# comprehensive Data delivery README FILE

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| **Study Section** | Study 6.6: Fluvial Geomorphology (FGM) |
| **Study Component** | (1) Bed Evolution Model Development, Coordination, and Calibration |
| **Prepared By** | Tetra Tech, Inc. |
| **Data Collection and Processing By** | Tetra Tech, Inc. |
| **Field Date Range** | July 9, 2013 through September 17, 2014 |

**Introduction:** The overall goal of the Fluvial Geomorphology Modeling below Watana Dam Study is to model the effects of the proposed Susitna-Watana Hydroelectric Project (the Project) on the fluvial geomorphology of the Susitna River and to assist in predicting the trend and magnitude of geomorphic response. More specifically, the purpose of the modeling study, along with the Geomorphology Study (Study 6.5), is to assess the potential impact of the Project on the behavior of the river downstream of the proposed dam, with particular focus on potential changes in instream and riparian habitat.

The goal of the study component “Bed Evolution Model Development, Coordination, and Calibration” is to develop calibrated models to predict the magnitude and trend of geomorphic response to the Project and apply the developed models to estimate the potential for channel change for with-Project operations compared to existing conditions.

Cross-section observations, water surface elevations, and Upper Susitna River Segment cross-sections were collected during the summer 2013 and 2014 field seasons in order to support model development and calibration.

**Data Summary:** Observations were performed at cross-section locations throughout the Lower and Middle Susitna River Segments. Data recorded included a floodplain/island description, an estimate of roughness (Manning’s n) along the floodplain/island, stratigraphic section of the bank, height and angle of the bank, and any other general observations including high-water marks and effects of ice processes. Observations were performed between PRM 46.3 and PRM 145.7 during the 2013 field season; these observations are summarized in the spreadsheet “6\_6\_FGM\_XSec\_Obs\_Summary\_20170630”.

Water surface elevations were primarily collected during cross section surveys conducted as part of Study 8.5. The Study 8.5 efforts also included additional surveys of water surface elevations at different times so that many cross sections had 2 or 3 water surface elevations for model calibration and validation purposes. As part of this study (Study 6.6), some cross section observations included water surface elevation surveys and a concentrated effort of these surveys was conducted during high flow conditions. Level loops performed at cross-section locations are summarized in the 2013 and 2014 water surface elevation (WSE) level loop spreadsheets.

Spatial data for cross-section observations and level loop locations are summarized within the “SuWa\_6\_6\_XC\_Pin\_20170630” shapefile. This can be found under the “GIS” folder at <http://gis.suhydro.org/suwareports/SuWa/06-GEO/6.06-GEOMOD>

With the absence of bathymetric data in the Upper Susitna River Segment, depths of the channel were estimated with a boat-mounted fathometer during the 2014 reconnaissance and are identified in Study 6.5’s 2014-2015 Study Implementation Report (report link below).

Locations of depth-measurements for the Upper Susitna River cross-sections are summarized within the “SuWa\_6\_6\_UpperRiver\_Xsecs\_20170630” shapefile. This can be found under the “GIS” folder at <http://gis.suhydro.org/suwareports/SuWa/06-GEO/6.06-GEOMOD>

**Data Organization:** None.

**Software or Hardware Considerations:** None.

**Online Data Link:** Folder “Susitna” at <http://gis.suhydro.org/suwareports/SuWa/06-GEO/6.06-GEOMOD/Cross-Sections>

**Online Report Link:** Cross-section and level loop data are described in the following 2 reports:

**“**6.6 Fluvial Geomorphology Modeling below Watana Dam Study” under June 3, 2014; Initial Study Report – Part A, B, and C at <http://www.susitna-watanahydro.org/type/documents/> . *There are a total of 3 links associated with this report. There is one link for the following: (1) Main body text and tables [Part A 1 of 3], (2) Figures [Part A 2 of 3], and (3) Appendices and Attachment [Part A 3 of 3].*

“06.06 Fluvial Geomorphology Modeling below Watana Dam – 2014-2015 Study Implementation Report (Part 1 of 4)” under November 2015; Study Completion and 2014/2015 Implementation Reports at <http://www.susitna-watanahydro.org/type/documents/> . *There are multiple links associated with this report filing, however the link noted as “Part 1 of 4” is the most relevant to the tributary surveys of cross-section geometry.*

Upper Susitna River Cross-sections is described in the following report:

“06.05 Geomorphology Study – 2014-2015 Study Implementation Report (Part 1 of 3)” under November 2015; Study Completion and 2014/2015 Implementation Reports at <http://www.susitna-watanahydro.org/type/documents/> . *There are multiple links associated with this report filing, however the link noted as “Part 1 of 3” is the most relevant to the Upper Susitna River Cross-sections.*

**[[1]](#endnote-1)**

1. **Data Distributor Contact Information:**

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