

Pipeline Construction, SWQ, & Best Management Practices

2011 North Dakota Storm Water & Pollution Control Conference
 April 5, 2011
 Gladstone Inn & Suites, Jamestown ND
 Dwayne Stenlund, MSc., CPESC
 Resource Professionals Alliance



Pipeline company to \$1.1M for violations in Wisconsin

- Associated Press - January 2, 2009 4:05 PM ET
- MADISON, Wis. (AP) - Wisconsin Attorney General J.B. Van Hollen says a company that installed a new oil pipeline across the state has agreed to pay \$1.1 million for environmental violations.
- Van Hollen said Friday the settlement with Houston-based Enbridge Energy Co. was related to work in and around wetlands, rivers and streams.
- The attorney general says the violations involved construction of new 32.1-mile pipeline between Superior and Delavan in 2007 and 2008. The pipeline is designed to carry 400,000 barrels of crude oil each day.
- Enbridge spokeswoman Denise Hamsher says some of the violations involved erosion controls that did not hold up during rain, causing streams to get polluted with mud. She says **Enbridge agrees there were 115 violations of permits designed to protect water quality.**
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Sustainable Construction



- “Providing for the needs of the present without detracting from the ability to fulfill the needs of the future”
- ASHRAE GreenGuide



Goal: Look like you were never there.

What is Green or ‘High-Performance’ Construction?

- One that achieves high performance over the full life cycle in the following areas:
 - Minimal energy consumption
 - Minimal atmospheric emissions
 - **Minimal discharge of harmful wastes**
 - **Minimal negative impacts of site ecosystems**



KEYS TO SUCCESS

- Teamwork
- Daily endeavor
 - Location within landscape
- Communication
- Implement
 - Strong details
 - Critical locations

Pre-construction meeting(s)

- Confined space plan
 - Topside vs pipe side planning
 - Dewatering/bypass
 - Slurry management program
 - MSDS of chemicals used/required
 - Sealing agents
 - Grout agents
 - Concrete
 - Washing agents
- Spill management program
- Refueling management program
- Temp disturbance stabilization program
- Inspection/records/documentation

Obtaining all Permits

- NPDES
- USACE
- Water Appropriations

Segment 1
(Jan. 4 - April 16)

WETLAND CROSSING METHOD	Existing Structure	Wetland/Stream	Wetland/Stream
Construction Access	Proposed Structure	Wetland	Stream
OR ROW Access	Existing Line to be Removed	Wetland Buffer	Wetland Protection
STOP - NO ACCESS	100' Proposed ROW	Wetland Protection	Wetland Protection
Wetland Crossing	Existing ROW (approx. 60' varies)	Wetland Protection	Wetland Protection
Wetland Crossing	Red Shouldered Hawk Habitat	Wetland Protection	Wetland Protection
Wetland Crossing	Wetland Protection	Wetland Protection	Wetland Protection

Minnesota Public Utilities Commission

ENBRIDGE

Minnesota Public Utilities Commission

ENBRIDGE

ENBRIDGE Energy Limited Partnership and

Enbridge Pipelines (Overhead Light) LLC.

Master Permit List for the Alberta Clipper and

Southern Lights Natural Gas Projects - REVISED November 17, 2008

Docket No. F07/P1-07-341

Page 1 of 8

Master Permit List for MPRD Docket No. PPL-07-361

MN Statute 76B2.0000

Permit No.	Permit Title	Permit Status
1.0	Wetland Crossing Permit	Issued
1.1	Wetland Crossing Permit	Issued
1.2	Wetland Crossing Permit	Issued
1.3	Wetland Crossing Permit	Issued
1.4	Wetland Crossing Permit	Issued
1.5	Wetland Crossing Permit	Issued
1.6	Wetland Crossing Permit	Issued
1.7	Wetland Crossing Permit	Issued
1.8	Wetland Crossing Permit	Issued
1.9	Wetland Crossing Permit	Issued
1.10	Wetland Crossing Permit	Issued
1.11	Wetland Crossing Permit	Issued
1.12	Wetland Crossing Permit	Issued
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1.14	Wetland Crossing Permit	Issued
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1.47	Wetland Crossing Permit	Issued
1.48	Wetland Crossing Permit	Issued
1.49	Wetland Crossing Permit	Issued
1.50	Wetland Crossing Permit	Issued

STORM WATER POLLUTION PREVENTION PLAN (SWPPP) NOTES

EROSION CONTROL NOTES AND DETAILS

1. THE EROSION CONTROL SUPERVISOR WILL WORK WITH THE ENGINEER TO DESIGN THE INSTALLATION, INSPECTION, AND MAINTENANCE OF THE EROSION PREVENTION AND SEDIMENT CONTROL, TEMP DISTURBANCE AND DUST CONTROL MEASURES DURING THE PROJECT.
2. THE EROSION CONTROL SUPERVISOR SHALL BE AVAILABLE 10 HOURS ON THE PROJECT WITHIN A 24 HOUR PERIOD.
3. THE EROSION CONTROL SUPERVISOR SHALL MAINTAINLY INSPECT THE ENTIRE CONSTRUCTION SITE DURING EACH DAY OF ACTIVE CONSTRUCTION. INSPECTIONS SHALL ALSO OCCUR WITHIN 24 HOURS AFTER EACH RAINFALL EVENT GREATER THAN 0.5" WITHIN THE PROJECT AREA. INSPECTIONS SHALL BE CONDUCTED WITHIN 24 HOURS OF THE RAINFALL EVENT.
4. ALL EROSION PREVENTION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED ON SITE DURING THE ENTIRE CONSTRUCTION PERIOD.
5. ALL EROSION PREVENTION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED ON SITE DURING THE ENTIRE CONSTRUCTION PERIOD.
6. ALL EROSION PREVENTION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED ON SITE DURING THE ENTIRE CONSTRUCTION PERIOD.
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9. ALL EROSION PREVENTION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED ON SITE DURING THE ENTIRE CONSTRUCTION PERIOD.
10. ALL EROSION PREVENTION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED ON SITE DURING THE ENTIRE CONSTRUCTION PERIOD.

LOCATION OF SWPPP MEASURES IN PROJECT PLAN

DESCRIPTION	TITLE	LOCATION
TEMPORARY EROSION CONTROL MEASURES	EROSION CONTROL PLAN	SHEET 18-18
PERMANENT EROSION CONTROL MEASURES	EROSION CONTROL PLAN	SHEET 18-18
TEMPORARY SEDIMENT CONTROL MEASURES	EROSION CONTROL PLAN	SHEET 18-18
PERMANENT SEDIMENT CONTROL MEASURES	EROSION CONTROL PLAN	SHEET 18-18
TEMPORARY DUST CONTROL MEASURES	EROSION CONTROL PLAN	SHEET 18-18
PERMANENT DUST CONTROL MEASURES	EROSION CONTROL PLAN	SHEET 18-18
TEMPORARY TEMP DISTURBANCE CONTROL MEASURES	EROSION CONTROL PLAN	SHEET 18-18
PERMANENT TEMP DISTURBANCE CONTROL MEASURES	EROSION CONTROL PLAN	SHEET 18-18
TEMPORARY DUST CONTROL MEASURES	EROSION CONTROL PLAN	SHEET 18-18
PERMANENT DUST CONTROL MEASURES	EROSION CONTROL PLAN	SHEET 18-18

NECESSARY TO MINIMIZE EROSION FROM DISTURBED AREAS AND DURING CONSTRUCTION OF THE PROJECT.

PHASE 1: EROSION CONTROL MEASURES

PHASE 2: SEDIMENT CONTROL MEASURES

PHASE 3: TEMP DISTURBANCE CONTROL MEASURES

PHASE 4: DUST CONTROL MEASURES

PHASE 5: TEMP DISTURBANCE CONTROL MEASURES

PHASE 6: DUST CONTROL MEASURES

PHASE 7: TEMP DISTURBANCE CONTROL MEASURES

PHASE 8: DUST CONTROL MEASURES

PHASE 9: TEMP DISTURBANCE CONTROL MEASURES

PHASE 10: DUST CONTROL MEASURES

PHASE 11: TEMP DISTURBANCE CONTROL MEASURES

PHASE 12: DUST CONTROL MEASURES

PHASE 13: TEMP DISTURBANCE CONTROL MEASURES

PHASE 14: DUST CONTROL MEASURES

PHASE 15: TEMP DISTURBANCE CONTROL MEASURES

PHASE 16: DUST CONTROL MEASURES

PHASE 17: TEMP DISTURBANCE CONTROL MEASURES

PHASE 18: DUST CONTROL MEASURES

PHASE 19: TEMP DISTURBANCE CONTROL MEASURES

PHASE 20: DUST CONTROL MEASURES

PHASE 21: TEMP DISTURBANCE CONTROL MEASURES

PHASE 22: DUST CONTROL MEASURES

PHASE 23: TEMP DISTURBANCE CONTROL MEASURES

PHASE 24: DUST CONTROL MEASURES

PHASE 25: TEMP DISTURBANCE CONTROL MEASURES

PHASE 26: DUST CONTROL MEASURES

PHASE 27: TEMP DISTURBANCE CONTROL MEASURES

PHASE 28: DUST CONTROL MEASURES

PHASE 29: TEMP DISTURBANCE CONTROL MEASURES

PHASE 30: DUST CONTROL MEASURES

PHASE 31: TEMP DISTURBANCE CONTROL MEASURES

PHASE 32: DUST CONTROL MEASURES

PHASE 33: TEMP DISTURBANCE CONTROL MEASURES

PHASE 34: DUST CONTROL MEASURES

PHASE 35: TEMP DISTURBANCE CONTROL MEASURES

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PHASE 53: TEMP DISTURBANCE CONTROL MEASURES

PHASE 54: DUST CONTROL MEASURES

PHASE 55: TEMP DISTURBANCE CONTROL MEASURES

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PHASE 57: TEMP DISTURBANCE CONTROL MEASURES

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PHASE 90: DUST CONTROL MEASURES

PHASE 91: TEMP DISTURBANCE CONTROL MEASURES

PHASE 92: DUST CONTROL MEASURES

PHASE 93: TEMP DISTURBANCE CONTROL MEASURES

PHASE 94: DUST CONTROL MEASURES

PHASE 95: TEMP DISTURBANCE CONTROL MEASURES

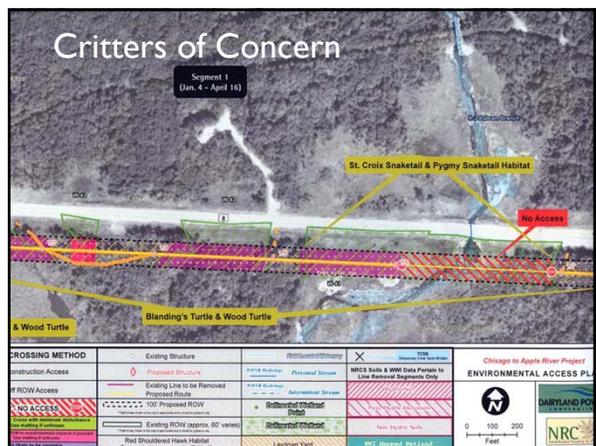
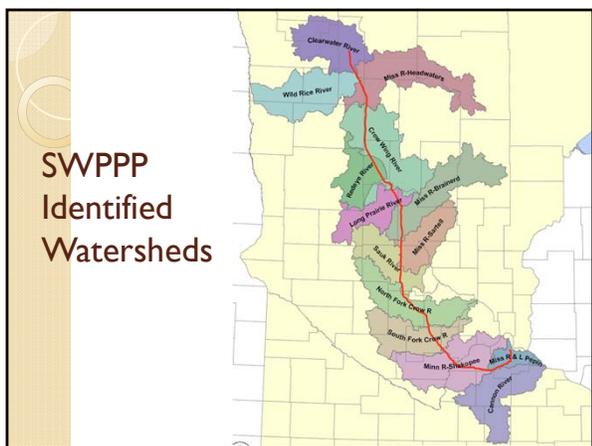
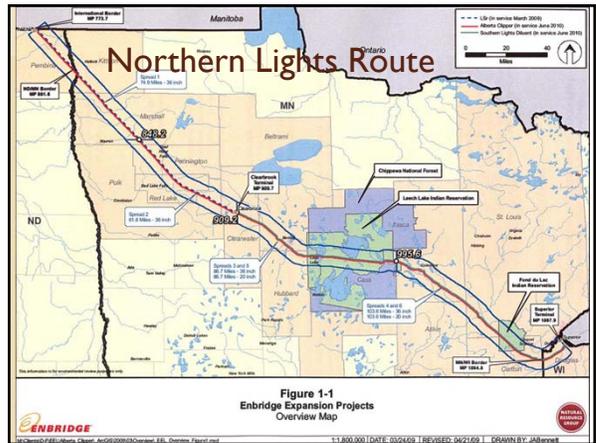
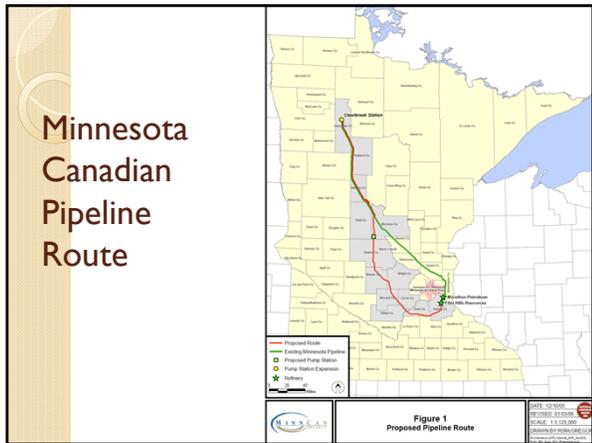
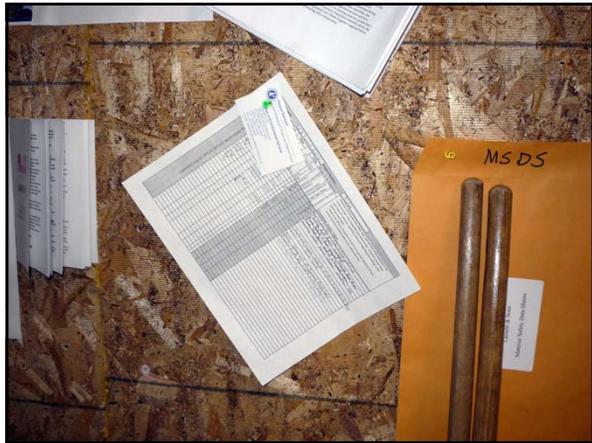
PHASE 96: DUST CONTROL MEASURES

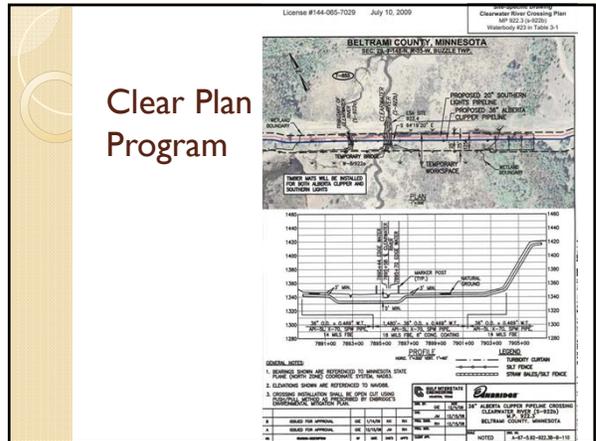
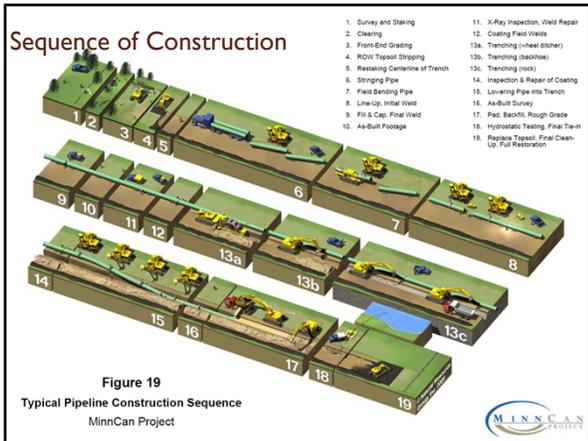
PHASE 97: TEMP DISTURBANCE CONTROL MEASURES

PHASE 98: DUST CONTROL MEASURES

PHASE 99: TEMP DISTURBANCE CONTROL MEASURES

PHASE 100: DUST CONTROL MEASURES





Seed Mixes

- Upland
- Steep slopes
- Wetlands
- Stream banks
- Pasture lands
- State lands
- Temp cover
- Active cropland
- CRP

Land Use	Seed	Compositions	Table	Minimum Seeding Periods
Upland Disturbed areas not to be seeded within 1 year	1	A. American Bluestem	A. 1	SD00
		B. Prairie Blue Stems	B. 1	Spring 01-01, Summer 11-01 (Disturb 11-01 Area only)
		C. Canada Wild Rye	C. 1	SD00
Upland Disturbed areas to be seeded within 1 year	2	A. American Bluestem	A. 2	SD00
		B. Prairie Blue Stems	B. 2	Spring 01-01, Summer 11-01 (Disturb 11-01 Area only)
		C. Canada Wild Rye	C. 2	SD00
Upland Disturbed areas to be seeded within 2 years	3	A. American Bluestem	A. 3	SD00
		B. Prairie Blue Stems	B. 3	Spring 01-01, Summer 11-01 (Disturb 11-01 Area only)
		C. Canada Wild Rye	C. 3	SD00
Wetlands Disturbed areas to be seeded within 1 year	4	A. American Bluestem	A. 4	SD00
		B. Prairie Blue Stems	B. 4	Spring 01-01, Summer 11-01 (Disturb 11-01 Area only)
		C. Canada Wild Rye	C. 4	SD00
		D. Hard Fescue	D. 4	SD00
		E. Orchard Grass	E. 4	SD00
		F. Red Top	F. 4	SD00
		G. Smooth Bromegrass	G. 4	SD00
		H. Tall Fescue	H. 4	SD00
		I. Timothy	I. 4	SD00
		J. Winter Hard Fescue	J. 4	SD00
		K. Kentucky Bluegrass	K. 4	SD00
		L. Tall Fescue	L. 4	SD00
		M. Smooth Bromegrass	M. 4	SD00
		N. Hard Fescue	N. 4	SD00
		O. Orchard Grass	O. 4	SD00
Wetlands Disturbed areas to be seeded within 2 years	5	A. American Bluestem	A. 5	SD00
		B. Prairie Blue Stems	B. 5	Spring 01-01, Summer 11-01 (Disturb 11-01 Area only)
		C. Canada Wild Rye	C. 5	SD00
		D. Hard Fescue	D. 5	SD00
		E. Orchard Grass	E. 5	SD00
		F. Red Top	F. 5	SD00
		G. Smooth Bromegrass	G. 5	SD00
		H. Tall Fescue	H. 5	SD00
		I. Timothy	I. 5	SD00
		J. Winter Hard Fescue	J. 5	SD00
		K. Kentucky Bluegrass	K. 5	SD00
		L. Tall Fescue	L. 5	SD00
		M. Smooth Bromegrass	M. 5	SD00
		N. Hard Fescue	N. 5	SD00
		Active Cropland Disturbed areas to be seeded within 1 year	6	A. American Bluestem
B. Prairie Blue Stems	B. 6			Spring 01-01, Summer 11-01 (Disturb 11-01 Area only)
C. Canada Wild Rye	C. 6			SD00
D. Hard Fescue	D. 6			SD00
E. Orchard Grass	E. 6			SD00
F. Red Top	F. 6			SD00
G. Smooth Bromegrass	G. 6			SD00
H. Tall Fescue	H. 6			SD00
I. Timothy	I. 6			SD00
J. Winter Hard Fescue	J. 6			SD00
K. Kentucky Bluegrass	K. 6			SD00
L. Tall Fescue	L. 6			SD00
M. Smooth Bromegrass	M. 6			SD00
N. Hard Fescue	N. 6			SD00
Active Cropland Disturbed areas to be seeded within 2 years	7			A. American Bluestem
		B. Prairie Blue Stems	B. 7	Spring 01-01, Summer 11-01 (Disturb 11-01 Area only)
		C. Canada Wild Rye	C. 7	SD00
		D. Hard Fescue	D. 7	SD00
		E. Orchard Grass	E. 7	SD00
		F. Red Top	F. 7	SD00
		G. Smooth Bromegrass	G. 7	SD00
		H. Tall Fescue	H. 7	SD00
		I. Timothy	I. 7	SD00
		J. Winter Hard Fescue	J. 7	SD00
		K. Kentucky Bluegrass	K. 7	SD00
		L. Tall Fescue	L. 7	SD00
		M. Smooth Bromegrass	M. 7	SD00
		N. Hard Fescue	N. 7	SD00



TO PREVENT STORMWATER FROM RUNNING OUT THE ENDS. AS CLEARING, GRUBBING AND EXCAVATION PROCEEDS, EROSION CONTROL MEASURES SHALL BE INSTALLED AS NECESSARY TO PREVENT EROSION AND OFFSITE SEDIMENT RUNOFF. EROSION CONTROL MEASURES SHALL BE MAINTAINED IN GOOD CONDITION BY THE CONTRACTOR UNTIL THE SITE HAS REACHED FINAL BENCHMARKS TO CONSTRUCT ROADWAYS, WHILE MAINTAINING ADEQUATE EROSION CONTROL IN ALL AREAS TO BE SEEDING.

MINIMUM 4" OF TOPSOIL FOR DISTURBED AREAS TO BE RE-VEGETATED. TOPSOIL SHALL BE STORED IN PILES TO BE RE-VEGETATED AND RE-SEEDING SHALL BE COMPLETED WITHIN 30 DAYS OF THE END OF CONSTRUCTION. SEEDING SHALL BE SEEDING (M-DOT MIX 190 @ 100#/AC OR MIX 270 @ 120#/AC) TO BE SEEDING.

THIS EROSION CONTROL PLAN AND ANY ADDITIONAL REQUIRED BASED ON MEANS, METHODS AND MATERIALS SHALL BE SUBMITTED TO THE DISTRICT ENGINEER FOR APPROVAL.

EROSION CONTROL RESPONSIBLE PARTIES:

DEVELOPER:
MOUNT DEVELOPMENT COMPANY
10400 VIKING DRIVE, SUITE 160
EDEN PRAIRIE, MN. 55344

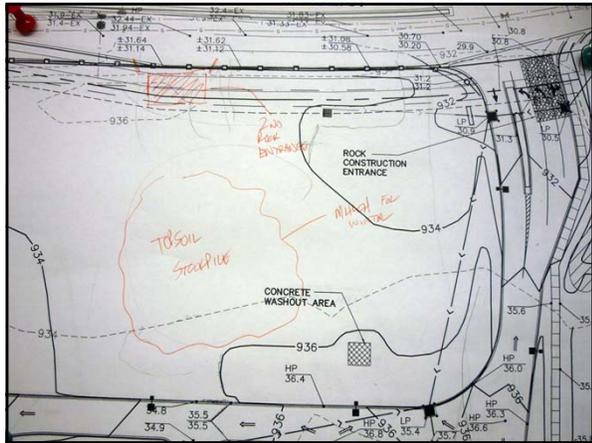
CONTRACTOR:
M.A. MORTENSON COMPANY
P.O. BOX 710
MINNEAPOLIS, MN 55440-0710

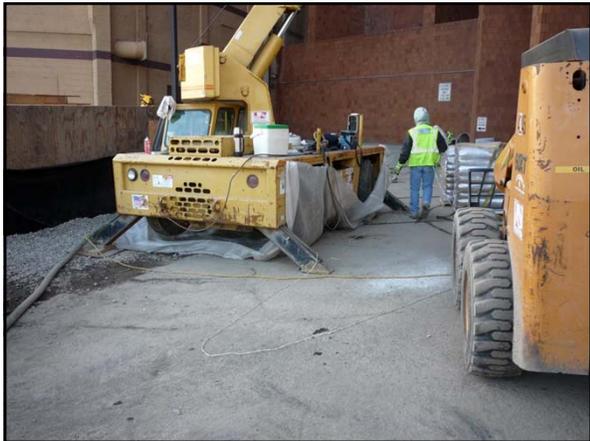
SWPPP INSPECTION:
DOUG BERGSTROM
BRAUN INTERTEC
CERTIFICATION FROM U. OF MN/MNDOT IN SWPPP DESIGN AND SITE MANAGEMENT

INSTALL AS SHOWN AND BORE AND

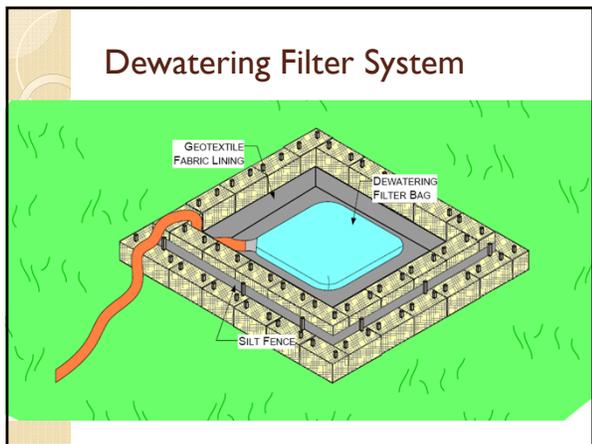
SWPPP March

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9 Drizzle	10 1/2" Rain 3/10th	11 2 1/2" Rain	12	13
14	15	16	17	18	19	20
21	22	23 Silt Fence Re-inspected	24	25	26	27
28	29	30	31			












ENBRIDGE

Equipment Cleaning Log

Form Completed By: _____
Date: _____
Time: _____
Location of Equipment: _____
Equipment Type: _____
Equipment ID: _____
(If different, enter ID number)

Cleaning Method: (check all that apply)

Scrape Down Steam Wash
 Blow Down (compressed air) Power/Pressure Wash (water)
 Other (Describe): _____

Comments: _____



