eBEACHES Locational Data SOP

Revised: July 2023

Process

For a new beach, new beach id, new beach-to-ID relationship (e.g., split or merge), or deletion of beach ID, go to 1. For refined location data only (e.g., latitude and longitude) with no beach ID change, see directions below.

For a name change only:

If using the EPA Access Databases, submit changes to the name associated with the EPA Beach ID in the Project Table (Monitoring) and the BEACH table (Notification).

If using your own database, enter the new beach name in the XML tags: <ProgramInterestName> for notification and <ProjectName> for monitoring. In addition, you should keep a cross-reference table locally so that if someone tries to do a trend analysis of actions and monitoring data, using the old name, they will be able to find out what the new name is. PRAWN and STORET will return only the new beach name when the query is done using the new beach name or BEACH_ID (PROJECT_ID in WQX/STORET), and nothing if done using the prior name.

CGI Federal, Assigns Beach ID

1)
a. When a state (includes tribe, territory) needs a new Beach ID (aka "Project ID" in STORET), (or for a "similar point of access"), the state must submit the name of the beach, the county the beach resides in, and nearest town, to the eBeaches Group at CGI Federal (ebeaches@cgifederal.com) or call 337-344-5429.

b. If the beach(es) associated with an existing ID are changed, e.g., "merged," "split," or "deleted"; also provide the old-to-new beach relationships. (*Note: When splitting a beach into two or more separate beaches it's possible to either request completely new IDs and mark the original historical or recycle the existing beach ID and request new IDs for the rest. Think about how you want to see historical trend data at a piece of shoreline - you may want to keep historical data with the old (inactive) id, and create new ids, then report the data from the old beach id to both new beach ids for historical background, and then report their data separately going into the future.*)

c. CGI generates the new Beach ID(s), in PRAWN, (and places a "historical flag" on the no longer used IDs) and informs the state and RTI.

State Submit Location Data to PRAWN

2)   a. The state uses the Beach ID(s) to submit location data (1a) to PRAWN, including latitude and longitude for beach start and end points. (Also see 9 for state submission of post-quality controlled (QCd) data to PRAWN). Past experience has shown that intermediate beach points will not likely be necessary, as the shape of the beach (and the length) is inherent in the EPA Reach Address Database (RAD) and underlying National Hydrographic Dataset (NHD). In any case, states that use these L/L data to perform their own reach indexing work (see 4) should consider submitting the work directly to the RAD via the CDX NHDEvent flow. Alternatively, states can notify RTI immediately upon upload of location data to PRAWN, to alert RTI to look for separately e-mailed shapefiles.

The latitude/longitude data should be verified before submitting to PRAWN. Google earth can be used to perform this verification. Download Google earth from https://earth.google.com/intl/earth/download/ge/agree.html. Once downloaded, double click on the Google earth icon to open on your desktop to open the application. You can check the latitude/longitude data by entering the points in the "fly-to" tab in the Google Earth side bar.

[Note: The latitude and longitude or shape file will be used to index the beach to the RAD to enable length calculation, enable relating to other data (e.g. permitted outfall locations), and hydrologic networking (e.g., flow modeling).]

b. Beach location updates will be initiated by CGI making available to RTI a list of new or revised Beach IDs and their associated latitude and longitude points on at least the last workday of each month during the standard data loading timeframe (October through May). Outside of this timeframe, this will happen quarterly.

c. Upon receipt of the BEACH ID(s), the state should also submit to PRAWN beach attribute data* which will show in BEACON Reports even before the beach is mapped (*see §3.1.3, 3.1.4, 3.1.7 of the Beach Notification Access Database User Guide– click on #1.

RTI Performs Indexing to NHD

3)   a. With EPA approval from Bill Kramer (kramer.bill@epa.gov), the state could request that the latitude and longitude data be reach indexed by RTI.

RTI Assists State or State Performs Indexing to NHD

4)   a. RTI assists the states to add the Beach ID(s) to NHD using the Hydrography Event Management (HEM) Tool and HEM EPA Add-On Tools. For assistance contact Nathan Ellermeier (RTI) nellermeier@rti.org 919-248-1962; Information on HEM tools can be found at: http://nhd.usgs.gov/tools.html#hem

b. State uses HEM Tools to index (or re-index) the beach to the NHD. The state can contact Bill Kramer about submitting the reach indexing to the RAD.

QC of Reach Indexing

5) RTI performs QC on the state's NHD event shapefiles or geodatabase.

a. If from step 3a, then RTI performs reach indexing and performs internal QC. RTI will generate a review package and send it to the state for approval https://www.epa.gov/beach-tech/submitting-data-epa#locate – click on #4. Upon approval from state, RTI will send the geodatabase to ERG for updating of the RAD

b. If from step 4, then RTI works with the state to QC the file. RTI can also assist users in submitting the file to the NHDevent flow via CDX (see 4b).

Note: If a state provides new latitude/longitude data during the indexing process, they should also re-submit this data to CGI Federal for inclusion in PRAWN.

ERG Updates RAD

6) Environmental Research Group (ERG) updates the RAD and notifies RTI and EPA. Once loaded into the RAD, the program attributed ArcGIS Server based beaches service is used to display data in BEACON. In addition to the attributed service, WATERS provides access to the indexed NHDPlus beaches data via a beaches indexed service (no program attributes) and via the WATERS Upstream / Downstream servicehttps://watersgeo.epa.gov/openapi/waters/.

CGI Assembles All Locational Data in PRAWN

7) For Allotment Formula purposes, PRAWN will assign "beaches and similar points of access" a default minimum nominal length for RAD calculated values. This will replace any shorter RAD length, and will only be used for allotment formula purposes.

EPA Confirms All State Data QC for List of Beaches and Allotment Formula

8) EPA confirms with states that all location data updates from QC, or other changes to PRAWN, are correct. The updated indexed beach location data generated from the latitude and longitude data stored in PRAWN is sent to those jurisdictions for review. The instructions for the review process can be downloaded at: https://www.epa.gov/beach-tech/submitting-data-epa#locate – click on #4.

9) Based on the QC, states should submit corrections to their locational data in PRAWN and/or RAD, as in 2) above.

EPA Use of List of Beaches and Length Data

10) This data will be used as needed to publish the National List of Beaches and a length-based allotment formula the National List of Beaches is posted on the Beach website at https://www.epa.gov/beach-tech/national-list-beaches

11) The new and/or revised indexed location data are published on a beach-by-beach basis on BEACON, see 6; updated in the RAD; and as entered into PRAWN, see 8.] The locational data is gathered for display in BEACON. However, since the data resides in the RAD, it is also available in the Water section of the MyEnvironment Mapping application http://www.epa.gov/myenvironment/

Appendix A

Acquiring and Storing Beach Length Data

This Locational Data Management SOP (as described above) uses PRAWN to store beach location data (latitude and longitude), and the Reach Address Database (RAD) to generate nationally-normalized beach lengths for use in the Beach Program Grant allotment formula.

Why use RAD in the beaches allotment formula?

The RAD is regularly used by national water programs to provide statistics on program features, (i.e., number of beaches, beach miles by state) that are comparable nation-wide, e.g., they have been normalized in scale, units of measure, precision, and accuracy. This means the length of a beach in the RAD may be different than the length measured by a state. However, it is equitable for all states because the normalized lengths are included in each state's total beach miles, and presented as their percentage of the national total in the proposed allotment formula.

The RAD stores the reach address of each beach or "similar point of access," which has been linked to the underlying surface water features (ocean, estuary, lakes, etc) in the NHD. These reach addresses record the geographic location and extent of each beach or similar point of access in both tabular and spatial formats. Periodically, EPA retrieves an updated version of the NHD from USGS and migrates all reach addresses then in the RAD to this new version, providing

a version of the NHD with the latest set of reach address indexed to the latest hydrologic basemap.

The only information about an individual beach or similar point of access stored in the RAD is its reach address. Additional descriptive information for each feature is stored in PRAWN and/or STORET. A unique Beach ID (Project ID in STORET) is used to relate the reach address for each Water Program feature found in the RAD with the other detailed data for that feature found in the separate databases. This unique Water Program feature ID is also called the Entity ID. Using Geographic Information System (GIS) terminology, the Water Program feature ID is the key for relating the event tables and shapefiles with the corresponding attribute information for that feature.

Metadata for the NHD use data elements from the "Content Standards for Digital Geospatial Metadata" (Federal Geographic Data Committee, 1994). The standard allows the identity, quality, spatial data organization and reference, entity and attribute definitions, distribution sources and forms, and metadata of the data to be documented. The metadata are provided as text files. A general set of metadata accompanies each set of data. This metadata provides general information that applies to all data. PRAWN (and its companion notification Access database) uses the relevant standards in a data structure similar to WQX/STORET to reduce user training effort. (See Appendix B)

On August 13, 2008, EPA published (OW-FRL-8703-9) an ACTION: Notice of Expected Changes to the Grant Allocation Formula for Awarding Grants under the BEACH Act.

That notice described EPA's intent to base allotment of certain unused funds and new funds over $10M on a formula that includes a factor, by jurisdiction, of total monitored beach miles, grouped into categories (pp. 47159):

They [the Workgroup] started their discussions with a common view that actual beach miles would be the most preferable measure because it is a direct measurement, rather than a surrogate and is also available as a data field in EPA's Program tracking, beach Advisories, Water quality standards, and Nutrients (PRAWN) database. PRAWN is used by EPA to store information on State and Territorial beach advisories and closings. However, the workgroup found several issues with the current information in PRAWN on actual total beach miles. The workgroup noted significant differences in reported beach mileage due to several factors. First, States and Territories have different ways for computing total beach miles in the data that they input into PRAWN. Second, not all States and Territories had input complete information about beach length into PRAWN. Finally, the workgroup noticed what appeared to be inconsistencies between entries in PRAWN and similar data from other sources.

As a result, the workgroup recommended that EPA improve the completeness and accuracy of the total beach mile data in PRAWN before considering using it in the allocation formula. EPA is continuing to compile and review for accuracy beach mileage information for all the BEACH Act States and Territories and expects to have more reliable data on beach mileage by mid-2009.

EPA has designed this effort to address all of the data limitations discussed above, as well as any additional limitations or concerns that may arise during this effort. The effort includes using the same latitude/longitude data standards as used in other EPA and State databases and a quality assurance review of all data used to generate the beach lengths. EPA is conducting this effort with the States and Territories to ensure that beach mileage amounts are accurate and thus would be appropriate to use for BEACH Act grant allocation formula purposes in the future.

The workgroup categorized monitored beach miles data into groups that were relatively close in magnitude. The workgroup observed that monitored beach miles tended to fall into five groups: less than 32 miles, 32-63 miles, 64-249 miles, 250-500 miles, and greater than 500 miles. Grouping information in this way has the effect of minimizing differences between the lowest and highest data points. EPA considers grouping data appropriate when there is a wide disparity between the high and low points of data.

Appendix B

Metadata Requirements for Latitude and Longitude Coordinates

PRAWN (and its companion notification Access database) uses the relevant standards listed below in a data structure similar to WQX/STORET to reduce user training effort.

The metadata standards for latitude longitude coordinates were produced by the Environmental Data Standards Council (EDSC). The EDSC seeks to promote the efficient sharing of environmental data through the development and adoption of data standards. If you would like more information on the EDSC you can visit their website, http://www.exchangenetwork.net/archives/meetings/knowledge/imwg_org.pdf

The Latitude/Longitude Data Standard is a set of data elements that can be used for recording horizontal and vertical coordinates and associated metadata that define a point on the earth. The latitude/longitude data standard establishes the requirements for documenting latitude and longitude coordinates and related method, accuracy, and description data for all places used in data exchange transaction. Additional information on the latitude/longitude data standard can be found on the web at, http://www.exchangenetwork.net/standards/Lat_Long_Standard_08_11_2006_Final.pdf

Appendix C

Decimal-change threshold to trigger re-indexing
When coordinate change occurs at the 5th decimal place (first image), there is NOT a need re-index (example of such a revision is visible by the blue revision at the left end of the beach line in the first image); change in the 4th decimal place (second image) SHOULD trigger re-indexing (the magnitude of that change shown in the second image, left end of the beach line)

Changed by 5 units at the 5th decimal

	Latitude	Longitude	Length (m)
Altered Line's Origin	41.373589	-71.502423	516
Original Line's Origin	41.373539	-71.502373	509

Original Line
Altered Line

N

0	0.13	0.26	0.52

km
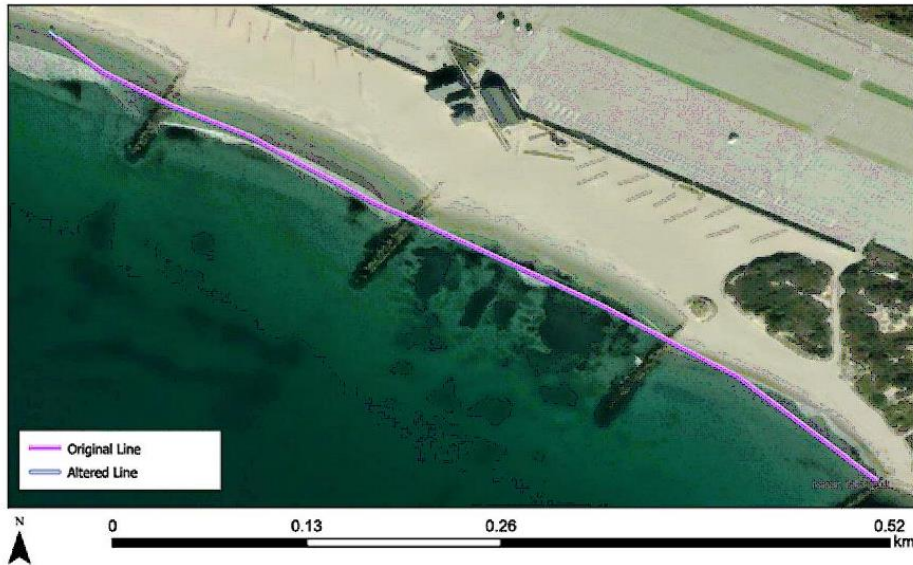
Changed by 5 units at the 4th decimal

	Latitude	Longitude	Length (m)
Altered Line's Origin	41.374039	-71.502873	578
Original Line's Origin	41.373539	-71.502373	509

Original Line
Altered Line

N

0	0.15	0.3	0.6

km