



LAKE MICHIGAN POTENTIAL DAMAGES STUDY

Great Lakes Shoreline Data Collection Form

The screenshot displays the 'Great Lakes Shoreline Data' software interface. At the top, there is a title bar and a main window containing a photograph of a beach. To the right of the photo are two buttons: 'Enter Inspector Data' and 'Enter Field Data'. Below the photo is a 'Comments:' text area. The main form area is titled 'Groyne Protection' and contains several sections: 'Shore Protection Types' with three dropdown menus (Type 1, Type 2, Type 3); 'Shore Protection Effectiveness' with two dropdown menus (Type 1, Type 2); and 'Please Provide Details for:' with buttons for 'Groynes' and 'Revetments'. A 'Shoreline Protection' dropdown menu is also present, showing a list of options including 'No Protection', 'Revetments', 'Seawalls/Bulkheads', 'Other Armoring', 'Groynes', 'Jetties', 'Offshore Breakwaters', 'Perched Beaches', 'Other Beach Erosion Control Devices', 'Beach Nourishment', 'Vegetation Planting', 'Bioengineering', 'Slope Grading', 'Bluf Stabilization', and 'Snow Fence/Windbreaks'. The bottom of the screenshot shows a Windows taskbar with several open applications, including 'Microsoft Word - Field Data' and 'Great Lakes Shoreline Data'.

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Great Lakes Shoreline Data Collection System RDBMS

The Great Lakes Shoreline Data Collection System is an automated computer based data collection system designed to facilitate the collection and storage of Great Lakes shoreline property surveys and potential damage interview data. The system is specifically designed to be loaded onto a notebook computer to facilitate data entry from the field. The system was commissioned by the US Army Corps of Engineers Detroit District.

Great Lakes Shoreline Data Collection System was developed in Microsoft Access 97™ using Visual Basic. The system presently consists of a Graphical User Interface (GUI) for data entry and display. The system has been designed to facilitate future updates to add customized data reporting, analysis and display functions.

The screenshot displays the graphical user interface for the Great Lakes Shoreline Data Collection System. The main window features a title bar with the text "Great Lakes Shoreline Data" and a logo. Below the title bar is a photograph of a sandy beach with waves in the background. To the right of the photo are two buttons: "Enter Inspector Data" and "Enter Field Data".

Below the photo is a "Comments:" text area. To the right of the photo is a "Form" section with buttons for "Return to Main Menu" and "Open Potential Damages Survey". Below these are dropdown menus for "Erosion Flooding" and "Bluffs Recommendations", and input fields for "Slope (degrees)" with a value of 0.

The "Shoreline Protection" section includes three dropdown menus for "Type 1:", "Type 2:", and "Type 3:". Below these are two more dropdown menus for "Shore Protection Effectiveness:" labeled "Type 1:" and "Type 2:". There are two buttons: "Groyne" and "Revetment".

A list of protection types is shown on the right side of the interface:

- No Protection
- Revetments
- Seawalls/Bulkheads**
- Other Armoring
- Groynes
- Jetties
- Offshore Breakwaters
- Perched Beaches
- Other Beach Erosion Control Devices
- Beach Nourishment
- Vegetation Planting
- Bioengineering
- Slope Grading
- Bluf Stabilization
- Snow Fence/Windbreaks

The "Groyne Subform" is open, showing a "Groyne ID:" field and a "Return to General Field Data" button. It contains several questions with dropdown menus for answers:

- Is the onshore elevation of the groyne(s) approximately equal to the 1:100 year flood elevation (yes if above)?
- Is the spacing between the groynes equal to 2-3 times the length of the groyne?
- Are the groynes on this property part of a field of at least 5 groynes?
- Is the groyne(s) built in such a way that sand will not migrate through the structure defeating its purpose?
- Is the Groyne(s) effectively trapping sediment (i.e. it is full of sand or recent deposits)?
- Is the onshore end of the groyne sufficiently protected from outflanking?
- Has the structure been built or had major maintenance completed within the last 5 years?
- Has the structure survived without frequent maintenance (i.e. less than two repairs in the last 5 years)?
- If the Answers to any of the above questions is no, can the deficiency be easily corrected by the property owner?

An "Explain how, or why not:" text area is provided for the last question. The Windows taskbar at the bottom shows the Start button, Microsoft Word, Field Data, an unlabeled Paint window, and the Great Lakes Shoreline... application window. The system clock shows 11:53 AM.

Introduction

This document describes and provides operating instructions for the Great Lakes Shoreline Data Collection System. The Great Lakes Shoreline Data Collection System is an automated computer based data collection system designed to facilitate the collection and storage of Great Lakes shoreline property surveys and potential damage interview data. The system is specifically designed to be loaded onto a notebook computer to facilitate data entry from the field.

Great Lakes Shoreline Data Collection System was developed in Microsoft Access 97™. The system presently consists of a Graphical User Interface (GUI) for data entry and display. The system has been designed to facilitate future updates to add customized data reporting, analysis and display functions.

Installation and Database Maintenance

The enclosed CD contains the following files:

1. FieldData.mdb - MS Access "Design Master File"
2. ReadMe.doc - the document you are now reading
3. Field Data Form Report Cover.doc - the cover page to this document.
4. Field Data Documentation.doc - a one page description of the Data Collection Form
5. Field data form Word version.doc - an MS Word version of a paper version of the Field Data Collection Sheet.

The Great Lakes Shoreline Data Collection System is contained on the Compact Disk (CD) in an Access file named "FieldData.mdb". The FieldData file contained on the CD is a "Design Master File". The Design Master File should be copied to the network or PC directory that will host the master database files. The Great Lakes Shoreline Data Collection System can then be opened by simply starting Access from any PC that is networked to the location of the Design Master.

NOTE: When the FieldData.mdb file is written to the CD, it is done so in Read-Only Format. In order for the program to operate properly, once it is copied from the CD into the Network or PC directory:

1. **Using Explorer or File Manager, right click on the FieldData.mdb file name and choose Properties;**
2. **In the Attributes section near the bottom, uncheck the "Read-Only" check box.**

When Access launches, it displays a menu asking the user to point Access to the location of the database that the user wishes to work with. At this point, the user should point

Access to the location of the Design Master File. When the Great Lakes Shoreline Data Collection System is opened using this method, the application is launched in user mode.

User mode allows users to view and update data but limits the ability of the user to make structural changes to the database. To make copies of the database, to facilitate use of the system on a mobile notebook for example, the database administrator must make replicas of the Great Lakes Shoreline Data Collection System and synchronize the replicas with the Design Master. To make replicas and synchronize multiple databases, the user must open the Great Lakes Shoreline Data Collection System in developer mode. To open the system in developer mode, follow the same instructions as described above for user mode, but hold down the *Shift* key while the application is opening.

To create replicate databases, the user must select **Create Replica** under the **Replication** heading on the **Tools** drop down menu at the top of the page. At this point the user is asked to select a directory for the replicate database file. If the target directory is networked to the Design Master, the user may simply select the appropriate network location. If the target directory is not networked, a notebook computer for example, the user must create a temporary replica database on their network and copy that replica to the notebook, or other location, using floppy disks, ftp or some other method of file transfer. It is important that the user note the location of the temporary replica database because the location will have to be used for subsequent synchronization of the Design Master.

From time to time, users will have to update the Design Master with data entered in replicate databases. Updating the Design Master is achieved by using the synchronize function. To use this function, users should open the Design Master in developer mode (hold the *Shift* key) and select **Synchronize now...** under the **Replication** heading on the **Tools** drop down menu at the top of the page. Access will then prompt the user to select the location of the replica database to be synchronized. For replica databases that are not networked to the Design Master, users will have to copy the replicate from its remote location back to the network location that was used to create its temporary replicate.

Great Lakes Shoreline Data Collection System

Main Menu

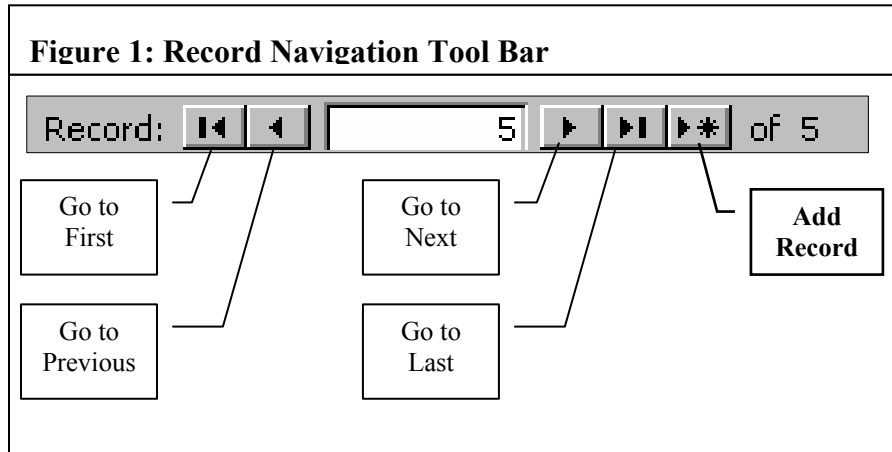
For the Main Menu, users have two choices:

1. Enter Inspector Data. Click on this button to:
 - Add a new inspector to database
 - View or update data for inspectors
2. Enter Field Data. Click on this to:
 - Add, update or view field inspection data
 - Add, update or view potential damages survey data

Inspector Data Form

The Inspector Data form is used to record contact information on inspectors. This data is linked to the field data records and may be used for quality control or follow-up work.

Users can navigate the inspector records or add a new inspector record using the navigation tool bar at the bottom of the form.



General Field Data Entry Form

The General Field Data Entry Form is used for entry of field observations. Users may update field observation data or create new records. Each property inspected should have a corresponding field data record. Records can be navigated or added by using the navigation tool bar at the bottom of the form (see Figure 1). At the top of the General Field Data Entry Form are four “tabs” that correspond to the type of data entered. The four tabs are:

1. Administration;
2. Shoreline Classification;
3. Erosion_Flooding; and,
4. Bluffs_Recommendations.

Administration Data

The Administration tab records and displays administrative data for each property surveyed. Users may use the mouse or *Tab* key to navigate the data entry fields. The Administration tab contains the following data entry fields:

Data Entry Field	Data Entry Instructions
Inspector ID	Chose inspector name from list. Additional names can be added to the system by using the Inspector Data Entry Form.
Date	Date field will default to the current date of a new record.
County	Chose county from list or type the first few letters of the county of choice.
Township	Enter Township.
US ACE File #	Enter US ACE File #.
Lot #	Enter Lot #.
Assessment #	Enter Assessment #.
Parcel ID #	Enter Parcel ID #.
Owner	Enter property owner's name.
Street #	Enter Street #.
Street Name	Enter Street Name
Home Phone	Enter property owner's home phone number.
Business Phone	Enter property owner's work phone number.
Reach #	Enter shoreline reach number.
Orientation	Chose orientation from list or type the first few letters of the orientation of choice.
Fetch	Enter fetch distance in kilometers.
Latitude	Enter latitude of property reach center point.
Longitude	Enter longitude of property reach center point.
Zone	Enter UTM zone
Land Use	Provide description of all land uses within 100m of the shoreline. Use land use codes if known.
Roll #	Enter roll number(s) of any photos taken. Separate numbers with a comma.
Photo #	Enter photo number(s) of any photos taken. Separate numbers with a comma.

Shoreline Classification

The Shoreline Classification tab records and displays shoreline classification data for each property surveyed. The Shoreline Classification tab also allows users to access the detailed shoreline protection sub-forms. Users may use the mouse or *Tab* key to navigate the data entry fields. The Shoreline Classification tab contains the following data entry fields:

Data Entry Field	Data Entry Instructions
Shoreline Type	Chose shoreline type from list.
Height(m)	Enter bluff height in meters.
Slope(degrees)	Enter bluff slope in degrees.
Shoreline Type Comments	Enter any relevant comments on the shoreline type

Data Entry Field	Data Entry Instructions
	classification.
Shore Protection Types (1,2,&3)	Enter up to three types of shore protection present on the property. If groynes, revetments, or seawalls are entered as shore protection type, the appropriate shoreline protection sub-form will automatically be opened.
Shore Protection Effectiveness	For each type of shore protection (1,2,&3) entered above, enter the effectiveness rating of that protection from the list.
Shoreline Protection Comments	Enter shoreline protection comments.
Nearshore Subaqueous Classification	Chose nearshore subaqueous classification from list.
Nearshore Subaqueous Classification Comments	Enter nearshore subaqueous classification comments.

Detailed Shoreline Protection Sub-forms

The system contains three sub-forms used to display and enter detailed data on groynes, revetments and seawalls. These sub-forms are accessed by clicking the appropriate button on the shoreline classification tab of the General Field Data Entry Form. Data entered in the Detailed Shoreline Protection Sub-forms corresponds only to the property record that is displayed, or active, in the shoreline classification tab when this button is clicked. The appropriate sub-form will also be automatically opened if the user enters groynes, revetments or seawall in the shore protection type field of the shoreline classification tab.

Each of the Detailed Shoreline Protection Sub-forms contains a series of questions regarding the shore protection type. Users enter yes, no or unknown for each question. The default value for these questions is “u”, or unknown. Users return to the shoreline classification tab by clicking the button that reads: Return to General Field Data.

Erosion_Flooding

The Erosion_Flooding tab records and displays data on bluffs and recommendations for each property surveyed. Users may use the mouse or *Tab* key to navigate the data entry fields. The Erosion_Flooding tab contains the following data entry fields:

Data Entry Field	Data Entry Instructions
Recession Rate (m/yr)	Enter the annual recession rate. The default value for this field is 9999. Unless the recession rate is known, the value for this field should be left as 9999.
Describe evidence of recent erosion.	Enter choice from list.
Classify Erosion.	Enter choice from list.

Data Entry Field	Data Entry Instructions
Comments on Erosion Evidence	Enter erosion comments.
Does erosion extend to neighboring properties.	Enter yes, no or unknown from list.
If yes, please describe	Describe nature of erosion that extends to neighboring properties.
Is there evidence of recent erosion.	Enter yes, no or unknown from list.
If yes, please describe	Describe recent erosion.
Are extensive flood protection measures present?	Enter yes, no or unknown from list.
If yes, please describe	Describe recent erosion.

Bluffs_Recommendations

The Bluffs_Recommendations tab records and displays erosion and flooding data for each property surveyed. Users may use the mouse or *Tab* key to navigate the data entry fields. The Bluffs_Recommendations tab contains a series of questions regarding any bluffs present on the property. For each question enter yes, no or unknown. The default value for these question fields is “u”, or unknown. The Bluffs_Recommendations tab contains a field for users to provide comments on the bluff observations. The Bluffs_Recommendations tab also contains a question on what the recommended course of action is for the property. Users can chose the recommended course of action from the list of choices.

Potential Damages Survey Form

Users may access the Potential Damages Survey Form from the General Field Data Entry Form. This is accomplished by clicking the button at the top of the form that reads: Open Potential Damages Survey. Data entered in the Potential Damages Survey Form corresponds only to the property record that is displayed, or active, in the General Field Data Entry Form when this button is clicked. To enter Potential Damages Survey data for a specific property, navigate to the General Field Data record for that property using the navigation tool bar at the bottom of the form (see Figure 1), then click the Open Potential Damages Survey button.

The Potential Damages Survey Form is used to add or display data on potential damages to property surveyed. At the top of the Potential Damages Survey Form are three “tabs” that correspond to the type of data entered. The three tabs are:

1. Site Visit Info;
2. Property Owner Survey; and,
3. Building Details.

Site Visit Info

The Site Visit Info tab contains a series of data entry fields to record observational data from site visits. Users may record the shortest distance to the water's edge, the elevation above sea level and the elevation of the lowest building opening for up to three primary buildings and up to three outbuildings for each property surveyed. The default value for these fields is 9999. Users may also enter the date and time of the measurements. The default values for the date and time fields are the current date and time.

Property Owner Survey

The Site Visit Info tab contains a series of data entry fields to record data from property owner surveys. Users should enter the name of the person surveyed. For any shoreline protection structures constructed, the cost of construction should be entered as the dollar value of the date of construction, not the present value.

Building Details

The Building Details tab contains a series of data entry fields to record data from property owner surveys. For any buildings constructed, the cost of construction should be entered as the dollar value of the date of construction, not the present value.