
Lewis River Dispersed Campsites Program

Dispersed Site Monitoring Methodology

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1.0 Introduction

PacifiCorp is developing a proactive plan for the long term monitoring of dispersed recreation sites at the Lewis River Hydroelectric Projects (Project) (Federal Energy Regulatory Commission [FERC] Project Nos. 935, 2071, and 2111) located in Cowlitz, Clark, and Skamania Counties, Washington. On November 30, 2004, PacifiCorp Energy, Cowlitz County PUD, federal and state agencies, Tribes, and non-governmental organizations (Parties) entered into a Settlement Agreement (SA) that resolved all issues between the Parties related to the relicensing and ongoing operations of the Lewis River Projects. The SA describes the terms under which they will support the FERC's issuance of new licenses for the Lewis River Projects, and was reached after nearly three years of negotiations covering a broad array of resource areas, including fish passage, instream flow, hatcheries and supplementation, aquatic habitat, monitoring and evaluation, wildlife habitat, recreation, cultural resources, flood management, socioeconomics, reporting, and coordination among the Parties.

As part of the SA, PacifiCorp is developing a Recreation Dispersed Shoreline Use Program (RDSUP) (PacifiCorp 2004a). Determining the suitability of the existing dispersed recreation sites and implementing a monitoring protocol (Protocol) is part of the Recreation Shoreline Use Program. PacifiCorp contracted with Mason, Bruce & Girard, Inc. (MB&G) to develop the monitoring Protocol. PacifiCorp will subsequently present this methodology to the Terrestrial Coordination Committee (TCC), an oversight committee made up of stakeholders and regulatory agencies, to obtain approval in accordance with the Settlement Agreement. The methodology described in Section 2.0 will provide PacifiCorp with the data necessary to manage the RDSUP. The following sections detail the specific Protocol designed by PacifiCorp and MB&G to meet the objective of defining dispersed recreation sites, and determining suitability of each of these sites. In addition, the Protocol describes the methods used to assess sensitive resources (species and habitats) surrounding the dispersed recreation site locations.

The steps described in this methodology are a first phase in the process of assessing the dispersed recreation sites. Following the field effort which will be conducted in April and May 2009, PacifiCorp will use the Protocol and data collected in developing specific criteria to protect habitat and to determine the continued use or closure of dispersed recreation sites. The protocol developed and data collected will also be used to monitor the use of the dispersed recreation sites, identify resource concerns, and determine appropriate management actions.

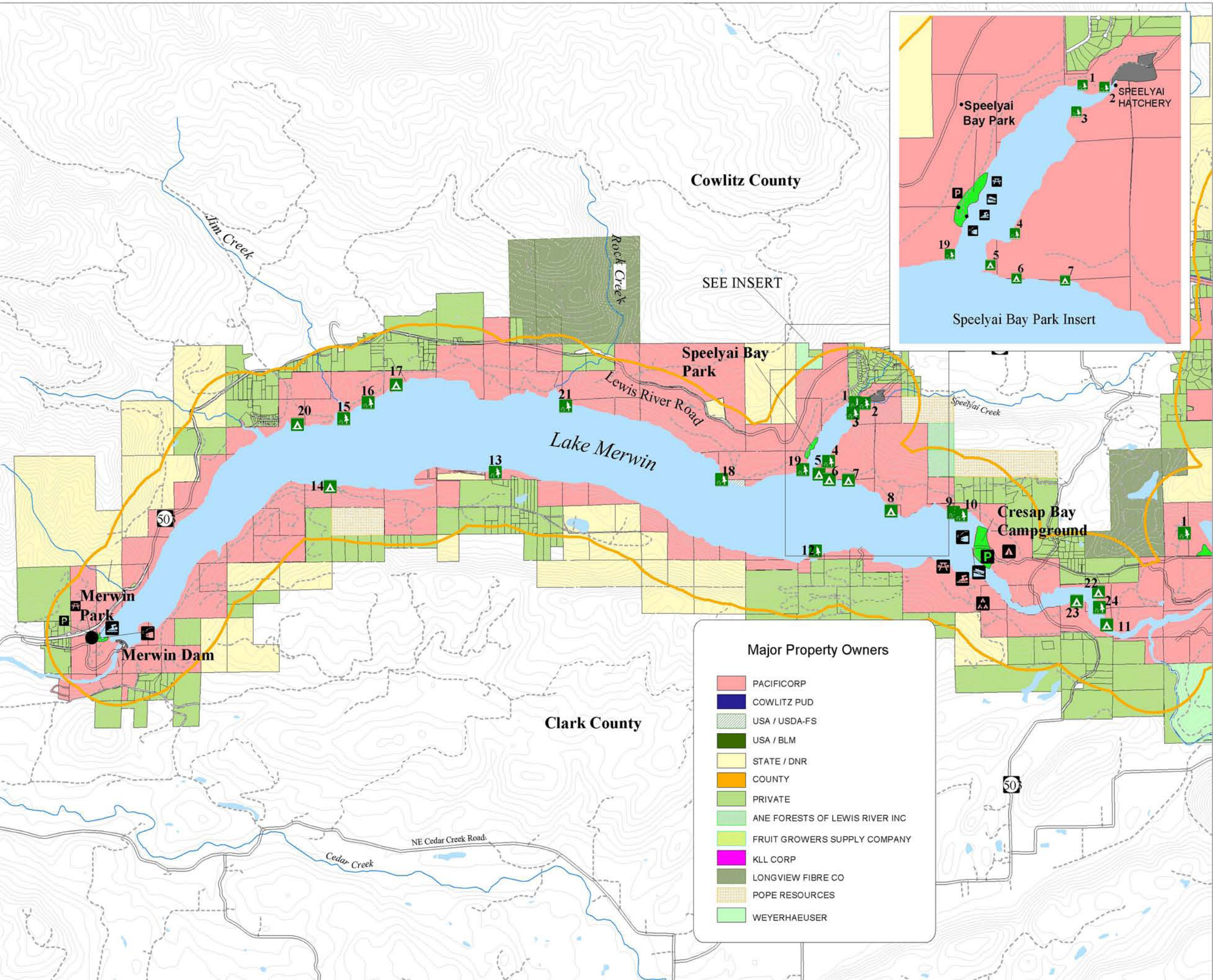
The Project area for the Dispersed Recreation Site Program is shown below (Figures 1.0-1 – 1.0-3). For the purposes of the RDSUP, PacifiCorp defines the Project area as the shorelines surrounding Yale Reservoir, Merwin Reservoir, and Swift Reservoir. There are approximately 92 known dispersed recreation sites located along the shorelines of these three bodies of water. The purpose of this Protocol, developed by PacifiCorp and MB&G, is to evaluate each of the dispersed recreation sites for suitability based on the criteria described in Section 2.0. In addition to the described Protocol, MB&G designed a handheld application to support the data

collection process. This handheld application is not required for the site evaluation, but when used, will assist in creating GIS layers of the data collected in a seamless, efficient, accurate manner. These data layers could then be combined with PacifiCorp's existing data for assistance in management decisions. The hand-held application and methodology are described in detail in Section 3.0.

Figure 1.0-1

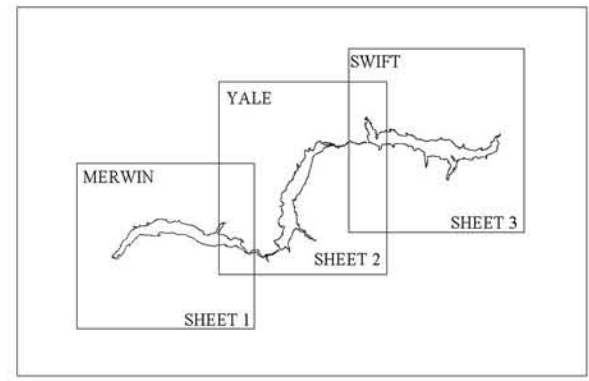
Shoreline Dispersed Recreation Sites (Sheet 1)

-  Study Area
-  Recreation Site
-  Unimproved Road/Trail
-  Camping
-  Day Use
-  Group Camping
-  Fishing Access
-  Boat Ramp
-  Swimming Area
-  Picnic Area
-  Parking

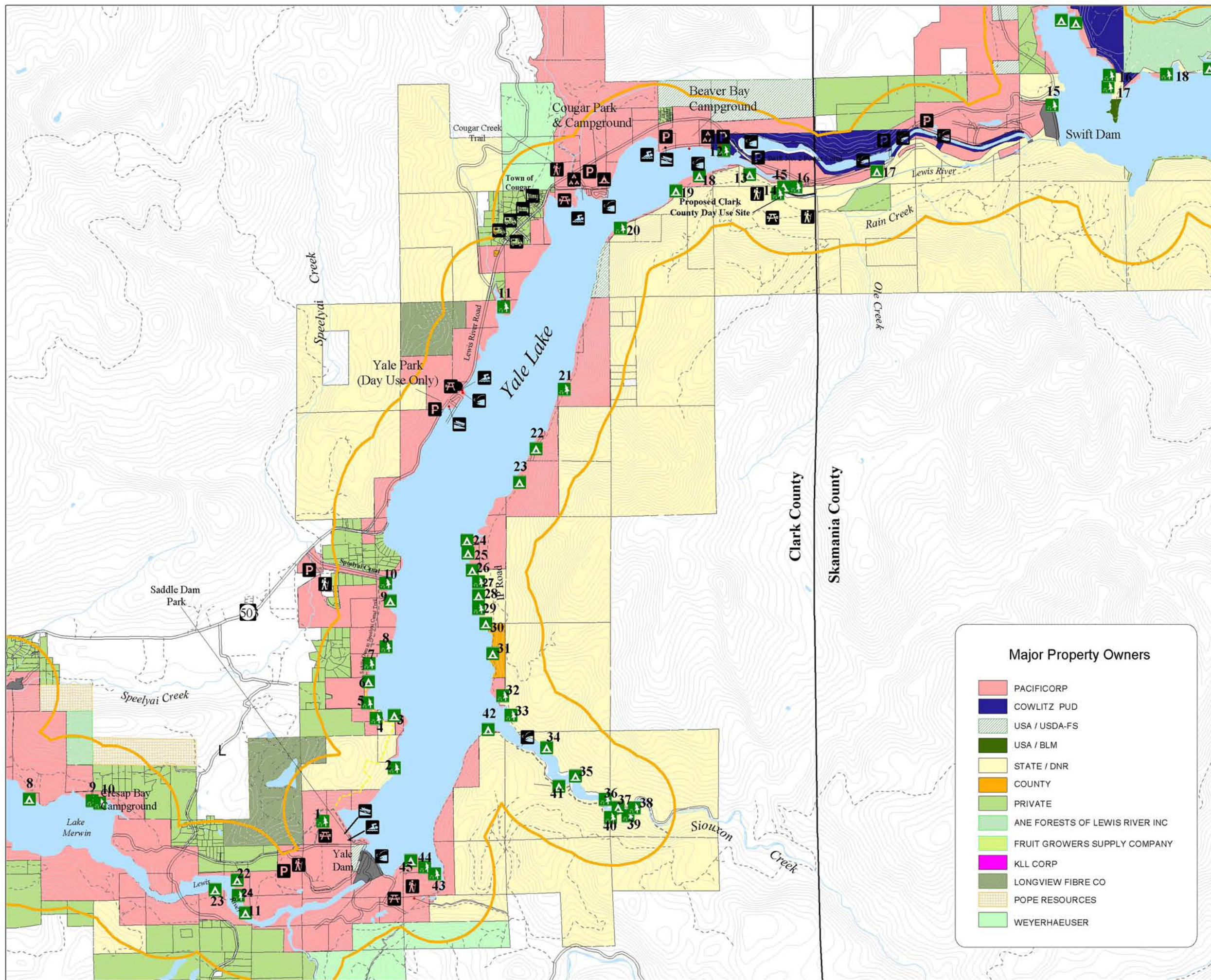


Major Property Owners

-  PACIFICORP
-  COWLITZ PUD
-  USA / USDA-FS
-  USA / BLM
-  STATE / DNR
-  COUNTY
-  PRIVATE
-  ANE FORESTS OF LEWIS RIVER INC
-  FRUIT GROWERS SUPPLY COMPANY
-  KLL CORP
-  LONGVIEW FIBRE CO
-  POPE RESOURCES
-  WEYERHAEUSER



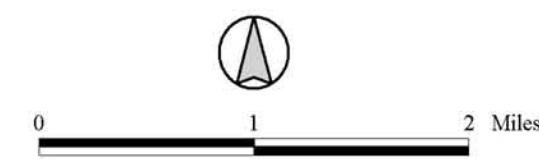
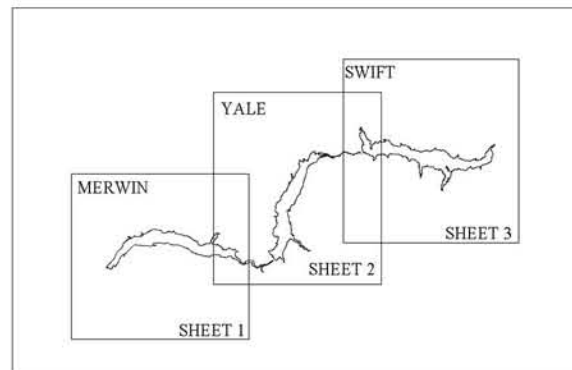
Shoreline Dispersed Recreation Sites (Sheet 2)



- Study Area
- Recreation Site
- Unimproved Road/Trail
- Camping
- Day Use
- Campground
- Group Camping
- RV Park
- Food/Lodging
- Trailhead
- Fishing Access
- Boat Ramp
- Swimming Area
- Picnic
- Parking / Turnout

Major Property Owners

- PACIFICORP
- COWLITZ PUD
- USA / USDA-FS
- USA / BLM
- STATE / DNR
- COUNTY
- PRIVATE
- ANE FORESTS OF LEWIS RIVER INC
- FRUIT GROWERS SUPPLY COMPANY
- KLL CORP
- LONGVIEW FIBRE CO
- POPE RESOURCES
- WEYERHAEUSER

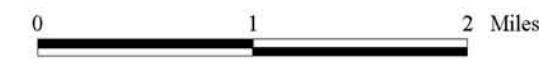
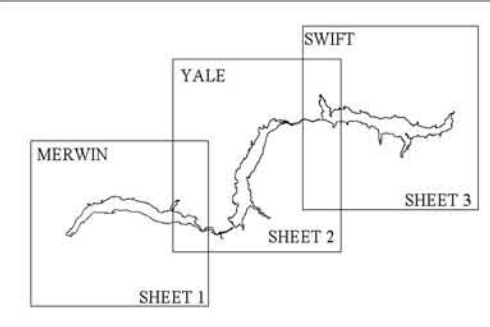


Shoreline Dispersed Recreation Sites (Sheet 3)

-  Study Area
-  Recreation Site
-  Unimproved Road/Trail
-  Camping
-  Day Use
-  Campground
-  Group Camping
-  Fishing Access
-  Boat Ramp
-  Swimming Area
-  Picnic Area
-  Parking

Major Property Owners

-  PACIFICORP
-  COWLITZ PUD
-  USA / USDA-FS
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-  KLL CORP
-  LONGVIEW FIBRE CO
-  POPE RESOURCES
-  WEYERHAEUSER



2.0 Dispersed Site Assessment Methodology

There are approximately 92 dispersed recreation sites included in PacifiCorp's RDSUP. Monitoring of these sites is required to provide information on three key indicators: 1.) site creep, 2.) site pioneering, and 3.) perceived crowding (dispersed recreation site occupancy). Additionally, each dispersed recreation site will be assessed for site suitability. According to PacifiCorp's RDSUP (2004a), in order to be considered suitable for dispersed recreation, a site must meet the following criteria:

- Initial Site Data and Recreation: For campsites, be of suitable size for overnight use, with an adequate boat-in shoreline, adequate level tent pad space, and adequate and safe campfire space.
- Bank Access: Have low (0 to 3 feet) to moderate (3 to 5 feet) bank access and low erosion potential.
- Not affect sensitive habitat or species. Not be in a jurisdictional wetland or affect their function.
- Not affect eligible cultural resource sites.
- Not be in a location that collects large amounts of driftwood (interfere with boat beaching).

The data gathered from the dispersed recreation site assessment will be used to determine whether a site should be closed to the public. For example, if a dispersed recreation site is located within a jurisdictional wetland, PacifiCorp may make the decision to close a particular dispersed recreation site.

MB&G, in cooperation with PacifiCorp, developed the following Protocol to assess each dispersed recreation site relative to the above criteria. The information described below will provide PacifiCorp managers with the information needed to make management decisions for the RDSUP.

2.1 Pre-Field Desktop GIS Effort

The dispersed recreation site assessment involves both an office and a field component. Prior to the field survey, biologists will review existing GIS layers maintained by PacifiCorp as they relate to the known locations of dispersed recreation sites. These layers will include the following:

- Associated species habitat
- Wetlands
- Streams
- Cultural resources
- Bank erosion potential

These data will provide a baseline level of data prior to conducting the field portion of the dispersed recreation site assessment.

2.1.1 Cultural Resource Assessment

The RDSUP requires that PacifiCorp perform an assessment of whether dispersed recreation sites will affect eligible cultural resource sites. The following section includes a description of the cultural resource assessment methodology.

PacifiCorp will provide biologists with a known cultural resource buffer layer for the purpose of facilitating the assessment of dispersed recreation sites on cultural resources. Due to the sensitive nature of the cultural resource layer, exact locations of known cultural resource sites cannot be specifically identified. However, a dispersed recreation site will be designated as potentially affecting cultural resource sites if the campsite is located within this buffer.

2.2 Initial Site Data

2.2.1 Establish Site Point

The biologist will first establish a site point at the center of each dispersed recreation site (Figure 2.1-1) or at the campfire ring (if present). If a fire ring is not present, the center of the site will be defined by visually determining the center point between (a) the north and south site boundaries, and (b) the east and west site boundaries. The site point will be the reference location for each dispersed recreation site.

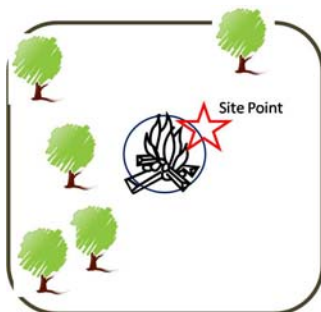


Figure 2.1-1. Site center

2.2.2 Photograph Current Conditions

Photographs will be taken in the four cardinal directions (N, S, E, and W) from the site point (Figure 2.1-2) using a digital camera. Each photograph should then be numbered and recorded in the GIS handheld application and/or in field notes for reference.

Biologists will also capture a photograph, using a digital camera, of the dispersed recreation site from the reservoir (Figure 2.1-3). Record the photograph number and file name in the GIS handheld application and/or field notes if handheld application is not available.

Finally, biologists will capture photographs of any other site features not otherwise captured with previous efforts (Figure 2.1-4). Any additional photographs will be recorded in the GIS handheld application and/or field notes for reference.

Photographs will be downloaded upon return from the field and saved to the electronic project files.

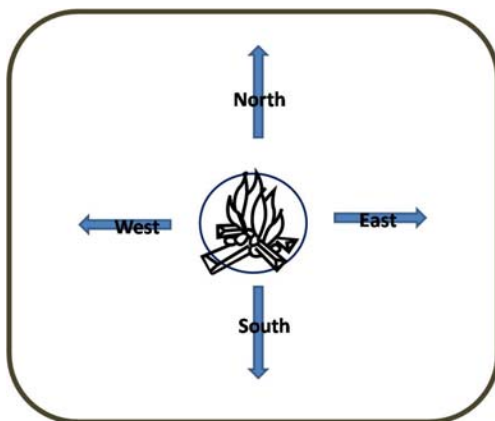


Figure 2.1-2. Photograph: site from site center in the four cardinal directions.

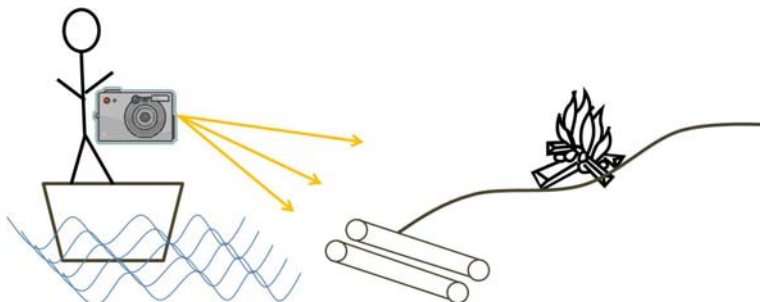


Figure 2.1-3. Photograph: site from the reservoir.

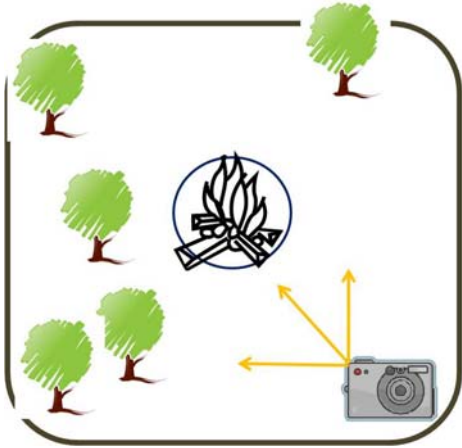


Figure 2.1-4. Photograph: any other site features not captured previously.

2.2.3 Measure Area of Impact

The area of impact will be measured at each dispersed recreation site. The area of impact, for the purposes of this monitoring/assessment effort, is defined as the areas around the site center devoid of vegetation or where vegetation is clearly disturbed. Disturbed areas are those areas devoid of vegetation due to regular use and/or trampling. The purpose of measuring the area of impact for each site is to establish a baseline for future comparisons. An accurate measurement of the site will assist in determining both whether site creep occurs and the total area of shoreline impact.

Biologists will measure the area of impact by recording the distance from the site center to the edge of vegetation disturbance in four directions. In most cases, this will be recorded by measuring the vegetation disturbance in all four cardinal directions (N, S, E, and W). In cases where this does not accurately represent the shape of the site, each measurement will be in 90 degree intervals. This will assess the furthest distance from the site center such that the shape of the site is documented (Figure 2.1-5).

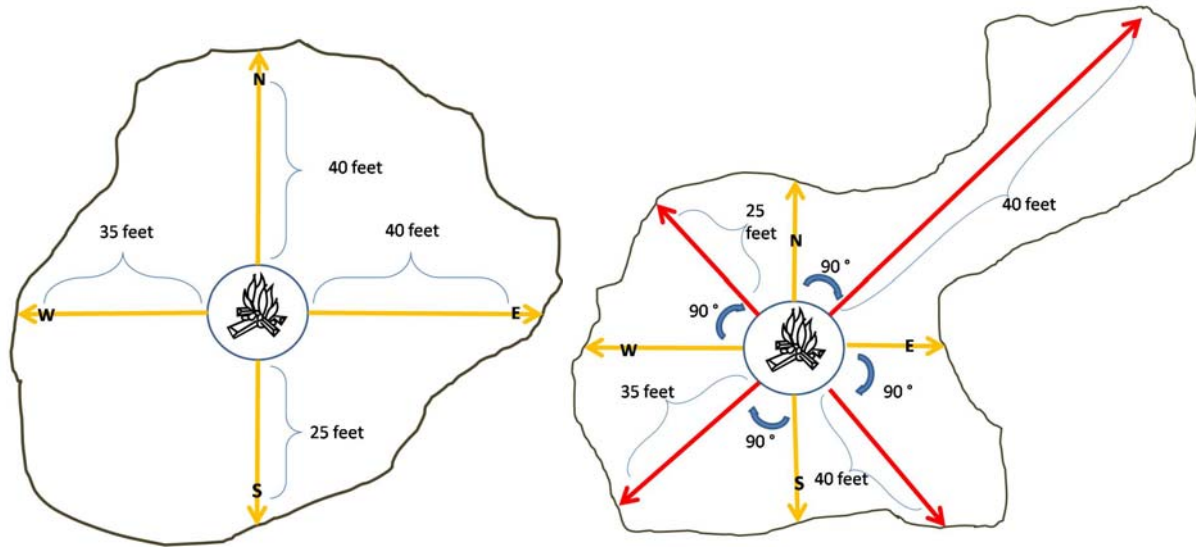


Figure 2.1-5. Measure area of impact.

2.2.4 Determine the Level of Impact

The level of impact will be measured in four categories:

1. Presence of fire ring (yes or no),
2. Presence of trash (low, medium, or high),
3. Presence of toilet (yes or no), and
4. Presence of damage (low, medium, or high).

Biologists will record measurements for each of these parameters according to the criteria outlined below. Results will be recorded in the handheld application and/or field notes.

- Fire ring (yes or no)
- Trash (low: 0 to 2 bags [30 gal], medium: 2 – 5 bags, or high: greater than 5 bags)
- Toilet (yes or no)
- Damage to vegetation (low: 0 to 5 trees / shrubs damaged, medium: 5 – 10 trees/shrubs damaged, or high: more than 10 damaged trees / shrubs damaged). Types of damage could include, but are not limited to, vandalism to the trunk or bark of a tree, removal of limbs for firewood, presence of exposed roots, etc.

2.2.5 Provide Field Sketch of Each Dispersed Site

Using the data form provided in Appendix A, the biologists will sketch each dispersed recreation site. The purpose of the sketch is to provide a reference to managers of the orientation of the site. Each sketch will include a north arrow, access point, general shape of the site, and fire ring (if present) or site center.

2.3 Determine Access Potential to the Dispersed Site.

In order to determine the access potential (low, medium, or high), biologists will measure the slope from the site center (usually the fire ring) to the ordinary high water mark (OHWM) or full pool with a clinometer or laser range finder (Figure 2.2-1). Using this information, biologists will assign an access potential for each site based on the criteria below. Biologists will then record the results in the handheld application and/or field notes.

- Low: <10%,
- Medium: 10-20%, and
- High: >20%
- If cut bank exists at water access, assume >20% slope.

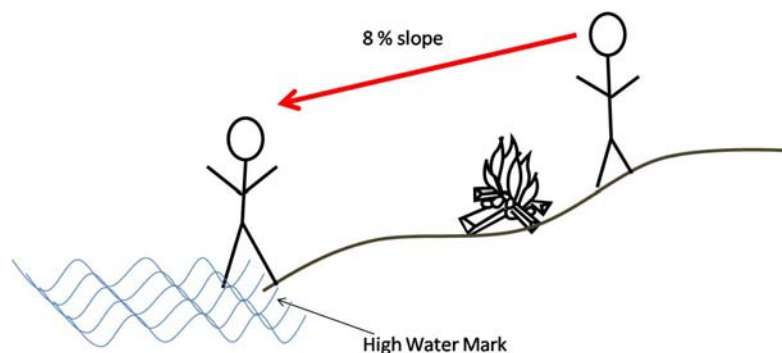


Figure 2.2-1. Measure slope from the site center to the high water mark or full pool mark.

2.4 Collect Sensitive Resource Data

In terms of sensitive resources, a site is suitable if it is not affecting sensitive habitat or species, not within or affecting a jurisdictional wetland, and not affecting cultural resources (PacifiCorp 2004a). Field biologists will determine habitat conditions at each dispersed site based on the parameters outlined in Chapter 17 of the Lewis River Wildlife Habitat Management Plan (PacifiCorp 2008). Specific protocols for sensitive resources are outlined below.

2.4.1 Associated Species

The RDSUP requires that PacifiCorp perform an assessment of whether dispersed recreation sites affect sensitive habitat or species. The following section describes the approach to the assessment of associated species of interest observed during the dispersed recreation field surveys as it relates to this goal.

At each dispersed campsite, biologists will record the presence or absence of associated species. If associated species are present, biologists will record the name of the species.

Associated species are those species that have been identified in the Lewis River Wildlife Habitat management Plan, Volume 1 (PacifiCorp 2008) because they were a focus during relicensing studies, they are indicator species for different habitat types, or they would directly benefit from habitat management actions. These species are provided in Appendix B. A dispersed recreation site will be designated as potentially affecting sensitive habitat or species if the presence of an associated species is documented within a dispersed recreation site.

2.4.2 Plant Species of Interest

The RDSUP requires that PacifiCorp perform an assessment of whether dispersed recreation sites affect sensitive habitat or species. The following sections describe the approach to the assessment of plants of interest observed during the dispersed recreation site field surveys as it relates to this goal.

At each dispersed recreation site, biologists will record the presence or absence of rare plant species. If rare species are present, biologists will record the name of the species. Rare species are those species that are listed under the Federal Endangered Species Act, the Washington State Endangered Species Act, as United States Forest Service (USFS) Sensitive Species on the Gifford Pinchot National Forest, or as Survey and Manage (S/M) Species that potentially occur within the Project area. These species are provided in Appendix C (PacifiCorp 2004b). Biologists will only document the presence of USFS Sensitive species and S/M species on USFS property in the Drift Creek drainage area. In all other areas, biologists will only document the presence of federal and state-listed plant species. A dispersed recreation site will be designated as potentially affecting sensitive habitat or species if the presence of a rare species is documented within a dispersed recreation site.

In addition, during field surveys, biologists will have the opportunity to record information regarding the presence of weed species. If weed species are present, biologists will record the name of the species. Weed species are those species described as noxious, invasive, or exotic and are included in Appendix C (PacifiCorp 2004b).

2.4.3 Wetland Assessment

The RDSUP requires that PacifiCorp perform an assessment of whether dispersed recreation sites are located in jurisdictional wetlands and if the sites will affect wetland functions. The following sections describe the approach to wetland assessment.

During the field survey, biologists will confirm the presence of known wetlands based on the previous GIS desktop effort. In addition, biologists will document the presence or absence of new wetlands at each dispersed campsite locations, as well as the proximity of wetlands to each dispersed recreation site. If wetlands are identified, biologists will determine the type of wetland: emergent, forested, or scrub/shrub. Biologists will also be able to record any comments associated with the identified wetlands. Following the field visits, biologists will analyze all documented wetlands, determine which sites are located within jurisdictional

wetlands and whether the sites will affect their function. A dispersed recreation site will be designated as potentially affecting jurisdictional wetlands or their function if the dispersed recreation site is located within 300 feet of a jurisdictional wetland.

During the field assessment, biologists will also document the presence or absence of streams at each dispersed campsite, as well as the proximity of the stream to each site. Biologists will also be able to record any comments associated with the identified streams.

2.4.4 Driftwood Potential

The RDSUP requires that PacifiCorp perform an assessment of whether dispersed recreation sites are located in areas that have the potential to collect large amounts of driftwood and whether the driftwood has the potential to interfere with boat traffic or cause boat beaching. The following section describes the approach to driftwood assessment.

At each dispersed recreation site, biologists will record whether or not there is driftwood present in the beach access area. To be considered in this analysis, a piece of driftwood must be greater than 12 inches at diameter breast height (DBH) and greater than 6 feet in length. DBH is evaluated as if the tree were standing upright. If driftwood greater than 12 inches DBH and greater than 6 feet in length is present, biologists will record whether or not the driftwood interferes with a boater's ability to access the site. Biologists will record the type of bank material according to the following categories: gravel, dirt, exposed roots, or concrete. In addition, if driftwood is present, biologists will record the number of pieces of driftwood according to the following categories: less than 5 pieces, 5 to 10 pieces, and greater than 10 pieces. The site will be considered to contain driftwood that affects boat beaching based on these parameters, particularly if the site has more than 10 pieces of driftwood.

3.0 Handheld Application Methodology

The Dispersed Site Assessment will be completed using a custom data collection application built for handheld GPS units. The application, called The Dispersed Campsite Assessment Application V.1 (DCA Application) has been customized to collect spatial and tabular data specifically related to the Dispersed Site Assessment process. The remainder of Section 3 includes technical details regarding the Dispersed Campsite Application, as well as an abbreviated user guide.

3.1 Technical Specifications

The DCA Application is built on Environmental Systems Research Institute, Inc's (ESRI) ArcPad 7.1 platform using visual basic for applications. ArcPad is a simplified GIS built to allow handheld GPS units to collect and analyze data. ArcPad is capable of running on a variety of resource and survey grade GPS units, as well as various handheld and desktop computers. The DCA Application has been tested and optimized to run on 2005 Trimble GeoXT resource grade GPS units, which is the device MB&G biologists will be using to conduct the survey. While the DCA Application should run on any device capable of running ArcPad, it is MB&G's recommendation that the application be tested on the subject device before attempting field use. It is also recommended that the DCA Application not be run with ArcPad versions lower than ArcPad 7.0.

The DCA Application consists of a series of ArcPad program files, four GIS shapefiles, and a set of input tables. The program files can be edited using ArcPad Studio or text viewers such as EditPad Lite or Windows Notepad. The four shapefiles (Site_Point, Special_Pt, Special_Ln, and Special_Poly) were created in ArcGIS and include a specific set of attributes. The shapefiles can be replicated by copying the originals or building replicas using the variable list included as Appendix C. The DCA Application also includes a set of 19 input tables in .dbf format. These input tables are used to populate the drop down boxes in the application. The name of these 19 input tables must not be changed, but the inputs can be changed using MS Excel (pre Office 2007), ArcGIS, or other database management software. The shapefiles and input tables are described in more detail in the User Guide section (Section 3.3) of this document.

3.2 Program Organization

The DCA Application consists of a series of toolbars and tools which make data collection more efficient and accurate. Following the Dispersed Site Assessment methodology described in Section 2, the DCA Application allows the user to define a point, also called the *Site Point*, located at the approximate center of a dispersed recreation site. The data collected will exist as

a GIS shapefile identifying the point as well as several characteristics of the site. For each *Site Point*, the DCA Application includes a series of variables organized into the following seven categories:

- General Site and Survey
- Photo(s)
- Existing Human Impacts
- Bank Access
- Sensitive Species Habitat
- Plant Habitat
- Wetland Conditions

The DCA Application organizes these categories into a series of tabs, similar to a Microsoft Excel worksheet, located in a data input form which will immediately appear after making a new *Site Point*. The information gathered in the field for each *Site Point* will be combined with additional GIS data to produce a complete view of each dispersed recreation site. For more information on each of the seven categories described above and their specific variables, refer to Appendix C or the User Guide in Section 3.3.3.

In addition to collecting *Site Point* features, the DCA Application also allows users to collect points, lines, and polygons for special field observations. These additional features are called *Special Points, Special Lines, and Special Polygons*, and can consist of unique plant communities, animal habitats, man-made features, or any other observation. After creating a *Special Point, Line, or Polygon*, the DCA Application will open a dialog box asking the User to identify what was observed (e.g., raptor nest), if a photo was taken, whether the observation should be associated with a site, as well as any additional comments or notes. For more information on how to collect a *Special Point, Line, or Polygon* refer to Appendix D or the User Guide in Section 3.3.3.

Finally, the DCA Application is capable of moving existing points as well as updating the attributes of existing dispersed campsites. More information on moving and editing existing dispersed campsites is available in Section 3.3.4.

3.3 Users Guide

This section includes a list of the requirements to run the DCA Application and an abbreviated Users Guide.

3.3.1 Required Files

The following is a list of program files, shapefiles, and input tables that are required to make the DCA Application perform correctly.

Program Files: The program files build the toolbars and tools required to run the application.

- CampApp.apa
- CampApp.vbs
- ArcPad.apx
- ArcPad.vbs

Shapefiles: Shapefiles are a GIS file format that stores the spatial location and attributes of each observation. Shapefiles are actually an aggregate of four files (name.dbf, name.prj, name.shp, and name.shx). When copying or moving shapefiles, it is best to use a GIS program such as ArcCatalog.

- Site_Pt
- Special_Ln
- Special_Pt
- Special_Poly

APL Files: Each shapefile listed above has an associated APL (.apl) file which includes the shapefile's data input forms for use in the application. If you are exporting data to ArcPad from ArcMap, .apl files will automatically be created for you. You will need to replace the auto generated .apl files with the .apl files provided with the application. For more information on replacing the .apl files see Section 3.3.2 below.

Input Tables: To make data entry easier, the DCA Application uses drop-down boxes wherever possible. The options in each drop-down box are controlled by set of 19 database tables (.dbf). To change to dropdown box inputs, open the database table in Microsoft Excel (pre Office 2007) or another database program and change or add to the *Inputs* column. The input tables include:

- **Access** – Describes how the site can be accessed (boat, car, foot, ohv)
- **Bank_Material** – Describes the bank's composition (gravel, dirt, exposed roots, concrete, sand)
- **Bank_Slope** – Classifies the slope of the bank into three categories
- **Campfire** – Classifies how many campfire rings are present at the site
- **Directions** – Used to identify which direction the surveyor is measuring
- **Driftwood Pieces** – Classifies the number of driftwood pieces present
- **Presence_Absence** – Yes or No
- **Presence_Absence_Short** – Yes or No used for sensitive species analysis
- **Qualitative_Scale** – Low, Medium, High
- **Rare_Plants** – List of rare plant species
- **Reservoirs** – List of reservoirs (Merwin, Yale, Swift)
- **Special_Type** – Classifies Special Point, Line, and Polygons into observation types (e.g. plant)

- **Streams** – Classifies streams as intermittent or perennial. Could be changed to describe fish presence.
- **Toilet** – Classifies the type of toilet present
- **Trash** – Classifies the amount of trash (in garbage bags) at the site
- **Vandalism** – Classifies number of trees/plants with evidence of vandalism
- **Weeds** – List of weed species
- **Wetlands_Proximity** – Classifies the distance from the site to the observed wetland
- **Wetlands_Type** – Classifies the type of wetland observed

3.3.2 Program Installation and Data Setup

The program files, shapefiles, and input tables must be loaded onto the GPS unit before running the application in the field. The setup procedure includes two components, program files and data, which are described individually below. For more information refer to Appendix D.

Program Files: There are four program files, identified in Section 3.3.1, which need to be installed on the handheld unit before collecting data in the field. The program files are categorized as either *Applet* or *System* files by ArcPad. The applet files, CampApp.apa and CampApp.vbs, must be copied onto the handheld unit into the Program Files>ArcPad>**Applets** folder. These two files will replace any existing applet files in this folder; any additional files with the suffix .apa or .vbs exist in the **Applets** folder should be removed before using the application. Similarly the system files, including ArcPad.apx and ArcPad.vbs, must be copied onto the handheld unit into the Program Files>ArcPad>**System** folder. The last program file to copy is the MBG.bmp file which should also be copied into the Program Files>ArcPad>**System** folder.

Data: The data required to run the DCA Application includes shapefiles as well as .apl files and input tables. Shapefiles should be checked out using the ArcGIS ArcPad extension or a similar extension from another desktop GIS program. Exported shapefiles from ArcMap will be placed into a default folder entitled **DataforArcPad** (or a self titled folder); which will include the shapefiles as well as auto-generated .apl files. Using Microsoft Explorer replace the auto-generated .apl files in the **DataforArcPad** folder with the .apl files provided with the DCA Application. After replacing the .apl files, copy the input tables into the **DataforArcPad** folder. With the updated .apl files and tables added to the **DataforArcPad**, copy the folder onto the handheld unit. The location of the **DataforArcPad** folder on your handheld does not matter. (The tables, .apl files, and shapefiles must be in the same folder on the GPS unit)

3.3.3 Using the Dispersed Campsite Assessment Application

The DCA Application is designed to be easy to use with very little instruction. The application consists of two toolbars and a series of tools that will allow the User to add and collect data as well as view context data, such as wetlands or known sensitive species habitat. The five steps to running the DCA Application include:

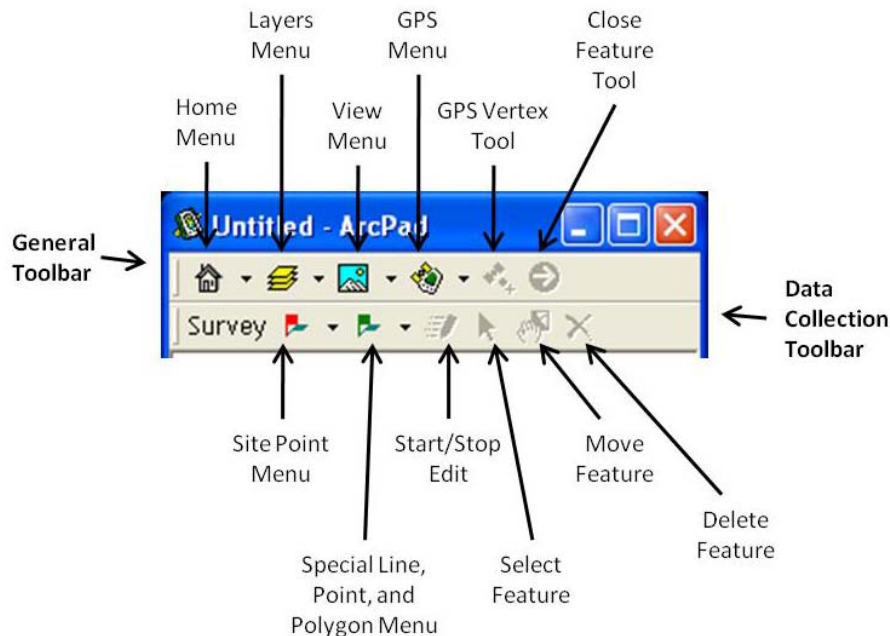
1. Opening the application
2. Adding Data (Site_Pt, Special_Ln, Special_Pt, and Special_Poly)
3. Turning on the GPS
4. Collecting Data
5. Completing Data Forms

The remainder of section 3.3.3 will describe each of the above five steps.

Step 1 – Opening the Application: The DCA Application will automatically open when ArcPad is selected from the Start menu on any Windows device. The application will begin with the startup screen shown below. (For information on editing existing data see Section 3.3.4.)

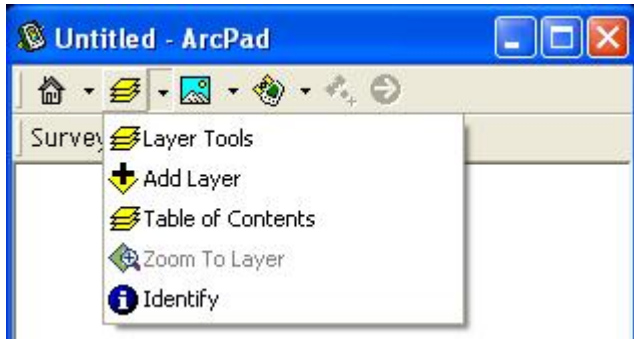


Once the application is loaded the startup screen will disappear, leaving the DCA Application interface shown below.



The application will load with a blank screen, as no data has been loaded. The next step is to load data.

Step 2 – Adding Data: With the application open, place the cursor over the *Layers Menu* and select the *Add Layers Tool*.



With the *Add Layers* dialog box open, the biologist must navigate to the **DataforArcPad** folder, or wherever the data is stored, and check the boxes next to the Site_Pt, Special_Ln, Special_Pt, and Special_Poly layers. Select the green *OK* button at the bottom of the *Add Layers* dialog box and the data will be added. In most cases, the Site_Pt, Special_Ln, Special_Pt, and Special_Poly layers will be empty so no points, lines, or polygons will appear on your screen. If there is context data, such as reservoirs, roads, trails, etc., they can be added using the same procedure.

Step 3 – Turning on the GPS: With the data added, the User is ready to activate the GPS unit and begin collecting data. To activate the GPS unit the biologist must place the cursor over the *GPS Menu* and select the *GPS Activate Tool*.



The biologist will know when the GPS functionality has been activated by the rotating compass rose or no connection icons (shown below) showing on the screen.



No GPS Connection

This icon indicates that your GPS units is either not receiving a signal or has been setup properly. Try moving to an area with a more exposed view of the sky.



GPS Connection

This icon indicates that your GPS units has received a signal and is ready to collect data.

Once the GPS unit is activated, the biologist is ready to collect data.

Step 4 – Collecting Data: There are two ways to collect data, GPS or freehand, using the DCA Application. GPS is the preferred method for collecting data as it is more accurate; however, if GPS coverage is unavailable, the freehand drawing method allows the User to draw data on the screen. Collecting data for points is different than collecting data for lines and polygons, so each is described separately below.

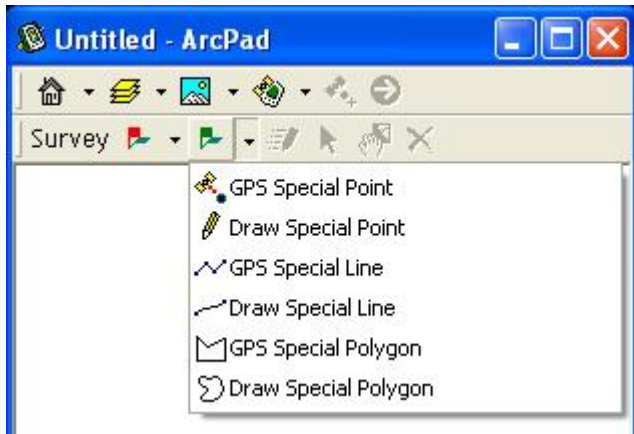
Point Data: The example here describes how to collect a *Site Point*, but collecting a *Special Point* requires the same procedures.

With the GPS active, the biologist must place the cursor over the *Site Point Menu* and click the *GPS Site Point Button*. Once the *GPS Site Point Button* has been clicked, the GPS unit will automatically collect a point. Once the point has been collected, the data input form will open.



When GPS coverage is not available, click the *Draw Site Point Button* and then tap the screen wherever the User would like to place the point. Once the Biologist has placed the point, the data input form will open.

Line and Polygon Data: The Special Line and Special Polygon data are either collected using a series of GPS vertices or by drawing the line or polygon on the screen.



With the GPS active, the biologist must place the cursor over the *Special Point, Line, or Polygon Menu* and click either the *GPS Special Line Button* or the *GPS Special Polygon Button*. Once either button has been clicked, the *GPS Vertex Tool* will be highlighted. By clicking the *GPS Vertex Tool* the Biologist will capture a vertex at the point where he or she is standing. To create a *Special Line or Polygon*, the Biologist will collect a series of GPS vertices using the *GPS Vertex Tool* which will be connected to make the desired shape. When the Biologist has collected the final vertex and would like to close the polygon or finish the line, they must click the *Close Feature Tool* and the data input form will appear. When creating a polygon using the *GPS Vertex Tool*, the *Close Feature Tool* will automatically connect the first and last vertex to close the polygon.



GPS Vertex Tool

With the GPS active and either the *GPS Special Line* or *GPS Special Polygon* tool selected, click on this button to place a vertex where you are standing.



Close Feature Tool

When you have placed all of the vertices for either a *Special Line* or *Special Polygon*, click on this button to finish the line or close the polygon. When creating a polygon the *Close Feature Tool* will connect your last vertex with the first vertex.

When GPS coverage is not available, the biologist can click either *Draw Special Line* or *Draw Special Polygon* from the *Special Point, Line, and Polygon Menu* and use the stylus to draw the line or polygon on the screen. The drawing will end when the stylus is lifted from the screen.

Once the stylus is lifted and the line or polygon is complete, the data input form will automatically open. Once the Biologist has drawn or used the GPS to collect an observation, the Biologist will complete the final step – entering the associated data via the data input form.

Step 5 – Completing the data input forms: Each observation has an associated data input form that collects specific characteristics of the observation. The data forms will appear automatically after the Biologist has collected an observation using the GPS or draw functions. The data forms for Special Lines, Points, and Polygons are the same but the data form for Site Points is different. Each type of data form is described below.

Site Point: The *Site Point* data form includes 11 tabs for data entry. The tabs correlate with the seven categories described in section 3.3.1. The Sensitive Species Habitat category is subdivided into three categories (mammal, avian, and other) based on the species of interest, and requires four tabs. Each of the tabs is described below.

1. **General Site and Survey:** This tab includes general information to identify the site, who observed the site, the date the observation occurred, and how the site can be accessed. The Site ID variable provides unique identification for the site.

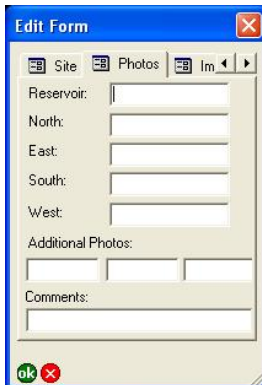


The image shows a screenshot of a software window titled "Edit Form". The window has a blue title bar with a close button (X) in the top right corner. Below the title bar, there are three tabs: "Site", "Photos", and "Im...". The "Site" tab is currently selected. The form contains several input fields and dropdown menus:

- Site ID:** A text input field with a vertical cursor.
- Date:** A dropdown menu showing "12/19/2008".
- Observer(s):** A text input field.
- Reservoir:** A dropdown menu.
- Access:** A dropdown menu.

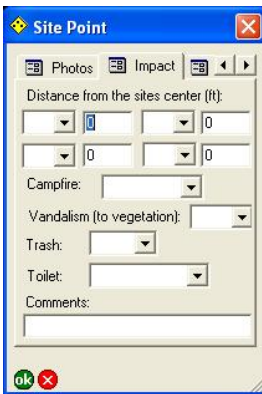
At the bottom left of the window, there is a small icon with the letters "ak" and a red "X" next to it.

2. **Photos:** This tab includes spaces for entering digital picture numbers from various points around the site.



The screenshot shows a dialog box titled "Edit Form" with a close button (X) in the top right corner. The "Photos" tab is selected, indicated by a small photo icon and the text "Photos" in the tab bar. The "Site" tab is also visible. The form contains several input fields: "Reservoir:" with a text box; "North:", "East:", "South:", and "West:" each with a text box; "Additional Photos:" with three small text boxes; and "Comments:" with a larger text box. At the bottom left, there are "ok" and "cancel" buttons.

3. **Existing Human Impacts:** This tab includes space to define the sites size as well as a series of variables which describe the existing human impacts on the site.



The screenshot shows a dialog box titled "Site Point" with a close button (X) in the top right corner. The "Impact" tab is selected, indicated by a small impact icon and the text "Impact" in the tab bar. The "Photos" tab is also visible. The form contains several input fields: "Distance from the sites center (ft):" with two spinners, both set to 0; "Campfire:" with a dropdown menu; "Vandalism (to vegetation):" with a dropdown menu; "Trash:" with a dropdown menu; "Toilet:" with a dropdown menu; and "Comments:" with a text box. At the bottom left, there are "ok" and "cancel" buttons.

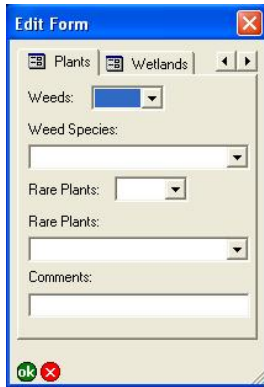
4. **Bank Access:** This tab includes variables which describe the interface between the site and the reservoir, including bank slope and composition as well as the prevalence of driftwood.



5. **Sensitive Species Habitat:** This series of tabs uses drop down boxes to describe the habitat, observations, or evidence of sensitive species at the site. For instance, if there is evidence that a beaver inhabits a site, the *Evid. (Evidence)* box would be changed to *yes*. If a beaver was observed at the site, the *Obs. (Observation)* box would be changed to *yes*. There are a total of four tabs (Mammal, Avian 1, Avian 2, and Other) to describe *Sensitive Species Habitat*.

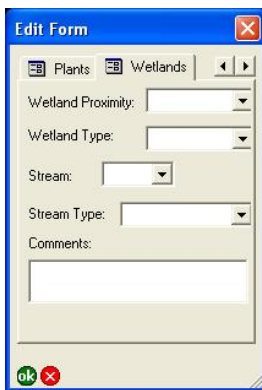


6. **Plants:** This tab includes space for identifying weeds and rare plants at the dispersed recreation site. Additional vegetation observations can be completed using *Special Points, Lines, and Polygons*.



The screenshot shows the 'Edit Form' dialog box with the 'Plants' tab selected. The form contains the following fields: 'Weeds' (a dropdown menu), 'Weed Species' (a text input field with a dropdown arrow), 'Rare Plants' (a dropdown menu), 'Rare Plants' (a text input field with a dropdown arrow), and 'Comments' (a text input field). At the bottom left, there is a green 'OK' button and a red 'X' button.

7. **Wetland Conditions:** This tab includes spaces to identify whether a wetland or stream is on or adjacent to the site.



The screenshot shows the 'Edit Form' dialog box with the 'Wetlands' tab selected. The form contains the following fields: 'Wetland Proximity' (a dropdown menu), 'Wetland Type' (a dropdown menu), 'Stream' (a dropdown menu), 'Stream Type' (a dropdown menu), and 'Comments' (a text input field). At the bottom left, there is a green 'OK' button and a red 'X' button.

Once all of the tabs have been completed, the biologist must click the green *OK* button at the bottom left corner of the data input form to save the data.

Special Points, Lines, and Polygons: The *Special Point, Line, and Polygon* data input forms are identical and consist of only one tab. *Special Points, Lines, and Polygons* can be used to collect any observation that is not a *Site Point* but is important for assessing the viability of a site. The

data inputs for *Special Points, Lines, and Polygons* include the type of observation (vegetation, man-made feature, etc.), an associated photo number, the closest site, and any comments.



Once the form has been completed, the biologist must click the green *OK* button at the bottom left corner of the data input form to save the data.

After completing all of the observations, the DCA Application can be closed by clicking the *Exit Button* under the *Home Menu*. The Biologist does not need to click the *Save Button* under the *Home Menu* before closing the application. **The *Save* function found under the *Home Menu* will save the current view on the handheld unit, not the data itself.**

To remove the data from your handheld, the Biologist must copy or cut the **DataforArcPad** folder from the handheld to their desktop computer. Before using the data on their desktop GIS, MB&G recommends that the Biologist differentially corrects the data using a preferred program.

3.3.4 Editing Existing Data

In addition to collecting new data, the DCA Application is capable of moving and deleting points as well as editing the attributes of existing data. The figure below shows the tools you will use to move, delete, and edit data.

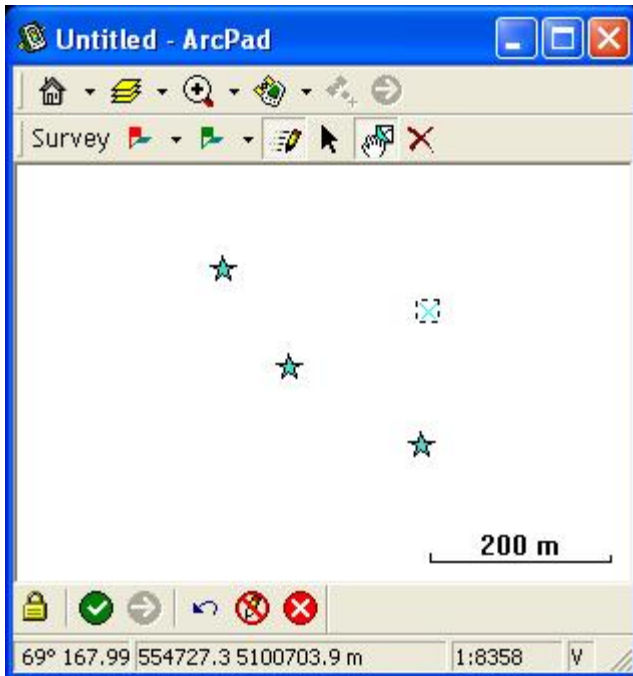


To start editing click the *Start/Stop Edit Button*, this will reveal the editable layers as shown below.



Choose the layer you would like to edit from the list. The names in the list correspond to the name of each GIS file. The Dispersed Campsites are included as Site_Pt. The remaining options are Special Lines, Special Points, and Special Polygons. Once you have selected the layer you would like to edit, you are ready to edit, move, or delete existing data.

1. **Editing Existing Data:** To edit an existing point's attributes, click on the *Select Features Button* and select the point you would like to edit from the map display. Once selected, the feature will be encased in a dotted square box. To edit the features attributes, click the feature on the map display again and the attribute entry form will appear. You can now enter attributes just as you would with a new data point.
2. **Moving Existing Data:** A feature in the wrong location can be moved by first clicking the *Select Feature Button* and selecting the feature you would like move. After the feature is selected, click the *Move Feature Button*. With the *Move Feature Button* active, grab the feature you would like to move and drag it to the desired location. Make sure to keep your stylus pressed against the screen until the feature is where you would like it. After being moved, the feature will appear as a blue X as shown in the figure below. Before the feature is moved, you must accept the change by clicking the green "check" button at the bottom of the screen as shown below. To return the feature to its original location, hit the backwards button at the bottom of the screen.



3. Deleting a feature: To delete an existing feature, click the *Select Feature Button* and then select the feature you would like to delete. With the feature selected, click the *Delete Feature Button*. A dialog will appear to confirm that you would like to delete the feature.

Once you have completed your edits, click the *Start/Stop Editing Button* and select the layer you are done editing. Once you have stopped the edit session, the red box surrounding the editable layer will disappear.

4.0 References

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Appendix A

Field Sketch Data Form

Lewis River Dispersed Campsites Program

Lewis River Dispersed Camping Site Assessment

Camping Site Sketch

| | | | |
|-------------------------|--------|-------|--------------------|
| Reservoir (Circle One): | Merwin | Swift | Yale |
| Date of Survey Visit: | _____ | | Survey Crew: _____ |

| | |
|--|--|
| <p style="text-align: center;">Drawing</p> <p>☒ = Live Tree ○ = Dead Tree</p> <p>▲ = Directionality (With North Arrow) – Include nearby roads, water bodies, wetlands, and/or other landmarks.</p> <p>--- = camp site boundary</p> <p>☆ = fire ring (if present)</p> <p>△ = Access point (beach and / or vehicle)</p> | |
| <p>Comments:</p> | |

| Associated Photos (Optional) | |
|------------------------------|--------------------|
| ID# _____ | Description: _____ |
| ID# _____ | Description: _____ |
| ID# _____ | Description: _____ |
| ID# _____ | Description: _____ |

| | |
|------------------|-------------|
| Signature: _____ | Date: _____ |
|------------------|-------------|

Appendix B

Associated Species List

Lewis River Dispersed Campsites Program

| Species Common Name Scientific Name | Federal Status | State Status |
|---|--------------------|--------------|
| Avian Species | | |
| Bald eagle <i>Haliaeetus leucocephalus</i> | Species of Concern | Threatened |
| Black-capped chickadee <i>Parus atricapilla</i> | None | None |
| Great blue heron <i>Ardea herodias</i> | None | Priority |
| Norther spotted owl <i>Strix occidentalis</i> | Threatened | Endangered |
| Pileated woodpecker <i>Dryocopus pileatus</i> | None | Candidate |
| Savannah sparrow <i>Passerculus sandwichensis</i> | None | None |
| Wood duck <i>Aix sponsa</i> | None | Priority |
| Yellow warbler <i>Dendroica petechia</i> | None | None |
| Mammalian Species | | |
| Beaver <i>Castor canadensis</i> | None | None |
| Black bear <i>Ursus americanus</i> | None | None |
| Black-tailed deer <i>Odocoileus hemionus</i> | None | Priority |
| Marten <i>Martes americana</i> | None | Priority |
| Mink <i>Mustela vison</i> | None | Priority |
| Northern flying squirrel <i>Glaucomys sabrinus</i> | None | None |
| Pacific Western big-eared bat <i>Plecotus townsendii</i> | Species of Concern | Candidate |
| Roosevelt Elk <i>Cervus elaphus</i> | None | Priority |
| Other Species of Interest | | |
| Cascade Torrent Salamander <i>Rhyacotriton cascadae</i> | None | Candidate |
| Larch Mountain salamander <i>Plethodon larselli</i> | Species of Concern | Sensitive |
| Papillose Tail-Dropper <i>Prophyaon dubium</i> | None | None |
| Van Dyke's salamander <i>Plethodon vandykei</i> | Species of Concern | Candidate |

| Pond Breeding Amphibians | | |
|---------------------------------|-----------|-----------------|
| Long-toed salamander | None | None |
| <i>Ambystoma macrodactylum</i> | | |
| Northern red-legged frog | None | None |
| <i>Rana aurora</i> | | |
| Northwestern salamander | None | None |
| <i>Ambystoma gracile</i> | | |
| Oregon spotted frog | Candidate | Endangered |
| <i>Rana pretiosa</i> | | |
| Pacific treefrog | None | None |
| <i>Pseudacris regilla</i> | | |
| Rough-skinned newt | None | None |
| <i>Taricha granulosa</i> | | |
| Western toad | None | State Candidate |
| <i>Bufo boreas</i> | | |

Appendix C

Botanical Survey Species Lists

Lewis River Dispersed Campsites Program

Table 2-2. Threatened, endangered, and sensitive (TES) and survey and manage (S/M) plant species potentially occurring in the Lewis River study area.

| Scientific Name / Common Name | USFWS ¹ | USFS ² | WNHP ³ |
|---|--------------------|-------------------|-------------------|
| Vascular Plants | | | |
| <i>Botrychium minganense</i> Mingan moonwort | | S | R2 |
| <i>Botrychium montanum</i> Victorin's grapefern | | S | W |
| <i>Carex interrupta</i> Green fruited sedge | | S | |
| <i>Carex machrochaeta</i> Large awned sedge | | S | S |
| <i>Chrysolepis chrysophylla</i> Golden chinquapin | | | S |
| <i>Cimicifuga elata</i> Tall bugbane | SoC | S | T |
| <i>Corydalis aquae-gelidae</i> Cold water corydalis | SoC | S S/M | T |
| <i>Coptis asplenifolia</i> Spleenwort leaved goldthread | | S S/M | S |
| <i>Coptris trifolia</i> Threelaf goldthread | | S S/M | |
| <i>Cyperus bipartitus</i> Shining flatsedge | | S | S |
| <i>Cypripedium fasciculatum</i> Clustered lady slipper | SoC | S S/M | T |
| <i>Cypripedium montanum</i> Mountain lady slipper | | S/M | W |
| <i>Dryopteris carthusiana</i> Toothed wood fern | | | R1 |
| <i>Erigeron howellii</i> Howell's daisy | SoC | S | T |
| <i>Epipactis gigantea</i> Giant helleborine | | | S |
| <i>Eunymus occidentalis</i> Western wahoo | | S | S |
| <i>Githopsis specuarioides</i> Common blue cup | | | S |
| <i>Isoetes nuttallii</i> Nuttall's quillwort | | | S |
| <i>Lindernia dubia</i> var. <i>anagallidea</i> False pimpernel | | | R2 |

| Scientific Name / Common Name | USFWS ¹ | USFS ² | WNHP ³ |
|---|--------------------|-------------------|-------------------|
| <i>Lycopodium dendroideum</i> Tree clubmoss | | S | S |
| <i>Montia diffusa</i> Branching montia | | S | |
| <i>Montia howellii</i> Howell's montia | SoC | S | W |
| <i>Ophioglossum pusillum</i> Adder's tongue | | S | T |
| <i>Orobanche pinorum</i> Pine broomrape | | | W |
| <i>Oxalis suksdorfii</i> Western yellow oxalis | | | S |
| <i>Parnassia fimbriata</i> var. <i>hoodiana</i> fringed grass of parnassus | | S | S |
| <i>Penstemon barrettiae</i> Barrett's beardtongue | SoC | S | T |
| <i>Plantanthera orbiculata</i> round leaved orchid | | S/M | W |
| <i>Pleuricospora fimbriolata</i> Fringed pinesap | | | W |
| <i>Poa laxiflora</i> Loose flowered bluegrass | | S | T |
| <i>Polemonium carneum</i> Great polemonium | | S | T |
| <i>Sidalcea hirtipes</i> Hairy stemmed chermallow | | | E |
| <i>Sidalcea nelsoniana</i> Nelson's checkermallow | T | | E |
| <i>Sisyrinchium sarmentosum</i> Pale blue eyed grass | SoC | S | T |
| <i>Trillium parviflorum</i> Small flowered trillium | | | S |
| <i>Utricularia intermedia</i> Flat leaved bladderwort | | S | S |
| <i>Utricularia minor</i> Lesser bladderwort | | | R1 |
| <i>Whipplea modesta</i> Yerba de selva | | | R1 |
| Lichens | | | |
| <i>Hypogymnia duplicata</i> | | S/M | P2 |
| <i>Hypogymnia oceanica</i> | | S/M | P2 |
| <i>Lobaria linita</i> | | S/M | P2 |
| <i>Pseudocyphellaria rainierensis</i> | | S/M | P2 |

| Scientific Name / Common Name | USFWS ¹ | USFS ² | WNHP ³ |
|----------------------------------|--------------------|-------------------|-------------------|
| Bryophytes | | | |
| <i>Diplophyllum plicatum</i> | | S/M | |
| <i>Kurzia makinoana</i> | | S/M | |
| <i>Tritomaria exectiformis</i> | | S/M | |

¹ **USFWS Status:** T-listed as threatened under the Endangered Species Act (ESA), those species likely to become endangered within the foreseeable future; SoC - species of concern, species that need additional information to support proposal to list as threatened or endangered; not protected under the ESA.

² **USFS Status:** S/M - Survey and Manage species designated in the Northwest Forest Plan, as amended (USFS and BLM 2000); S - listed on the Region 6 Sensitive Plant Species List (1999).

³ **State Status (WNHP 2000):** E-Listed as endangered; T-listed as threatened; S-listed as sensitive; R1 - review taxa for which more field work is needed to assess their rarity and the degree to which they are threatened; R2-review taxa with unresolved taxonomic questions; W-Watch, species that are more abundant and/or less threatened in WA than previously assumed; P2-lichen species for which WNHP is collecting information.

Table 2-3. Target list of exotic and invasive plant species for the Lewis River study area

| Species Common Name Scientific Name | Washington State Noxious Weed List Classification ^{1,3} | Exotic Pest Plants of Concern Classification ^{2,3} |
|---|---|--|
| Bull thistle <i>Cirsium vulgare</i> | none | none |
| Canada thistle <i>Cirsium arvense</i> | C | Most invasive - widespread |
| Dalmation toadflax <i>Linaria genistifolia</i> | B-designate (Clark, Cowlitz & Skamania Cos.) | Most invasive - widespread |
| Diffuse knapweed <i>Centaurea diffusa</i> | B-designate (Clark, Cowlitz & Skamania Cos.) | Most invasive - widespread |
| Field bindweed <i>Convolvulus arvensis</i> | C | |
| Giant knotweed <i>Polygonum sachalinense</i> | C | Red alert-high potential to spread |
| Gorse <i>Ulex europaeus</i> | B-designate (Cowlitz Co.) | |
| Himalayan blackberry <i>Rubus discolor</i> | | Most invasive - widespread |
| Houndstongue <i>Cynoglossum officinale</i> | C | |
| Japanese knotweed <i>Polygonum cuspidatum</i> | C | Red alert - high potential to spread |
| Johnsongrass <i>Sorghum halepense</i> | A | |
| Meadow knapweed <i>Centaurea pratensis</i> | B-designate (Cowlitz & Skamania Cos.) | |
| Poison hemlock <i>Conium maculatum</i> | C | |
| Policeman's helmet <i>Impatiens glandulifera</i> | B-designate (Clark, Cowlitz & Skamania Cos.) | |
| Purple starthistle <i>Centaurea calcitrapa</i> | A | |
| Purple loosestrife <i>Lythrum salicaria</i> | B-designate (Clark, Cowlitz & Skamania Cos.) | Most invasive - widespread |
| Ragweed <i>Ambrosia artemisiifolia</i> | | |
| Russian knapweed <i>Centaurea repens</i> | B-designate (Clark, Cowlitz & Skamania Cos.) | |
| Scot's broom <i>Cytisus scoparius</i> | B | Most invasive - widespread |
| South American waterweed <i>Elodea densa</i> | | |
| Spotted knapweed <i>Centaurea maculosa</i> | B-designate (Clark, Cowlitz & Skamania Cos.) | Red alert - high potential to spread |

| | | |
|---|--|----------------------------|
| St. John's wort <i>Hypericum perforatum</i> | C | Most invasive - widespread |
| Spiny cocclebur <i>Xanthium spinosum</i> | C | |
| Tansy ragwort <i>Senecio jacobaea</i> | B | Most invasive - widespread |
| Trailing blackberry <i>Rubus ursinus</i> | | |
| Yellow toadflax <i>Linaria vulgare</i> | C | |
| Yellow starthistle <i>Centaurea solstitialis</i> | B-designate (Clark, Cowlitz & Skamania Cos.) | Most invasive - widespread |

¹ Class A - Weeds that are non-native species with a limited distribution in Washington; eradication is required by law.

Class B - Species established in some regions of Washington. In counties where a Class B species is unrecorded or of limited distribution, prevention of seed production is required. In these counties, the weed is listed as a Class B designate, meaning it is designated for control by state law. In areas where a Class B species is already abundant or widespread, control is a county option.

Class C - Species is widely established and can be controlled if locally desired.

² From the Washington Native Plant Society.

³ The lack of an entry in both columns indicates that the species has no formal designation as a weed but is considered exotic or invasive by botanists who developed or reviewed the target list.

Appendix D

List of Variables for the Handheld Application

Lewis River Dispersed Campsites Program

| | GIS VARIABLE | NAME | DATA TYPE | INPUTS | GIS or FIELD | DESCRIPTION |
|-------------------------|--------------|-------------------------|-----------|------------------------------|--------------|---|
| General Site and Survey | SITE_ID | Site ID | string | | Field | Unique ID for each site surveyed |
| | DATE | Date | date | | Field | Date site was surveyed |
| | WATER | Water Level | double | | GIS | Water level (in feet) on the day of the observation. This data will be derived from PacifiCorp water level logs based on the date of the observation. |
| | OBSERVERS | Field Staff | string | | Field | Names of individuals completing the survey |
| | RESERVOIR | Reservoir | string | Swift, Yale, Merwin | Field | Which reservoir is the site located on |
| | ACCESS | Access options | string | Auto, boat, foot | Field | Methods for reaching the site. Can include multiple access types. |
| Photos | PHOTO_R | Site Photo Reservoir | string | | Field | Photo number for site photo from boat |
| | PHOTO_N | Site Photo N | string | | Field | Photo number for site photo facing north |
| | PHOTO_E | Site Photo E | string | | Field | Photo number for site photo facing east |
| | PHOTO_S | Site Photo S | string | | Field | Photo number for site photo facing south |
| | PHOTO_W | Site Photo W | string | | Field | Photo number for site photo facing west |
| | PHOTO_1 | Additional Site Photo | string | | Field | Photo number of first additional site photo |
| | PHOTO_2 | Additional Site Photo | string | | Field | Photo number of second additional site photo |
| | PHOTO_3 | Additional Site Photo | string | | Field | Photo number of third additional site photo |
| | PHOTO_CMT | Photo Comments | string | | Field | Comments regarding photo points |
| Existing Human Impacts | EDGE_N | North Edge Distance | double | | Field | Distance in feet from the site point (centroid) to north edge |
| | EDGE_E | East Edge Distance | double | | Field | Distance in feet from the site point (centroid) to east edge |
| | EDGE_S | South Edge Distance | double | | Field | Distance in feet from the site point (centroid) to south edge |
| | EDGE_W | West Edge Distance | double | | Field | Distance in feet from the site point (centroid) to west edge |
| | CAMPFIRE | Campfire Ring | string | None, 1, > 1 | Field | Does the site have an existing campfire ring |
| | PICNIC | Picnic Table | string | yes, no | Field | Does the site have an existing picnic table |
| | VANDALS | Vandalism of Vegetation | string | 0-5, 5-10, >10 | Field | Does the site have evidence of vandalism to vegetation |
| | TRASH | Trash | string | 0-2, 2-5, >5 | Field | Amount of trash at the site (measured in bags) |
| | TOILET | Toilet | string | None, primitive, established | Field | Does the site have a pit toilet present |
| | IMP_CMT | Impact Comments | string | | Field | Comments |
| | BANK_S | Bank Slope | string | <10%, 10-20%, >20% | Field | Approx. height from water to the top of the bank (in feet). |

| | GIS VARIABLE | NAME | DATA TYPE | INPUTS | GIS or FIELD | DESCRIPTION |
|-------------------------------------|------------------------|-----------------------------------|-----------|------------------------|-------------------------------------|---|
| Bank Access | BANK_M | Bank Material | string | gravel, concrete, etc. | Field | Bank material (gravel, dirt, exposed roots, concrete) |
| | EROSION | Erosion Potential | string | low, med, high | GIS | Based on existing data provided by PacifiCorp. |
| | DRIFT | Existing Driftwood | string | yes, no | Field | Is driftwood present at the site |
| | DRIFT_A | Driftwood Impacting Access | string | yes, no | Field | Is driftwood interfering with access to the site |
| | DRIFT_P | Driftwood Pieces | string | <5, 5-10, 10+ | Field | Number of driftwood pieces present |
| | BANK_CMT | Bank Comments | string | | Field | Comments |
| Cultural | CULT | Cultural Resources | string | yes, no | GIS | Cultural resources existing within x distance of the site |
| | CULT_CMT | Comments (Cultural) | string | | Field/GIS | Comments |
| Sensitive Species Habitat (Mammals) | BEAVER_H | Beaver Habitat | string | yes, no | Field | Beaver habitat exists on site |
| | BEAVER_O | Beaver Observation | string | yes, no | Field | Beaver observed on site |
| | BEAVER_E | Beaver Evidence | string | yes, no | Field | Evidence of a beaver on site |
| | BEAR_H | Black Bear Habitat | string | yes, no | Field | Black bear habitat exists on site |
| | BEAR_O | Black Bear Observed | string | yes, no | Field | Black bear observed on site |
| | BEAR_E | Black Bear Evidence | string | yes, no | Field | Evidence of a Black Bear on site |
| | DEER_H | Black-tailed Deer Habitat | string | yes, no | Field | Black-tailed Deer habitat exists on site |
| | DEER_O | Black-tailed Deer Observed | string | yes, no | Field | Black-tailed Deer observed on site |
| | DEER_E | Black-tailed Deer Evidence | string | yes, no | Field | Evidence of a Black-tailed Deer on site |
| | MARTIN_H | Martin Habitat | string | yes, no | Field | Martin habitat exists on site |
| | MARTIN_O | Martin Observed | string | yes, no | Field | Martin observed on site |
| | MARTIN_E | Martin Evidence | string | yes, no | Field | Evidence of a Martin on site |
| | MINK_H | Mink Habitat | string | yes, no | Field | Mink habitat exists on site |
| | MINK_O | Mink Observed | string | yes, no | Field | Mink observed on site |
| | MINK_E | Mink Evidence | string | yes, no | Field | Evidence of a Mink on site |
| | NFS_H | Northern Flying Squirrel Habitat | string | yes, no | Field | Northern Flying Squirrel habitat exists on site |
| | NFS_O | Northern Flying Squirrel Observed | string | yes, no | Field | Northern Flying Squirrel observed on site |
| | NFS_E | Northern Flying Squirrel Evidence | string | yes, no | Field | Evidence of a Northern Flying Squirrel on site |
| | ELK_H | Roosevelt Elk Habitat | string | yes, no | Field | Roosevelt Elk habitat exists on site |
| | ELK_O | Roosevelt Elk Observed | string | yes, no | Field | Roosevelt Elk observed on site |
| ELK_E | Roosevelt Elk Evidence | string | yes, no | Field | Evidence of a Roosevelt Elk on site | |
| LAND_CMT | Comments (Mammals) | string | | Field | Comments | |
| EAGLE_H | Bald Eagle Habitat | string | yes, no | Field | Bald Eagle habitat exists on site | |
| EAGLE_O | Bald Eagle Observed | string | yes, no | Field | Bald Eagle observed on site | |

| | GIS VARIABLE | NAME | DATA TYPE | INPUTS | GIS or FIELD | DESCRIPTION |
|-----------------------------------|--------------------|---------------------------------|-----------|---------|---------------------------------|---|
| Sensitive Species Habitat (Avian) | EAGLE_E | Bald Eagle Evidence | string | yes, no | Field | Evidence of a Bald Eagle on site |
| | WOOD_H | Pileated Woodpecker Habitat | string | yes, no | Field | Pileated Woodpecker habitat exists on site |
| | WOOD_O | Pileated Woodpecker Observed | string | yes, no | Field | Pileated Woodpecker observed on site |
| | WOOD_E | Pileated Woodpecker Evidence | string | yes, no | Field | Evidence of a Pileated Woodpecker on site |
| | HERON_H | Great Blue Heron Habitat | string | yes, no | Field | Great Blue Heron habitat exists on site |
| | HERON_O | Great Blue Heron Observed | string | yes, no | Field | Great Blue Heron observed on site |
| | HERON_E | Great Blue Heron Evidence | string | yes, no | Field | Evidence of a Great Blue Heron on site |
| | CHIC_H | Black-capped Chickadee Habitat | string | yes, no | Field | Black-capped Chickadee habitat exists on site |
| | CHIC_O | Black-capped Chickadee Observed | string | yes, no | Field | Black-capped Chickadee observed on site |
| | CHIC_E | Black-capped Chickadee Evidence | string | yes, no | Field | Evidence of a Black-capped Chickadee on site |
| | OWL_H | Northern Spotted Owl Habitat | string | yes, no | Field | Northern Spotted Owl habitat exists on site |
| | OWL_O | Northern Spotted Owl Observed | string | yes, no | Field | Northern Spotted Owl observed on site |
| | OWL_E | Northern Spotted Owl Evidence | string | yes, no | Field | Evidence of a Northern Spotted Owl on site |
| | SPAR_H | Savannah Sparrow Habitat | string | yes, no | Field | Savannah Sparrow habitat exists on site |
| | SPAR_O | Savannah Sparrow Observed | string | yes, no | Field | Savannah Sparrow observed on site |
| | SPAR_E | Savannah Sparrow Evidence | string | yes, no | Field | Evidence of a Savannah Sparrow on site |
| | WARB_H | Yellow Warbler Habitat | string | yes, no | Field | Yellow Warbler habitat exists on site |
| | WARB_O | Yellow Warbler Observed | string | yes, no | Field | Yellow Warbler observed on site |
| | WARB_E | Yellow Warbler Evidence | string | yes, no | Field | Evidence of a Yellow Warbler on site |
| | DUCK_H | Wood Duck Habitat | string | yes, no | Field | Wood Duck habitat exists on site |
| DUCK_O | Wood Duck Observed | string | yes, no | Field | Wood Duck observed on site | |
| DUCK_E | Wood Duck Evidence | string | yes, no | Field | Evidence of a Wood Duck on site | |
| RAP_H | Raptor Habitat | string | yes, no | Field | Raptor habitat exists on site | |
| RAP_O | Raptor Observed | string | yes, no | Field | Raptor observed on site | |
| RAP_E | Raptor Evidence | string | yes, no | Field | Evidence of a Raptor on site | |
| AIR_CMT | Comments (Avian) | string | | Field | Comments | |
| ther) | PTD_H | Papillose Tail-Dropper Habitat | string | yes, no | Field | Papillose Tail-Dropper habitat exists on site |
| | PTD_O | Papillose Tail-Dropper Observed | string | yes, no | Field | Papillose Tail-Dropper observed on site |
| | PTD_E | Papillose Tail-Dropper Evidence | string | yes, no | Field | Evidence of a Papillose Tail-Dropper on site |
| | VDS_H | Van Dyke's Salamander Habitat | string | yes, no | Field | Van Dyke's Salamander habitat exists on site |
| | VDS_O | Van Dyke's Salamander Observed | string | yes, no | Field | Van Dyke's Salamander observed on site |
| | VDS_E | Van Dyke's Salamander Evidence | string | yes, no | Field | Evidence of a Van Dyke's Salamander on site |

| | GIS VARIABLE | NAME | DATA TYPE | INPUTS | GIS or FIELD | DESCRIPTION |
|-------------------------------|--------------|-------------------------------------|------------------------------|---------------------------------|--------------|---|
| Sensitive Species Habitat (O) | CTS_H | Cascade Torrent Salamander Habitat | string | yes, no | Field | Cascade Torrent Salamander habitat exists on site |
| | CTS_O | Cascade Torrent Salamander Observed | string | yes, no | Field | Cascade Torrent Salamander observed on site |
| | CTS_E | Cascade Torrent Salamander Evidence | string | yes, no | Field | Evidence of a Cascade Torrent Salamander on site |
| | LMS_H | Larch Mountain Salamander Habitat | string | yes, no | Field | Larch Mountain Salamander habitat exists on site |
| | LMS_O | Larch Mountain Salamander Observed | string | yes, no | Field | Larch Mountain Salamander observed on site |
| | LMS_E | Larch Mountain Salamander Evidence | string | yes, no | Field | Evidence of a Larch Mountain Salamander on site |
| | PBA_H | Pond Breeding Amphibians Habitat | string | yes, no | Field | Pond Breeding Amphibians habitat exists on site |
| | PBA_O | Pond Breeding Amphibians Observed | string | yes, no | Field | Pond Breeding Amphibians observed on site |
| | PBA_E | Pond Breeding Amphibians Evidence | string | yes, no | Field | Evidence of a Pond Breeding Amphibians on site |
| | WAT_CMT | Comments (Other) | string | | Field | Comments |
| Plants | IPLANTS | Weeds | string | yes, no | Field | Weeds on the site |
| | IPLANT_SP | Weed Species | string | | Field | Species Name |
| | RPLANTS | Rare Plants | string | yes, no | Field | Rare plants on the site |
| | RPLANT_SP | Rare Species | string | | Field | Species Name |
| | | PLANT_CMT | Comments (Plants) | string | | Field |
| Wetlands | WET_SITE | Wetland Proximity | string | on site, adjacent, none | GIS/Field | Wetlands on or within 300 feet of the site |
| | WET_TYPE | Type of Wetlands | string | Emergent, Forested, Scrub/Shrub | Field | Type of wetland |
| | STREAM | Stream | string | yes, no | GIS/Field | Stream on or adjacent to the site |
| | STREAM_TYP | Stream Type | string | | Field | Is the stream intermittent or perenial |
| | | WET_CMT | Comments (Stream & Wetlands) | string | | Field |

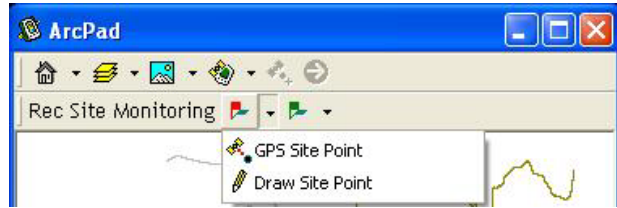
Appendix E

Dispersed Campsite Assessment Application Workflow

Lewis River Dispersed Campsites Program

Dispersed Recreation Site Assessment Application Workflow

Step 1: Create a Site Point



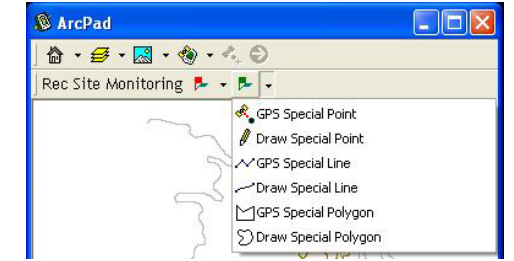
The Site Point menu is identified as a red flag on the toolbar. Choose to either GPS the site point or if GPS coverage is limited draw the site point.

The site point is taken at the approximate center of the site using either the GPS or drawing function. After placing a site point a dialog box will direct you to fill in information via text boxes and drop down menus. There are eleven tabs that need to be completed. The eleven tabs are categorized into seven categories:

- General Site and Survey
- Photos
- Existing Human Impacts
- Bank Access
- Sensitive Species Habitat
- Plant Habitat
- Wetland Conditions

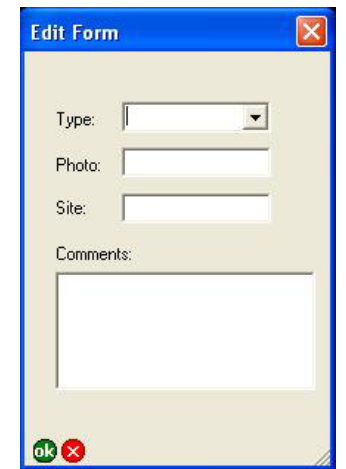
Step 2 includes an example from each category above. Due to space requirements only one of the Sensitive Species Habitat forms is shown below.

Step 4: Create Special Points, Lines, and Polygons



Use the GPS or draw function to create Special Points, Lines, and Polygons the same way you would a Site Point. Fill in the one page form and click the OK button to save your data.

Special Points, Lines, and Polygons can represent any observation that is not included with the Site Point feature. After drawing or using the GPS to define a Special Point, Line, or Polygon the dialogue box below will open.

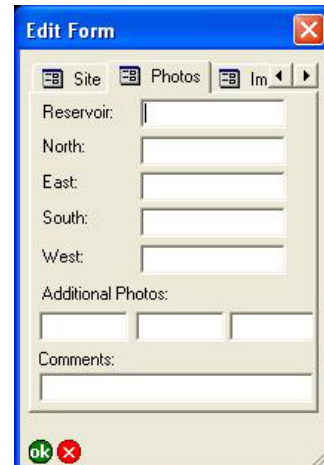


Step 2: Complete the Site Point Forms



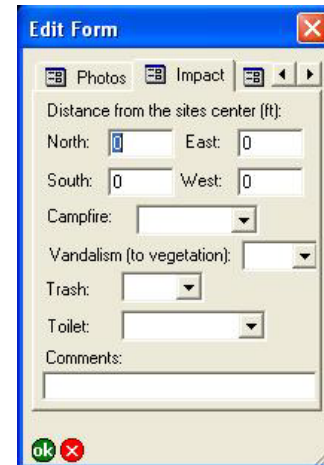
General Site and Survey

This tab includes general information to identify the site, who observed the site, the date the observation occurred, and how the site was accessed. The Site ID variable is the sites unique ID.



Photos

This tab includes spaces for entering digital picture numbers from various points around the site.



Existing Human Impacts

This tab includes space to define the sites size as well as a series of variables which describe the existing human impacts on the site.



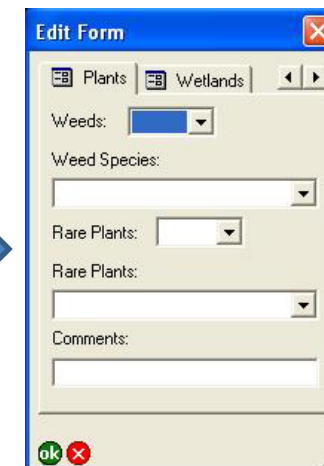
Bank Access

This tab includes variables which describe the interface between the site and the lake including bank slope and composition as well as the prevalence of driftwood.



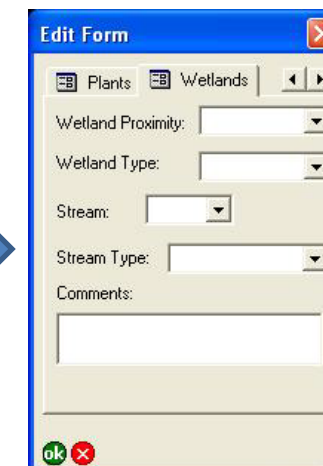
Sensitive Species Habitat

This tab uses drop down boxes to describe observations or evidence of sensitive species at the site. For instance, if the observer sees evidence of a Beaver than the box under Evid. would be changed to Yes.



Plant Habitat

This tab includes spaces for identifying weeds and rare plants at the site. Additional vegetation observations can be completed using Special Points, Lines, and Polygons.



Wetland Conditions

This tab includes spaces to identify if a wetland or stream is on or adjacent to the site.

Step 3: Click OK button to save survey