

**DETAILED FISH PASSAGE ASSESSMENT SURVEY**

**7 SURVEYOR INFORMATION**

|            |          |            |
|------------|----------|------------|
| 7.1 Date:  | Time:    | 7.2 Agency |
| 7.3 Scope: | 7.4 Rod: | 7.5 Data:  |

**8 CROSSING INFORMATION**

| Type    | No. of Culverts or Bays | No. of Segments | Type per Log |
|---------|-------------------------|-----------------|--------------|
| Culvert |                         |                 |              |
| Bridge  |                         |                 |              |
| Other   |                         |                 |              |

**9 Active Channel Width**

9.1 Upstream Channel Widths: (1) \_\_\_\_\_ (2) \_\_\_\_\_ (3) \_\_\_\_\_  
 (4) \_\_\_\_\_ (5) \_\_\_\_\_

**10 TRASH RACK**

10.1 Is there a trash rack present at site?  
 Yes     No     Unknown

10.2 What is the distance upstream of trash rack from crossing?  
 \_\_\_\_\_(ft)

10.3 Rack condition during survey:  
 Clean     Full     Partially full     Bypassed by stream channel     Unknown

10.4 Flows at which trash rack is being bypassed:  
 Low flows     High flows     All flows     Unknown

**11 TAIL WATER CONTROL**

11.1 Natural Tailwater Control (Downstream of weirs if present):  
 No control point    Pool tail out    Bedrock    Large debris    Small debris    Unknown

11.2 Tailwater Substrate:  
 silt/clay    sand (<0.08")    gravel (0.08-2.5")    cobble (2.5-10")    boulder (>10")  
 bedrock    Unknown

**11.3 Tail Water Control Cross Section (Photograph Required with tape at cross section)**

| OBSERVATION | STATION<br>(0.1 ft) | BS<br>(+) | HI<br>(0.01 ft) | FS<br>(-) | ELEVATION<br>(0.01 ft) | NOTES |
|-------------|---------------------|-----------|-----------------|-----------|------------------------|-------|
| TWBFLT      |                     |           |                 |           |                        |       |
| TWACLT      |                     |           |                 |           |                        |       |
| TWCX1       |                     |           |                 |           |                        |       |
| TWCX2       |                     |           |                 |           |                        |       |
| TWCX3       |                     |           |                 |           |                        |       |
| TWCX4       |                     |           |                 |           |                        |       |
| TWCX5       |                     |           |                 |           |                        |       |
| TWCX6       |                     |           |                 |           |                        |       |
| TWCX7       |                     |           |                 |           |                        |       |
| TWCX8       |                     |           |                 |           |                        |       |
| TWCX9       |                     |           |                 |           |                        |       |
| TWCX10      |                     |           |                 |           |                        |       |
| TWCX11      |                     |           |                 |           |                        |       |
| TWCX12      |                     |           |                 |           |                        |       |
| TWACRT      |                     |           |                 |           |                        |       |
| TWBFRT      |                     |           |                 |           |                        |       |

**12 WEIR PRESENCE AND DESCRIPTION**

12.1 Downstream Weirs:  Yes  No      12.1 Number of Weirs: \_\_\_\_\_

12.2 Weir material and condition

| Weir | Material<br>(circle one) |     |         |      |            | Condition<br>(circle one) |      |      |
|------|--------------------------|-----|---------|------|------------|---------------------------|------|------|
|      | Concrete                 | Log | Boulder | Wood | Sheet Pile | Good                      | Fair | Poor |
|      | Concrete                 | Log | Boulder | Wood | Sheet Pile | Good                      | Fair | Poor |
|      | Concrete                 | Log | Boulder | Wood | Sheet Pile | Good                      | Fair | Poor |
|      | Concrete                 | Log | Boulder | Wood | Sheet Pile | Good                      | Fair | Poor |
|      | Concrete                 | Log | Boulder | Wood | Sheet Pile | Good                      | Fair | Poor |

Weir Description:

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| 12.3 WEIR CROSS SECTION NUMBER _____ OF _____ |                     |           |                 |           |                        |       |
|---|---------------------|-----------|-----------------|-----------|------------------------|-------|
| POINT   | STATION<br>(0.1 ft) | BS<br>(+) | HI<br>(0.01 ft) | FS<br>(-) | ELEVATION<br>(0.01 ft) | NOTES |
| WRBFLT  |                     |           |                 |           |                        |       |
| WRACLT  |                     |           |                 |           |                        |       |
| WRCX1   |                     |           |                 |           |                        |       |
| WRCX2   |                     |           |                 |           |                        |       |
| WRCX3   |                     |           |                 |           |                        |       |
| WRCX4   |                     |           |                 |           |                        |       |
| WRCX5   |                     |           |                 |           |                        |       |
| WRCX6   |                     |           |                 |           |                        |       |
| WRCX7   |                     |           |                 |           |                        |       |
| WRCX8   |                     |           |                 |           |                        |       |
| WRCX9   |                     |           |                 |           |                        |       |
| WRCX10  |                     |           |                 |           |                        |       |
| WRCX11  |                     |           |                 |           |                        |       |
| WRCX12  |                     |           |                 |           |                        |       |
| WRCX13  |                     |           |                 |           |                        |       |
| WRCX14  |                     |           |                 |           |                        |       |
| WRCX15  |                     |           |                 |           |                        |       |
| WRCX16  |                     |           |                 |           |                        |       |
| WRCX17  |                     |           |                 |           |                        |       |
| WRACRT  |                     |           |                 |           |                        |       |
| WRBFRT  |                     |           |                 |           |                        |       |

| 13 Longitudinal Profile  |                     |           |                 |           |                        |   |
|--|---------------------|-----------|-----------------|-----------|------------------------|---|
| (Enter thalweg from first resting pool upstream of culvert to slope break downstream of tailwater control) |                     |           |                 |           |                        |   |
| POINT  | STATION<br>(0.1 ft) | BS<br>(+) | HI<br>(0.01 ft) | FS<br>(-) | ELEVATION<br>(0.01 ft) | Station Description and<br>Water Depth                        |
|  |                     |           |                 |           |                        | TBM:  |
| USCHTW   |                     |           |                 |           |                        | TW Control of 1 <sup>st</sup> resting<br>habitat u/s of inlet |
| USCH1  |                     |           |                 |           |                        |   |
| USCH2  |                     |           |                 |           |                        |   |
| USCH3  |                     |           |                 |           |                        |   |
| USCH4  |                     |           |                 |           |                        |   |
| USAPR  |                     |           |                 |           |                        | UPSTREAM END OF<br>Inlet Apron/Riprap                         |
| INLINV   |                     |           |                 |           |                        | Inlet Depth   |
| OUTINV   |                     |           |                 |           |                        | Outlet Depth  |
| DSAPR  |                     |           |                 |           |                        | DS END OF Outlet<br>Apron/Riprap                              |
| DSMAX5   |                     |           |                 |           |                        | Max. Depth within 5' of<br>outlet                             |
| DSMAX  |                     |           |                 |           |                        | Max. Pool Depth   |
| TWC  |                     |           |                 |           |                        | TW Control Depth  |
| DSCH1  |                     |           |                 |           |                        | Downstream slope  |
| DSCH2  |                     |           |                 |           |                        |   |
| DSCH3  |                     |           |                 |           |                        |   |

| 14 FILL VOLUME |                     |           |                 |           |                        |      |
|----------------|---------------------|-----------|-----------------|-----------|------------------------|------|
| POINT          | STATION<br>(0.1 ft) | BS<br>(+) | HI<br>(0.01 ft) | FS<br>(-) | ELEVATION<br>(0.01 ft) | NOTE |
| FILINTOP1      |                     |           |                 |           |                        |      |
| FILINTOP2      |                     |           |                 |           |                        |      |
| FILINTOP3      |                     |           |                 |           |                        |      |
| FILOUTTOP1     |                     |           |                 |           |                        |      |
| FILOUTTOP2     |                     |           |                 |           |                        |      |
| FILINBOT1      |                     |           |                 |           |                        |      |
| FILINBOT2      |                     |           |                 |           |                        |      |
| FILOUTTOP1     |                     |           |                 |           |                        |      |
| FILOUTTOP2     |                     |           |                 |           |                        |      |
| FILOUTTOP3     |                     |           |                 |           |                        |      |
| FILOUTBOT1     |                     |           |                 |           |                        |      |
| FILOUTBOT2     |                     |           |                 |           |                        |      |

**15 SITE SKETCH (PLAN/PROFILE/DETAILS):**

| <b>16 SITE PICTURES</b> |                          |                |
|-------------------------|--------------------------|----------------|
| <b>Picture ID</b>       | <b>Picture type</b>      | <b>Comment</b> |
|                         | TWEC Transect (required) |                |
|                         |                          |                |
|                         |                          |                |
|                         |                          |                |
|                         |                          |                |
|                         |                          |                |

**17 EMBEDDED CULVERT** (Not including open arched culverts)

CULVERT (Bay) \_\_\_\_\_ of \_\_\_\_\_

17.1 Is the culvert embedded?     Yes    No    Unknown

17.2 If YES, is it embedded:    Fully (entire culvert length)    Partially    Unknown

17.3 Downstream End Depth: \_\_\_\_\_ (ft)    Upstream End Depth: \_\_\_\_\_ (ft)

17.4 Dominant Substrate:

- Silt/Clay    Sand (<0.08")    Gravel (0.08-2.5")    Cobble (2.5-10")    Boulder (>10")  
 Bedrock    Unknown

**18 Lower Embedded Cross Section Elevations**  
 (cross section along substrate at beginning of segment)

| POINT   | STATION<br>(0.1 ft) | BS<br>(+) | HI<br>(0.01 ft) | FS<br>(-) | ELEVATION<br>(0.01 ft) | Notes |
|---------|---------------------|-----------|-----------------|-----------|------------------------|-------|
| LEMBLT  | 0                   |           |                 |           |                        |       |
| LEMBX1  |                     |           |                 |           |                        |       |
| LEMBX2  |                     |           |                 |           |                        |       |
| LEMBX3  |                     |           |                 |           |                        |       |
| LEMBX4  |                     |           |                 |           |                        |       |
| LEMBX5  |                     |           |                 |           |                        |       |
| LEMBX6  |                     |           |                 |           |                        |       |
| LEMBX7  |                     |           |                 |           |                        |       |
| LEMBX8  |                     |           |                 |           |                        |       |
| LEMBX9  |                     |           |                 |           |                        |       |
| LEMBX10 |                     |           |                 |           |                        |       |
| LEMBRT  |                     |           |                 |           |                        |       |

**19 Upper Embedded Cross Section Elevations**  
 (cross section along substrate at end of segment)

| POINT   | STATION<br>(0.1 ft) | BS<br>(+) | HI<br>(0.01 ft) | FS<br>(-) | ELEVATION<br>(0.01 ft) | Notes |
|---------|---------------------|-----------|-----------------|-----------|------------------------|-------|
| UEMBLT  | 0                   |           |                 |           |                        |       |
| UEMBX1  |                     |           |                 |           |                        |       |
| UEMBX1  |                     |           |                 |           |                        |       |
| UEMBX2  |                     |           |                 |           |                        |       |
| UEMBX3  |                     |           |                 |           |                        |       |
| UEMBX4  |                     |           |                 |           |                        |       |
| UEMBX5  |                     |           |                 |           |                        |       |
| UEMBX6  |                     |           |                 |           |                        |       |
| UEMBX7  |                     |           |                 |           |                        |       |
| UEMBX8  |                     |           |                 |           |                        |       |
| UEMBX9  |                     |           |                 |           |                        |       |
| UEMBX10 |                     |           |                 |           |                        |       |
| UEMBRT  |                     |           |                 |           |                        |       |



**CULVERT /BRIDGE SEGMENT INFORMATION**

CULVERT (Bay) \_\_\_\_\_ of \_\_\_\_\_ SEGMENT # \_\_\_\_\_ of \_\_\_\_\_

**20 SEGMENT DESCRIPTION (DESCRIBE ANY UNIQUE FEATURES OF THE SEGMENT)**

\_\_\_\_\_

**21 SEGMENT SHAPE INFORMATION**

21.1 Shape:  Arch  Arch-Top Box  Box  Circular pipe  Pipe-arch  
 Elliptical pipe  Unknown

21.2 Diameter : \_\_\_\_\_(ft) 21.3 Height/Rise: \_\_\_\_\_(ft)

21.4 Width/Span: \_\_\_\_\_(ft) 21.5 Length : \_\_\_\_\_(ft)

21.6 Culvert segment shape description: (Describe uniqueness of shape)

\_\_\_\_\_

**22 MEAN LOW FLOW INDICATOR**

22.1 Stain line (rust) height \_\_\_\_\_ ft.

**23 INLET INFORMATION**

23.1 Type:  projecting  Headwall  Wingwall  Mitered  Flared end section  
 Segment connection  Unknown

23.2 Alignment (inlet to channel):  < 30°  30-45°  >45°

23.3 Inlet Description: (Describe apron type, shape, material and other features influencing fish passage) \_\_\_\_\_

23.4 INLET APRON:  Yes  No  Unknown

| <b>CULVERT /BRIDGE SEGMENT INFORMATION (continued)</b> |                                 |
|--|---------------------------------|
| <b>CULVERT</b> (Bay) _____ of _____                    | <b>SEGMENT #</b> _____ of _____ |

| <b>24 OUTLET INFORMATION</b> |
|------------------------------|
|------------------------------|

24.1 Type:     Projecting     Headwall     Wingwall     Mitered     Flared end section  
 Segment connection     Unknown

24.2 Alignment (outlet to channel):         < 30<sup>0</sup>         30-45<sup>0</sup>         >45<sup>0</sup>

24.3 Outlet Description: (Describe apron type, shape, material and other features influencing fish passage)

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22.4 Outlet Configuration

At stream grade     Freefall into pool     Cascade over riprap     Freefall to apron     Unknown

24.5 Fish Ladder:     Yes         No     Unknown

24.6 Outlet Apron:     Yes     No     Unknown

| <b>25 SEGMENT SIDE MATERIALS</b> |
|----------------------------------|
|----------------------------------|

25.1 Condition:     Good         Fair         Poor         Unknown

25.2 Condition Description \_\_\_\_\_

25.3 Side Material Description

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li><input type="checkbox"/> Annular (2.5" x 0.5")</li> <li><input type="checkbox"/> Annular (3" x 1")</li> <li><input type="checkbox"/> Annular (5 " x 1 "</li> <li><input type="checkbox"/> Annular (6" x 2")</li> <li><input type="checkbox"/> Annular (9" x 2.5")</li> <li><input type="checkbox"/> Helical (2.5" x 0.5")</li> <li><input type="checkbox"/> Helical (3" x 1")</li> <li><input type="checkbox"/> Helical (5 " x 1 "</li> <li><input type="checkbox"/> Helical (6" x 2")</li> <li><input type="checkbox"/> Helical (9" x 2.5")</li> <li><input type="checkbox"/> Cast Iron Pipe</li> <li><input type="checkbox"/> Clay Sewer Pipe</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> Composite Steel Spiral Rib Pipe</li> <li><input type="checkbox"/> Concrete</li> <li><input type="checkbox"/> Concrete Pipe (Cast-in-place)</li> <li><input type="checkbox"/> Concrete Pipe (Pre-cast)</li> <li><input type="checkbox"/> Plastic Pipe (Corrugated Interior)</li> <li><input type="checkbox"/> Plastic Pipe (Smooth Interior)</li> <li><input type="checkbox"/> Spiral Rib Metal Pipe (0.75" (W) x 0.75" (D) @ 7.5" o/c)</li> <li><input type="checkbox"/> Spiral Rib Metal Pipe (0.75" (W) x 1" (D) @ 9" o/c)</li> <li><input type="checkbox"/> Spiral Rib Metal Pipe (0.75" (W) x 1" (D) @ 9" o/c)</li> <li><input type="checkbox"/> Steel Pipe, Ungalvanized</li> <li><input type="checkbox"/> Structural Plate</li> <li><input type="checkbox"/> Other: _____</li> </ul> |
|---|--|

| <b>CULVERT / BRIDGE SEGMENT INFORMATION</b> |                                 |
|---|---------------------------------|
| <b>CULVERT</b> (Bay) _____ of _____         | <b>SEGMENT #</b> _____ of _____ |

| <b>26 SEGMENT BOTTOM/LINING MATERIAL</b> |
|--|
|--|

26.1 Condition:    Good                       Fair                       Poor                       Unknown

26.2 Condition Description: \_\_\_\_\_

26.3 Bottom/Lining Material Description

- |   |  |
|---|--|
| <input type="checkbox"/> Same as segment material<br><input type="checkbox"/> Annular (2.5" x 0.5")<br><input type="checkbox"/> Annular (3" x 1")<br><input type="checkbox"/> Annular (5 " x 1 "<br><input type="checkbox"/> Annular (6" x 2")<br><input type="checkbox"/> Annular (9" x 2.5")<br><input type="checkbox"/> Helical (2.5" x 0.5")<br><input type="checkbox"/> Helical (3" x 1")<br><input type="checkbox"/> Helical (5 " x 1 "<br><input type="checkbox"/> Helical (6" x 2")<br><input type="checkbox"/> Helical (9" x 2.5")<br><input type="checkbox"/> Cast Iron Pipe<br><input type="checkbox"/> Clay Sewer Pipe<br><input type="checkbox"/> Composite Steel Spiral Rib Pipe<br><input type="checkbox"/> Concrete | <input type="checkbox"/> Concrete Pipe (Cast-in-place)<br><input type="checkbox"/> Concrete Pipe (Pre-cast)<br><input type="checkbox"/> Plastic Pipe (Corrugated Interior)<br><input type="checkbox"/> Plastic Pipe (Smooth Interior)<br><input type="checkbox"/> Spiral Rib Metal Pipe (0.75" (W) x 0.75" (D) @ 7.5" o/c)<br><input type="checkbox"/> Spiral Rib Metal Pipe (0.75" (W) x 1" (D) @ 9" o/c)<br><input type="checkbox"/> Spiral Rib Metal Pipe (0.75" (W) x 1" (D) @ 9" o/c)<br><input type="checkbox"/> Steel Pipe, Ungalvanized<br><input type="checkbox"/> Structural Plate<br><input type="checkbox"/> Bitumous Coating<br><input type="checkbox"/> Plastic<br><input type="checkbox"/> Grouted Rock<br><input type="checkbox"/> Natural Substrate<br><br><input type="checkbox"/> Other : _____ |
|---|--|

| <b>27 CULVERT SEGMENT RETROFIT</b> |
|------------------------------------|
|------------------------------------|

27.1 Retrofit type:    none             corner baffles             gravel retention weirs  
 notched weirs     offset baffles     ramp baffle     Unknown

27.2 Condition:    Good             Fair             Poor             Non-Functional     Unknown

27.3 Outlet Sill (inside culvert at outlet):     Yes             No             Unknown

| CULVERT/ <b>BRIDGE</b> SEGMENT INFORMATION (continued) |                          |
|--|--------------------------|
| CULVERT ( <b>Bay</b> ) _____ of _____                  | SEGMENT # _____ of _____ |

| 28 Segment Profile   |                     |           |                 |           |                        |                      |
|--|---------------------|-----------|-----------------|-----------|------------------------|----------------------|
| (Enter thalweg from first inlet invert to invert at segment end) |                     |           |                 |           |                        |                      |
| Point  | Station<br>(0.1 ft) | BS<br>(+) | HI<br>(0.01 ft) | FS<br>(-) | Elevation<br>(0.01 ft) | Notes                |
| TBM  |                     |           |                 |           |                        | TBM:                 |
| USSEGINV   |                     |           |                 |           |                        | Segment inlet depth  |
| USCH2  |                     |           |                 |           |                        |                      |
| USCH3  |                     |           |                 |           |                        |                      |
| USCH4  |                     |           |                 |           |                        |                      |
| DSSEGINV   |                     |           |                 |           |                        | Segment Outlet Depth |