

# Susitna-Watana Hydroelectric Project Document

## ARLIS Uniform Cover Page

|                                                                                                                                                                                                                                                                                                                                           |  |                                                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------|
| <b>Title:</b><br><br>Fish and aquatics instream flow study (8.5) : Initial study report.<br>Appendices D-F                                                                                                                                                                                                                                |  | <b>SuWa 207</b>                                      |
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| <b>Notes:</b><br>Contents: appendix D. GINA initial study report 8.5 data files -- appendix E. Tributary gaging site schematics -- appendix F. Tributary gaging representative site photos.<br><br>The following parts of Section 8.5 appear in separate files: Main report ; Figures ; Appendices A-C ; Appendices D-F ; Appendices G-I. |  |                                                      |

All reports in the Susitna-Watana Hydroelectric Project Document series include an ARLIS-produced cover page and an ARLIS-assigned number for uniformity and citability. All reports are posted online at <http://www.arlis.org/resources/susitna-watana/>



APPENDIX D: GINA INITIAL STUDY REPORT 8.5 DATA FILES

APPENDIX E: TRIBUTARY GAGING SITE SCHEMATICS

APPENDIX F: TRIBUTARY GAGING REPRESENTATIVE SITE PHOTOS

**Susitna-Watana Hydroelectric Project**  
**(FERC No. 14241)**

**Fish and Aquatics Instream Flow Study (8.5)**

**Appendix D**  
**GINA Initial Study Report 8.5 Data Files**

**Initial Study Report**

Prepared for

Alaska Energy Authority



Prepared by

R2 Resource Consultants, Inc.

February 2014 Draft

The following data files are available on the Geographic Information Network of Alaska (GINA) at <http://gis.suhydro.org/reports/isr>.

**Table 1. Initial Study Report Data Files for Fish and Aquatics Instream Flow Study 8.5.**

| Section    | Data File Name                                                  | Description                                                                                              |
|------------|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| 5.3        |                                                                 |                                                                                                          |
| Appendix C | ISR_8_5_IFS_2013FocusAreaMeasurements.xlsx                      | 2013 ADCP measurements (including streamflow and velocity) at Focus Areas                                |
| 5.3        | ISR_8_5_IFS_2013TributaryMeasurements.xlsx                      | 2013 streamflow and staff gage measurements at tributary sites                                           |
| 5.3        | ISR_8_5_IFS_2013TributaryGagingLocations.xlsx                   | Tributary gaging locations                                                                               |
| 5.3        | /8_5_ESS_Surface_Water_Station_Data/8_5_Air_Temperature         | Folder containing surface water station air temperature data files                                       |
| 5.3        | /8_5_ESS_Surface_Water_Station_Data/8_5_Continuous_Water_Levels | Folder containing surface water station water level data files                                           |
| 5.3        | /8_5_ESS_Surface_Water_Station_Data/8_5_Met_Data                | Folder containing surface water station meteorological data files                                        |
| 5.3        | /8_5_ESS_Surface_Water_Station_Data/8_5_Water_Temperature       | Folder containing surface water station water temperature data files                                     |
| 5.4        | ISR_8_5_IFS_2013FlowRoutingTrans.xlsx                           | 2013 flow routing transect locations                                                                     |
| 5.4        | ISR_8_5_IFS_2012FlowRoutingTrans.shp                            | 2012 flow routing transect locations                                                                     |
| 5.4        | ISR_8_5_IFS_2012&2013Q-WSE-BathymetryMeasurements.xlsx          | 2012 and 2013 Q and water surface elevation measurements                                                 |
| 5.5        | ISR_8_5_IFS_WinterSiteLocations.xlsx                            | Winter site locations                                                                                    |
| 5.5        | ISR_8_5_IFS_WinterSpotWQ.xlsx                                   | Winter spot water quality data                                                                           |
| 5.5        | ISR_8_5_IFS_WinterContinuousDO.xlsx                             | Winter continuous dissolved oxygen data                                                                  |
| 5.5        | ISR_8_5_IFS_WinterContinuousTemp.xlsx                           | Winter continuous temperature data                                                                       |
| 5.5        | ISR_8_5_IFS_WinterContinuousStage.xlsx                          | Winter continuous stage data                                                                             |
| 5.5        | ISR_8_5_IFS_HSC_CurveData.xlsx                                  | Habitat suitability criteria (HSC) curve data                                                            |
| 5.5        | ISR_8_5_IFS_HSC_SiteLocations.xlsx                              | Habitat suitability criteria (HSC) site locations                                                        |
| 10         | ISR_8_5_IFS_FocusAreaExtents.shp                                | Focus Area upper and lower extents                                                                       |
| 10         | ISR_8_5_IFS_PRM_Route.shp                                       | Project River Mile (PRM) GIS route                                                                       |
| Appendix I | ISR_8_5_IFS_2013_QC3_LowerRiverDischarge.xlsx                   | Discharge measurements at IFS fish habitat transects for the lower river sites                           |
| Appendix I | ISR_8_5_IFS_2013_HEC-RAS_Model.xlsx                             | List of HEC-RAS models used to support the report                                                        |
| Appendix I | ISR_8_5_IFS_2013_PRM97_HEC-RAS_ModelFiles.zip                   | HEC-RAS model file for PRM 97 site                                                                       |
| Appendix I | ISR_8_5_IFS_2013_BirchCreek_HEC-RAS_ModelFiles.zip              | HEC-RAS model file for Birch Creek site                                                                  |
| Appendix I | ISR_8_5_IFS_2013_97Transect.shp                                 | Transects based on Bathymetry and RTK data and extended to high ground on both banks at PRM 97 site      |
| Appendix I | ISR_8_5_IFS_2013_BCTransect.shp                                 | Transects based on Bathymetry and RTK data and extended to high ground on both banks at Birch Creek site |
| Appendix I | ISR_8_5_IFS_2013_QC3_97TransectElev.shp                         | Elevation points along transects at PRM 97 site                                                          |
| Appendix I | ISR_8_5_IFS_2013_QC3_97TransectSubstr.shp                       | Substrate information derived from transect substrate survey at PRM 97 site                              |
| Appendix I | ISR_8_5_IFS_2013_QC3_BCTransectElev.shp                         | Elevation points along transects at Birch Creek site                                                     |
| Appendix I | ISR_8_5_IFS_2013_QC3_BCTransectSubstr.shp                       | Substrate information derived from transect substrate survey at Birch Creek site                         |

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**Fish and Aquatics Instream Flow Study (8.5)**

**Appendix E**  
**Tributary Gaging Site Schematics**

**Initial Study Report**

Prepared for

Alaska Energy Authority



**SUSITNA-WATANA HYDRO**

*Clean, reliable energy for the next 100 years.*

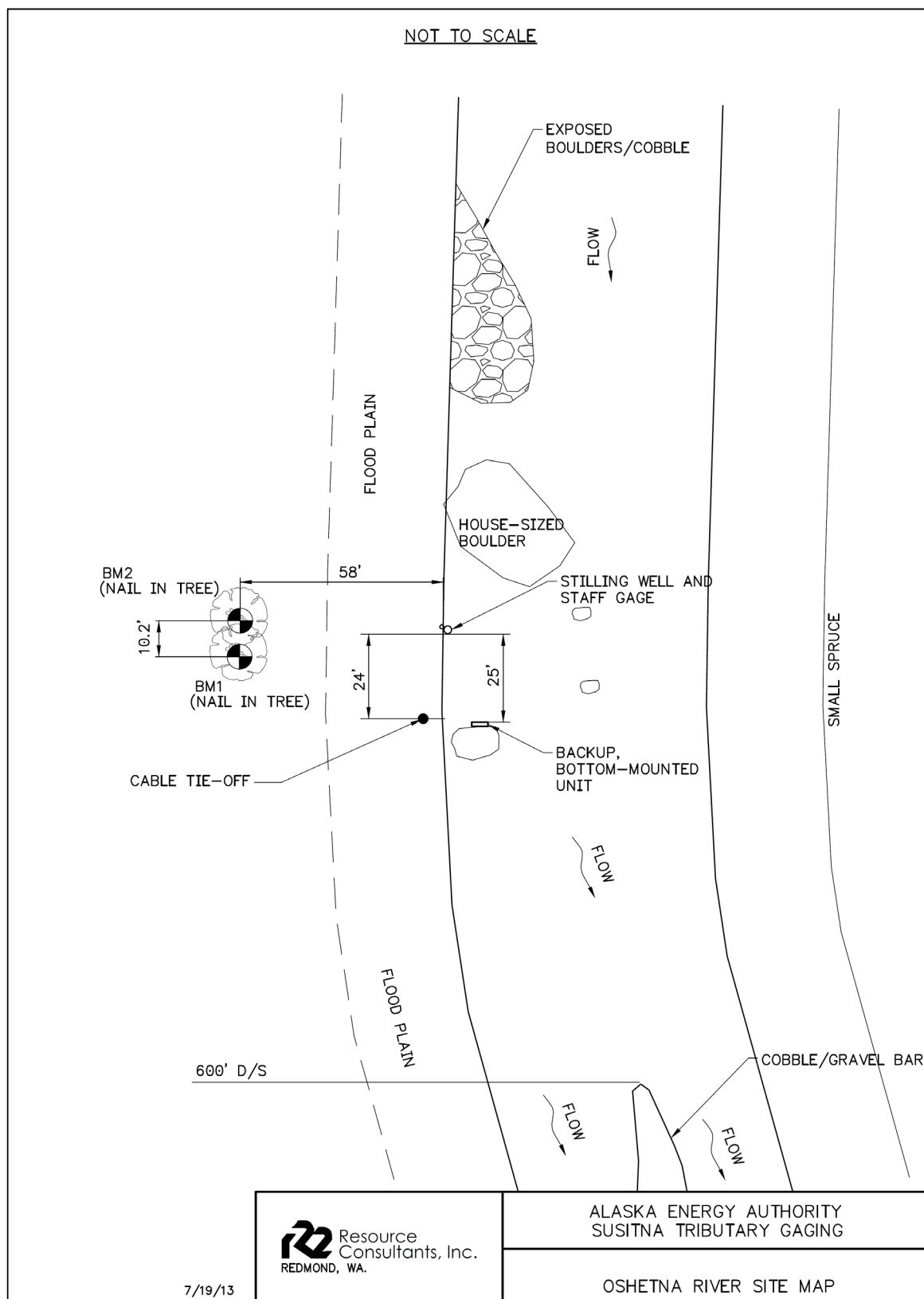
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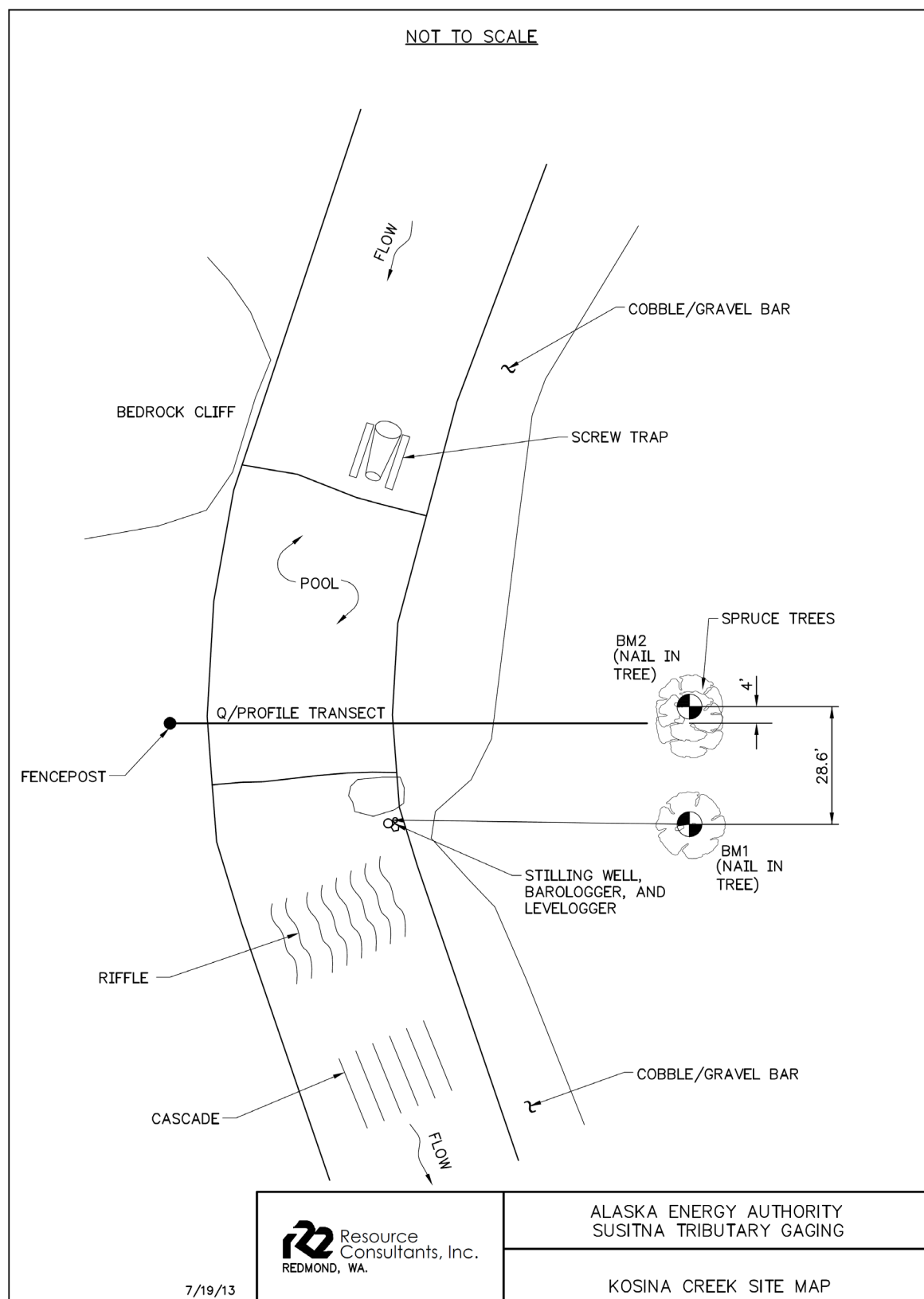
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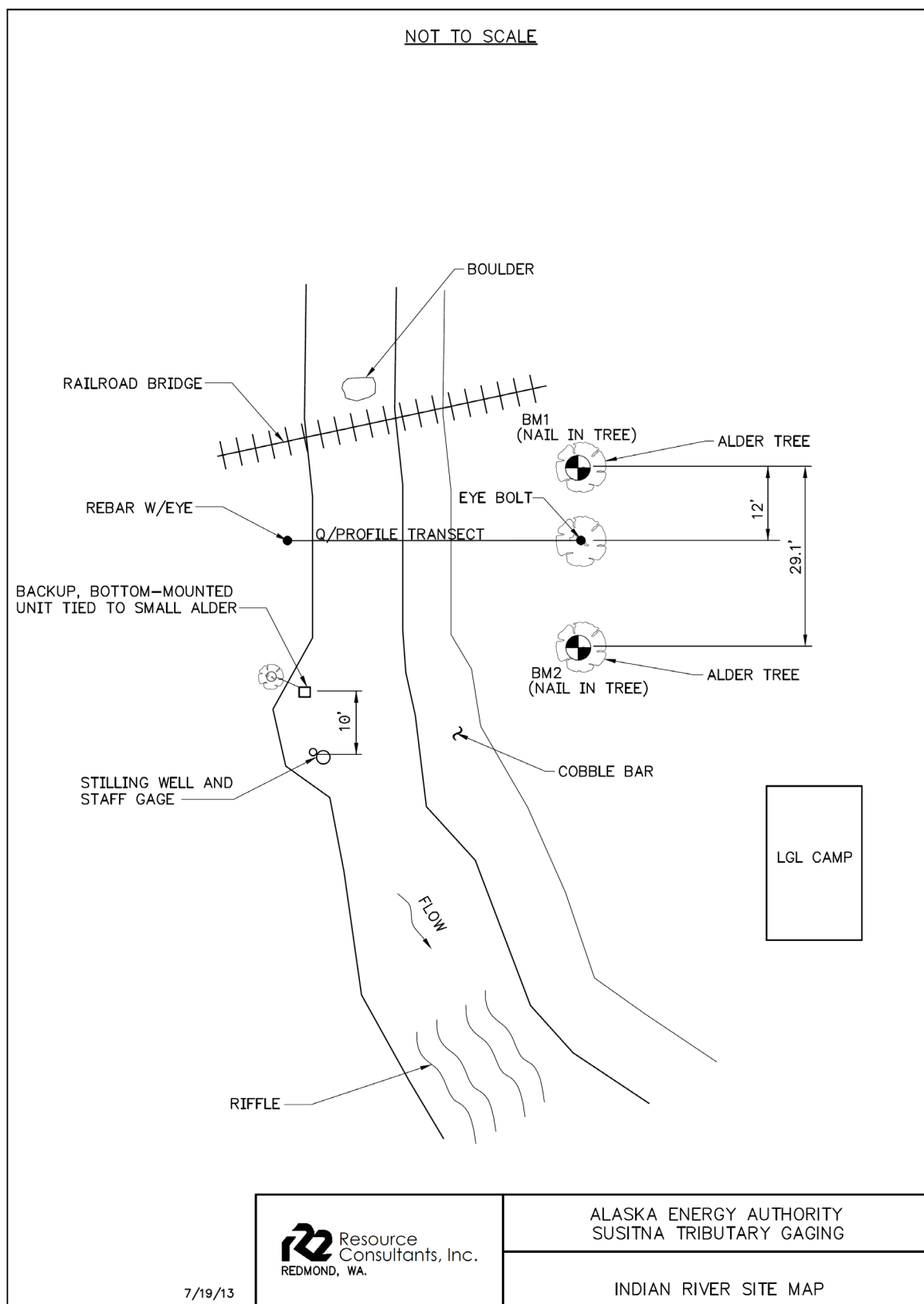
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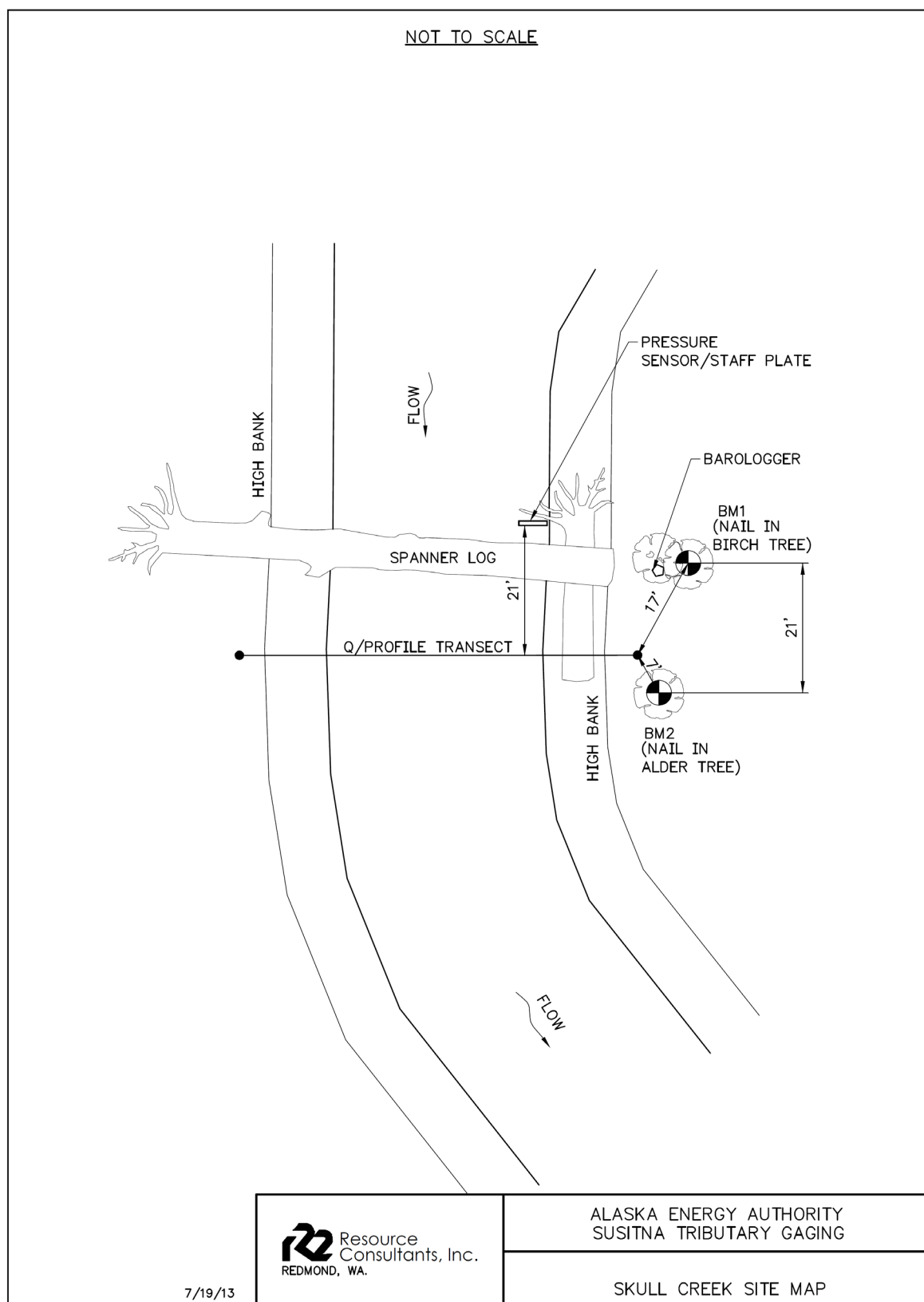
**Figure 1. Site schematic for tributary gage at Oshetna River (Upper River).**



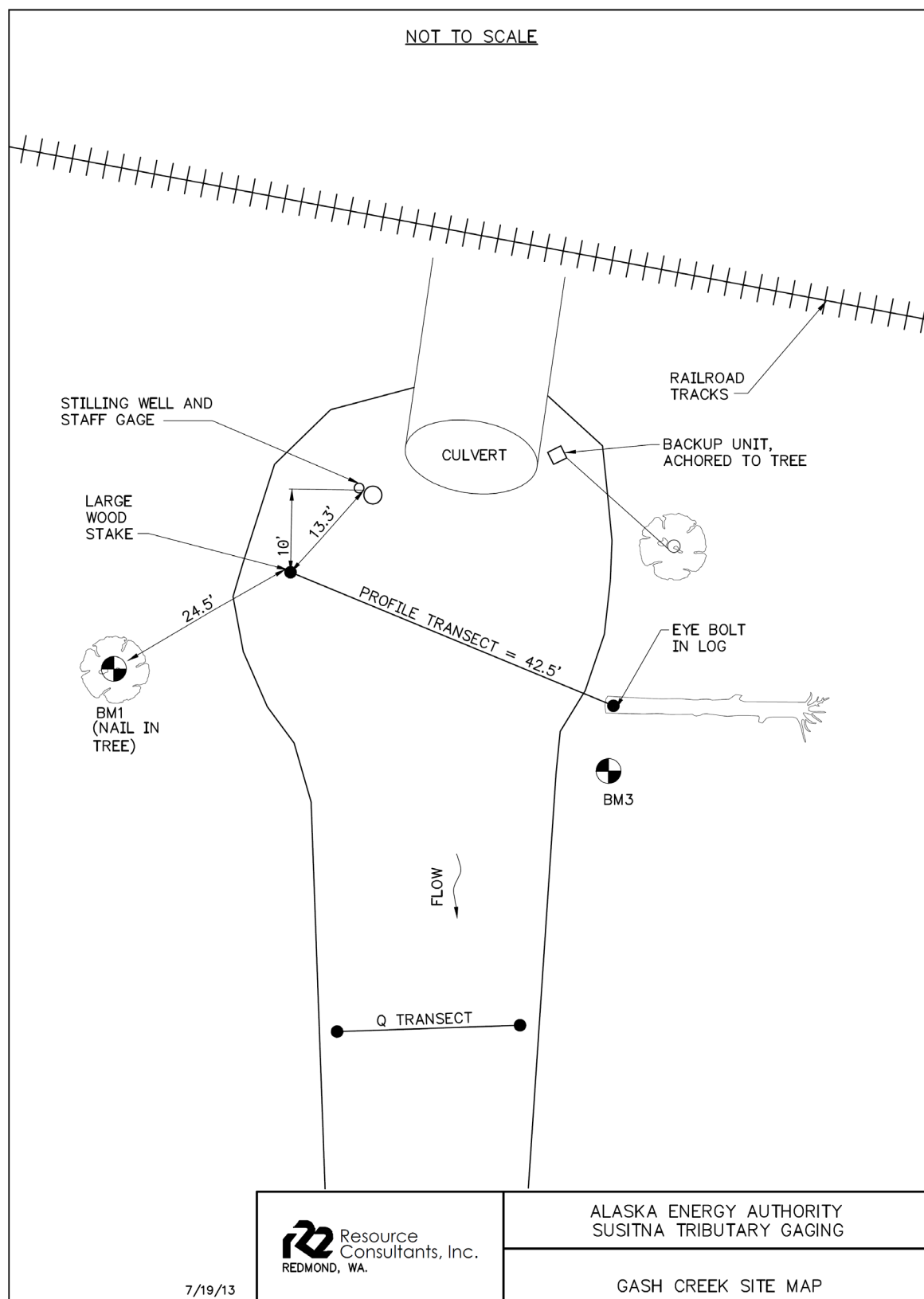
**Figure 2. Site schematic for tributary gage at Kosina Creek (Upper River).**



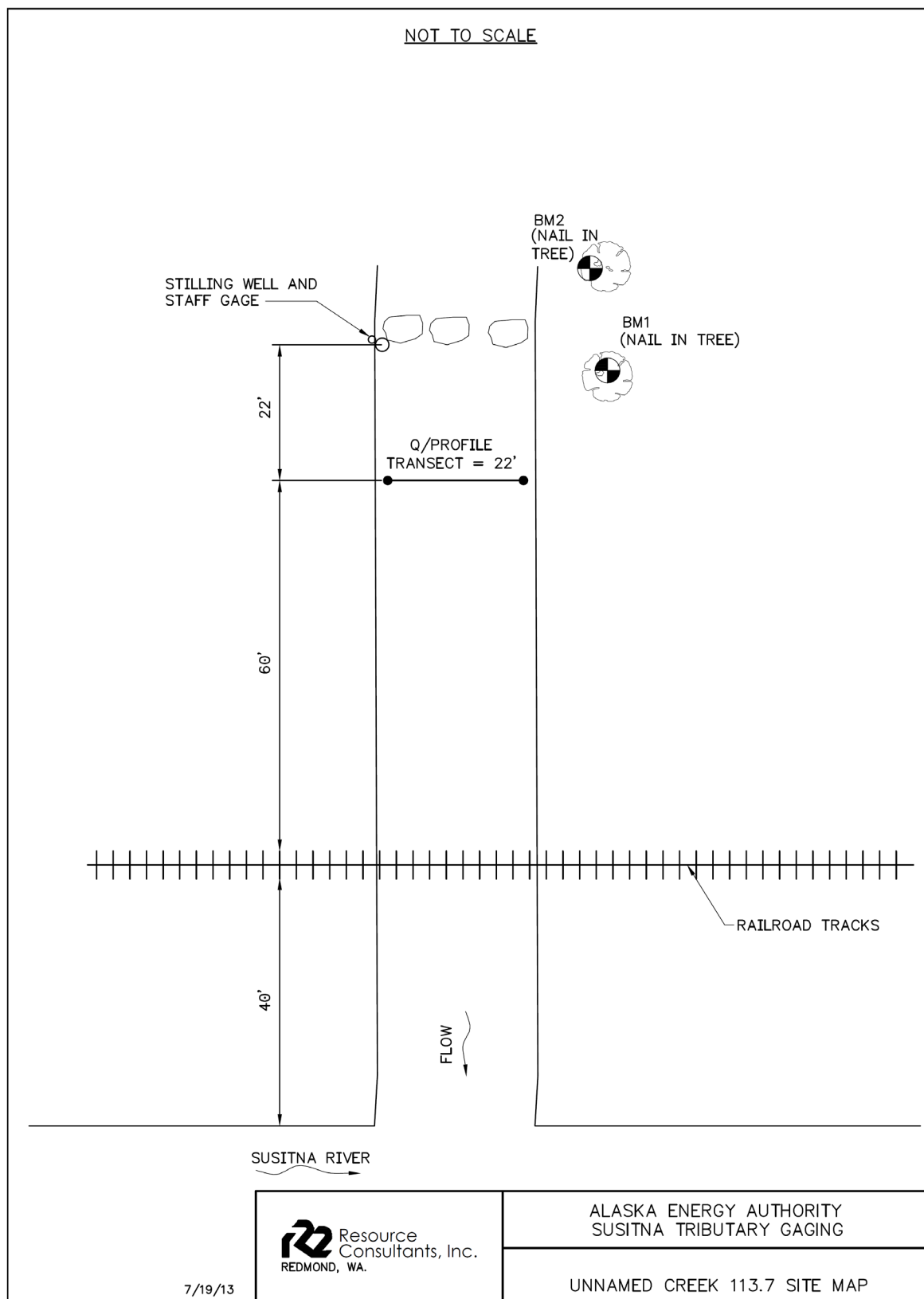
**Figure 3. Site schematic for tributary gage at Indian River (Middle River, FA-141 [Indian River]).**



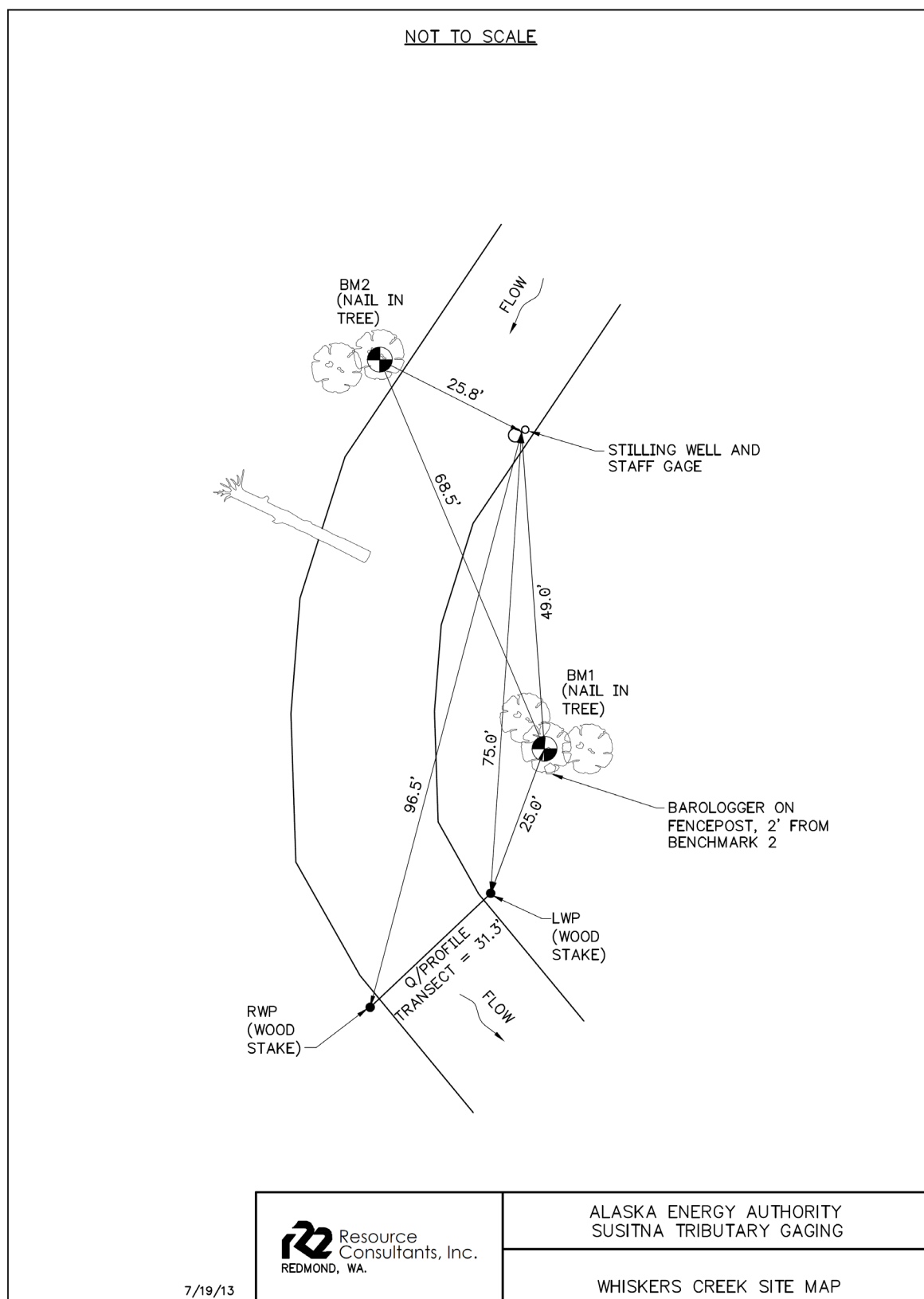
**Figure 4. Site schematic for tributary gage at Skull Creek (Middle River, FA-128 [Slough 8A]).**



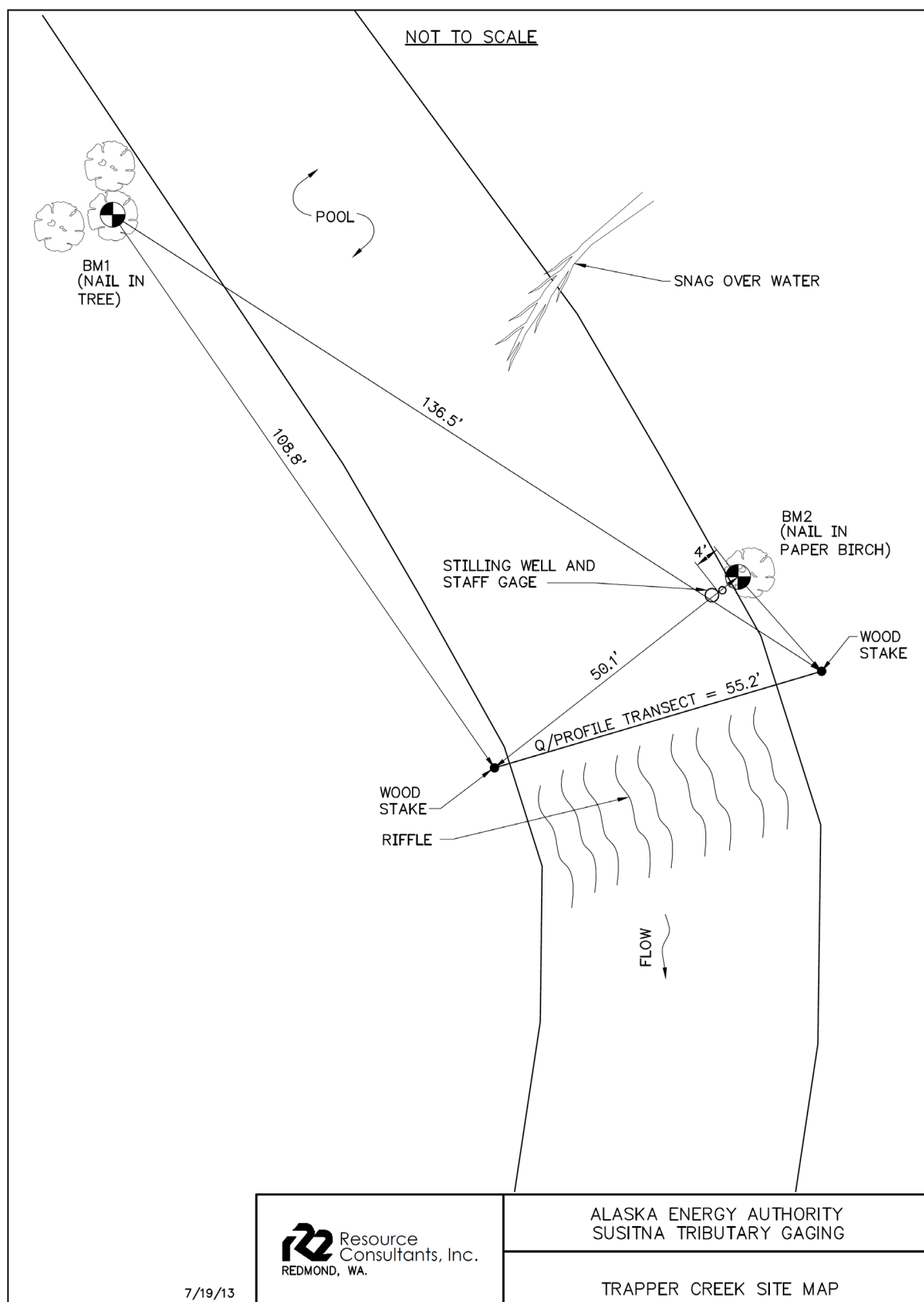
**Figure 5. Site schematic for tributary gage at Gash Creek (Middle River, FA-113 [Oxbow 1]).**



**Figure 6. Site schematic for tributary gage at Unnamed Creek 113.7 (Middle River, FA-113 [Oxbow 1]).**



**Figure 7. Site schematic for tributary gage at Whiskers Creek (Middle River, FA-104 [Whiskers Slough]).**



**Figure 8. Site schematic for tributary gage at Trapper Creek (Lower River).**

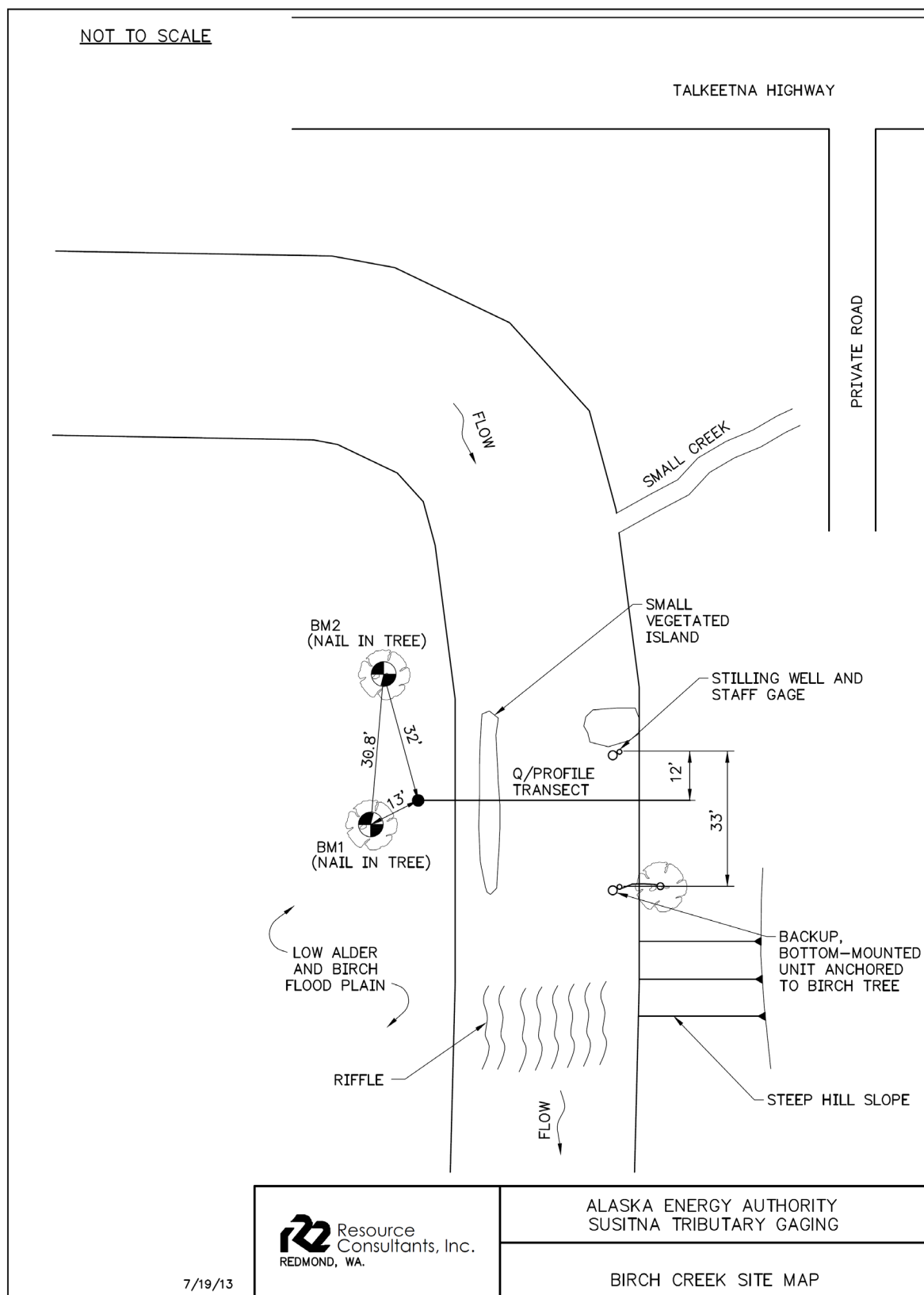
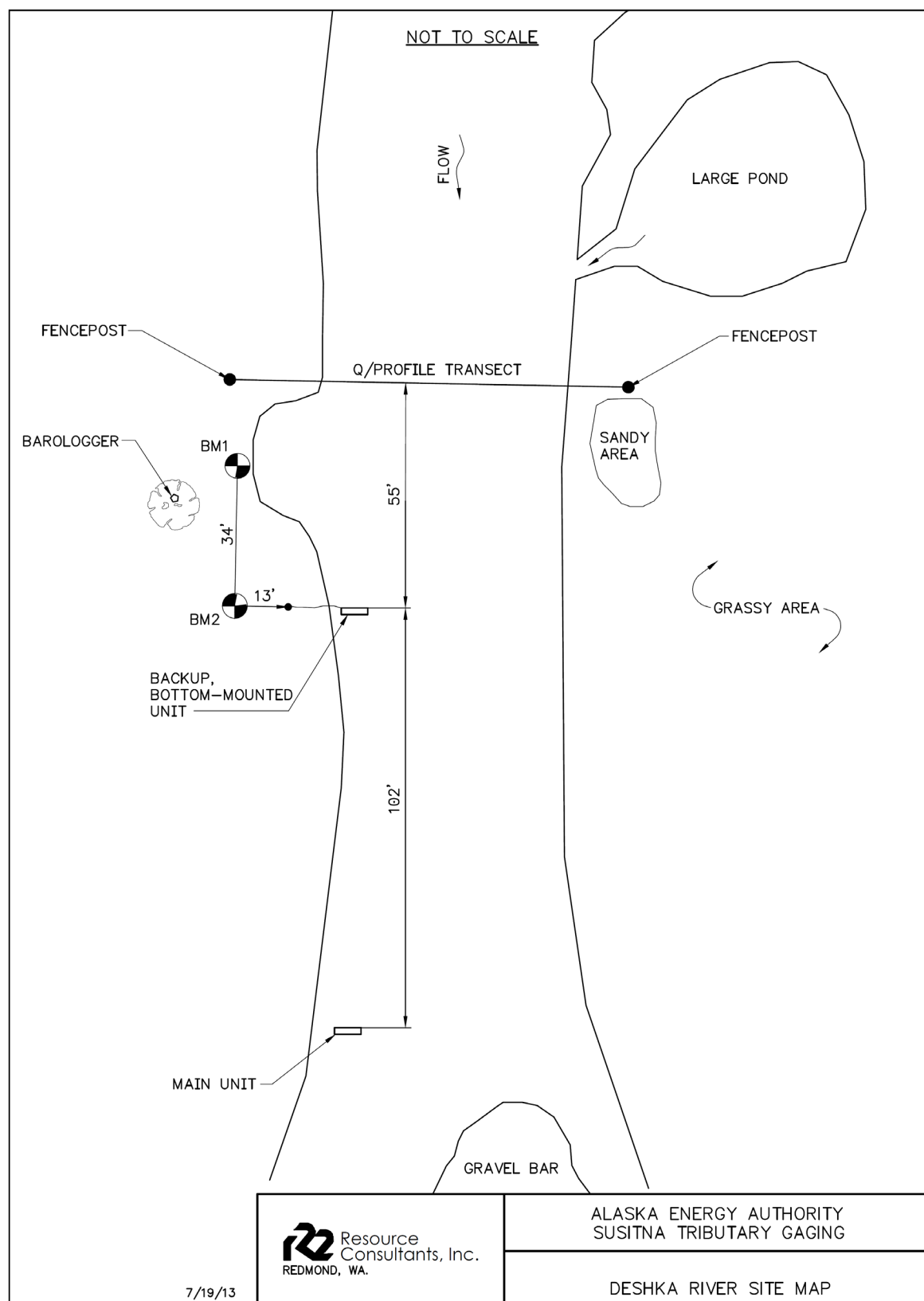


Figure 9. Site schematic for tributary gage at Birch Creek (Lower River).



**Figure 10. Site schematic for tributary gage at Deshka River (Lower River).**

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**Figure 2. Kosina Creek site photo (Upper River).**



**Figure 3. Unnamed Tributary 144.6 site photo (Middle River, FA-144 [Slough 21]).**



**Figure 4. Indian River site photo (Middle River, FA-141 [Indian River]).**



**Figure 5. Skull Creek site photo (Middle River, FA-128 [Slough 8A]).**



**Figure 6. Gash Creek site photo (Middle River, FA-113 [Oxbow 1]).**



**Figure 7. Slash Creek site photo (Middle River, FA-113 [Oxbow 1]).**



**Figure 8. Unnamed Tributary at 113.7 site photo (Middle River, FA-113 [Oxbow 1]).**



**Figure 9. Whiskers Creek site photo (Middle River, FA-104 [Whiskers Slough]).**



**Figure 10. Trapper Creek site photo (Lower River).**



**Figure 11. Susitna River at Trapper Creek site photo (Lower River).**



**Figure 12. Birch Creek site photo (Lower River).**



**Figure 13. Susitna River at Birch Creek site photo (Lower River).**



**Figure 14. Deshka River site photo (Lower River).**



**Figure 15. Susitna River at Deshka site photo (Lower River).**