memo

651 Hale Avenue North Oakdale, Minnesota 55128 telephone: 651.770.8448 facsimile: 651.770.2552 www.eorinc.com

Date | January 5, 2010

To | BCWD Board of Managers

CC Karen Kill, BCWD Administrator

From | Ryan Fleming, PE

Regarding | Abandoned Street Car Line Repair

Background

Two breaches were found in the abandoned street car line adjacent the fen during a site visit in November of 2009. EOR completed a survey of the area in December from which to base a hydraulic analysis and construction drawings to repair the area.

Hydraulic Analysis

Currently, flow from the wetland south of the abandoned street car line flow through the breach and into the fen. The proposed construction design will raise the grade of the street car bed at the breach to match adjacent grades. This will result in water from the south wetland following the swale along the street car line; the path which it would have taken prior to the breach. While the breaches in the street car line were in place, all runoff from the wetland to the south has been into the fen, with zero flow through the swale to the east. Below is a table displaying the change in water quantity that will be diverted to the east along the street car line. Our analysis did not include an impact analysis to downstream landowners, though modeling shows that no additional water would be diverted for the majority of rainfall events.

Table 1: Model Results

24-Hour Rainfall	Runoff Rate [cfs]	Runoff Volume [cf]
2-year [2.8"]	0.0	0
5-year [3.6"]	0.4	9278.3
10-year [4.2"]	1.0	18557.6
100-year [5.9"]	5.2	50704.8

Key Project Components

- Common borrow fill material to build embankment
- Compost to provide rooting medium, fast vegetation establishment and erosion control
- Erosion control blanket and compost logs to contain sediment and for wetland protection
- Low compaction to promote root growth while adequate for runoff impediment
- Combination of seed mixes appropriate for street car embankment and wetland areas

Requested Action

Approve draft drawings and direct EOR to work with the administrator to secure bids to begin construction in late winter or early spring.

ENVIRONMENTALLY
SENSITIVE AREA
WETLAND (FEN)

COMPOST SOCK (2)
5 FOOT OFFSET

B

BREACH 1 CL

A'

10.9'

CONSTRUCTION
LIMITS

A

11.2'

BREACH 2 CL

STREET CAR LINE (ABANDONED)
(STA. REFERENCE KEATS AVE. N)

COMPOST SOCK (2)
5 FOOT OFFSET

ENVIRONMENTALLY
SENSITIVE AREA
WETLAND

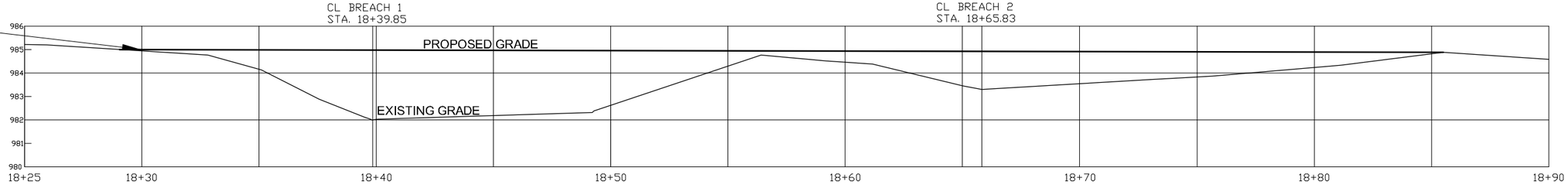
B'

SCALE IN FEET
0 2.5 5 10

N

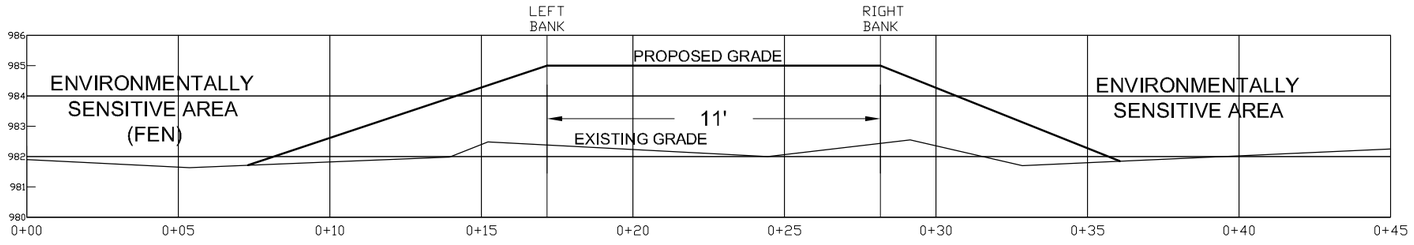
PLAN

FILL STREET CAR
BED BREACH 1 & 2 TO
MATCH GRADE AT
ELEVATION 985



PROFILE A

STREET CAR SIDE
SLOPE TO CONFORM
TO ADJACENT SLOPE



PROFILE B

NO	DATE	BY	REVISION
6			
5			
4			
3			
2			
1			

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.

RYAN M. FLEMING
DATE: 12/31/2009 LICENSE # 46211

SUBMISSION DATE: 12/31/2009

DESIGN BY RMF | DRAWN BY RMF

EOR PROJECT NO. 00041-0141

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water ecology community

BCWD
1380 WEST FRONTAGE RD, HWY 36

STILLWATER, MINNESOTA 55082

PLAN & PROFILE
FOR
FEN STREET CAR LINE REPAIR

GRANT, WASHINGTON, MINNESOTA

SHEET 2
OF
3 SHEETS

Plot Date: 01/06/2010
Drawing name: X:\Clients_WD\041_BCWD\0153_Fen_Trolly_Car_Line_Restoration\02_GIS\5_Fen_Trolley\dwg_02PLAN_PROFILE.dwg
Xrefs: _XHY_FEN2, WASH_CO_TOPO2, P_ERO2, _XS_PROFHFEN2, _XS_PNTSHFEN