

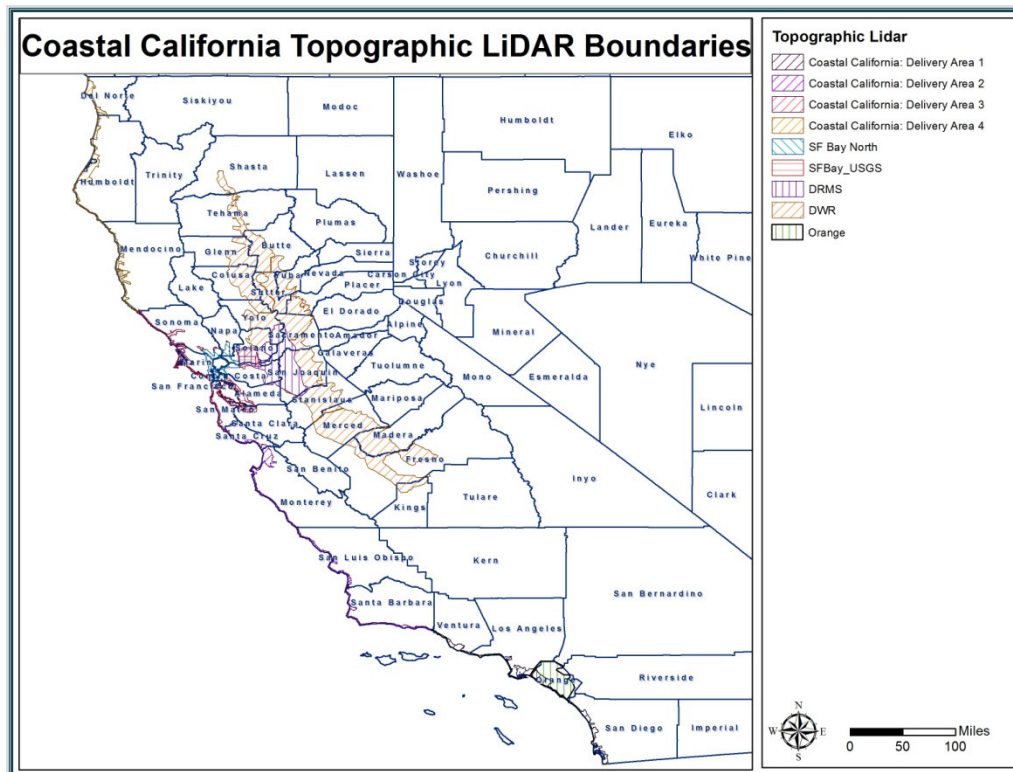
DATE: 7/2/2012
 TO: Dennis Hall
 FROM: Josh Novac
 SUBJECT: Coastal California Data Merge – Data Inventory and Void Identification Report

MESSAGE:

The following memorandum outlines the comprehensive inventory that was performed by the Dewberry/Fugro team to identify Topographic LiDAR, Bathymetric LiDAR, and Acoustic data to be merged for this project. Along with the memorandum, a file geodatabase containing the project boundaries, inventoried data, and voids is being delivered. Each section will outline data to be used in the merge process along with a section detailing the information that can be found in the file geodatabase deliverable.

Topographic LiDAR Data:

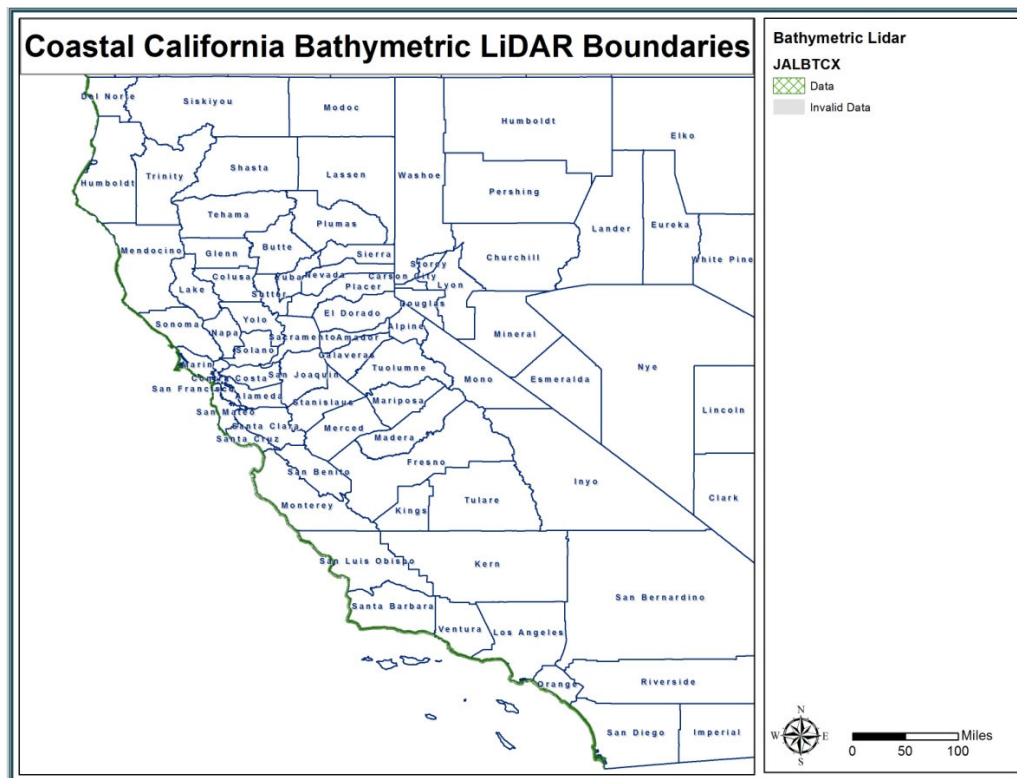
The project boundary defined for the topographic LiDAR portion of this project is coincident with the Coastal California LiDAR program for NOAA, JALBTCX, and OPC. This dataset will be used as the primary source in all areas and does not contain voids. Data in the San Francisco Bay Area are being merged in a separate project by the USGS. This area is not identified as a void in the program as it will exist in a separate project and can be incorporated into this merged product at a later date.



inventory in the event that it is decided to incorporate other existing projects within the state of California. These projects include the California DWR program LiDAR, the San Francisco Bay LiDAR, and the Orange County LiDAR. Other LiDAR datasets exist with the state but are not adjacent to the project boundary and therefore have not been included in the data inventory. If the stake holders on this program find value in including additional LiDAR programs in the inventory Dewberry can include these as requested.

Bathymetric LiDAR Data:

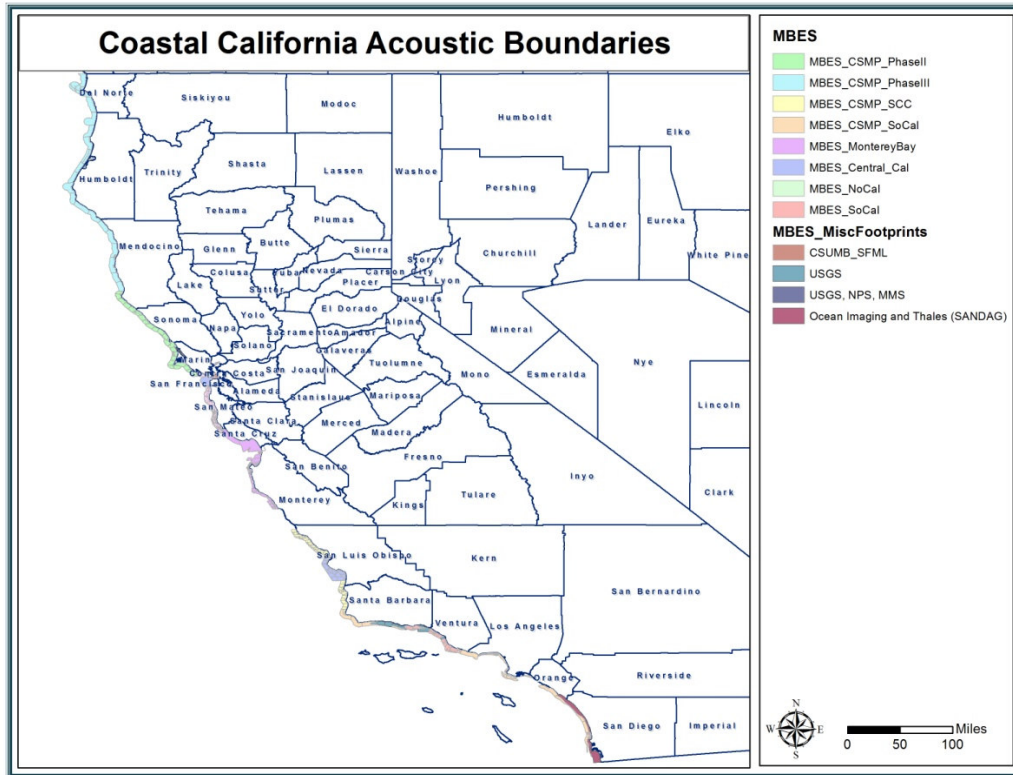
The bathymetric LiDAR data identified for this program consists of the LiDAR acquired for the Coastal California Mapping Program that was largely collected by JALBTCX. All missions have been included in the geodatabase with symbology defined based on the usability of the data. The bathymetric LiDAR will exist in the near shore area only. There are numerous areas that are identified as “invalid data” within the bathymetric LiDAR. Data are designated as “invalid data” if the results of the survey are not usable or did not meet specifications for the program. Areas marked as invalid data were assumed to have no-data and therefore would generate voids if no additional products were overlapping those locations.



Acoustic Data:

The acoustic data occurs from the near shore area to the three mile boundary. The acoustic data come from many different sources and are primarily multi-beam echo sounding data. All available identified project extents have been included in the geodatabase for review. There are several programs that were identified as potentially useful to this program where the boundary was

unavailable. In these instances a boundary will be created upon receipt of the data and included in the inventory at that time. Additionally, low resolution acoustic data were identified throughout the project area and are not included in the inventory at this time. These data can be included in the inventory if the program stakeholders deem this information would be helpful. A list of these projects has been included in this memorandum.



In addition to the data defined in the inventory geodatabase, the following projects have been identified within the project boundary. These projects either did not have a project boundary or are currently deemed unsuitable for the program due to spatial resolution, accuracy, or collection date.

1. San Francisco Bay Acoustic Data (South) – Collected in 1997. This is a single beam acoustic survey. The XYZ format of the data is available and could be used in the merge program. A project boundary for this program was not identified. Link: http://pubs.usgs.gov/of/2007/1169/data/O1169_metadata/SSFB05_NAVD.html.
2. Humboldt Bay Bathymetry – Collected in 1993. This survey contains 732 points covering the bay and surrounding inlets. A report on the accuracy of this survey was not located. Link: <http://www.dfg.ca.gov/marine/gis/bathymetry.asp>.
3. GLORIA EEZ Scan Data – Collected in 1984. This collection was conducted by the USGS and covers much of the deep water off-shore component of this program. However, the spatial resolution is very poor and not recommended for inclusion in this program. Link: <http://coastalmap.marine.usgs.gov/regional/contusa/westcoast/pacificcoast/data.html>.

4. San Francisco Bay Bathymetric Survey – Collected in 1950 & 1983. There were several collections over the San Francisco Bay, however, the resolution ranges from 25 – 100 meters and is not recommended for inclusion into this program. Link: <http://sfbay.wr.usgs.gov/sediment/sfbay/downloads.html>.
5. San Pablo Bay Bathymetric Survey – Collected in 1983. The spatial resolution of this survey is 50 meters. Because of the date of collect and poor resolution this source is not recommended for inclusion in the merge program.
6. Suisan Bay Bathymetric Survey – Collected in 1990. The spatial resolution of this survey is 25 meters. Because of the date of collect and poor resolution this source is not recommended for inclusion in the merge program.

Elevation Geodatabase:

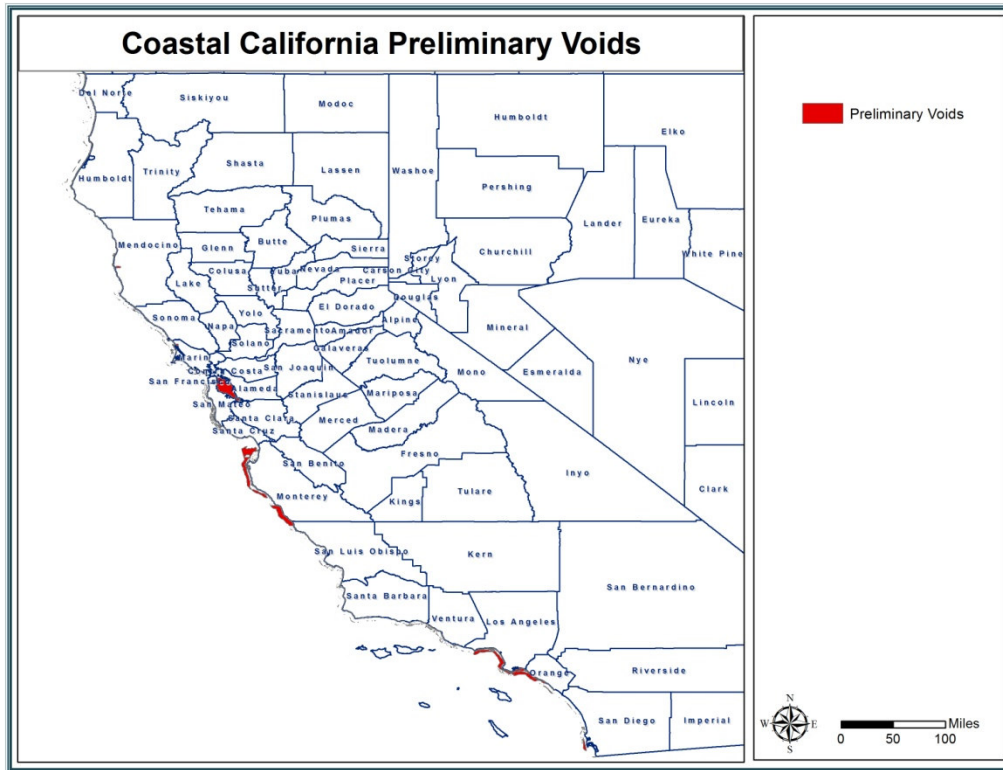
The primary deliverable for the data inventory is a file geodatabase developed by Fugro and updated by Dewberry to include any additional data identified for this task. The file geodatabase is split between Topographic, Bathymetric, and Acoustic (Multi-beam Echo Soundings (MBES)). Within each feature class the attributes are listed for the developer of the data, the client the data were created for, an online link to the data, if one exists, the year the data were collected, and overall accuracy of the products. In the case of the bathymetric LiDAR, the data is also designated as “invalid data” if the results of the survey are not usable, or did not meet specifications, for the program.

In addition to the individual survey boundaries, an overview of each data type along with project boundaries has been incorporated into the project overview dataset. This dataset serves as a quick reference for where data exists and the overall extents of the California data merge area. This dataset also includes the feature class containing the preliminary void polygons.

Preliminary Void Polygons:

The preliminary void polygons represent areas where ‘no-data’ or ‘invalid-data’ exist within the data merge boundaries. These preliminary voids were developed by removing all known survey information from the project extents. This includes known voids in the bathymetric LiDAR and acoustic layers. The dataset is preliminary as these voids have not been validated in the data at this stage of the process. However, these voids will be suitable for aiding in the development of a plan for filling or not filling the void areas.

The void areas in the geodatabase are attributed with the square meters, acres, and square mileage of the void. Dewberry recommends that any void that is less than 3 times the nominal post spacing (or resolution) of the source data be determined as within interpolation tolerance of the project. These small voids within tolerance will be filled during the DEM creation process. In this case, voids less than three square meters would be filled in the topographic LiDAR and acoustic data. For the bathymetric LiDAR, voids less than 15 square meters would be filled.



Upon receipt of the data Dewberry will perform a final comprehensive void analysis that will be used to validate the initial voids. This will be completed through the generation of density grids where areas that do not meet three times the nominal post spacing of the product will be defined as a data void. These areas will be exported to polygons and will be used to replace the preliminary file as well as used for masking the void areas in the final deliverable so that areas that are voids are treated as 'no-data' in the final DEM products.

ATTACHMENTS:

- Attachment A – California Data Merge Geodatabase