



<i>Title:</i> NEON User Guide to AIS Site Survey (DP1.20003.001)	<i>Date:</i> 09/14/2026
<i>Author:</i> Nick Harrison	<i>Revision:</i> A

NEON USER GUIDE TO AIS SITE SURVEY (DP1.20003.001)

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CHANGE RECORD

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1 DESCRIPTION

1.1 Purpose

This document provides an overview of the data included in this NEON Level 1 data product and associated metadata for AIS Site Surveys conducted at NEON aquatic sites.

The text herein provides a discussion of measurement theory and implementation, data product provenance, quality assurance and control methods used, and approximations and assumptions made during data creation.

1.2 Scope

This document describes the field data and associated metadata collected through AIS Standard Operating Procedure: Conducting AIS Site Surveys at NEON Aquatic Sites (AD[06]) and published as AIS Site Survey (DP1.20003.001).

This document also provides details relevant to publication of the data product via the NEON data portal, with additional detail available in NEON Data Variables for AIS Site Survey (DP1.20003.001) (AD[04]) and NEON Raw Data Validation for AIS Site Survey (DP0.00026.001) (AD[03]) included in the data package.



2 RELATED DOCUMENTS AND ACRONYMS

2.1 Associated Documents

AD[01]	NEON.DOC.000001	NEON Observatory Design (NOD) Requirements
AD[02]	NEON.DOC.002652	NEON Data Products Catalog
AD[03]	Available with data download	NEON Raw Data Validation for AIS Site Survey (DP0.00026.001)
AD[04]	Available with data download	NEON Data Variables for AIS Site Survey (DP1.20003.001)
AD[05]	NEON.DOC.004104	NEON Science Data Quality Plan
AD[06]	NEON.DOC.005399	AIS Standard Operating Procedure: Conducting AIS Site Surveys at NEON Aquatic Sites
AD[07]	NEON.DOC.000008	NEON Acronym List
AD[08]	NEON.DOC.000243	NEON Glossary of Terms
AD[09]	NEON.DOC.005400	Datasheets for AIS Standard Operating Procedure: AIS Site Survey
AD[10]	NEON.DOC.005221	AOS/TOS Standard Operating Procedure: Trimble GEOXH Receivers Setup and Use
AD[11]	Available with data download	Categorical Codes csv

2.2 Acronyms

Acronym	Definition
AQU	NEON Aquatics Program
BM	Benchmark
COP	Control point
DP	Data Product
GPS	Global Positioning System
L0	Level 0
L1	Level 1
TS	Total station
UTM	Universal Transverse Mercator



3 DATA PRODUCT DESCRIPTION

The AIS Site Survey data product provides data that characterizes the channel cross-section where continuous discharge is estimated at all NEON stream sites, river sites (excluding Lower Tombigbee River) and the Toolik Lake inflow and outflow. Datasets include spatial data, categorical map codes associated with survey points, and fields that describe the location and timing of the survey. During AIS site surveys, total station instrumentation are used to map multiple points (survey points) along the discharge cross-section and a single point on the staff gauge. Each survey point contains easting, northing, and height coordinates relative to the location of the total station during the survey. Following the survey, a mapCode is assigned to each survey point that categorizes the location of the shot.

3.1 Spatial Sampling Design

AIS site surveys begin by setting up the total station and referencing it to fixed benchmarks that are typically installed near the staff gauge and discharge cross-section. The total station is then used to map multiple points along the discharge cross-section (capturing as much of the right and left bank floodplain, the right and left banks, and the stream bed as possible) and a single point on the staff gauge. At NEON river sites (FLNT and BLWA), the survey cannot extend into and across the channel due to the depth of the water so only the nearshore floodplain and edge of water are mapped.

3.2 Temporal Sampling Design

AIS site surveys are conducted as needed at each site and will typically occur when the stage-discharge relationship is observed to have changed due to changes in channel morphology.

3.3 Variables Reported

All variables reported from the field are listed in NEON Raw Data Validation for AIS Site Survey (DP0.00026.001) (AD[03]). Variables reported in published data are listed in NEON Data Variables for AIS Site Survey (DP1.20003.001) (AD[04]).

3.4 Temporal Resolution and Extent

Data are reported at the temporal resolution of a single survey bout.

3.5 Product Instances

Survey frequency varies by site and operational need. AIS site surveys are conducted to develop the stage-discharge rating curve (see the Stage-discharge rating curves data product (DP4.00133.001) which is a critical input to the Continuous discharge data product (DP4.00130.001)). Mapping the staff gauge allows for elevations along the cross-section to be related to gauge height, which informs the stage activation of the physical hydrologic channel controls that are present within the cross-section and delineated in the rating curve. AIS site surveys are not published at the TOMB site as a NEON rating curve is not produced for this site (USGS discharge data from a nearby gauge are used to provide continuous discharge data for TOMB).



3.6 Data Relationships

Every AIS site survey bout is represented in the published `sur_surveyPoints_pub` table. Table 1 describes the published table available via download from the NEON Data Portal for this data product.

Table 1: Data tables available in downloads of this data product from the NEON Data Portal

Table	Description
<code>sur_surveyPoints_pub</code>	Survey data used to define hydrologic controls within the discharge cross-section

3.7 Special Considerations

3.7.1 Downloading AIS Site Survey Data

To download L1 AIS Site Survey data packages:

1. Access the NEON data portal and select AIS Site Survey (DP1.20003.001), date range, and location.
2. Download the L1 dataset.

4 DATA QUALITY

4.1 Data Entry Constraint and Validation

Data entry constraints and validation are implemented during survey data capture and ingest; product-specific validation requirements are described in NEON Raw Data Validation for AIS Site Survey (DP0.00026.001).

4.2 Automated Data Processing Steps

Published data are reviewed for completeness, timeliness, and validity using internal tests and metrics, as described in the NEON Science Data Quality Plan (AD[05]).

4.3 Data Revision

All data are provisional until a numbered version is released through annual NEON data releases.

4.4 Uncertainty

Spatial uncertainty reflects total station and GNSS measurement quality, benchmark/control configuration, site conditions, and post-processing methods.

4.5 Quality Flagging

Quality and completeness metadata are provided in survey-level records and related ancillary notes where applicable.