

UNDERWATER BRIDGE INSPECTION REPORT

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STRUCTURE NO. 25572  
TWP 475 (KOHAN LANE)  
OVER  
WELLS CREEK  
DISTRICT 6 - GOODHUE COUNTY

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OCTOBER 1, 2012

PREPARED FOR THE  
MINNESOTA DEPARTMENT OF TRANSPORTATION

BY  
COLLINS ENGINEERS, INC.

JOB NO. 7423

MINNESOTA DEPARTMENT OF TRANSPORTATION  
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure unit inspected below water at Bridge No. 25572, Bent 1, was found to be in good condition with no defects of structural significance observed. The channel bottom appeared stable consisting of silty sand and riprap with no significant scour present. Timber debris was observed at the upstream nose of Bent 1 along with associated loss of coating on the adjacent pile due to abrasion.

INSPECTION FINDINGS:

- (A) The channel bottom material in the vicinity of the bridge consisted of silty sand allowing 3 inches of penetration and scattered 12 inch diameter riprap.
- (B) The upstream pile of Bent 1 exhibited 50 percent loss of coating due to abrasion.
- (C) A light to moderate timber debris accumulation was observed at the upstream nose of Bent 1, consisting of 12 inch diameter and smaller logs and branches, extending from the channel bottom up 5 feet.

RECOMMENDATIONS:

- (A) The inspection of the submerged substructure units of Structure No. 25572 can most likely be accomplished in the future without the use of a dive team. To perform the underwater inspection, a properly equipped qualified inspector will have to enter the water during a period of low flow. As channel bottom contours and depths of flow can change quickly, it is recommended that lead line soundings of water depth be taken along the upstream and downstream fascias to determine whether wading is possible prior to beginning the inspection. If conditions are unsafe for inspection by wading, then an underwater inspection with the use of a dive team will be required.
- (B) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of sixty (60) months.

**Inspection Team Leader**

*Roy Forsyth*

**Roy A. Forsyth, PE**  
**Date 6/30/2014 License# 49270**

Respectfully submitted,

**PROFESSIONAL ENGINEER**

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.

*Daniel G. Stromberg*  
\_\_\_\_\_  
*Daniel G. Stromberg*

Date 6/30/14 License # 21491

COLLINS ENGINEERS, INC.

*Daniel G. Stromberg*  
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*Daniel G. Stromberg*  
Registered Professional  
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION  
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 25572

Feature Crossed: Wells Creek

Feature Carried: TWP 475 (Kohn Lane)

Location: District 6 - Goodhue County

Bridge Description: The superstructure consists of three spans of timber stringers and deck, supported by two timber abutments and two steel shell encased pile bent piers.

2. INSPECTION DATA

Professional Engineer Diver: Roy A. Forsyth, P.E.

Dive Team: Jordan Furlan, P.E., Charles Euwema

Date: October 1, 2012

Weather Conditions: Sunny, 75° F

Underwater Visibility: 2.0 feet

Waterway Velocity: 1 ft/sec

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Bent 1.

General Shape: Bent 1 consists of five Cast-In-Place piles supporting a timber cap.

Maximum Water Depth at Substructure Inspected: Approximately 0.9 feet.

4. WATERLINE DATUM

Water Level Reference: The bottom of the pier cap at the upstream nose of Bent 1.

Water Surface: The waterline was approximately 11.3 feet below reference.

Assumed Waterline Elevation = 88.7

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 7

Item 61: Channel and Channel Protection: Code 6

Item 92B: Underwater Inspection: Code A/10/12

Item 113: Scour Critical Bridges: Code R

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

       Yes   X   No

6. STRUCTURAL ELEMENT CONDITION RATING

Item #	Element Description	Quantity	Unit	Conditions				
				1	2	3	4	5
382	Cast-In-Place Piling	5	EA	4	1			
361	Scour Smart Flag	1	EA	1				



Photograph 1. Overall View of Bridge, Looking Northwest.



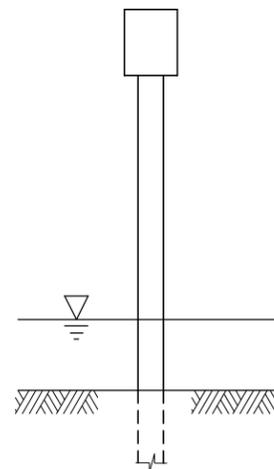
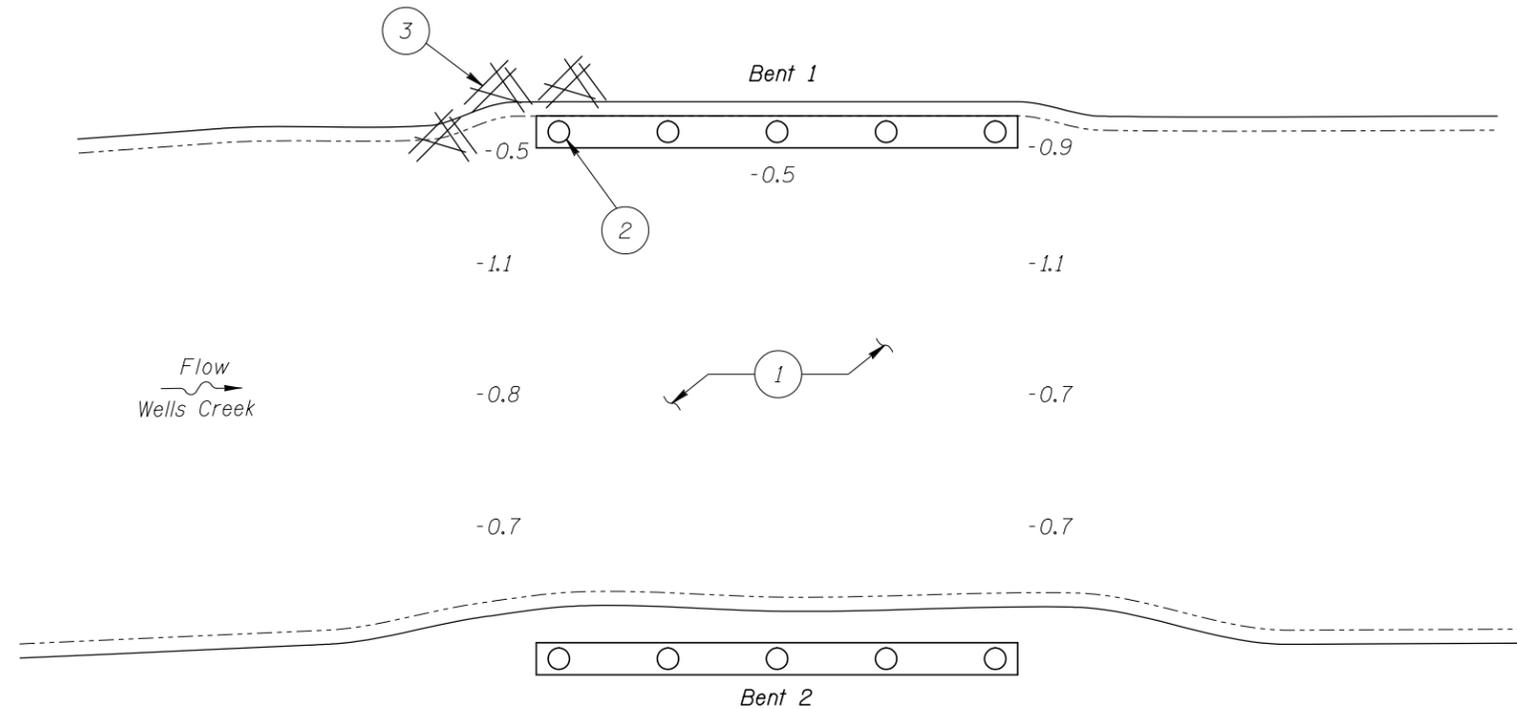
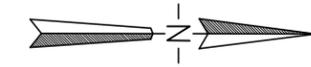
Photograph 2. View of Bent 1, Looking West.



Photograph 3. View of Bent 2, Looking Northeast.

INSPECTION NOTES

- 1 The channel bottom material in the vicinity of the bridge consisted of silty sand allowing 3 inches of penetration and scattered 12 inch diameter riprap.
- 2 The upstream pile of Bent 1 exhibited 50 percent loss of coating due to abrasion.
- 3 A light to moderate timber debris accumulation was observed at the upstream nose of Bent 1, consisting of 12 inch diameter and smaller logs and branches, extending from the channel bottom up 5 feet.



TYPICAL END VIEW OF PIERS

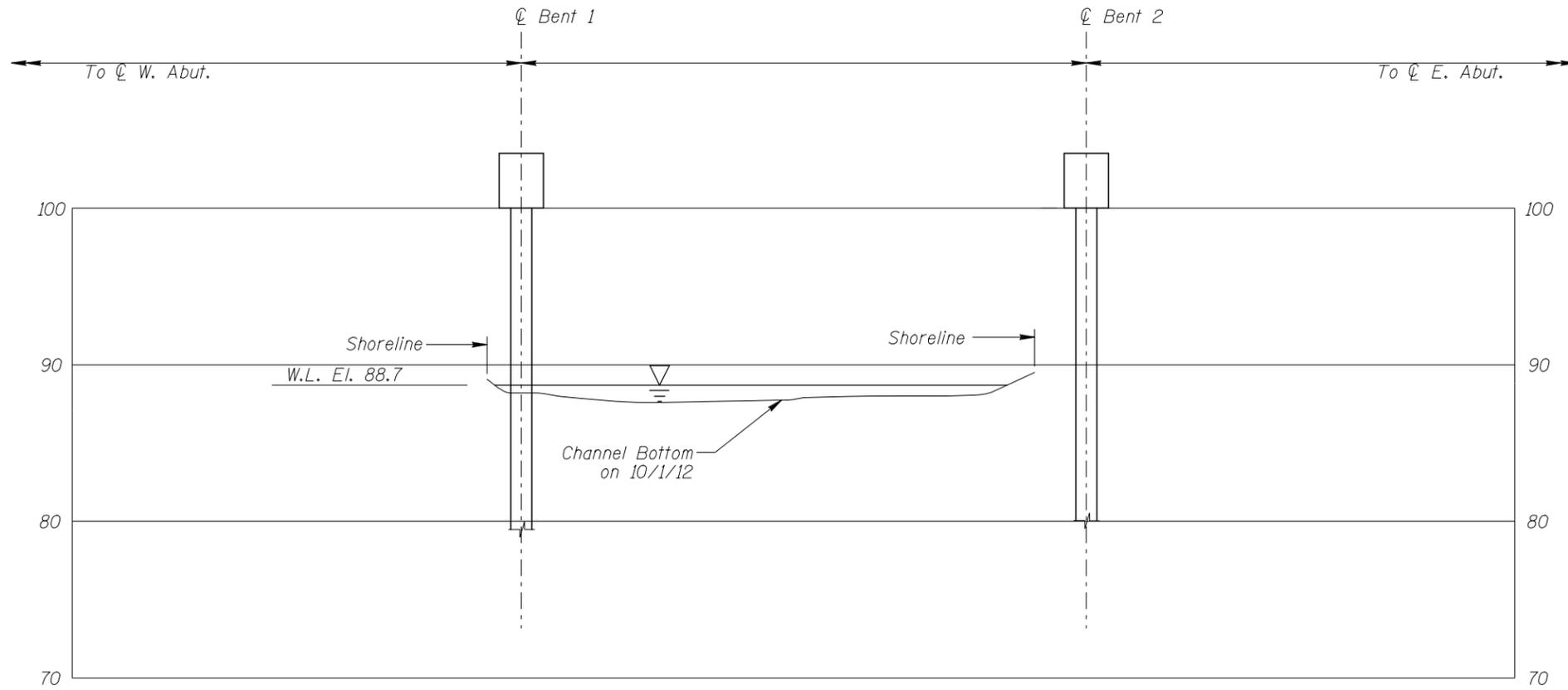
GENERAL NOTES:

1. Bent 1 was inspected underwater.
2. At the time of inspection on October 1, 2012 the waterline was located approximately 11.3 feet below the bottom of the pier cap at the upstream nose of Bent 1. No plans were available and a reference elevation of 100 was assumed. This corresponds with a waterline elevation of 88.7 feet.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.

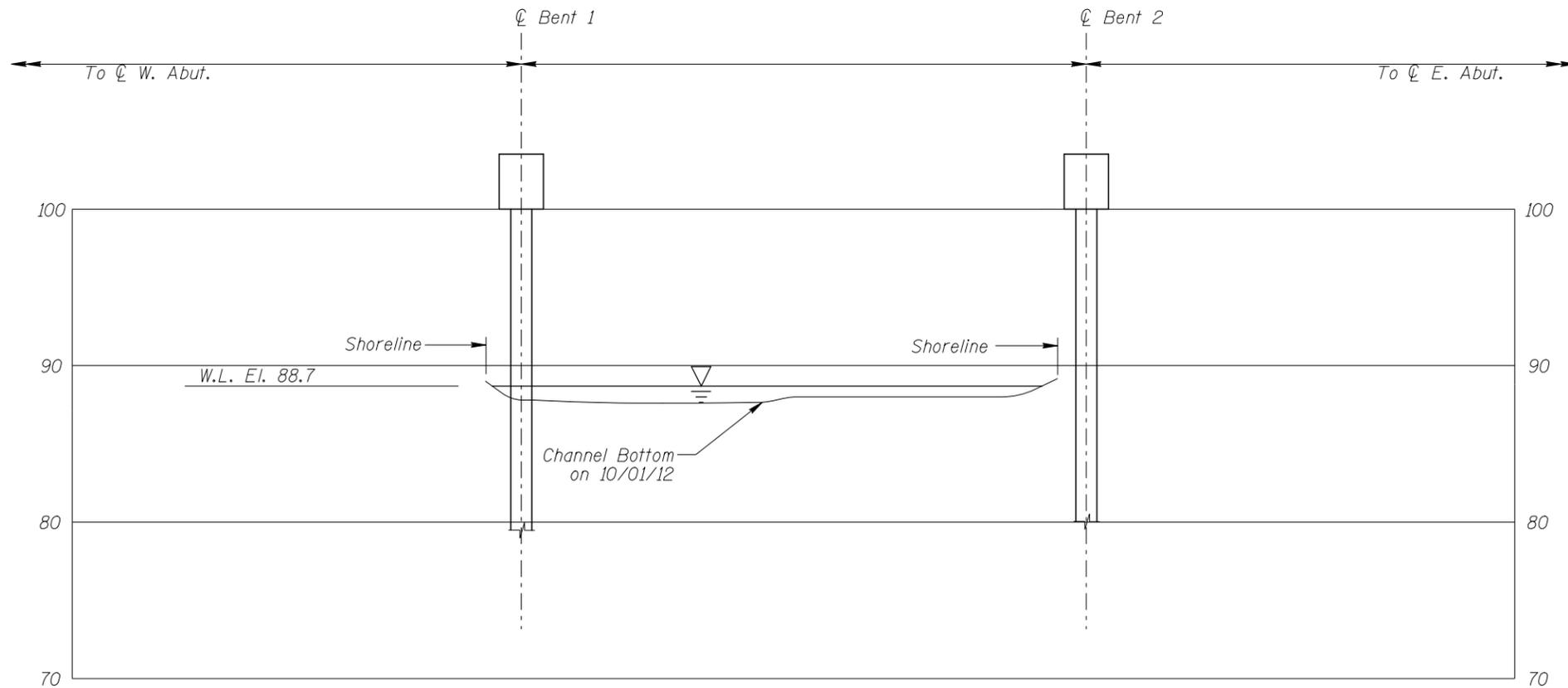
Legend

- 1.1 Sounding Depth from Waterline (10/01/12)
- Cast-In-Place Pile
- ⊗ Timber Debris

<b>MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION</b>		
STRUCTURE NO. 25572 OVER WELLS CREEK DISTRICT 6, GOODHUE COUNTY		
INSPECTION AND SOUNDING PLAN		
Drawn By: JTF	<b>COLLINS ENGINEERS</b> <small>123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Date: OCT. 2012
Checked By: DGS		Scale: NTS
Code: 742325572		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:

Refer to Figure 1 for General Notes.

<b>MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION</b>		
STRUCTURE NO. 25572 OVER WELLS CREEK DISTRICT 6, GOODHUE COUNTY		
UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
Drawn By: JTF	<b>COLLINS ENGINEERS</b> <small>123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Date: OCT. 2012
Checked By: DCS		Scale: 1"=10'
Code: 742325572		Figure No.: 2

MINNESOTA DEPARTMENT OF TRANSPORTATION  
OFFICE OF BRIDGES AND STRUCTURES  
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: October 1, 2012

ON-SITE TEAM LEADER: Roy A. Forsyth, P.E.

BRIDGE NO: 25572 WEATHER: Sunny, 75° F

WATERWAY CROSSED: Wells Creek

DIVING OPERATION: \_\_\_\_\_ SCUBA \_\_\_\_\_ SURFACE SUPPLIED AIR  
 OTHER Wading due to low water levels

PERSONNEL: Jordan Furlan, P.E., Charles Euwema

EQUIPMENT: Scraper, Lead Line, Sounding Pole, Probe Rod, Camera

TIME IN WATER: 2:40 P.M.

TIME OUT OF WATER: 2:55 P.M.

WATERWAY DATA: VELOCITY 1 ft/sec

VISIBILITY 2.0 feet

DEPTH 0.9 feet maximum at Bent 1.

ELEMENTS INSPECTED: Bent 1

REMARKS: Bent 1 was found to be in good condition with no defects of structural significance observed. The channel bottom appeared stable consisting of silty sand and riprap with no significant scour present. Timber debris was observed at the upstream nose of Bent 1 along with associated loss of coating on the adjacent pile due to abrasion.

FURTHER ACTION NEEDED: \_\_\_\_\_ YES  NO

The inspection of the submerged substructure units of Structure No. 25572 can most likely be accomplished in the future without the use of a dive team. To perform the underwater inspection, a properly equipped qualified inspector will have to enter the water during a period of low flow. As channel bottom contours and depths of flow can change quickly, it is recommended that lead line soundings of water depth be taken along the upstream and downstream fascias to determine whether wading is possible prior to beginning the inspection. If conditions are unsafe for inspection by wading, then an underwater inspection with the use of a dive team will be required.

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of sixty (60) months.

MINNESOTA DEPARTMENT OF TRANSPORTATION  
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 25572  
INSPECTORS Collins Engineers, Inc.  
ON-SITE TEAM LEADER Roy A. Forsyth, P.E.  
WATERWAY CROSSED Wells Creek

INSPECTION DATE October 1, 2012

NOTE: USE ALL APPLICABLE CONDITION DEFINITIONS AS DEFINED IN THE MINNESOTA RECORDING AND CODING GUIDE INCLUDING GENERAL, SUBSTRUCTURE, CHANNEL AND PROTECTION, AND CULVERTS AND WALL DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

UNIT REFERENCE NO.	UNIT DESCRIPTION	MAXIMUM DEPTH OF WATER	SUBSTRUCTURE					CHANNEL					GENERAL						
			PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER (BRACING)	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Bent 1	0.9'	7	N	N	7	N	7	N	N	7	6	6	N	7	N	N	N	N

\*UNDERWATER PORTION ONLY

REMARKS: Bent 1 was found to be in good condition with no defects of structural significance observed. The channel bottom appeared stable consisting of silty sand and riprap with no significant scour present. Timber debris was observed at the upstream nose of Bent 1 along with associated loss of coating on the adjacent pile due to abrasion.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO. USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.