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:

2006 URS Corporation Bare Earth Topographic Lidar: Shawsheen River, Massachusetts

1.2. Summary description of the data:

URS Corporation contracted EarthData International to aquire topographic elevation data for 82 square miles in Essex

and Middlesex Counties, Massachusetts during 2006. Products generated include lidar point clouds, 3D hydro breaklines,

and lidar bare-earth elevation models in LAS format using lidar collected with a Leica ALS-50 Aerial Lidar Sensor.

Lidar Sensor Specifications:

Sensor: Leica ALS-50 Aerial Lidar Sensor (s/n ALS036)

Airspeed: ~ 130 knots

Laser Pulse Rate: 38,000 Hz

Field of View: 35 Degrees

Scan Rate: 20 Hz

Average Swath Width: 1537 meters

Nominal Post Spacing 3 meters

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:

2006-12-16

1.5. Actual or planned geographic coverage of the data:

W: -71.308999, E: -71.122943, N: 42.725917, S: 42.443801

1.6. Type(s) of data:

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

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:

- 2006-12-27 00:00:00 - Terrasurv was tasked to perform a geodetic control survey in support of LIDAR mapping of the Shawsheen river area in Essex and Middlesex Counties, Massachusetts. The Global Positioning System (GPS) was used in a static differential mode to measure the interstation vectors of the network. The National Spatial Reference System (NSRS) was used to provide control for the network. Continuously Operating Reference Station WMTS was used, along with two ground stations of the NSRS. Two Trimble dual frequency receivers were used on day 361 of 2006. A base receiver was set up near on C 35, at the Lawrence Municipal Airport. This point was also used by the flight crew during the aerial data acquisition phase. The two northerly LIDAR points (SR-1 and SR-5) were surveyed using this station as a base. The other three LIDAR stations, and benchmark V 34, were surveyed using the CORS as a base. The horizontal datum was the North American Datum of 1983, 1996 adjustment (NAD 1983 1996), and the vertical datum was the North American Vertical Datum of 1988 (NAVD 1988) Geoid03.
- 2006-12-16 00:00:00 - URS contracted EarthData International, Inc. (EarthData) to collect and deliver high quality topographic elevation point data derived from multiple return, light detection and ranging (Lidar) measurements for an area of interest totaling approximately 82 square miles in Essex and Middlesex Counties, Massachusetts. Data was collected at a nominal three meter (3) meter post spacing between points at an altitude of 2438 meters (8,000 feet) above mean terrain. This data was used to produce a bare-earth surface model and hydro-enforced breaklines for the project. The aerial acquisition was conducted on 16 December, 2006 using and aircraft (tail number N2636P). Lidar data was captured using an ALS-50 Lidar system, s/n ALS036, including an inertial measuring unit (IMU) and a dual frequency GPS receiver.
- 2007-02-28 00:00:00 - EarthData has developed a unique method for processing lidar data to identify and remove elevation points falling on vegetation, buildings, and other aboveground structures. The algorithms for filtering data were utilized within EarthData's proprietary software and commercial software written by TerraSolid. This software suite of tools provides efficient processing for small to large-scale, projects and has been incorporated into ISO 9001 compliant production work flows. The following is a step-by-step breakdown of the process. 1. Using the lidar data set provided by EarthData, the technician performs calibrations on the data set. 2. Using the lidar data set provided by EarthData, the technician performed a visual inspection of the data to verify that the flight lines overlap correctly. The

technician also verified that there were no voids, and that the data covered the project limits. The technician then selected a series of areas from the data set and inspected them where adjacent flight lines overlapped. These overlapping areas were merged and a process which utilizes 3-D Analyst and EarthData's proprietary software was run to detect and color code the differences in elevation values and profiles. The technician reviewed these plots and located the areas that contained systematic errors or distortions that were introduced by the lidar sensor. 3. Systematic distortions highlighted in step 2 were removed and the data was re-inspected. Corrections and adjustments can involve the application of angular deflection or compensation for curvature of the ground surface that can be introduced by crossing from one type of land cover to another. 4. The lidar data for each flight line was trimmed in batch for the removal of the overlap areas between flight lines. The data was checked against a control network to ensure that vertical requirements were maintained. Conversion to the client-specified datum and projections were then completed. The lidar flight line data sets were then segmented into adjoining tiles for batch processing and data management. 5. The initial batch-processing run removed 95% of points falling on vegetation. The algorithm also removed the points that fell on the edge of hard features such as structures, elevated roadways and bridges. 6. The operator interactively processed the data using lidar editing tools. During this final phase the operator generated a TIN based on a desired thematic layers to evaluate the automated classification performed in step 5. This allowed the operator to quickly re-classify points from one layer to another and recreate the TIN surface to see the effects of edits. Geo-referenced images were toggled on or off to aid the operator in identifying problem areas. The data was also examined with an automated profiling tool to aid the operator in the reclassification. 7. The point cloud data were delivered in LAS format.

- 2007-02-28 00:00:00 - 3-D breaklines were created for the creation of a completely new hydrology dataset specifically tailored to meets the needs of the users of terrain data. 1) Breaklines were generated for all streams draining greater than approximately 1 square mile. 2) Two-dimensional lines defining the centerline and banks of those streams were manually digitized into Microstation format from the available 2002 source digital aerial imagery using lidar hillshades as an ancillary reference. 3) Breaklines were collected, unbroken through closed water bodies and culverts, as well as under roads, railroads, and bridges, in order to maintain proper stream network connectivity. 4) The entire breakline dataset was checked to ensure integrity of the linework with respect to topologic structure, connectivity, and positive downhill stream flow. 5) Single line streams were collected with the following criteria: Any area of drainage that did not meet the criteria to be collected as a double banked stream or closed water body. 6) Double-banked streams were collected with the Any area of drainage that was at least 40 feet wide for a distance of greater than 540 feet, and excluding closed water bodies. Double banked streams were delivered as linear features. 7) Artificial path lines were collected as the center line for all double banked streams and closed water bodies. Artificial paths

were also created for closed water bodies where no flow path was delineated coming into or leaving the water body, and/or where the closed water body existed as the origin source of a flow path. 8) Artificial paths that are drawn in the two instances above go through the center of the water body and stop halfway through it. Artificial paths were only drawn for water bodies that fell on a streamline. 9) Any islands found within water bodies were collected in instances where trees were visible on them (indicating that these are permanent features). These islands were delivered as separate polyline features if present. 10) Any and all closed water bodies were collected, regardless of size, excluding such features as swimming pools, for the entire project area. 11) Water bodies were delivered as polygon features. 12) Single line streams, double banked streams, artificial paths and closed water bodies have unique attribution such that one feature type can be easily distinguished from another. 13) Linework was delivered in ESRI shape file format. 14) The 3D Hydro Breaklines were developed for the sole purpose of supporting flood mapping and should not be used to generate contours
- 2013-10-01 00:00:00 - The NOAA Office for Coastal Management (OCM) received topographic files las V1.1 format. The files contained lidar elevation measurements, Class 2 Points, return information, scan angle, intensity values and GPS Week Time. The data were received in Massachusetts State Plane Mainland Zone 2001, NAD83 coordinates and were vertically referenced to NAVD88 using the Geoid03 model. The vertical units of the data were meters. OCM performed the following processing for data storage and Digital Coast provisioning purposes: 1. The GPS Week Time was converted to Adjusted Standard GPS Time. 2. The las files were changed from V 1.1 to V 1.2. 3. The las files were converted from orthometric (NAVD88) heights to ellipsoidal heights using Geoid03. 4. The las files were converted from a Projected Coordinate System (MA SP Mainland) to a Geographic Coordinate System (NAD83). 5. The las files' horizontal units were converted from meters to decimal degrees.

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/49771

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=2576
https://noaa-nos-coastal-lidar-pds.s3.amazonaws.com/laz/geoid18/2576/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/#/lidar/search/where:ID=2576

;

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.