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:

2012 Lidar: Fall Creek, OR

1.2. Summary description of the data:

No metadata record for this data set was provided to the NOAA Office for Coastal Management (OCM). This record was created with information from the data report. A link to the data report is provided in the URL section of this metadata record.

Watershed Sciences, Inc. (WSI) collected Light Detection and Ranging (LiDAR) data in Fall Creek, OR for David C. Smith and Associates and the US Army Corps of Engineers between January 13 and February 23, 2012. The requested lidar area of interest (AOI) totals approximately 23,859 acres and Total Area Flown (TAF) totals 25,485 acres.

In addition to these lidar point data, the bare earth Digital Elevation Models (DEM) created from the lidar point data are also available. These data are available for custom download at the link provided in the URL section of this metadata record.

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:

2012-01-13, 2012-02-23

1.5. Actual or planned geographic coverage of the data:

W: -122.921337, E: -122.647548, N: 44.009017, S: 43.911659
Fall Creek project area.

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):

Lineage Statement:

Watershed Sciences, Inc., collected Light Detection and Ranging (LIDAR) data in the Blue River project area for the USDA Forest Service and EPA. NOAA OCM received the data from DOGAMI and ingested it into the Digital Coast Data Access Viewer for distribution.

Process Steps:

- 2011-11-01 00:00:00 - Acquisition. This LiDAR survey utilized an Optech Orion mounted in a Cessna Caravan 208B aircraft. The LiDAR system was set to acquire ≥ 100,000 laser pulses per second (i.e., 100 kHz pulse rate) and flown at 800 m above ground level (AGL), capturing a scan angle of ±14o from nadir . The survey implemented opposing flight lines with side-lap of ≥50% (≥100% overlap) to reduce laser shadowing and increase surface laser painting. To solve for laser point position, an accurate description of aircraft position and attitude is vital. Aircraft position is described as x, y, and z and is measured twice per second (2 Hz) by an onboard differential GPS unit. Aircraft attitude is described as pitch, roll, and yaw (heading) and is measured 200 times per second (200 Hz) from an onboard inertial measurement unit (IMU).
- Ground Survey During the LiDAR survey, static (1 Hz recording frequency) ground surveys were conducted over set monuments. After the airborne survey, the static GPS data are processed using triangulation with Continuously Operating Reference Stations (CORS) and checked using the Online Positioning User Service (OPUS1) to quantify daily variance. Multiple sessions are processed over the same monument to confirm antenna height measurements and reported position accuracy. During every LiDAR survey, static (1 Hz recording frequency) ground surveys were conducted over either pre-existing or newly set monuments. After the airborne survey, the static GNSS data were processed using triangulation with Continuously Operating Reference Stations (CORS) and checked using the Online Positioning User Service (OPUS) to quantify daily variance. Additionally, a daily RTK survey was conducted to collect ground control points. These data are then used in the processing of the LiDAR data acquired during the flight. WSI owns and operates multiple sets of Trimble GPS and Global Navigation Satellite System (GNSS) dual-frequency L1-L2 receivers used in both static and RTK surveys. Existing and established survey benchmarks serve as control points during LiDAR acquisition. All monumentation established by WSI is set using 5/8” x 30" rebar topped with a 2” aluminum cap marked with the monument name, date and “WATERSHED SCIENCES INC., CONTROL” across the top.
- Laser Point Processing Laser point coordinates are computed using the LMS software suites based on independent data from the LiDAR system (pulse time, scan angle), and aircraft trajectory data (SBET). Laser point returns (first through fourth) are assigned an associated (x, y, and z) coordinate along with unique intensity values (0-255). The data are output into large LAS v. 1.2 files; each point maintains the corresponding scan angle, return number (echo), intensity, and x, y, and z (easting, northing, and elevation) information. The system allows up to four range

measurements per pulse, and all discernible laser returns are processed for the output dataset. Flightlines and LiDAR data are then reviewed to ensure complete coverage of the project area and positional accuracy of the laser points. Once the laser point data are imported into TerraScan, a manual calibration is performed to assess the system offsets for pitch, roll, heading and mirror scale. Using a geometric relationship developed by WSI, each of these offsets is resolved and corrected if necessary. The LiDAR points are then filtered for noise, pits and birds by screening for absolute elevation limits, isolated points and height above ground. Supervision of point classes occurs, and spurious points are removed. For a *.las file containing approximately 7.5-9.0 million points, an average of 50-100 points are typically found to be artificially low or high. Common sources of non-terrestrial returns are clouds, birds, vapor, and haze. Internal calibration is refined using TerraMatch. Points from overlapping lines are tested for internal consistency and final adjustments are made for system misalignments (i.e., pitch, roll, heading offsets and mirror scale). Automated sensor attitude and scale corrections yield 3-5 cm improvements in the relative accuracy. Once the system misalignments are corrected, vertical GNSS drift is resolved and removed per flight line, yielding a slight improvement (<1 cm) in relative accuracy. In summary, the data completes a robust calibration designed to reduce inconsistencies from multiple sources (i.e., sensor attitude offsets, mirror scale, GNSS drift). The TerraScan software suite is designed specifically for classifying near-ground points (Soininen, 2004). The processing sequence begins by 'removing' all points that are not 'near' the earth based on geometric constraints used to evaluate multi-return points. The resulting bare earth (ground) model is visually inspected and additional ground point modeling is performed in site-specific areas (over a 50-meter radius) to improve ground detail. This is only done in areas with known ground modeling deficiencies, such as: deeply incised stream banks and dense vegetation. In some cases, ground point classification includes known vegetation (e.g., understory, low/dense shrubs, etc.) and these points are then manually reclassified as non-grounds. Ground surface rasters are developed from triangulated irregular networks (TINs) of ground points.
- 2019-10-01 00:00:00 - The NOAA Office for Coastal Management (OCM) received 112 lidar point cloud files in laz format from DOGAMI. The files contained lidar elevation and intensity measurements. The data were in UTM Zone 10N, NAD83, meters, coordinates and NAVD88 (Geoid03) elevations in meters. The data were classified as: 1-Unclassified, 2-Ground, 8-Model Key Point, and 9-Water. OCM processed all classifications of points to the Digital Coast Data Access Viewer (DAV). Classes available on the DAV are: 1, 2, 8, 9. OCM performed the following processing on the data for Digital Coast storage and provisioning purposes: 1. An internal OCM script was run to check the number of points by classification and by flight ID and the gps and intensity ranges. 2. Internal OCM scripts were run on the laz files to convert from orthometric (NAVD88) elevations to ellipsoid elevations using the Geoid03 model, to convert from UTM Zone 10N, NAD83 coordinates in meters, to geographic coordinates, to assign the geokeys, to sort the data by gps time, and zip

the data to database and to http. (Citation: processed lidar data)

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/57827

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?

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=8887
https://noaa-nos-coastal-lidar-pds.s3.amazonaws.com/laz/geoid12b/8887/index.html

7.3. Data access methods or services offered:

Data is available online for bulk and 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_CO

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 tape and 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.