

CCRM ShoreWatch Living Shoreline Monitoring App Data Management Plan

Project Description

ShoreWatch is a Living Shoreline Monitoring Application – powered by ESRI Field Maps and Survey123 – developed by the Center for Coastal Resources Management (CCRM) at the Virginia Institute of Marine Science (VIMS). ShoreWatch is designed to support the monitoring and analysis of Living Shoreline projects in Virginia. It enables Living Shoreline practitioners and organizations (Users) to input observations, upload photos, and collect field data on Living Shoreline projects. The accompanying ShoreWatch Dashboard allows Users to analyze trends over time and evaluate the performance and outcomes of nature-based shoreline restoration efforts.

Types of Data Collected

ShoreWatch collects the following types of data:

- **Environmental observations** of Living Shoreline elements (e.g., marsh vegetation, oyster presence, maintenance needs).
- **Geospatial data** for Living Shoreline elements (GPS coordinate locations, site boundaries, aerial cover, GIS layers).
- **Temporal data** with timestamps of monitoring events.
- **Photographic records** of Living Shoreline elements and time-series photo documentation.
- **User-generated input** through forms, notes and site metadata.
- **Analytical data outputs** such as summary statistics and reports through the ShoreWatch Dashboard.

File formats include CSV, GeoJSON, JPG/PNG, and PDF reports.

Data Collection Methods

Field data in ShoreWatch are collected through Esri Field Maps and Esri Survey123 standardized monitoring forms. GPS data are collected via mobile device and/or integrated GPS units. Data are validated through built-in quality checks (e.g., required fields, range limits).

Data Analyses and Visualization

Data analysis outputs are performed through coding in the **ShoreWatch Data Explorer** (i.e. ShoreWatch Dashboard). Individual monitoring site trend analyses are performed using JavaScript and displayed in the ShoreWatch Data Explorer built and powered by JavaScript. Virginia-wide monitoring summary statistics are performed using Arcade and displayed within the ShoreWatch Data Explorer via a link to the **Virginia Summary Dashboard** built using ESRI's ArcGIS Dashboards and hosted in ArcGIS Online.

Data Storage and Backup

All data in ShoreWatch are stored in ArcGIS online and then copied daily to CCRM's secure network server for automated backup, stored on CCRM's server. Redundant storage systems ensure data resilience. Access to data is role-based with encryption in transit and at rest.

Metadata and Documentation

Each dataset includes standardized metadata (site ID, date, data collector, parameters). Additional documentation of data collected with the App is provided in the ShoreWatch Manual and supplemental materials.

Data Sharing and Access

ShoreWatch promotes open data while safeguarding privacy and sensitive information.

- **Registration and Approval:** All users must register and receive approval from CCRM before being granted access to the Esri ShoreWatch Group which enables use of the ShoreWatch App.
- **User Credentials:** Esri login credentials allow users to edit their own collected data while limiting access to data collected by other users. A ShoreWatch ID allows users to download raw data and view analysis of their collected data.
- **User Data Access:** User specific monitoring site summary data is available via a User Credentials using the ShoreWatch Data Explorer Dashboard on CCRM's ShoreWatch website which provides an interactive map and downloadable summary reports.
- **Raw Data Access:** Raw datasets are available for download via User Credentials through their organization's CCRM ESRI Group web map.
- **Public Access:** Public summary data are made available through the Virginia Dashboard and Site Trends sections of the ShoreWatch Data Explorer Dashboard located on CCRM's ShoreWatch website.
- **Sensitive Data:** Sensitive or proprietary data are restricted or anonymized.
- **User Agreement:** Any user issued Esri credentials by VIMS must sign a User Agreement before an Esri login is provided for ShoreWatch access.

Data Preservation and Long-Term Archiving

Long-term data archiving will be maintained through partnerships with institutional repositories. Archived datasets will include metadata, documentation, and version history. Raw and processed data are retained indefinitely, or for a minimum of 10 years.

Responsibilities and Resources

The ShoreWatch development team is responsible for database management, data quality control, and system maintenance. Contributors are responsible for accurate field data collection. Members of the ShoreWatch development team will oversee data policies, access requests, and archiving. Access requests and data questions can be submitted to ShoreWatch@vims.edu. ShoreWatch resources can be found on the ShoreWatch web page, ShoreWatch.VIMS.edu, maintained and managed by CCRM.