# comprehensive Data delivery README FILE

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| **Study Section** | Study 5.6: Water Quality Modeling Study (WQ\_MOD) |
| **Study Component** | Modeling (EFDC) |
| **Prepared By** | Tetra Tech, Inc. |
| **Data Collection and Processing By** | Tetra Tech, Inc. |
| **Field Date Range** | 2013–2017 |

**Introduction:** The overall goal of this effort was to model information on water quality (e.g., temperature, dissolved oxygen, sediment) in areas with the potential to be affected by construction and operation of the proposed Susitna-Watana Hydroelectric Project in Alaska.

This Water Quality Modeling Study (5.6) focuses on predicting the potential impacts of the dam and its proposed operations on water quality through the development of a water quality model. The goal of Study 5.6 is to utilize the extensive information collected from the Baseline Water Quality Study (Study 5.5) to develop a model to evaluate the potential impacts of the proposed Project and operations on various physical parameters within the Susitna River watershed.

The contents of this folder, “GIS Data”, include Geographic Information System (GIS) shapefile data generated in the development and analysis of the riverine, reservoir, and FA-128 grid maps.

**Data Summary:** The development of the Susitna modeling projects required discretization of the river, reservoir, and focus area into GIS grid maps. The GIS shapefile for each of the grid map areas generates a nine file data package. Each package includes files such as spatial index, projection, database, and encoding files. The folders are organized by *area name*, where the area is either FA-128, reservoir, or riverine. A table summarizing the types of data files in each folder is below. The grid shapefiles are also contained in an overall geodatabase.

| **File Type** | **File Name** | **Comments** |
| --- | --- | --- |
| Geodatabase  | **SuWa\_5\_6\_GIS\_GDB\_20170630.zip** | Geodatabase containing the river, reservoir, and FA-128 grids |
| **SuWa\_5\_6\_GIS\_*AreaName\_*20170630.zip** |
| Encoding file | 5\_6\_EFDC\_*AreaNam*e\_Grid.cpg | Describes encoding applied to shapefile |
| Database file | 5\_6\_EFDC\_*AreaName*\_Grid.dbf | Stores shapefile data, e.g., attribute data and object IDs |
| Projection file | 5\_6\_EFDC\_*AreaName*\_Grid.prj | Shapefile’s coordinate and projection system |
| Spatial Index file | 5\_6\_EFDC\_*AreaName*\_Grid.sbn | Optimizes spatial queries |
| Spatial Index file | 5\_6\_EFDC\_*AreaName*\_Grid.sbx | Optimizes spatial queries |
| XML file | 5\_6\_EFDC\_*AreaName*\_Grid.shp | Shapefile |
| Shape file | 5\_6\_EFDC\_*AreaName*\_Grid.shp | Spatial vector data |
| Shape index position file | 5\_6\_EFDC\_*AreaName*\_Grid.shx | Used to search forward and backwards |
| XML file | 5\_6\_EFDC\_*AreaName*\_Grid\_metadata | Shapefile metadata, contains ultimate file location link. Metadata created in ArcCatalog (version 10.2-10.5) with metadata style FGDC CSDGM metadata. |

**Data Organization:** TheGIS Data files are organized by model. GIS Data document files include the following subdirectories:

* SuWa\_5\_6\_GIS\_FA\_128\_20170630.zip
* SuWa\_5\_6\_GIS\_Reservoir\_20170630.zip
* SuWa\_5\_6\_GIS\_Riverine\_20170630.zip
* SuWa\_5\_6\_GIS\_GDB\_20170630.zip

**Geospatial Projection**

* PROJCS["NAD\_1983\_2011\_StatePlane\_Alaska\_4\_FIPS\_5004\_Feet",GEOGCS["GCS\_NAD\_1983\_2011",DATUM["D\_NAD\_1983\_2011",SPHEROID["GRS\_1980",6378137.0,298.257222101]],
* PRIMEM["Greenwich",0.0],
* UNIT["Degree",0.0174532925199433]],
* PROJECTION["Transverse\_Mercator"],
* PARAMETER["False\_Easting",1640416.666666667],
* PARAMETER["False\_Northing",0.0],
* PARAMETER["Central\_Meridian",-150.0],
* PARAMETER["Scale\_Factor",0.9999],
* PARAMETER["Latitude\_Of\_Origin",54.0],
* UNIT["Foot\_US",0.3048006096012192]]

**Online Data Link:** http://gis.suhydro.org/suwareports/SuWa/05-WQ/5.06-WQ\_MOD/GIS Data

**Online Report Link:** http://www.susitna-watanahydro.org/type/documents/

| Title | Date | Description | Link |
| --- | --- | --- | --- |
| Revised Study Plan Section 5.6, Water Quality Modeling Study | 12/14/2012 | This document presents the plan for this study, including goals, objectives, the study area, and proposed study methods to construct reservoir and riverine models that predict potential changes to water quality in post-Project conditions. | [RSP for Study 05.06](http://www.susitna-watanahydro.org/wp-content/uploads/2012/12/01-RSP-Dec2012_1of8-Sec-1-5-IntrothroughWaterQuality-v2.pdf) |
| FERC Study Plan Determination for Study 5.6 | 4/1/2013 | This document presents FERC approval of Study 5.6, which approved AEA’s Revised Study Plan with recommended adjustments. | [FERC SPD for Study 05.06](http://www.susitna-watanahydro.org/wp-content/uploads/2015/11/20130401_FERC_SPD14remainingStudies.pdf) |
| Draft Initial Study Report for Study 5.6 | 2/3/2014 | This draft of the ISR summarized the study methods and variances during the 2013 study season, and presented preliminary data collected for Study 5.6. This draft ISR was later republished as Part A of the final ISR. | [Draft ISR for Study 05.06](http://www.susitna-watanahydro.org/wp-content/uploads/2014/02/05.6_WQMOD_ISR_Draft.pdf) |
| Riverine Modeling Proof of Concept Meeting: Reservoir and Riverine Water Quality Modeling |  4/15/2014 -4/17/2015 | These presentations demonstrate preliminary parameterization and configuration of the reservoir and water quality models. Draft model output for temperature and dissolved oxygen are presented for from each of the models. Seasonal changes in these water quality parameters are demonstrated for the standard model calibration 50 year data set representing wet, dry, and average past climate periods. | [April 2014 Presentations for Study 05.06 (File 1)](http://www.susitna-watanahydro.org/wp-content/uploads/2014/04/2014_04_15-17TT_Riverine_ReservoirWQM.pdf)[April 2014 Presentations for Study 05.06 (File 2)](http://www.susitna-watanahydro.org/wp-content/uploads/2014/04/2014_04_15-17TT_Riverine_RiverWQM.pdf) |
| Initial Study Report for Study 5.6 | 6/3/2014 | This document is the Initial Study Report (Parts A, B and C) for Study 5.6. Part A republishes the Draft ISR. Part B identifies supplemental information and errata in Part A. Part C presents study modifications and plans for completing the study. | [ISR Part A for Study 05.06](http://www.susitna-watanahydro.org/wp-content/uploads/2014/05/05.6_WQMOD_ISR_PartA.pdf)[ISR Part B for Study 05.06](http://www.susitna-watanahydro.org/wp-content/uploads/2014/06/05.7_MERC_ISR_PartB.pdf)[ISR Part C for Study 05.06](http://www.susitna-watanahydro.org/wp-content/uploads/2014/06/05.7_MERC_ISR_PartC.pdf) |
| Baseline Water Quality Study (Study 5.5) and Water Quality Modeling Study (Study 5.6) Water Quality and Lower River Modeling Technical Memorandum | 9/30/2014 | The riverine model currently extends from the dam site downstream to PRM 29.9. Study 5.6, Part C of the Initial Study Report (ISR) explained that AEA would assess in 2014 whether to extend the water quality modeling downstream of PRM 29.9 (AEA 2014). | [Sept. 2014 TM for Study 5.6](http://www.susitna-watanahydro.org/wp-content/uploads/2014/09/DRAFT-Tech-Memo_Baseline-Water-Quality-Decision-Points.pdf) |
| Initial Study Report Meetings, Water Quality Modeling Study (5.6) | 11/15/2014 | Transcripts and AEA’s agenda and PowerPoint presentations for the ISR meeting for the Water Quality Modeling Study | [Transcripts from ISR Meeting](http://www.susitna-watanahydro.org/wp-content/uploads/2014/11/Oct15_ISR_Meeting_PartA_Transcripts.pdf)[Materials from ISR Meeting](http://www.susitna-watanahydro.org/wp-content/uploads/2014/11/Oct15_ISR_Meeting_PartB_Agenda_Presentations.pdf) |
| 2014 to 2015 Study Implementation Report, Study 5.6, Water Quality Modeling Study  | 11/2015 | AEA’s Study Implementation Report describing current progress on construction and testing of the reservoir and riverine water quality models. | [2014-2015 SIR for Study 05.06 (File 1)](http://www.susitna-watanahydro.org/wp-content/uploads/2015/11/05.6_WQMOD_SIR.pdf)[2014-2015 SIR for Study 05.06 (File 2)](http://www.susitna-watanahydro.org/wp-content/uploads/2015/11/05.6_WQMOD_SIR_AppA.pdf) |

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

1. **Data Distributor Contact Information:**

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