracked sediment when necessary.

Dewatering is anticipated for the excavation work of this project. Discharge filtration should be incorporated into the dewatering activities. Energy dissipation shall be provided at all discharge points to prevent scour.

Because the project is less than 5 acres, temporary sedimentation basins are not required.

Record Retention

The SWPPP, all changes to it, and inspection and maintenance records must be kept on-site during construction. The OWNER must retain a copy of the SWPPP along with the following records for three (3) years after submittal of the Notice of Termination.

1. Any other permits required for the project;
2. Records of all inspection and maintenance conducted during construction;
3. All permanent operations and maintenance agreements that have been implemented, including all right of way, contract, covenants and other binding requirements regarding perpetual maintenance; and
4. All required calculations for design of the temporary and permanent stormwater management systems.

1	FOR BID	KBM	KBM	12/10/14
0	FOR REVIEW	KBM		12/5/14
REV	REVISION DESCRIPTION	DWN	APP	REV DATE

Pollution Prevention Measures

Solid Waste

Solid waste, including but not limited to, collected asphalt and concrete millings, floating debris, paper, plastic, fabric, construction and demolition debris and other waste must be disposed of properly and must comply with MPCA disposal requirements.

Hazardous Materials

Hazardous materials, including but not limited to oil, gasoline, paint and any hazardous substance must be properly stored including secondary containments, to prevent spills, leaks or other discharge. Restricted access to storage areas must be provided to prevent vandalism. Storage and disposal of hazardous waste must be in compliance with MPCA regulations.

Washing of Construction Vehicles

External washing of trucks and other construction vehicles must be limited to a defined area of the site. Runoff must be contained and waste properly disposed of. No engine degreasing is allowed on site.

Concrete Washout Area

Concrete washout is not anticipated for this project.

Inspections

The inspection log will be completed by the CONTRACTOR for the construction site. Inspections at the site will be completed as follows:

- Once every seven (7) days during active construction and,
- Within 24 hours after a rainfall event greater than 0.5 inches in 24 hours.

The individual performing inspections must be trained as required by part IV.E of the Permit. CONTRACTOR to provide OWNER with proof of training. Inspections must include stabilized areas, erosion prevention and sediment control BMPs, and infiltration areas. Corrective actions must be identified and date of correction must be noted as identified in Section IV.E. of the Permit.

Final Stabilization

All areas disturbed by construction will receive seed and mulch or sod according to the plans and specifications and within the specified vegetative time schedule. Final stabilization will occur when the site has a uniform vegetative cover with a density of 70% over the entire disturbed area. All temporary synthetic erosion prevention and sediment control BMPs (such as silt fence) must be removed as part of the site final stabilization. All sediment must be cleaned out of conveyances and temporary sedimentation basins if applicable.

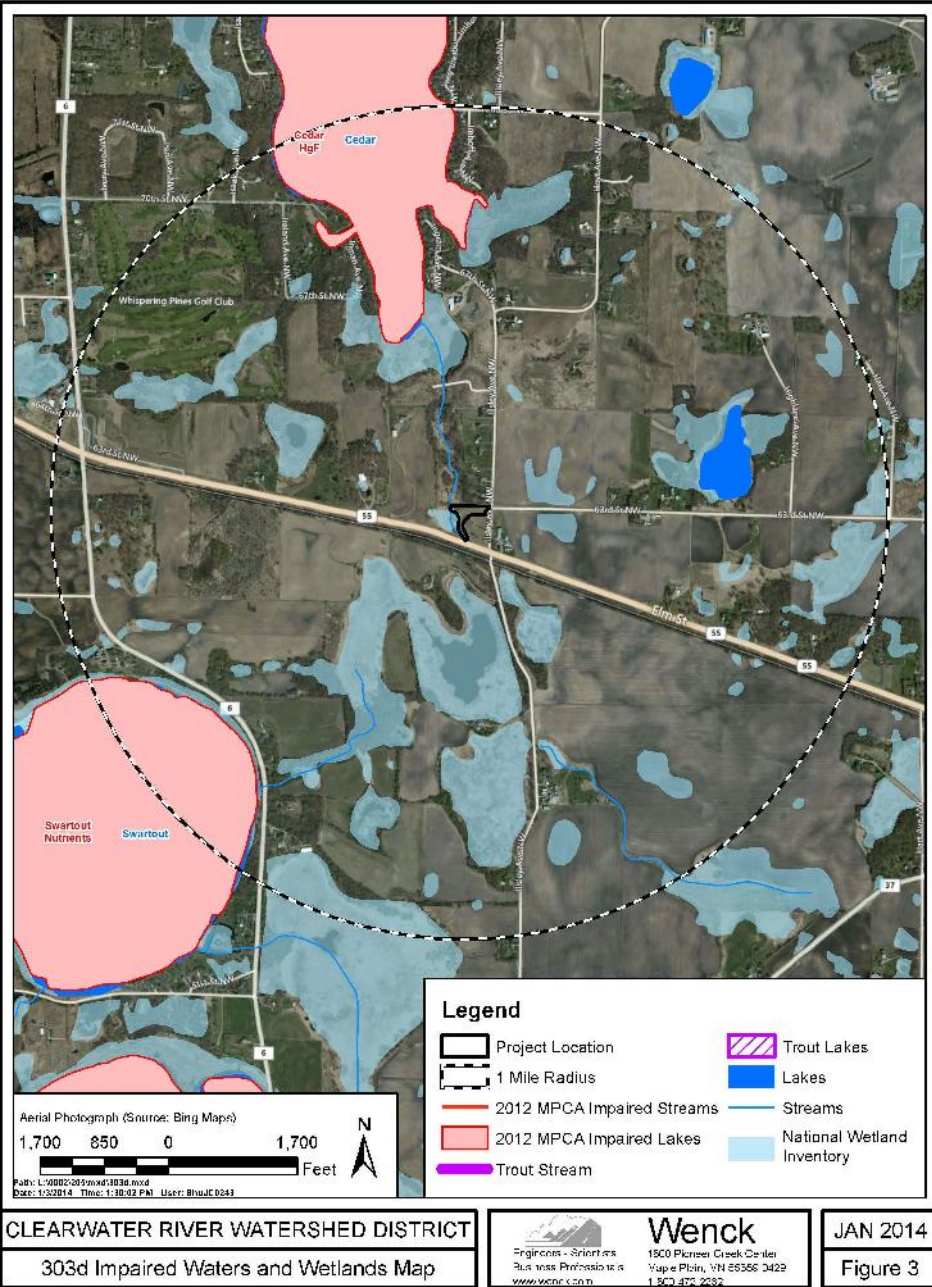
Notice of Termination (NOT) must be submitted within 30 days of final stabilization.

IMPAIRED WATERS, SPECIAL WATERS, AND WETLANDS

This Project is not located within 1 mile of a special water. This Project is located within 1 mile of an impaired waters (Figure 3 this sheet):
Cedar Lake impaired for HgF
Swartout Lake impaired for Nutrients

Because of the proximity of the project to an impaired water during construction:

1. All exposed soil areas must be stabilized as soon as possible to limit soil erosion but in no case later than seven (7) days after the construction activity in that portion of the site has temporarily or permanently ceased.
2. Temporary sediment basins are required to handle runoff for common drainage locations that serve an area with 5 or more acres disturbed at one time.



CLEARWATER RIVER WATERSHED DISTRICT
303d Impaired Waters and Wetlands Map

Wenck
Engineers - Planners
1500 Pioneer Creek Center
Maple Plain, MN 55359-3429
www.wenck.com

JAN 2014
Figure 3

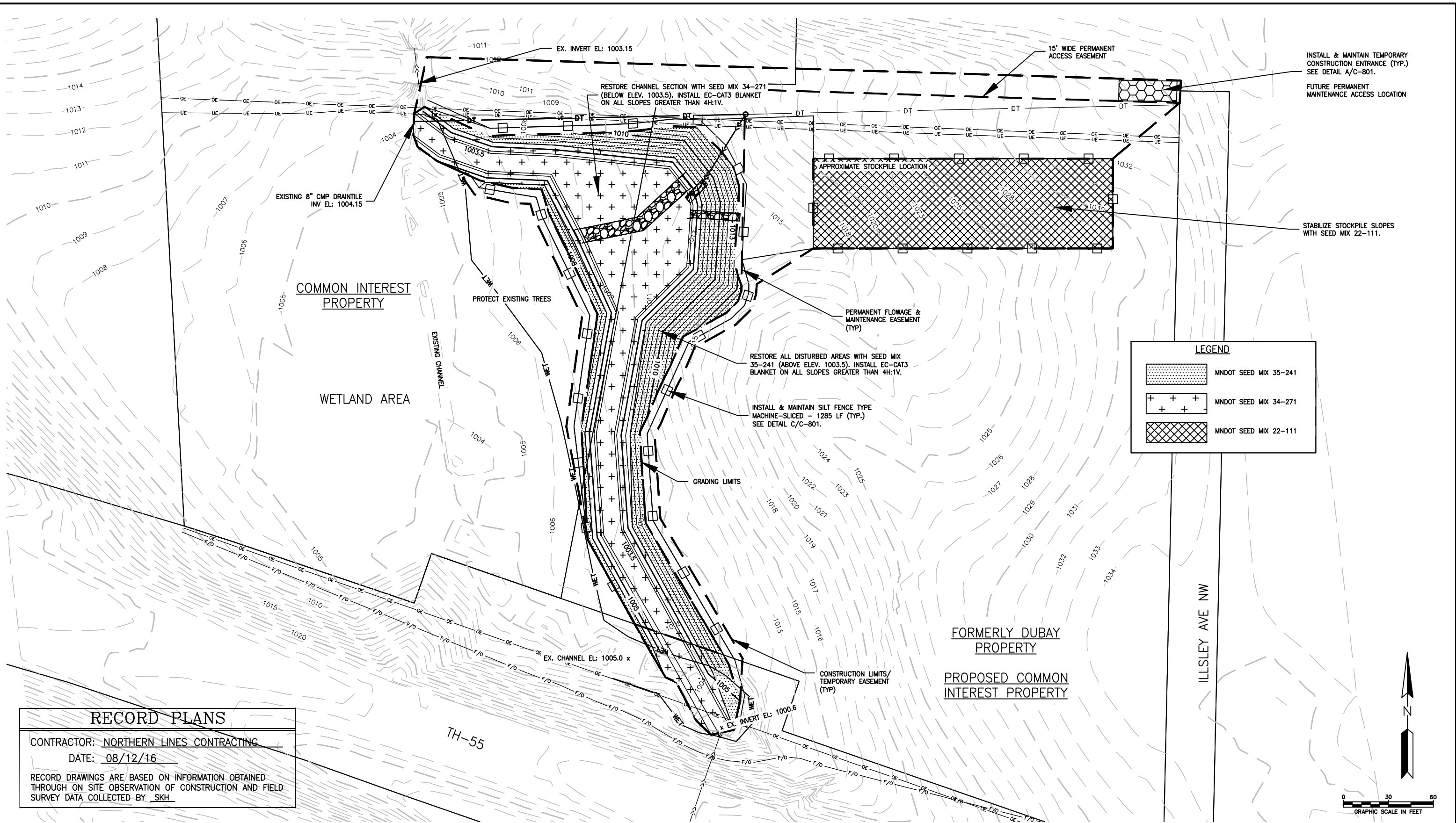
PRIME CONSULTANT

Wenck
Consulting Engineers
1500 PIONEER CREEK CENTER
MAPLE PLAIN, MN 55359
763-479-4200
763-479-4242

PROJECT TITLE
**CEDAR OLD HIGHWAY 55
STORMWATER IMPROVEMENTS**

**CLEARWATER RIVER
WATERSHED DISTRICT**

SWPPP PLAN			
DWN BY	CHK'D	APP'D	DWG DATE
KBM	RAK	KBM	DEC 2014
PROJECT NO.		SCALE	
0002-205		AS SHOWN	
SHEET NO.		REV NO.	
C-201		1	



RECORD PLANS

CONTRACTOR: NORTHERN LINES CONTRACTING

DATE: 08/12/16

RECORD DRAWINGS ARE BASED ON INFORMATION OBTAINED THROUGH ON SITE OBSERVATION OF CONSTRUCTION AND FIELD SURVEY DATA COLLECTED BY SKH

EROSION CONTROL NOTES

- ALL EXPOSED SOIL AREAS MUST BE STABILIZED AS SOON AS POSSIBLE TO LIMIT SOIL EROSION BUT IN NO CASE LATER THAN SEVEN (7) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED.
- RESTORE ALL DISTURBED AREAS ABOVE EL. 1003.5 WITH 4" TOPSOIL AS SPECIFIED.
- PERMANENT RESTORATION SHALL OCCUR AT THE EARLIEST POSSIBLE STAGE.
- ALL QUANTITIES ARE APPROXIMATE AND MAY VARY TO ALLOW COMPLETION OF WORK.
- PRIVATE UTILITIES ARE SHOWN IN GENERAL LOCATIONS. CONTRACTOR TO COORDINATE WITH PRIVATE UTILITY OWNERS PER GOPHER STATE ONE REQUIREMENTS.

REV	REVISION DESCRIPTION	DWN	APP	REV DATE
1	FOR BID	KBM	KBM	12/10/14
0	FOR REVIEW	KBM		12/5/14

SEAL

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PRINT NAME KEVIN B. MATTSO

SIGNATURE

DATE 12/10/14 LICENSE # 48386

PRIME CONSULTANT

Wenck

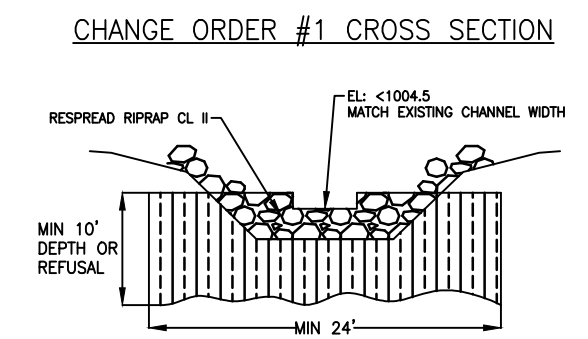
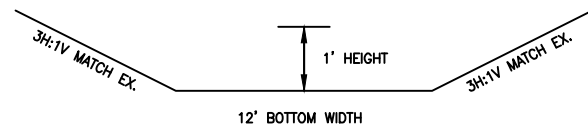
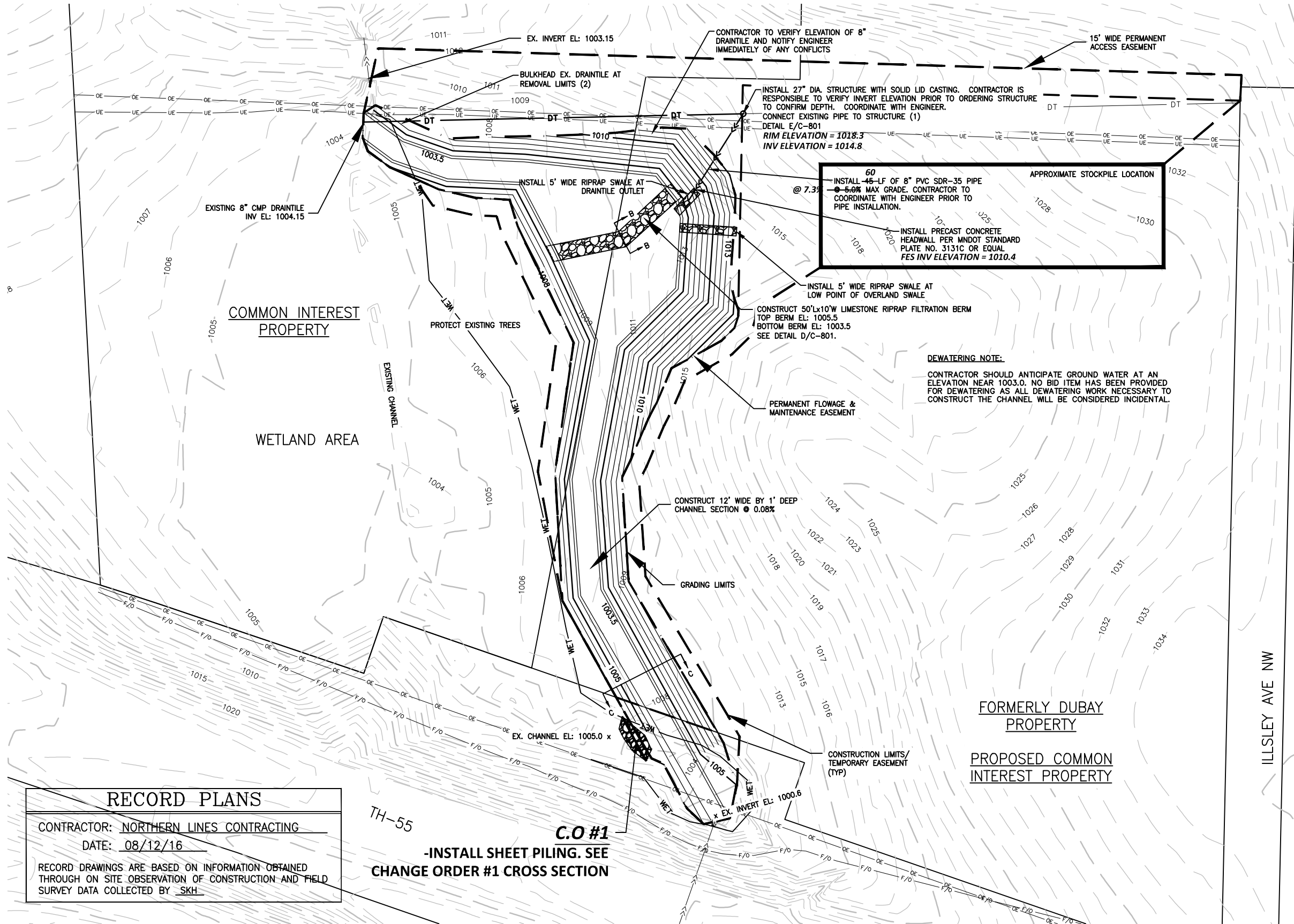
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PROJECT TITLE

CEDAR OLD HIGHWAY 55 STORMWATER IMPROVEMENTS

CLEARWATER RIVER WATERSHED DISTRICT

SHEET TITLE				
EROSION & SEDIMENT CONTROL PLAN				
DWN BY	CHK'D	APP'D	DWG DATE	DEC 2014
KBM	RAK	KBM	SCALE	AS SHOWN
PROJECT NO.	SHEET NO.			REV NO.
0002-205	C-202			1



RECORD PLANS

CONTRACTOR: NORTHERN LINES CONTRACTING
DATE: 08/12/16

RECORD DRAWINGS ARE BASED ON INFORMATION OBTAINED THROUGH ON SITE OBSERVATION OF CONSTRUCTION AND FIELD SURVEY DATA COLLECTED BY SKH

GENERAL NOTES

- SALVAGE AND REINSTALL ALL SIGNS AS DIRECTED BY ENGINEER (INCIDENTAL).
- ALL QUANTITIES ARE APPROXIMATE AND MAY VARY TO ALLOW COMPLETION OF WORK.
- PRIVATE UTILITIES ARE SHOWN IN GENERAL LOCATIONS. CONTRACTOR TO COORDINATE WITH PRIVATE UTILITY OWNERS PER GOPHER STATE ONE REQUIREMENTS.
- NOTIFY ENGINEER IMMEDIATELY OF ALL EXISTING SEWER AND WATER SERVICE CONFLICTS.
- CONTRACTOR TO STRIP AND SALVAGE EXISTING TOPSOIL.
- REVIEW ALL TREE REMOVALS WITH ENGINEER.

REV	REVISION DESCRIPTION	DWN	APP	REV DATE
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0	FOR REVIEW	KBM	KBM	12/5/14

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PRINT NAME	KEVIN B. MATTONSON
SIGNATURE	
DATE	12/10/14
LICENSE #	48386

PRIME CONSULTANT

Wenck

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Consulting Engineers

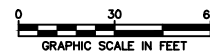
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MAPLE PLAIN, MN 55359

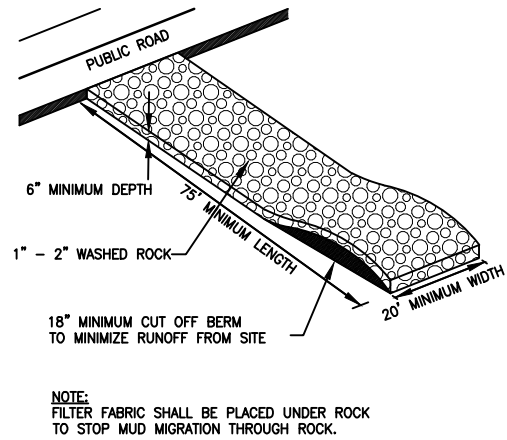
763-479-4200
763-479-4242

PROJECT TITLE
**CEDAR OLD HIGHWAY 55
STORMWATER IMPROVEMENTS**

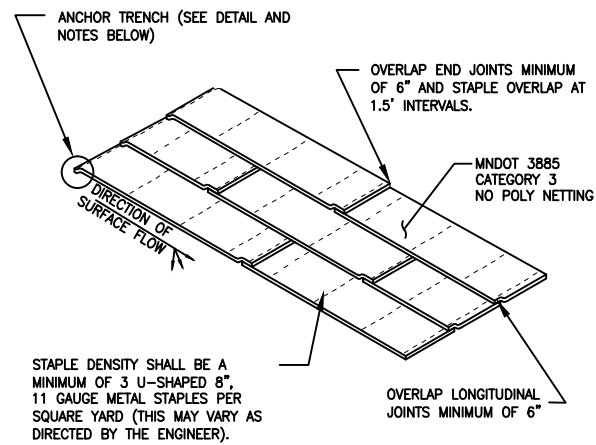
**CLEARWATER RIVER
WATERSHED DISTRICT**

SHEET TITLE				
GRADING PLAN				
DWN BY	CHK'D	APP'D	DWG DATE	DEC 2014
KBM	RAK	KBM	SCALE	AS SHOWN
PROJECT NO.	SHEET NO.			REV NO.
0002-205	C-301			1

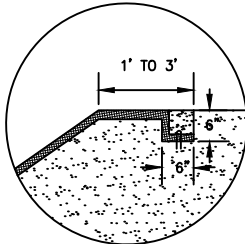




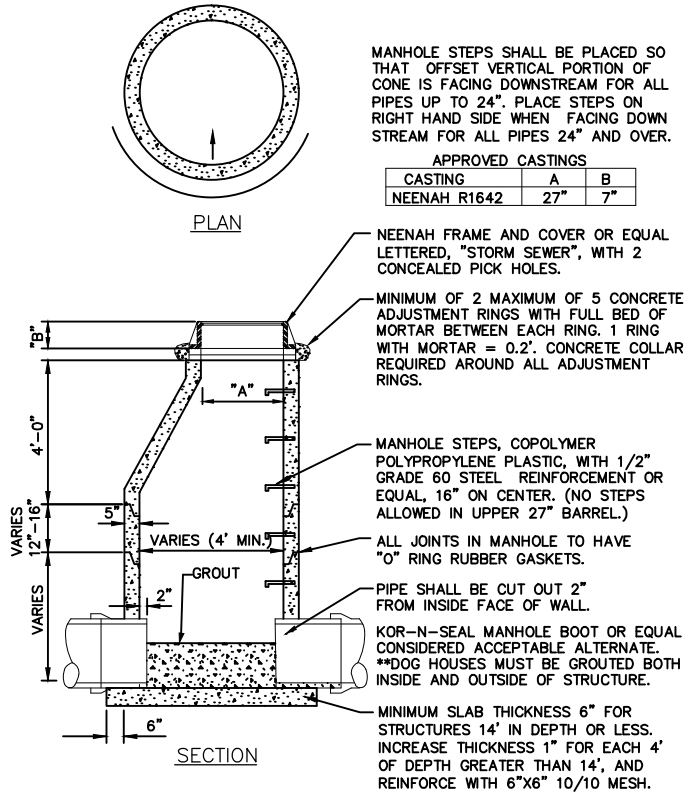
A TEMPORARY CONSTRUCTION ENTRANCE DETAIL



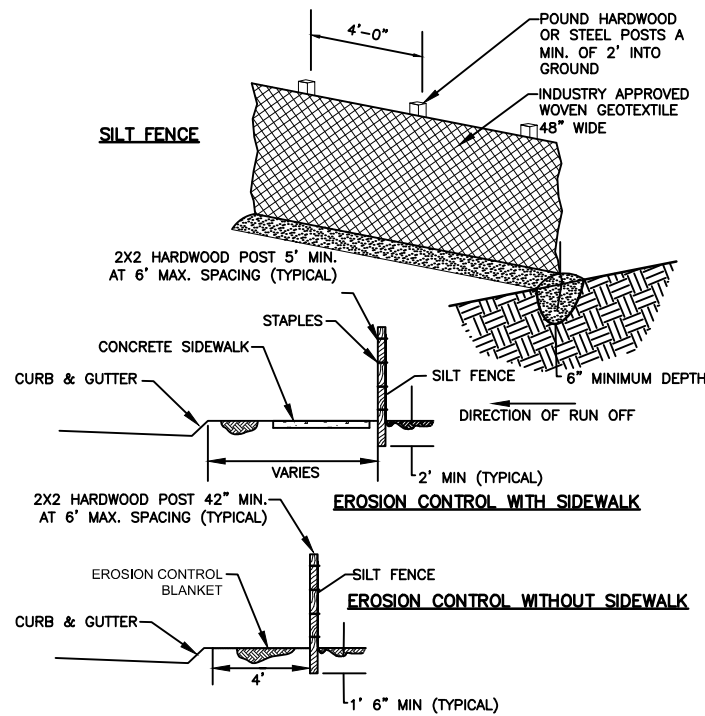
- ANCHOR TRENCH**
1. DIG 6" X 6" TRENCH
 2. LAY BLANKET IN TRENCH
 3. STAPLE AT 1.5' INTERVALS
 4. BACKFILL WITH NATURAL SOIL AND COMPACT
 5. BLANKET LENGTH SHALL NOT EXCEED 100' WITHOUT AN ANCHOR TRENCH



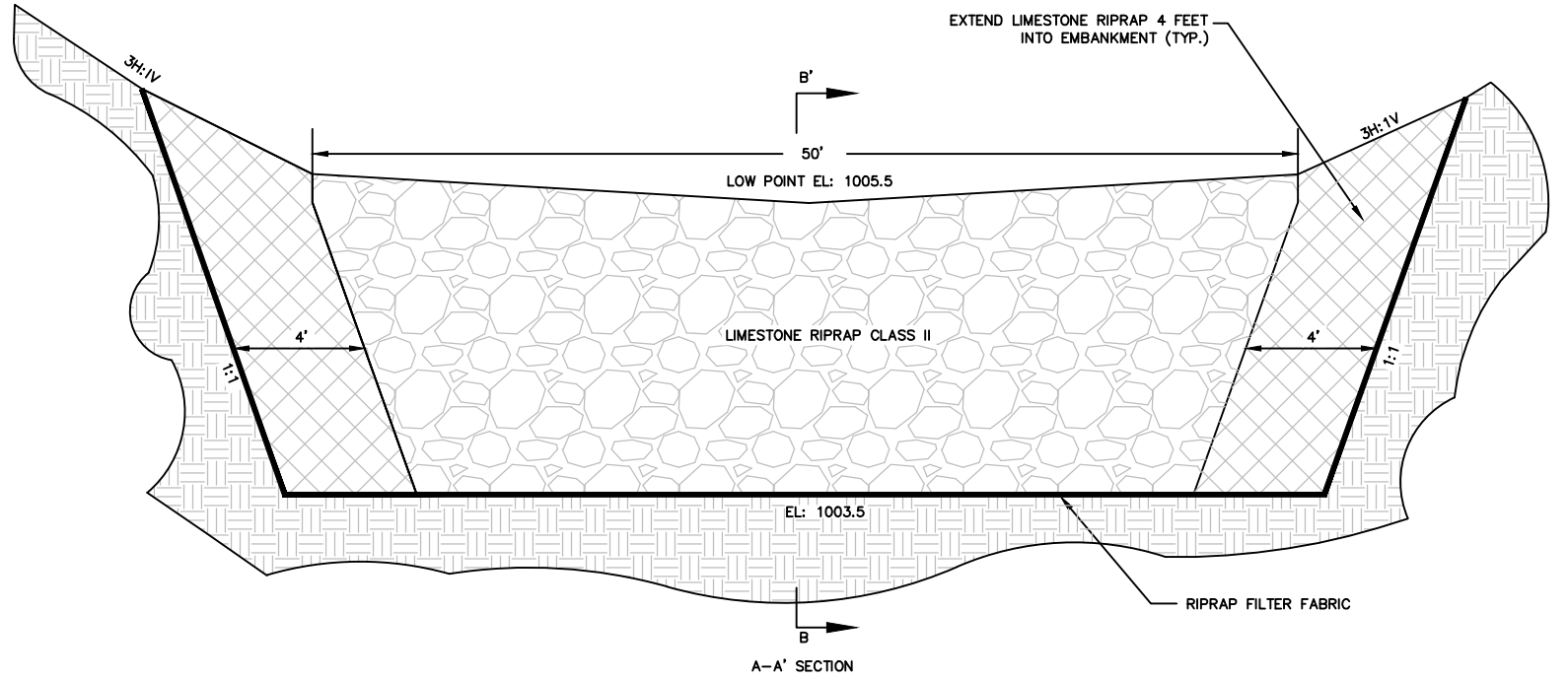
B EROSION CONTROL BLANKET DETAIL



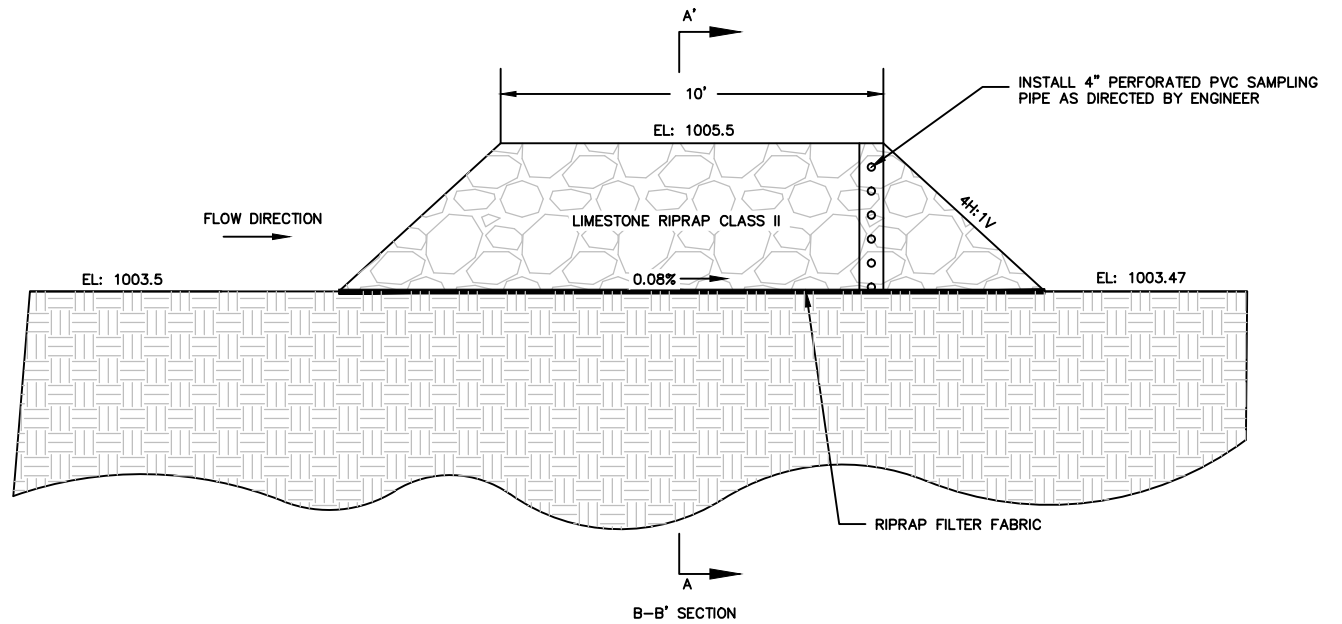
E STORM SEWER MANHOLE



C SILT FENCE DETAIL



D FILTRATION BERM DETAIL



RECORD PLANS	
CONTRACTOR: <u>NORTHERN LINES CONTRACTING</u>	
DATE: <u>08/12/16</u>	
RECORD DRAWINGS ARE BASED ON INFORMATION OBTAINED THROUGH ON SITE OBSERVATION OF CONSTRUCTION AND FIELD SURVEY DATA COLLECTED BY <u>SKH</u>	

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SIGNATURE	
DATE	12/10/14
LICENSE #	48386

PRIME CONSULTANT	
1800 PIONEER CREEK CENTER MAPLE PLAIN, MN 55359	
763-479-4200 763-479-4242	

PROJECT TITLE	
CEDAR OLD HIGHWAY 55 STORMWATER IMPROVEMENTS	
CLEARWATER RIVER WATERSHED DISTRICT	

SHEET TITLE			
DETAILS			
DWN BY	CHK'D	APP'D	DWG DATE
KBM	RAK	KBM	DEC 2014
PROJECT NO.		SCALE	
0002-205		AS SHOWN	
SHEET NO.		REV NO.	
C-801		1	