*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:

2007 US Army Corps of Engineers (USACE), Jacksonville District US Virgin Islands LiDAR

### 1.2. Summary description of the data:

This Light Detection and Ranging (LiDAR) bare-earth classified LAS dataset is a topographic survey conducted for the

USACE USVI LiDAR Project. These data were produced for The Corps of Engineers Jacksonville District. The USVI LiDAR Survey

consists of the islands of St. Croix, St. Thomas, and St. John. The LiDAR point cloud was flown at a density sufficient to support

the Federal Emergency Management Agency (FEMA) guidelines and specifications. The Atlantic Group acquired the USVI LiDAR Survey

between November 16, 2007 and November 29, 2007. The USVI LiDAR survey was collected under the guidance of a Professional

Mapper/Surveyor.

Original contact information:

Contact Org: 3001 Inc

Title: LiDAR Department

Phone: (985) 661 - 3001

Email: lidar@3001inc.com

### 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:

2007-11-16 to 2007-11-29

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

W: -65.091685, E: -64.549985, N: 18.431784, S: 17.673984

**1.6. Type(s) of data:**
*(e.g., digital numeric data, imagery, photographs, video, audio, database, tabular data, etc.)*

**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?**

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

- 2007-08-09 00:00:00 - The Airborne Global Position System (ABGPS), inertial measurement unit (IMU), and raw scans are collected during the LiDAR aerial survey. The ABGPS monitors the xyz position of the sensor and the IMU monitors the orientation of the aircraft. During the aerial survey laser pulses reflected from features on the surface and are detected by the receiver optics and collected by the data logger. GPS locations are based on data collected by receivers on the aircraft and base stations on the ground. The ground base stations are placed no more than 35 km radius from the flight survey area.
- 2008-01-01 00:00:00 - The ABGPS, IMU, and raw scans are integrated using proprietary software developed by the Leica Geosystems and delivered with the Leica ALS50 System. The resultant file is in a LAS binary file format. The LAS file version 1.1 format can be easily transferred from one file format to another. It is a binary file format that maintains information specific to the LiDAR data (return #, intensity value, xyz, etc.). The resultant points are produced in the Florida State Plane West Zone coordinate system, with units in feet and referenced to the NAD83 horizontal datum and GRS80/Geoid03 vertical datum.
- 2007-08-31 00:00:00 - The unedited data are classified to facilitate the application of the appropriate feature extraction filters. A combination of proprietary filters is applied as appropriate for the production of bare-earth digital terrain models ( DTMs). Interactive editing methods are applied to those areas where it is inappropriate or impossible to use the feature extraction filters, based upon the design criteria and/or limitations of the relevant filters. These same feature extraction filters are used to produce elevation height surfaces.
- 2007-08-31 00:00:00 - Filtered and edited data are subjected to rigorous QA/QC according to the 3001 Inc. Quality Control Plan and procedures. Very briefly, a series of quantitative and visual procedures are employed to validate the accuracy and consistency of the filtered and edited data. Ground control is established by 3001, Inc. and GPS-derived ground control points (GCPs) points in various areas of dominant and prescribed land cover. These points are coded according to landcover, surface material, and ground control suitability. A suitable number of points are selected for calculation of a statistically significant accuracy assessment as per the requirements of the National Standard for Spatial Data Accuracy. A spatial proximity analysis is used to select edited LiDAR data points within a

specified distance of the relevant GCPs. A search radius decision rule is applied with consideration of terrain complexity, cumulative error, and adequate sample size. Accuracy validation and evaluation is accomplished using proprietary software to apply relevant statistical routines for calculation of Root Mean Square Error (RMSE) and the National Standard for Spatial Data Accuracy (NSSDA) according to Federal Geographic Data Committee (FGDC) specifications.
- 2007-08-31 00:00:00 - The LiDAR mass points were delivered in American Society for Photogrammetry and Remote Sensing LAS 1.1 format. The header file for each dataset is complete as define by the LAS 1.1 specification. In addition the following fields are included: Flight Date Julian, Year, and Class. The data were classified as follows: Class 1 = Unclassified- this class includes vegetation, buildings, noise etc.; Class 2 = Ground Class 7 = Noise Class 9 = Water Class 12 = Overlap
- 2007-01-01 00:00:00 - A triangulated irregular network (TIN) is a set of irregularly spaced points that contain an explicit topographic value. Each point is a vertice and is connected to any three points to represent an area of uniform topography. TINs retain precise topological location and are excellent sources for statistical calculations. The TINs were created in Terrasolid's "Terrascan" software. The first step of the process included the separation of the bare-earth points from the artifacts. The breaklines (vectors) are then concerted to x, y, z (ASCII) files and imported into the bare-earth mass points. The final step is to create the TIN using an ESRI Arc macro language (aml) script. To ensure the quality of the TIN each TIN is viewed independently to ensure that the hydro-breaklines are enforced and that the vegetation has been removed.
- 2007-01-01 00:00:00 - The breaklines were constructed under the model representation that water courses vary linearly in elevation or are constant in elevation between critical points established in the breakline model. These breaklines were determined from LiDAR and orthophoto data of specific dates and that model the land/water contributions and extents on those dates. The 3-D vector line work was created using stereo-compilation, digitizing, and manual editing. A thorough QC procedure was implemented to verify the elevation of the breaklines and to ensure no zero elevations were found except in coastal areas where it is possible to find z values equal to mean sea level. The breaklines are hydrologically correct 3-D product that represents a continuous dendritic network. This dataset is topologically correct. Stream and river features that are 0.5 miles or greater in length will be captured. Features that are 8 feet are less in width shall be captured as a single breaklines. Features greater than 8 feet in width shall be captured as double breakline features. All features will be captured as three-dimensional breaklines. Coastal shorelines shall be captured as three-dimensional linear features. Coastal breaklines will merge seamlessly with linear hydrographic features at the approximate maximum extent of tidal influence. The shoreline of islands within water bodies shall be captured as three-dimensional breaklines. Terramodel software was used to display the edited LiDAR points and associated GEOTIFF orthophotos to construct breaklines for the water's edge of wide channel rivers and canals, the shoreline of lakes and the shoreline of islands within water

bodies. Breakline elevations were linearly ramped between identified critical elevation points along flowing water courses or were set at a fixed level for lakes based on the lowest observed shoreline elevation or water return elevation. The breakline files are edge-matched and a shapefile for the project was created. Three-dimensional breaklines were derived through on screen digitizing based on the LiDAR data and orthophotography. The line work was captured as two dimensional lines with x/y coordinates only. Principal breaklines that support hydrologic and hydraulic models were captured which includes stream shorelines and hydraulic features such as dams, bridges, and culverts that constrict or impede the flow of water.
- 2010-11-01 00:00:00 - The NOAA Office for Coastal Management (OCM) received files in LAS format. The files contained LiDAR intensity and elevation measurements. OCM performed the following processing on the data to make it available within Digital Coast: 1. The data were converted from State Plane Puerto Rico coordinates to UTM Zone 20 coordinates. 2. The data were converted from NAVD88 feet to NAVD88 meters. 3. The data were re-tiled in MARS and all point classifications were set to 0 (class 0). 4. The data were filtered to Bare Earth (class 2) and Unclassified (class 1) using an automated process in LASEdit. 5. The data were converted from UTM coordinates to geographic coordinates. 6. The data were converted from NAVD88 heights to ellipsoid heights using Geoid03. 7. The LAS header fields were sorted by latitude and updated.

**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:
- 1.6. Type(s) of data
- 1.7. Data collection method(s)
- 3.1. Responsible Party for Data Management
- 4.1. Have resources for management of these data been identified?
- 4.2. Approximate percentage of the budget for these data devoted to data management

- 5.2. Quality control procedures employed
- 7.1. Do these data comply with the Data Access directive?
- 7.1.1. If data are not available or has limitations, has a Waiver been filed?
- 7.1.2. If there are limitations to data access, describe how data are protected
- 7.4. Approximate delay between data collection and dissemination
- 8.1. Actual or planned long-term data archive location
- 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?

**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/50067

**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

**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?**

**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=559
https://noaa-nos-coastal-lidar-pds.s3.amazonaws.com/laz/geoid18/559/index.html

**7.3. Data access methods or services offered:**
This data can be obtained on-line at the following URL: https://coast.noaa.gov/dataviewer;

**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)*

**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*

## 9. Additional Line Office or Staff Office Questions

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