

*Please provide the following information, and submit to the NOAA DM Plan Repository.*

**Reference to Master DM Plan (if applicable)**

*As stated in Section IV, Requirement 1.3, DM Plans may be hierarchical. If this DM Plan inherits provisions from a higher-level DM Plan already submitted to the Repository, then this more-specific Plan only needs to provide information that differs from what was provided in the Master DM Plan.*

URL of higher-level DM Plan (if any) as submitted to DM Plan Repository:

**1. General Description of Data to be Managed****1.1. Name of the Data, data collection Project, or data-producing Program:**

2015 NRCS Lidar: Saginaw County, MI

**1.2. Summary description of the data:**

Geographic Extent: Saginaw County, MI, covering approximately 815 square miles.

Dataset Description: This data was part of a joint project between USDA Natural Resources Conservation Service (NRCS), USGS, and the state of Michigan to collect 31 counties of Michigan in 2016. Though the overall project has 2016 in the name, this Saginaw County data was collected in 2015. The Saginaw collection called for the planning, acquisition, processing and derivative products of lidar data to be collected at a nominal pulse spacing (NPS) of 0.7 meter. Project specifications are based on the U.S. Geological Survey National Geospatial Program Base Lidar Specification, Version 1.0. The data was developed based on a horizontal projection/datum of Michigan State Plane South, NAD83, international feet and vertical datum of NAVD1988 (GEOID12A), international feet. Lidar data was delivered in RAW flight line swath format, then processed to create Classified LAS 1.2 Files formatted to 991 individual 5000 foot X 5000 foot tiles. Corresponding Intensity Images and Bare Earth DEMs tiles were created with the same 5000 foot X 5000 foot tile schema. Breaklines were produced in Esri geodatabase format. Processing by NOAA for ingest into the Digital Coast Data Access Viewer changed the projection and datum to NAD83(2011) ellipsoid heights in meters with geographic coordinates in the cloud optimized point cloud version of LAZ.

Ground Conditions: Lidar was collected in spring of 2015, while no snow was on the ground and rivers were at or below normal levels. In order to post process the Lidar data to meet task order specifications, Spicer Group Inc established a total of 120 Land Cover control points (52 QC checkpoints, 68 calibration control points) which were used to calibrate the Lidar to known ground locations established throughout the Saginaw County, MI project area. 28 additional check points were surveyed by Kucera for the accuracy check of the initial acquisition. these 28 points have been added to the NVA Lidar and DEM accuracy reports.

**1.3. Is this a one-time data collection, or an ongoing series of measurements?**

One-time data collection

**1.4. Actual or planned temporal coverage of the data:**

2015-03-24 to 2015-04-17

**1.5. Actual or planned geographic coverage of the data:**

W: -84.39956206, E: -83.66761175, N: 43.57166506, S: 43.11684188

**1.6. Type(s) of data:**

*(e.g., digital numeric data, imagery, photographs, video, audio, database, tabular data, etc.)*

Model (digital)

**1.7. Data collection method(s):**

*(e.g., satellite, airplane, unmanned aerial system, radar, weather station, moored buoy, research vessel, autonomous underwater vehicle, animal tagging, manual surveys, enforcement activities, numerical model, etc.)*

**1.8. If data are from a NOAA Observing System of Record, indicate name of system:**

**1.8.1. If data are from another observing system, please specify:**

**2. Point of Contact for this Data Management Plan (author or maintainer)**

**2.1. Name:**

NOAA Office for Coastal Management (NOAA/OCM)

**2.2. Title:**

Metadata Contact

**2.3. Affiliation or facility:**

NOAA Office for Coastal Management (NOAA/OCM)

**2.4. E-mail address:**

coastal.info@noaa.gov

**2.5. Phone number:**

(843) 740-1202

**3. Responsible Party for Data Management**

*Program Managers, or their designee, shall be responsible for assuring the proper management of the data produced by their Program. Please indicate the responsible party below.*

**3.1. Name:**

**3.2. Title:**

Data Steward

#### 4. Resources

*Programs must identify resources within their own budget for managing the data they produce.*

##### 4.1. Have resources for management of these data been identified?

Yes

##### 4.2. Approximate percentage of the budget for these data devoted to data management (specify percentage or "unknown"):

Unknown

#### 5. Data Lineage and Quality

*NOAA has issued Information Quality Guidelines for ensuring and maximizing the quality, objectivity, utility, and integrity of information which it disseminates.*

##### 5.1. Processing workflow of the data from collection or acquisition to making it publicly accessible

*(describe or provide URL of description):*

Process Steps:

- 2018-01-01 00:00:00 - Lidar Pre-Processing: Airborne GPS and IMU data were merged to develop a Single Best Estimate (SBET) of the lidar system trajectory for each lift. Lidar ranging data were initially calibrated using previous best parameters for this instrument and aircraft. Relative calibration was evaluated using advanced plane-matching analysis and parameter corrections derived. This was repeated iteratively until residual errors between overlapping swaths, across all project lifts, was reduced to acceptable levels. Data were then block adjusted to match surveyed calibration control. Raw data NVA were checked using independently surveyed checkpoints. Swath overage points were identified and tagged within each swath file. The results of the final calibration, NVA and horizontal accuracy assessments, and the "raw" swaths were forwarded to the client to obtain a Notice To Proceed on classification and derivative product generation.
- 2018-01-01 00:00:00 - Classified LAS Processing: The bare earth surface is then manually reviewed to ensure correct classification on the Class 2 (Ground) points. After the bare-earth surface is finalized, it is then used to generate all hydro-breaklines through heads-up digitization. All ground (ASPRS Class 2) lidar data inside of the Lake Pond and Double Line Drain hydro flattening breaklines were then classified to water (ASPRS Class 9) using TerraScan macro functionality. All Lake Pond Island and Double Line Drain Island features were checked to ensure that the ground (ASPRS Class 2) points were reclassified to the correct classification after the automated classification was completed. All bridge decks were classified to Class 17. All overlap data was processed through automated functionality provided by TerraScan to classify the overlapping flight line data to approved classes by USGS. The overlap data was identified using the Overlap Flag, per LAS 1.4 specifications. All data was manually reviewed and any remaining artifacts removed using functionality provided by TerraScan and TerraModeler.
- 2018-01-01 00:00:00 - Hydro Flattening Breakline Processing: Class 2 lidar was used

to create a bare earth surface model. The surface model was then used to heads-up digitize 2D breaklines of inland streams and rivers with a 100 foot nominal width and Inland Ponds and Lakes of 2 acres or greater surface area. Elevation values were assigned to all Inland Ponds and Lakes, Inland Pond and Lake Islands, Inland Stream and River Islands, using TerraModeler functionality. Elevation values were assigned to all Inland streams and rivers using ESRI Software. All ground (ASPRS Class 2) lidar data inside of the collected inland breaklines were then classified to water (ASPRS Class 9) using TerraScan macro functionality. The breakline files were then translated to ESRI File-Geodatabase format using ESRI conversion tools.

- 2018-01-01 00:00:00 - Hydro Flattened Raster DEM Process: Class 2 lidar in conjunction with the hydro breaklines were used to create a 1 foot Raster DEM. Using automated scripting routines within ArcMap, an ERDAS Imagine IMG file was created for each tile. Each surface is reviewed using ESRI ArcMAP to check for any surface anomalies or incorrect elevations found within the surface.

- 2018-01-01 00:00:00 - Intensity Image Generation Process: Image Generation Process: GeoCue software was used to create the deliverable Intensity Images. All overlap classes were ignored during this process. This helps to ensure a more aesthetically pleasing image. The GeoCue software was then used to verify full project coverage as well. TIF/TWF files were then provided as the deliverable for this dataset requirement.

- 2019-01-01 00:00:00 - Processing Boundary Creation: Processing boundary was created using original client-provided AOI shape file. The original file was buffered by 500 ft in order to meet task order requirements for data coverage.

- 2018-01-01 00:00:00 - QC Checkpoint Creation: Please see the survey report for more information on Control Point location methodologies. The calibration control point shape files were generated from XYZ text files using a combination of Global Mapper and ArcMap software.

- 2018-01-01 00:00:00 - Tile Layout Production: Tile Index Processing: Tiles were created using a 0,0 origin point to ensure proper divisibility of raster and image cells. A 5000 foot x 5000 foot tile size was used as called for in the Task Order. Tile index was output in ESRI shape file format.

- 2023-12-21 00:00:00 - NOAA downloaded the source data from USGS in December 2023. Data were converted to ellipsoid heights in geographic coordinates for ingest into the Digital Coast Data Access Viewer. In the process, they were converted to the cloud optimized point cloud variant of the LAZ format. (Citation: MI\_31Co\_Saginaw\_2016)

**5.1.1. If data at different stages of the workflow, or products derived from these data, are subject to a separate data management plan, provide reference to other plan:**

**5.2. Quality control procedures employed (describe or provide URL of description):**

## 6. Data Documentation

*The EDMC Data Documentation Procedural Directive requires that NOAA data be well documented, specifies the use of ISO 19115 and related standards for documentation of new data, and provides links to resources and tools for metadata creation and validation.*

### 6.1. Does metadata comply with EDMC Data Documentation directive?

No

#### 6.1.1. If metadata are non-existent or non-compliant, please explain:

Missing/invalid information:

- 1.7. Data collection method(s)
- 3.1. Responsible Party for Data Management
- 5.2. Quality control procedures employed
- 7.1.1. If data are not available or has limitations, has a Waiver been filed?
- 7.4. Approximate delay between data collection and dissemination
- 8.3. Approximate delay between data collection and submission to an archive facility

### 6.2. Name of organization or facility providing metadata hosting:

NMFS Office of Science and Technology

#### 6.2.1. If service is needed for metadata hosting, please indicate:

### 6.3. URL of metadata folder or data catalog, if known:

<https://www.fisheries.noaa.gov/inport/item/71697>

### 6.4. Process for producing and maintaining metadata

*(describe or provide URL of description):*

Metadata produced and maintained in accordance with the NOAA Data Documentation Procedural Directive: [https://nosc.noaa.gov/EDMC/DAARWG/docs/EDMC\\_PD-Data\\_Documentation\\_v1.pdf](https://nosc.noaa.gov/EDMC/DAARWG/docs/EDMC_PD-Data_Documentation_v1.pdf)

## 7. Data Access

*NAO 212-15 states that access to environmental data may only be restricted when distribution is explicitly limited by law, regulation, policy (such as those applicable to personally identifiable information or protected critical infrastructure information or proprietary trade information) or by security requirements. The EDMC Data Access Procedural Directive contains specific guidance, recommends the use of open-standard, interoperable, non-proprietary web services, provides information about resources and tools to enable data access, and includes a Waiver to be submitted to justify any approach other than full, unrestricted public access.*

### 7.1. Do these data comply with the Data Access directive?

Yes

#### 7.1.1. If the data are not to be made available to the public at all, or with limitations, has a Waiver (Appendix A of Data Access directive) been filed?

**7.1.2. If there are limitations to public data access, describe how data are protected from unauthorized access or disclosure:**

**7.2. Name of organization of facility providing data access:**

NOAA Office for Coastal Management (NOAA/OCM)

**7.2.1. If data hosting service is needed, please indicate:**

**7.2.2. URL of data access service, if known:**

<https://coast.noaa.gov/dataviewer/#/lidar/search/where:ID=10006/details/10006>

<https://noaa-nos-coastal-lidar-pds.s3.amazonaws.com/laz/geoid18/10006/index.html>

**7.3. Data access methods or services offered:**

Data is available online for bulk or custom downloads

**7.4. Approximate delay between data collection and dissemination:**

**7.4.1. If delay is longer than latency of automated processing, indicate under what authority data access is delayed:**

## **8. Data Preservation and Protection**

*The NOAA Procedure for Scientific Records Appraisal and Archive Approval describes how to identify, appraise and decide what scientific records are to be preserved in a NOAA archive.*

**8.1. Actual or planned long-term data archive location:**

*(Specify NCEI-MD, NCEI-CO, NCEI-NC, NCEI-MS, World Data Center (WDC) facility, Other, To Be Determined, Unable to Archive, or No Archiving Intended)*

NCEI\_NC

**8.1.1. If World Data Center or Other, specify:**

**8.1.2. If To Be Determined, Unable to Archive or No Archiving Intended, explain:**

**8.2. Data storage facility prior to being sent to an archive facility (if any):**

Office for Coastal Management - Charleston, SC

**8.3. Approximate delay between data collection and submission to an archive facility:**

**8.4. How will the data be protected from accidental or malicious modification or deletion prior to receipt by the archive?**

*Discuss data back-up, disaster recovery/contingency planning, and off-site data storage relevant to the data collection*

Data is backed up to cloud storage.

**9. Additional Line Office or Staff Office Questions**

*Line and Staff Offices may extend this template by inserting additional questions in this section.*