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:
2014 FEMA Lidar DEM: Ketchikan, Alaska

1.2. Summary description of the data:
Digital Elevation model, derived from a lidar point cloud data, developed to support FEMA flood risk analysis and mapping in Ketchikan, Alaska. Point cloud is classified as ground (class 2) and other (class 1). The data was collected under a FEMA contract to the Strategic Alliance for Risk Reduction (STARR) with an accuracy requirement to support 2-foot contours. Original tasking indicates additional classes would be populated (7, 9, 10, 11), but they are not in the data set.

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:
2014-11-30

1.5. Actual or planned geographic coverage of the data:
W: -131.890301, E: -131.454155, N: 55.517998, S: 55.290125

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

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:
- 2014-09-30 00:00:00 - Terrain data used for flood risk analysis go through LiDAR preliminary processing and the unclassified point cloud data are tested as specified in the USGS National Geospatial Program Base LiDAR Specification Version 1.0.

Where the Mapping Activity Statement (MAS) requires bare earth post-processing of the floodplain area of interest (AOI), the elevation data are tested and comply with both the Fundamental Vertical Accuracy (FVA) and Consolidated Vertical Accuracy (CVA) requirements. Where no bare earth post-processing is specified, only the FVA requirements apply for LiDAR preliminary processing.
- 2014-07-01 00:00:00 - Ground Survey: RTK GPS based surveys were utilized to support both processing and testing of LiDAR data within FEMA designated Areas of Interest (AOIs). Geographically distinct ground points were surveyed using GPS technology throughout the AOIs to provide support for three distinct tasks. Task 1: Ground control monuments utilized for the STARR Ketchikan LiDAR dataset. Ground control monuments are used to provide redundant control within 13 nautical miles of mission areas for LiDAR flights, as well as the collection of ground control points using real-time kinematic (RTK) survey techniques. The horizontal datum for this dataset is NAD83 (2011), the vertical datum is NAVD88, Geoid 12A, and the data is projected in Alaska State Plane Zone 1. Units are in US Survey Feet. Task 2: RTK (real time kinematic) ground control points collected for the STARR Ketchikan LiDAR dataset. RTK ground control points are used to correct and verify the vertical accuracy of the LiDAR data. The horizontal datum for this dataset is NAD83 (2011), the vertical datum is NAVD88, Geoid 12A, and the data is projected in Alaska State Plane Zone 1. Units are in US Survey Feet. Task 3: Land cover class ground check points collected for the STARR Ketchikan LiDAR dataset. Land class ground check points are used to assess the vertical accuracy of the LiDAR data and are collected using real time kinematic (RTK) survey techniques. The horizontal datum for this dataset is NAD83 (2011), the vertical datum is NAVD88, Geoid 12A, and the data is projected in Alaska State Plane Zone 1. Units are in US Survey Feet.
- 2014-07-13 00:00:00 - LiDAR Acquisition: General: LiDAR collection was collected using a Leica ALS70 system mounted in a Piper Navajo airplane. Yielded an average pulse density of >= 4 pulses/square meter over the Ketchikan Project Area. Swath Acquisition: This swath dataset represents the STARR Ketchikan LiDAR study area. This data is delineated in 4800x4800 ft tiles. Tile naming is derived from the 4 four digits of the easting and first four digits of the northing coordinates of the lower left corner. Data is unclassified (class 0). The horizontal datum for this dataset is NAD83 (2011), the vertical datum is NAVD88, Geoid 12A, and it is projected in Alaska State Plane Zone 1. Units are in US Survey Feet. Quantum Spatial collected the STARR Ketchikan LiDAR data for STARR on 07/12/ 2014 and 07/13/2014 further information is available in the Ketchikan Post-Flight Aerial Acquisition Report. All areas were surveyed with an opposing flight line side-lap of >=50% (=100% overlap) in order to reduce laser shadowing and increase surface laser painting. To accurately solve for laser point position (geographic coordinates x, y and z), the positional coordinates of the airborne sensor and the attitude of the aircraft were recorded continuously throughout the LiDAR data collection mission. Position of the aircraft was measured twice per second (2 Hz) by an onboard differential GPS unit, and aircraft attitude was measured 200

times per second (200 Hz) as pitch, roll and yaw (heading) from an onboard inertial measurement unit (IMU). All swath data were classified as Class 0 or Unclassified. Leica ALS70 Instrument Parameters: Beam diameter: 37 cm cm, Pulse rate: 175 kHz, Maximum returns: 4, Speed: 150 knots, Overlap: 60 %, Laser power: 93.6 %, Field of view (FOV): 30 degrees, Beam wavelength: 1064 nm, Frequency of GPS sampling: 2 Hz, Frequency of IMU sampling: 200 Hz, Swath width: 857 m, AGL: 5207 - 5315 MSL m, Average pulse density: 4
- 2014-09-30 00:00:00 - Bare Earth Processing: QSI processing staff initiated a suite of automated and manual techniques to process the data into ASPRS Class 2 Bare Earth. The calibrated and filt ered LiDAR point cloud was hand checked for accuracy. Generate bare earth models as triangulated surfaces. The calibrated and filtered LiDAR point cloud was hand checked for accuracy. All points were placed in one of the following categories: 1 Unclassified, 2 Ground, 7 Noise, and 12 Overlap Points. Model Key points were then generated from the Ground points and placed in Category 8. Requested elevation values were evaluated for the Consolidated Vertical Accuracy (CVA) testing. Ketchikan Classified LiDAR ASPRS Classifications 1 Unclassified 2 Ground
- 2018-05-01 00:00:00 - Digital Elevation Model tiles were received in ESRI Arc coverage proprietary format from FEMA. Tiles were in Alaska state plane zone 01 US survey feet with vertical units of US survey feet. The vertical datum was NAVD88 using the NGS Geoid12a geoid model. Data were converted to tif format and changed to horizontal and vertical meters for ingest in the Digital Coast Data Access Viewer. The change of horizontal units was done because the system was not processing the files in US survey feet correctly. This projection does not have an EPSG code. EPSG code 6394 was used for Alaska State Plane Zone 1 NAD83(2011) in meters. Tests showed this data was correctly interpreted in some software, but not all software. The data in both feet and meters is available on the bulk download data access link. (Citation: Ketchikan 3ft Digital Elevation Models)

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
- 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/52496

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=8522
https://noaa-nos-coastal-lidar-pds.s3.us-east-1.amazonaws.com/dem/AK_Ketchikan_FEMA_DEM_2014

7.3. Data access methods or services offered:
Data is available online for 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)

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.