

*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 U.S. Geological Survey (USGS) Topographic Lidar: Channel Islands, California

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

Terrapoint collected LiDAR for 197 square miles covering five islands off the coast of Los Angeles, California. These islands are part of the

Channel Islands National Park and consists of San Miguel Island, Santa Rosa Island, Santa Cruz Island, Anacapa Island, and Santa Barbara Island.

The nominal pulse spacing for this project was better than 0.7 meters. This project was collected with a sensor which collects waveform data

and provides an intensity value for each discrete pulse extracted from the waveform. GPS Week Time, Intensity, Flightline and echo number

attributes were provided for each LiDAR point. Dewberry used proprietary procedures to classify the LAS according to USGS ARRA

specifications:

1-Unclassified

2-Ground

7-Noise

9-Water

10-Ignored Ground due to breakline proximity.

Dewberry produced 3D breaklines, seamless DSMs, and seamless hydro flattened DEMs for the 204 tiles (2000 m x 2000 m) that cover the project area.

Area mapped by island is as follows:

Santa Barbara Island-1 sq. mi.

Anacapa Island-1 sq. mi.

San Miguel Island-15 sq. mi.

Santa Rosa Island-83 sq. mi.

Santa Cruz Island-97 sq. mi.

Two UTM zones cover the Channel Islands. The islands delivered per each UTM zone are as follows (please note that Santa Rosa Island was delivered

in both UTM zone 10 and UTM zone 11):

UTM Zone 10:

Santa Rosa Island

San Miguel Island

UTM Zone 11:

Santa Barbara Island

Santa Rosa Island

Santa Cruz Island

Anacapa Island

The NOAA Office for Coastal Management received the data in UTM Zones 10 and 11.

The data were converted to geographic coordinates and

from NAVD88 heights to ellipsoid heights using GEOID09. These files were converted for data storage and Digital Coast provisioning purposes.

Original contact information:

Contact Org: USGS

Title: USGS NGTOC

Phone: (573) 308-3612

Email: ckelly@usgs.gov

**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:**

2010-03-11 to 2010-04-08

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

W: -120.479098, E: -119.013085, N: 34.087167, S: 33.449425

**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:

- 2010-04-01 00:00:00 - Terrapoint used their latest helicopter-based LiDAR sensor. The Riegl LMS-Q560 helicopter-mounted system is designed specifically for small block sites and corridor applications. A combination of Sokkia GSR 2600 and NovAtel DL-4+ dual-frequency GPS receivers were used to support the airborne operations of this survey and to establish the GPS control network. Airborne GPS kinematic data was processed on-site using GrafNav kinematic On-The-Fly (OTF) software. Flights were flown with a minimum of 6 satellites in view (130 above the horizon) and with a PDOP of better than 4. Distances from base station to aircraft were kept to a maximum of 24 km. For all flights, the GPS data can be classified as excellent, with GPS residuals of 3cm average or better but no larger than 10cm being recorded. The initial step of calibration is to verify availability and status of all needed GPS and Laser data against field notes and compile any data if not complete. Laser data points are generated using Terrapoint's proprietary laser post-processing software. This software combines the raw laser range and angle data file with the finalized GPS/IMU information. The resulting point cloud has been projected into the desired coordinate system in LAS binary format. All missions are validated against the adjoining missions for relative vertical biases and collected GPS kinematic ground truthing points for absolute vertical accuracy purposes. On a project level, a coverage check is carried out to ensure no slivers are present in areas where it was possible to acquire LiDAR at a safe AGL.

- 2010-09-01 00:00:00 - Dewberry utilizes a variety of software suites for inventory management, classification, and data processing. All LiDAR related processes begin by importing the data into the GeoCue task management software. GeoCue allows the data to retain its delivered tiling scheme (2000 m by 2000 m). The tiled data is then opened in Terrascan where Dewberry uses proprietary ground classification routines to remove any non-ground points and generate an accurate ground surface. The ground routine consists of three main parameters (building size, iteration angle, and iteration distance); by adjusting these parameters and running several iterations of this routine an initial ground surface is developed. The building size parameter sets a roaming window size. Each tile is loaded with neighboring points from adjacent tiles and the routine classifies the data section by section based on this roaming window size. The second most important parameter is the maximum terrain angle, which sets the highest allowed terrain angle within the model. Once the ground routine has been completed a manual quality control routine is done using hillshades, cross-sections, and profiles within the Terrasolid software suite. After this QC step, a peer review and supervisor manual inspection is completed on a percentage of the classified tiles based on the project size and variability of the terrain. After the ground classification corrections were

completed, the dataset was processed through a water classification routine that utilizes breaklines compiled by Dewberry to automatically classify hydrographic features. The water classification routine selects ground points within the breakline polygons and automatically classifies them as class 9, water. During this water classification routine, points which are in close proximity (2 ft) to the hydrographic features are moved to class 10, an ignored ground. In addition to classes 1, 2, 9, and 10, St. Johns allows for a Class 7, noise points. This class was only used if needed when points could manually be identified as low/high points. The fully classified dataset is then processed through Dewberry's comprehensive quality control program. 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 10= Ignored Ground The LAS header information was verified to contain the following: Class (Integer) GPS Week Time (0.0001 seconds) Easting (0.01 foot) Northing (0.01 foot) Elevation (0.01 foot) Echo Number (Integer 1 to 4) Echo (Integer 1 to 4) Intensity (8 bit integer) Flight Line (Integer) Lidar Scan Angle (Integer degree)

- 2012-10-01 00:00:00 - The NOAA Office for Coastal Management (OCM) received topographic files in LAS format. The files contained lidar elevation and intensity measurements. The data were received in UTM Zones 10 and 11 (NAD83) coordinates and were vertically referenced to NAVD88 using the Geoid09 model. The vertical units of the data were meters. OCM performed the following processing for data storage and Digital Coast provisioning purposes: 1. The topographic las files were converted from orthometric (NAVD88) heights to ellipsoidal heights using Geoid09.

**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/50117>

**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=1398>

<https://noaa-nos-coastal-lidar-pds.s3.amazonaws.com/laz/geoid18/1398/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=1398>

;

**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.*