

*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:**

2010 USACE NCMP Topobathy Lidar DEM: Oregon and Washington

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

These files contain rasterized topographic and bathymetric lidar elevations generated from data collected by the SHOALS-1000T bathymetric and the Leica ALS60 topographic lidar systems along the coast of Oregon and Washington. Lidar data coverage normally extends along the coastline from the waterline inland 500 meters (topography) and offshore 1,000 meters or to laser extinction. An exception to topographic coverage was made during the field data acquisition where the 500 m corridor was shifted toward the ocean to include the large occurrence of exposed rocks off the Oregon coastline. In this case the final topographic data coverage corridor was reduced to a range of 100 m to 150 m to include coverage over rocks offshore. In Washington, additional bathymetric survey areas in Puget Sound and San Juan de Fuca Strait were added on later in the field campaign to replace areas with persistent unfavorable survey conditions (weather and water clarity); topographic lidar data collection was not performed on the additional areas.

Native lidar data is not generally in a format accessible to most Geographical Information Systems (GIS). Specialized in-house and commercial software packages are used to process the native lidar data into 3-dimensional positions that can be imported into GIS software for visualization and further analysis. The 3-D position data are used to generate a series of gridded file products, with each covering approximately 5 kilometers of shoreline. The grid file index is provided by the shape file, "OR\_Boxes", and the numbers used to identify files are in the "Box" field of the shape file. The data file naming convention is based on the year, project, area name, vertical datum, "Box" number and product type. An example file name is "2010\_NCMP\_OR\_001\_Grid.tif", where <2010> is the project year, <NCMP> is the project under which data were collected, <OR> is the area of data collection, <001> is the "Box" number and <Grid> is the product type (bare earth DEM or first return DSM). On bare earth DEM, interpolation has occurred over removed building footprints to fill in elevations.

In addition to these bare earth Digital Elevation Model (DEM) data, the lidar point data

that these DEM data were created from, 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:**

2010-06-27 to 2010-07-13, 2010-07-24 to 2010-10-07

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

W: -124.73687, E: -123.89907, N: 48.38925, S: 41.99885

**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?****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):*

Lineage Statement:

The USACE collected, processed, and provided the data to the NOAA Office for Coastal Management (OCM). OCM received the data and processed it to be available for custom download from the Data Access Viewer (DAV) and for bulk download from https.

Process Steps:

- These data were collected using the SHOALS-1000T and ALS60 systems. They are owned by Fugro and operated through contract. The ALS60 system collects topographic lidar data at maximum pulse rate of 200 kHz in a wavelength of 1064 nm with a CASI-1500 hyperspectral line scanner integrated with the system. The SHOALS collects bathymetric lidar data at 1kHz, RGB imagery at 1Hz and a CASI-2 hyperspectral line scanner integrated with the system as well. Aircraft position, velocity and acceleration information are collected through a Novatel and POS A/V 410 equipment (SHOALS) and the onboard GPS/IMU system (ALS60). SHOALS raw data streams are transferred to the office for downloading and processing in SHOALS GCS software. ALS60 raw data were also transferred to the office and processed in IPAS software. Aircraft position data are processed using POSpac software and the results are combined with the lidar data to produce 3-D positions for each lidar shot. Upon inspection and QA/QC in the software packages Fledermaus (SHOALS), GeoCue and TerraScan (ALS60), anomalous data are flagged as invalid. FPI Workbench and Fugro's proprietary software convert all valid data from ellipsoid to orthometric heights based on the NGS' GEOID09 model and exports data as a series of first return topography and bathymetry ASCII files. The bathymetry files contain only the returns below the water surface (no topography).
- The topographic first return and bathymetry point clouds, where both exist, are

combined into a single file to create a surface model grid (DSM); bathymetric data have been limited to data below the water surface. On bare earth DEM, topographic data has been filtered to include ground returns only; These datasets are combined to create the elevation model. The raster grids are created by generating a triangulated irregular network (TIN) and then extracting the grid node elevations from the TIN surface; in the bare earth DEM, interpolation fills in elevation values over building footprints. The origin point of the grid is located at a horizontal position whose value is evenly divisible by the 1m grid resolution such that rasters from subsequent surveys have common cell boundaries. Fugro uses FPI Workbench and ArcGIS to perform this operation utilizing TIN area delineation method: "max edge length 10m"; this also secures elevations will not be interpolated more than 5m away from actual data points (except when interpolating over building footprints). The grid is converted to a TIFF raster within ArcGIS. The projection is defined as "North American Datum of 1983" using the DefineProjection command within ArcToolbox; statistics are also generated with Calculate\_Statistics tool to display the grid's elevations range properly. Horizontal positions, provided in decimal degrees of latitude and longitude, are referenced to the North American Datum of 1983 (NAD83). Vertical positions are referenced to the NAD83 ellipsoid and provided in meters. The National Geodetic Survey's (NGS) GEOID09 model is used to transform the vertical positions from ellipsoid to orthometric heights referenced to the North American Vertical Datum of 1988 (NAVD88).

- 2022-01-10 00:00:00 - The NOAA Office for Coastal Management (OCM) received GeoTiff format files from USACE JALBTCX for the Oregon and Washington coastline project area. The bare earth raster files were at a 1 m grid spacing. The data were in geographic NAD83 coordinates and NAVD88 (Geoid09) elevations in meters. OCM assigned the appropriate EPSG codes (Horiz - 4269, Vert - 5703) and copied the raster files to https for Digital Coast storage and provisioning purposes.

**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/66400>

**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?**

**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=9443/details/9443>

[https://noaa-nos-coastal-lidar-pds.s3.us-east-1.amazonaws.com/dem/USACE\\_OR\\_WA\\_DEM\\_2010\\_9443](https://noaa-nos-coastal-lidar-pds.s3.us-east-1.amazonaws.com/dem/USACE_OR_WA_DEM_2010_9443)

**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)*

**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.*