

Oregon Explorer Map Viewer

Guidance for Creating a Map and Shapefile for Oregon Watershed Restoration Inventory (OWRI) Reporting

Maps and shapefiles submitted to OWRI should show all the restoration activities completed as part of the project being submitted. Activities completed as part of different projects should not be submitted unless it is clearly delineated which activities are associated with which projects. Additionally, submitted maps should be accurate and clearly labeled so OWEB does not have to request additional information. All treatments reported to OWRI should be accounted for on the map. Detailed Guidance is given at the end of this document [here](#).

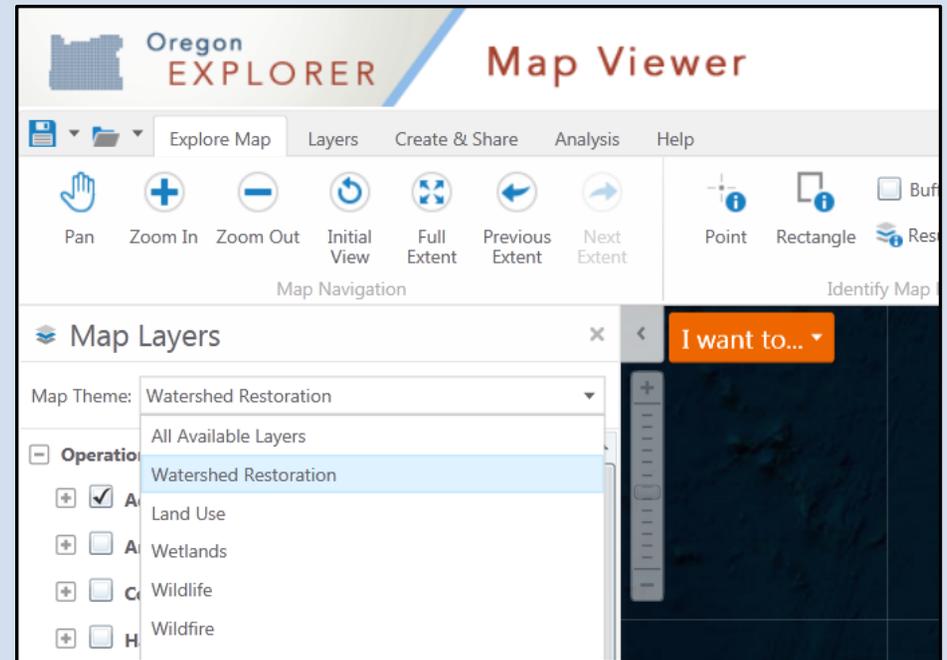
1. Go to <http://oregonexplorer.info/> and click on 'Oregon Explorer Map Viewer' to open the tool.

Oregon Explorer Map Viewer URL
http://tools.oregonexplorer.info/oe_map_viewer/viewer.html?Viewer=OE

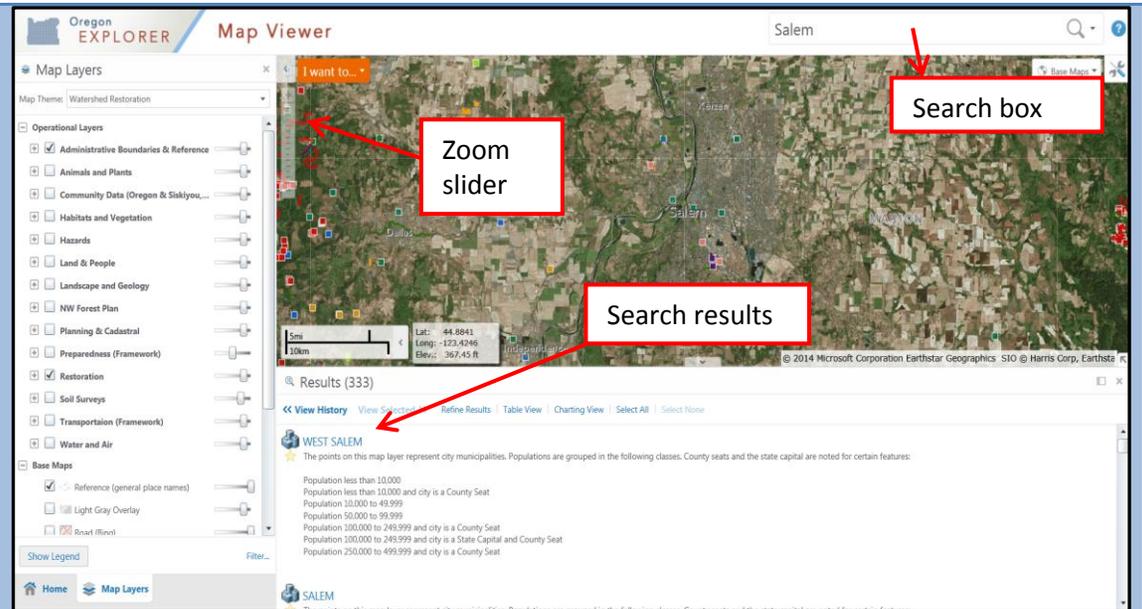
2. Switch the Map Theme to 'Watershed Restoration'.

Initially, there is a light gray overlay layer on the map. This can be removed by clicking the orange "I want to..." dropdown and selecting "turn off light gray overlay layer."

* Please read the [OWRI mapping guidance](#) for information on what should be displayed on your project map.



3. **Zoom in to the general area of interest using the scroll wheel on your mouse or the zoom slider on the upper left of the map view. Alternatively, you can enter in the town closest in proximity to your project in the search box (e.g., Salem). For the search box:**
 - a. Results will be listed in a results table.
 - b. Click on the name of the location.
 - c. An info window will pop up. Click on 'Zoom to Feature' to center the map on that location.

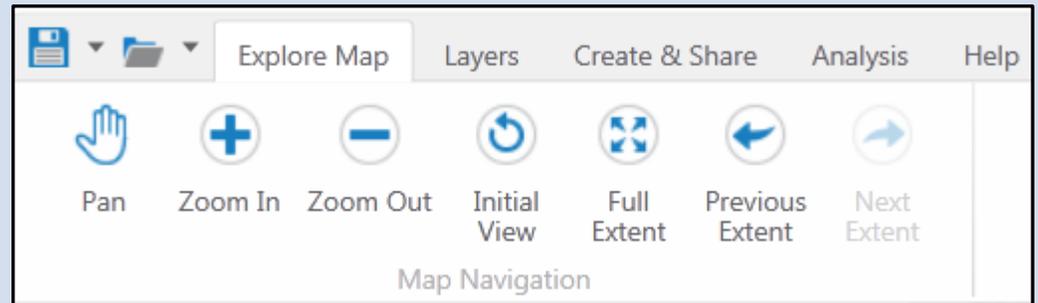


4. **Use the tools (pan, zoom in, zoom out) and the scroll wheel on your mouse on the 'Explore Map' tab to locate the project location.**

Additional guidance on using the Oregon Explorer Map Viewer can be found at:

http://tools.oregonexplorer.info/oe_map_viewer_1_10_x/Help/Default.htm

<http://oregonexplorer.info/OregonExplorerTutorials>

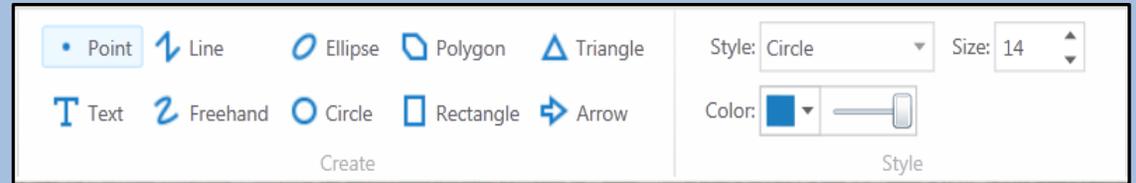


5. On the 'Create & Share' tab use the point, line or polygon drawing tools to draw the features that represent the project activities as described in the [OWRI Mapping Guidance](#) below.

Zoom into the map to a large enough scale to be able to accurately draw a line or polygon, or place a point in the exact location where the treatment occurred.

- Select a drawing tool (point, line, or polygon)
- Each click on the map will create a vertex of a polygon; segment of a line After selecting a drawing tool, each click on the map will create a vertex of a polygon or line, or a point feature.
- To finish a line or polygon sketch double click on the last vertex.
- You can edit a feature after you've finished by clicking 'Edit Drawing'. This will reveal all the vertices in the sketch which you can move individually or delete by double clicking on them. You can also delete drawings using the 'Erase' tool.

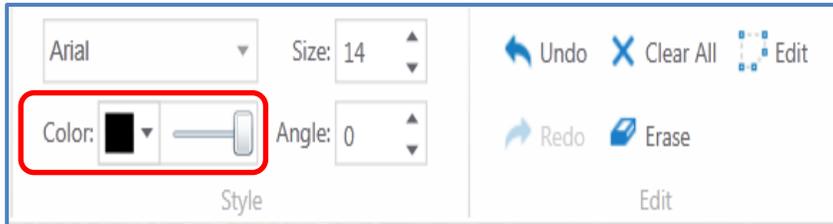
You can change the color and outline of different features to help differentiate between different activities using the border and fill settings which appear when you select the polygon drawing tool.



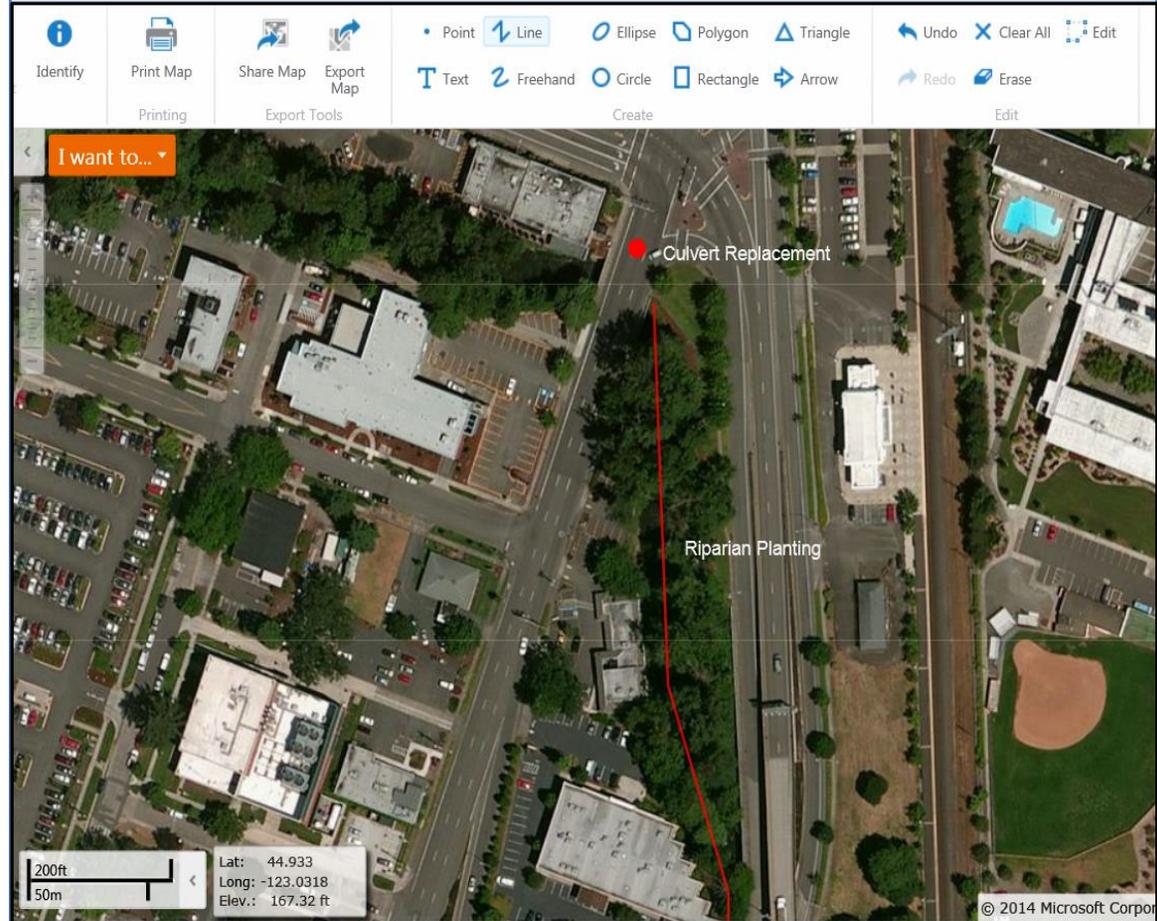
6. Label each of the features with the treatment that occurred using the 'Text' drawing tool.



- Click on the 'Text' icon
- Change the color of the text to white to make it more visible against the aerial photo.
- Click on the map next to one of your features and type in the treatment information (see example to the right).
- Repeat for each feature included on the map.



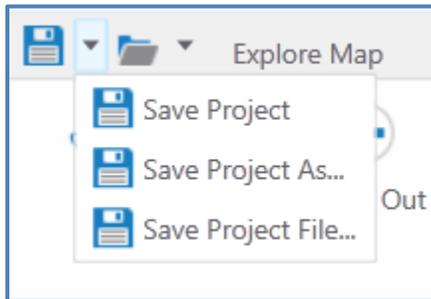
* Please account for all treatments associated with each project. You can provide additional notes/explanation to the map using the 'text' tool as well.



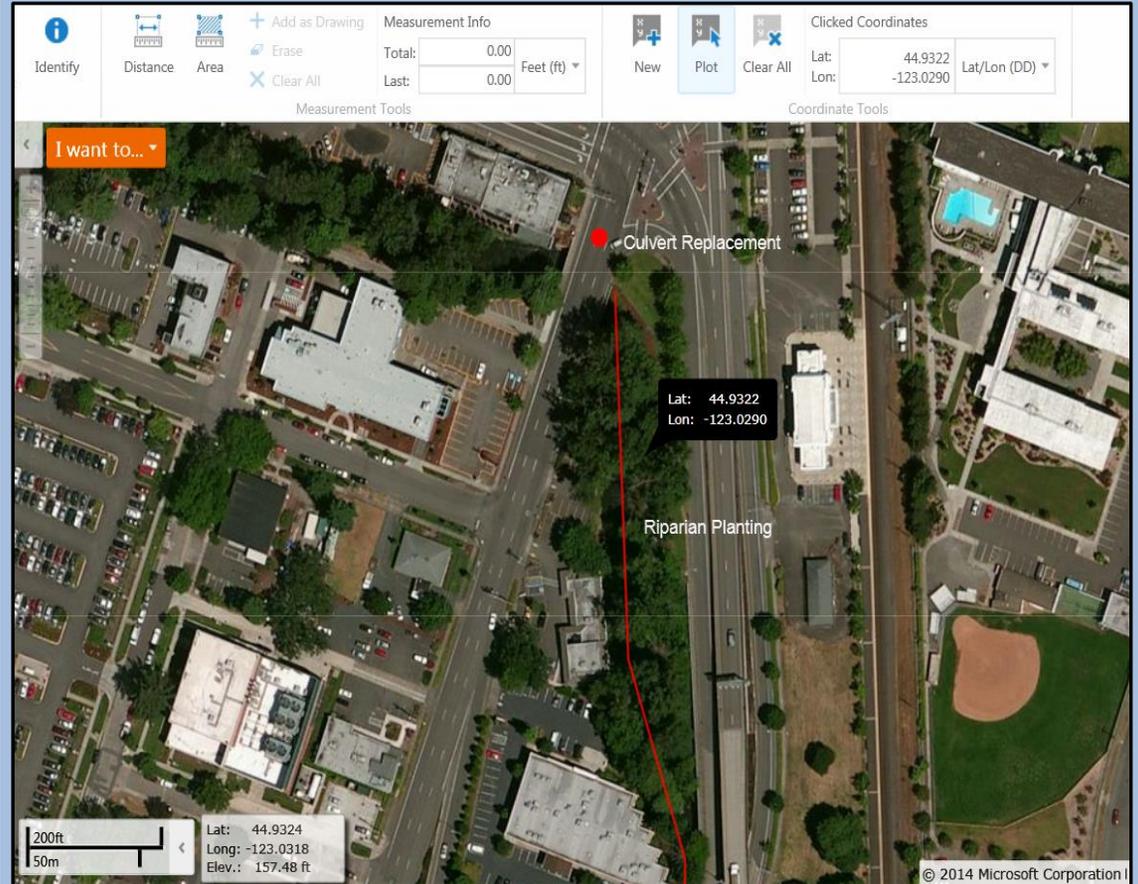
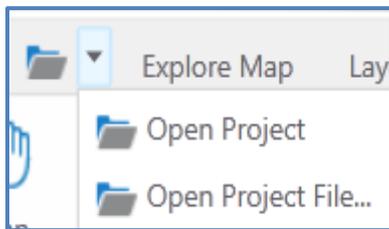
7. Mark the center of the project area with a latitude and longitude.
 - a. Click on the 'Analysis' tab.
 - b. Select 'Plot'.
 - c. Click on the approximate center of the map.
 - d. This will insert a call out box with the coordinates at the location that you click.

There are additional features in the 'Analysis' tab that may also be useful for reporting or project planning such as calculating distance and areas.

* If you don't have time to finish your map, you can save it and work on it later! Simply click on the drop down arrow next to the disk icon and click 'Save Project File...'



This will allow you to save a .gvsp file to your computer that you can then load at a later time by clicking on the drop down arrow next to the open folder icon and click 'Open Project File...'



8. Export the features from the map you have created in shapefile format. This will enable OWEB to quickly add the spatial information about your project to our database.

a. Click the extract button.



b. A popup will appear - click the download button. This will export a .zip file with the shapefiles for each of point, line, or polygon features you included in your map. Each shapefile is actually composed of several files (.dbf, .prj, .shp, and .shx etc...). In the figure to the right there are three shapefiles, Point, Polygon, and Polyline.

c. Save the .zip file on your computer.

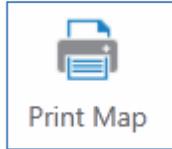
* In addition to extracting the shapefile, it is important that we also receive a labeled map with all the treatments accounted for in PDF format so we can assign each restoration activity to the proper spatial feature.

Point shapefile

Name	Type
Point.dbf	DBF File
Point.prj	PRJ File
Point.shp	SHP File
Point.shx	SHX File
Polygon.dbf	DBF File
Polygon.prj	PRJ File
Polygon.shp	SHP File
Polygon.shx	SHX File
Polyline.dbf	DBF File
Polyline.prj	PRJ File
Polyline.shp	SHP File
Polyline.shx	SHX File



9. To create a PDF, click the 'Print Map' icon on the 'Create & Share' tab.



Title the map with the name of the project used in the OWRI online form. Adding notes describing what different colors or symbols mean on your map is also very helpful.

Any map layers that you have turned on will show in the legend. These can be turned off by unchecking their corresponding boxes in the map layers section to the left of the map.

Click the 'Print' button - a dialogue box titled 'Print Request' will appear.

Click 'Open File' on the 'Print Request' dialogue box to open the PDF and save it.

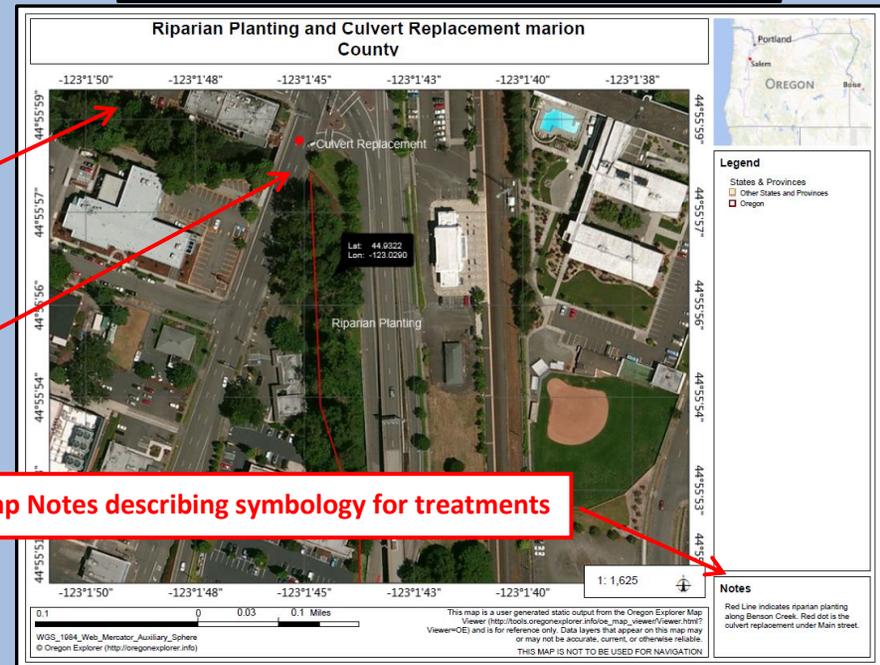
Note: keep the current default settings.

A "Print Map" dialog box with the following settings: Select Layout: 8.5 x 11 (Landscape); Output Format: Pdf; Resolution: Standard (Best for PDFs); Grid: Latitude / Longitude; Map Scale: 1: 2,257 (Current Scale); Title: Riparian Planting and Culvert Replacement marion County; Notes: Red Line indicates riparian planting along Benson Creek. Red dot is the culvert replacement under Main street. Buttons: Preview Extent, Print, Cancel.

Descriptive title of the project

Each activity is accounted for on the map
And clearly labeled

Map Notes describing symbology for treatments

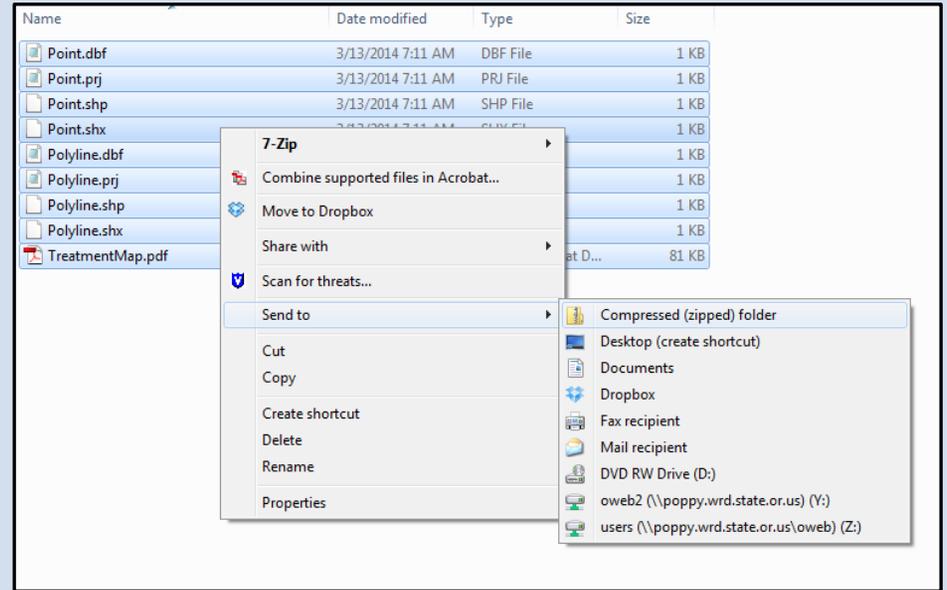


10. Combine the shapefiles and the PDF map into one zip file.

This can be accomplished with a number of different utilities such as:

Window Explorer – select the files you want to put in the zip file, right click on the selection and click ‘send to’ → ‘compressed (zipped) file’.

Or you can use 7-Zip, a free file compression utility which can be downloaded at: <http://www.7-zip.org/>



11. Login to OWRI Online (OWRIO) and upload the PDF map and the shapefiles following the instructions on the ‘upload map’ page.

Note: double check that you have selected the correct OWRI project that corresponds with the map that is about to be uploaded.

OWRI Mapping Guidance

Maps and shapefiles submitted to OWRIO should show all the restoration activities completed as part of the project being submitted. Activities completed as part of different projects should not be submitted unless it is clearly delineated which activities are associated with which projects. Additionally, submitted maps should be accurate and clearly labeled so OWEB does not have to request additional information. **All treatments reported to OWRI should be accounted for on the map.**

Restoration activities are classified at three levels. The highest level is the “Activity Type” which is the general category of restoration action. The second level is “activity” which is more descriptive of the action being implemented and finally, there are the specific “treatments.” Within the Oregon Watershed Restoration Inventory Online (OWRIO) system, the “treatments and metrics” section shows the restoration activities that were reported for each project (Table 1).

Table 1. Treatments and metrics section of the OWRIO project review page. For this project (13761), there were two activity types, three activities, and three treatments. Note the units and their associated quantities. Clicking “view” under the detail column will provide additional details about the treatment.

Treatments and Metrics					
Activity Type	Activity	Treatment	Quantity	Unit	Detail
Estuarine	Estuarine invasive plant control	Estuary treated for non-native or noxious plant species	14.00	acre	View
Wetland	Wetland invasive plant control	Wetland treated for non-native or noxious plant species	26.00	acre	View
Wetland	Wetland vegetation planting	Wetland vegetation planted	5.00	acre	View

Restoration activities are mapped using two methods (by activity type, by site) and three different geometry types (points, lines, or polygons), depending on the nature of the treatments. Generally, all treatments need to be accounted for on the map but can be grouped by activity type if they occupy the exact same spatial extent. However, all treatments must be clearly labeled. Detailed specifications on what method and geometry each treatment should be mapped as is provided in the section [Specific mapping guidance by treatment](#) below.

Mapping Method

By Activity Type

Mapping at the activity type level simply means that any treatments that share the same activity type for a project may be mapped together, provided they occupy the same spatial extent. For instance, in Table 1 there are two treatments that share the same wetland activity type. The invasive plant control treatment occupied 26 acres and the vegetation planting occupied 5 acres. Since these two treatments are different acreages and they do not occupy the same spatial extent, they should be mapped separately. If both treatments were 26 acres and occupied the same area, they could be mapped together (Figure 1). The same would be true for activities that are mapped as lines, such as riparian or instream activity types. Guidance on when to map at the activity type level for all treatments is provided below in [Specific Mapping Guidance by Treatment](#).

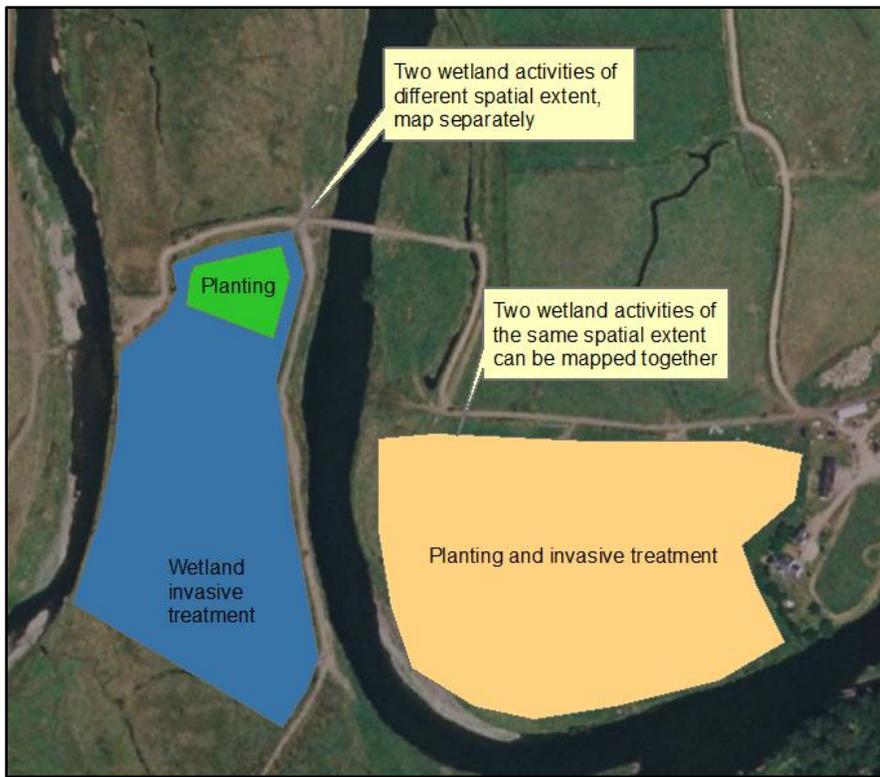
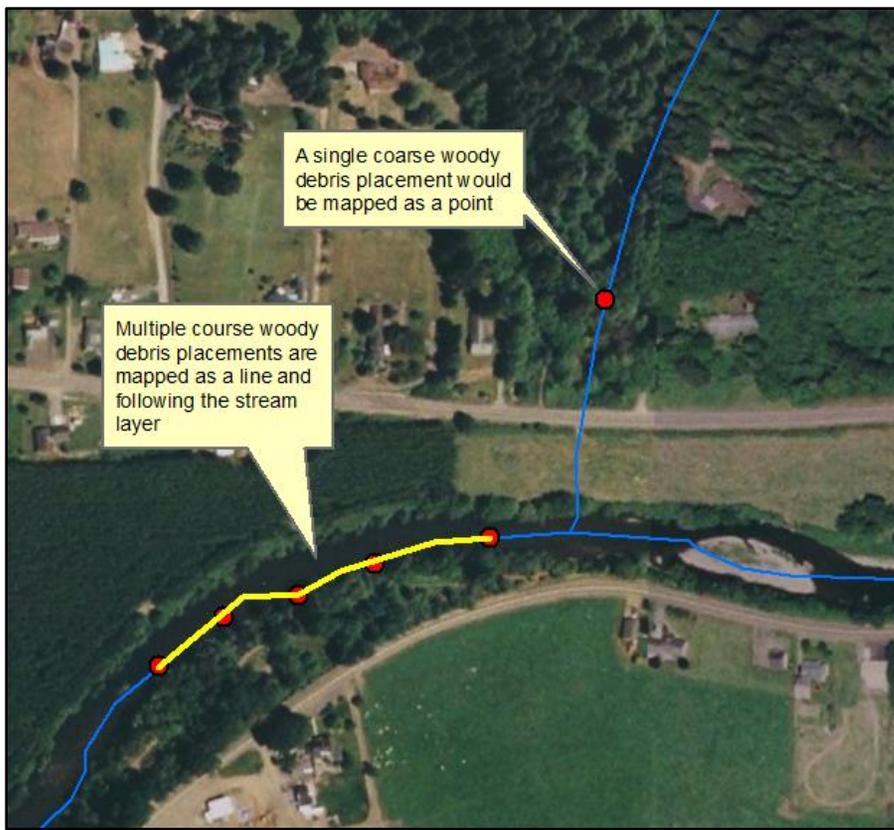


Figure 1. Map demonstrating how to represent treatments of the same activity type. If the treatments occupy the same spatial extent they can be mapped together. If they are of different extents, create a polygon or line for each treatment.

Any treatment that would be mapped as a line according to the [Specific Mapping Guidance by Treatment](#) may be mapped as a point when it occurs at only one location. An example would be a single coarse woody debris placement within a stream. However, if there is more than one location associated with the treatment, thus forming a cohesive linear pattern, it should be mapped as a line (Figure 2). If the treatment locations are scattered about the project area and do not form a cohesive linear pattern, they should be mapped as points or multiple lines. Both instream and riparian treatments are mapped along the stream layer.



A single coarse woody debris placement would be mapped as a point

Multiple coarse woody debris placements are mapped as a line and following the stream layer

Figure 2. Map demonstrating that multiple single structures of an instream treatment are mapped as a line. When there is only one structure, then it will be mapped as a point.

By Site

Features that are mapped at each site are generally point locations, such as a fish passage point or culvert improvements or replacements. These treatments will always be mapped as individual, separate points unless they are of the same activity type and in exactly the same location. All locations should be shown on the map at a large enough scale that they can be mapped precisely. Fish passage barriers are especially important to map correctly because the data is added to a statewide dataset of fish passage barriers and is used by multiple agencies and organizations for management and restoration planning.

Specific Guidance by Activity Type

- Instream projects

Instream projects often include structures placed in or along the stream to provide or create habitat for aquatic organisms. They are generally mapped as lines because they are usually placed along a continuous section of stream or at regular intervals. For instance, a series of 5 large wood placement treatments along a length of stream are assumed to affect that whole section, and are therefore mapped as a line (Figure 2). In cases where individual structures are installed or are not in a direct line with each other, these can be represented as points. Examples of other instream projects include bank stabilization or side channels reconnected to the stream.

- Instream Flow projects

Instream Flow projects will all be mapped as points. There are only three treatments associated with instream flow (water right transferred/leased, irrigation improvement, and water flow gauge installed).

- Road projects

Road projects will be mapped as lines or points at the activity type level. The basic principles outlined previously for instream projects also pertain to road projects. Road projects will be mapped as a line when the restoration activity occupies a linear location such as a road rocking, relocating, or vacating. Road projects will be mapped as a point when the restoration activity occupies a single location such as a non-stream crossing or drainage improvement.

- Fish Passage/Fish Screen projects

Fish passage/fish screen projects will only be mapped as points at the site level. Examples of fish passage projects include a culvert replaced at a road/stream crossing and a push-up dam removal or a culvert removed as part of an estuarine project. Statewide data on fish passage barriers is very important so please provide the most accurate location possible for these projects.

- Riparian projects

Riparian projects will be mapped primarily as lines. Although riparian projects exist adjacent to the stream, in OWRI they are mapped as a line segment directly in the stream. If more than one area was treated they can be represented as multiple lines or if the treated areas are close together they can be mapped as one contiguous line (Figure 3).

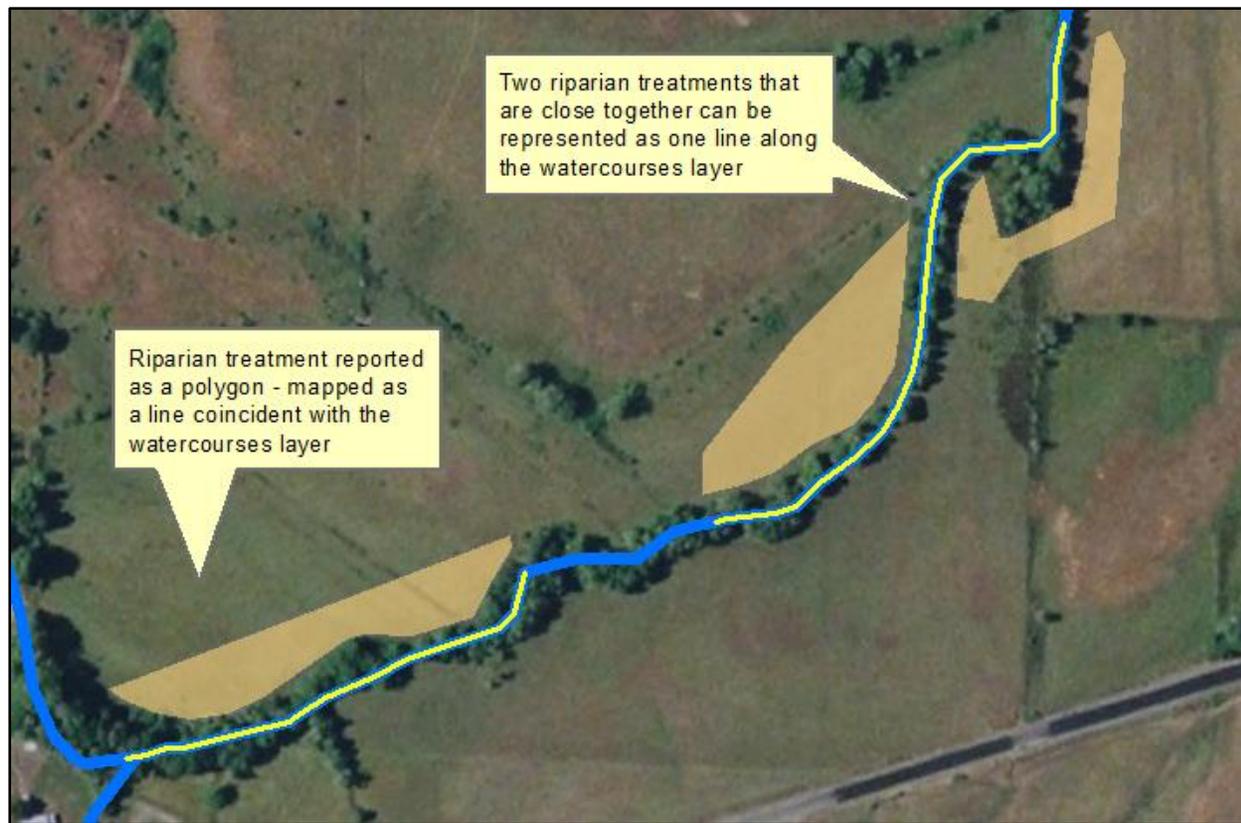


Figure 3. Map showing riparian projects mapped as lines (yellow). If multiple treatments are close together they can be mapped as one line, otherwise they should be mapped as separate lines.

- Wetland projects

Wetland projects will be mapped as polygons showing the wetland area treated, created, or otherwise affected by the activity (Figure 1)

- Estuarine

Estuarine projects will be mapped primarily as polygons showing the estuarine area treated, improved, or restored. Points may be used to specify location where estuarine connections are restored by culvert/dike/berm modification or removal.

- Upland

Upland projects will be mapped as polygons, lines, or points. Projects that are mapped as polygons are intended to represent the area that is either directly or indirectly affected by the activity. Examples of treatments that result in direct effects would be erosion control or tree planting

treatments. Examples of treatments that indirectly affect an area are irrigation efficiency projects such as a field that requires less irrigation due to the activity, or a nutrient/manure management project where the affected area will contribute less runoff.

The only upland projects that will be mapped as lines are those where an irrigation system improvement was completed where a dirt ditch was converted to a pipeline. In this case, map the line where the conversion occurred. The only upland projects that will be mapped as points are individual off-channel livestock or wildlife watering points (Figure 4).

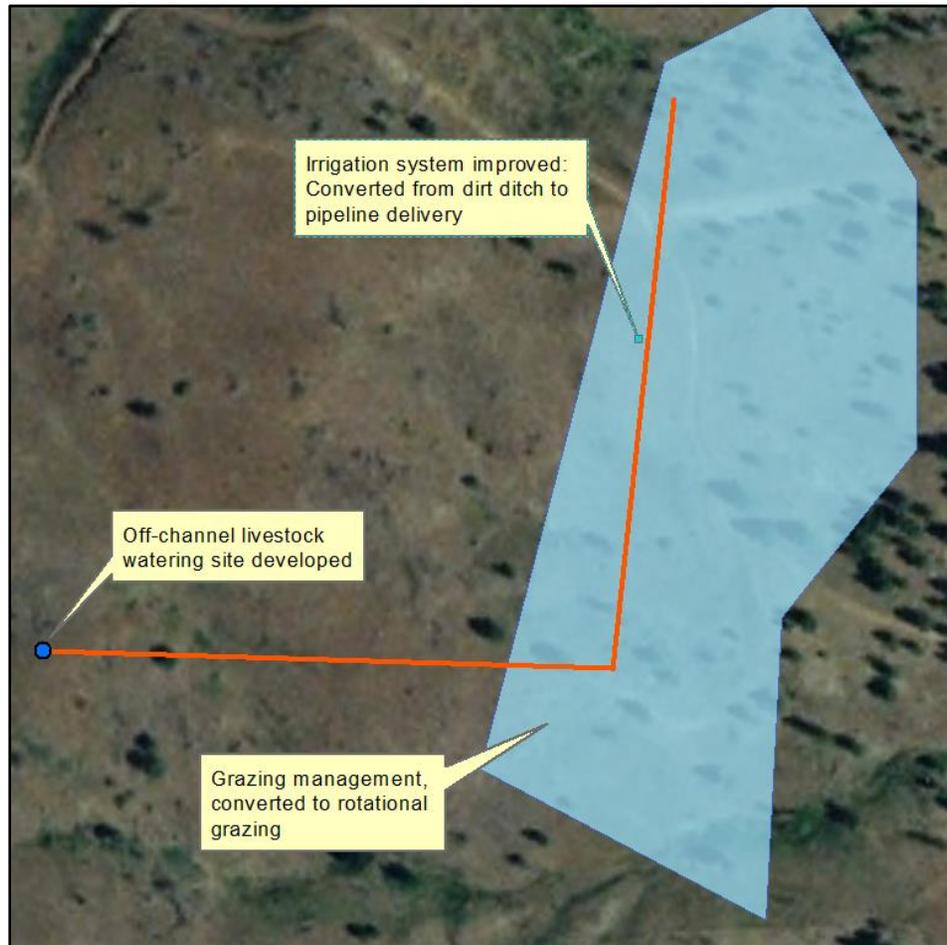


Figure 4. Typical upland activities are mapped as polygons such as grazing management treatments. The only upland activity types mapped as lines are irrigation systems converted from ditch to pipeline, and the only upland activity types mapped as points are off-channel livestock or wildlife watering sites.

- Urban

All urban projects will be mapped as polygons. Similar to upland projects, the area affected directly or indirectly by these projects will be mapped. Examples of urban projects include sediment control basins, pesticide use reduction, and installation of bioswales (Figure 5).



Figure 5. Urban activity type (off-channel flood storage) mapped as a polygon.

Mapping Example

The following example is for OWRI project 11473. The 'treatments and metrics' table indicates there are three activity types reported; fish passage, instream, and road (Table 2). Notice that there are three treatments under fish passage, two under instream, and three under road. Often, a treatment will be listed more than once because it has more than one associated metric (acres, miles etc.). For instance, for the salmon carcass placement, the metrics are pounds, number of carcasses, and miles of placement, so the treatment shows up three times; however, it only needs to be mapped once.

Table 2. Treatments and metric table for OWRI project ID 11473. Note that there are more than one metric for some treatments so they are repeated in the table. All treatments from this table should be mapped for each project.

Treatments and Metrics			
Activity Type	Activity	Treatment	Quantity Unit
Fish Passage	Crossing improvement	Culverts/structures/fords removed and not replaced	2.00 culvert
Fish Passage	Crossing improvement	Culverts/structures/fords replaced with bridges	1.00 bridge
Fish Passage	Crossing improvement	Culverts/structures/fords replaced with culverts placed embedded or flat	2.00 culvert
Instream	Instream habitat (not anchored): Large wood placement	Large wood placed	18.00 structure
Instream	Instream habitat (not anchored): Large wood placement	Large wood placed	76.00 key piece log
Instream	Salmon carcass placement	Salmon carcasses placed	784.00 pound
Instream	Salmon carcass placement	Salmon carcasses placed	56.00 salmon carcass
Instream	Salmon carcass placement	Salmon carcasses placed	1.50 mile
Road	Road decommission	Road obliterated, decommissioned, or vacated	26.40 station
Road	Surface drainage improvement	Permanent cross-drains added above stream crossings	2.00 structure
Road	Surface drainage improvement	Road durable rocking or quality hard road rocking prior to haul	24.00 station

For this project there are eight treatments, five activities, and three activity types. Referring to [Specific Mapping Guidance by Treatment](#), for fish passage treatments, each site should be mapped. Totaling the quantities of the treatments, there are five occurrences of fish passage treatments (2 culverts removed and not replaced, 1 culvert replaced with a bridge, and 2 culverts replaced with embedded or flat culverts). Therefore, five points should be mapped (Figure 6). The only time five points would not be mapped is when more than one of the treatments occurred at the exact same location (see [mapping by site](#) above).

For the instream activities there are two different treatments. Referring to [Specific Mapping Guidance by Treatment](#), the treatment “Large Wood Placed” under instream habitat is supposed to be mapped as a line at the activity type level. This is also true of the other instream treatment “Salmon Carcasses Placed.” Therefore these two treatments can be mapped as one line if they occurred in the same location (see [mapping by activity type](#) above). If they do not occur in the same location, they should be mapped as separate lines. In the case of mapping them as one line, make sure the labels correspond to both the treatments represented by that line. Instream activities should be mapped coincident with the stream layer using the trace tool in ArcGIS. In this example, they occurred at different location and are mapped separately following the watercourses layer (Figure 6).

The final three treatments are all road treatments. According to the spreadsheet they can be mapped at the activity type level and are mapped as lines. If all the road treatments occur at the same location, they can be mapped as one line. If not, they should be mapped as multiple lines. In this case, the two surface drainage treatments were in the same location, but the decommissioned road was in another location. Therefore, the two surface drainage treatments were mapped at the activity type level as one feature, and the decommissioned road was mapped separately (Figure 6).

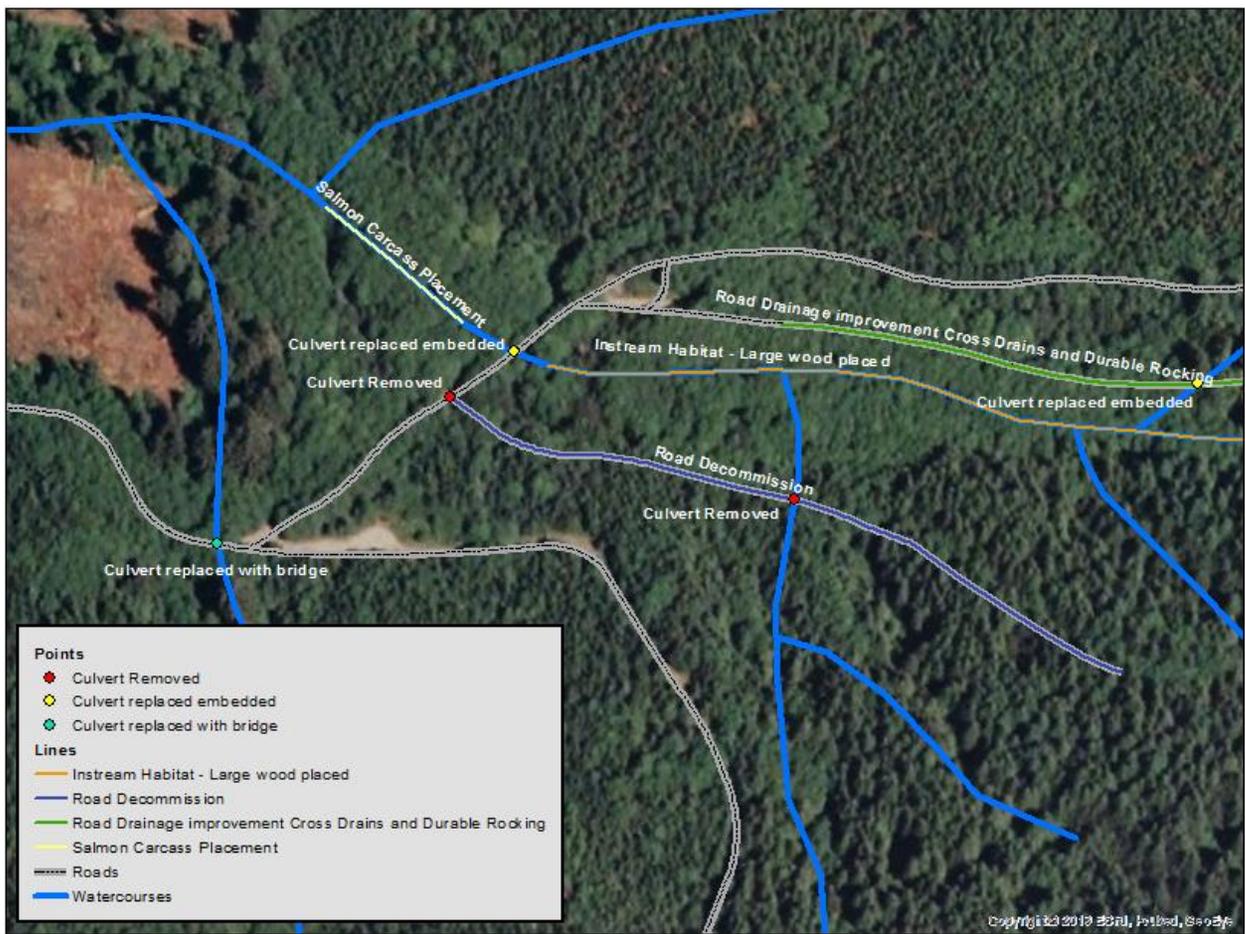


Figure 6. OWRI example mapping (project ID 11473) showing five fish passage points, two instream treatment lines, and two road treatment lines.

Specific Mapping Guidance by Treatment

Activity Type	Activity	Treatment	Geometry Type	Mapping Method
Estuarine	Estuarine creation	Estuarine habitat created from non-estuarine/non-wetland area	Polygon	Map at activity type level
Estuarine	Estuarine improvement	Existing estuary improved by channel modification	Polygon	Map at activity type level
Estuarine	Estuarine improvement	Existing estuary improved by debris removal	Polygon	Map at activity type level
Estuarine	Estuarine improvement	Existing estuary improved by reintroduction of native animal species	Polygon	Map at activity type level
Estuarine	Estuarine invasive plant control	Estuary treated for non-native or noxious plant species	Polygon	Map at activity type level
Estuarine	Estuarine restoration	Estuarine connection restored by dike or berm modification / removal	Point	Map each site
Estuarine	Estuarine restoration	Estuarine connection restored by estuarine culvert modification / removal	Polygon	Map at activity type level
Estuarine	Estuarine restoration	Estuarine connection restored by removal of existing fill material (other than dike)	Polygon	Map at activity type level
Estuarine	Estuarine vegetation planting	Estuarine vegetation planted	Polygon	Map at activity type level
Fish Passage	Crossing improvement	Culverts with rock or log weirs installed below outlet	Fish Passage Point	Map each site
Fish Passage	Crossing improvement	Culverts/structures repaired	Fish Passage Point	Map each site
Fish Passage	Crossing improvement	Culverts/structures retrofitted with baffles or weirs (adding roughness into existing culverts)	Fish Passage Point	Map each site
Fish Passage	Crossing improvement	Culverts/structures/fords removed and not replaced	Fish Passage Point	Map each site
Fish Passage	Crossing improvement	Culverts/structures/fords replaced with bridges	Fish Passage Point	Map each site
Fish Passage	Crossing improvement	Culverts/structures/fords replaced with culverts placed embedded or flat	Fish Passage Point	Map each site
Fish Passage	Crossing improvement	Culverts/structures/fords replaced with ford	Fish Passage Point	Map each site
Fish Passage	Crossing improvement	Culverts/structures/fords replaced with open bottom arch culverts	Fish Passage Point	Map each site
Fish Passage	Crossing improvement	Culverts/structures/fords replaced with weir/baffle culverts	Fish Passage Point	Map each site
Fish Passage	Crossing improvement	Other treatment	Fish Passage Point	Map each site
Fish Passage	Non-crossing improvement	Culverts/structures installed to allow side channel access	Fish Passage Point	Map each site
Fish Passage	Non-crossing improvement	Dam removed	Fish Passage Point	Map each site
Fish Passage	Non-crossing improvement	Dam repaired	Fish Passage Point	Map each site
Fish Passage	Non-crossing improvement	Debris jam removed	Fish Passage Point	Map each site
Fish Passage	Non-crossing improvement	Diversion dams removed or modified	Fish Passage Point	Map each site
Fish Passage	Non-crossing improvement	Engineered barrier bypass or fishway installed (other than fish ladders)	Fish Passage Point	Map each site
Fish Passage	Non-crossing improvement	Fish ladders improved	Fish Passage Point	Map each site
Fish Passage	Non-crossing improvement	Fish ladders installed	Fish Passage Point	Map each site
Fish Passage	Non-crossing improvement	Other diversions modified	Fish Passage Point	Map each site
Fish Passage	Non-crossing improvement	Other treatment	Fish Passage Point	Map each site
Fish Passage	Non-crossing improvement	Push-up dams permanently removed	Fish Passage Point	Map each site
Fish Passage	Non-crossing improvement	Tidegate removed and not replaced	Fish Passage Point	Map each site
Fish Passage	Non-crossing improvement	Tidegate replaced or modified	Fish Passage Point	Map each site

Fish Passage	Non-crossing improvement	Weir barrier removed	Fish Passage Point	Map each site
Fish Screening	Fish screening	Existing fish screens replaced, repaired, or modified	Point	Map each site
Fish Screening	Fish screening	New fish screens installed on diversions (where no screen had existed previously)	Point	Map each site
Instream	Animal species removal	Animal species removal	Line	Map at activity type level
Instream	Bank stabilization	Other stream bank stabilization technique	Line	Map at activity type level
Instream	Bank stabilization	Stream bank stabilized: bank resloped	Line	Map at activity type level
Instream	Bank stabilization	Stream bank stabilized: bank resloped and rock revetment installed	Line	Map at activity type level
Instream	Bank stabilization	Stream bank stabilized: bioengineering	Line	Map at activity type level
Instream	Bank stabilization	Stream bank stabilized: log and rock revetment installed	Line	Map at activity type level
Instream	Bank stabilization	Stream bank stabilized: log revetment installed	Line	Map at activity type level
Instream	Bank stabilization	Stream bank stabilized: riprap (rock revetment) installed	Line	Map at activity type level
Instream	Beaver introduction/encouragement	Beaver introduction/encouragement	Line	Map at activity type level
Instream	Channel alteration	Main stream channel modified / created	Line	Map at activity type level
Instream	Channel alteration	Pool excavated or blasted	Line	Map at activity type level
Instream	Channel alteration	Spawning gravel placed	Line	Map at activity type level
Instream	Engineered structures	Flow deflector installed: log	Line	Map at activity type level
Instream	Engineered structures	Flow deflector installed: log and rock/boulder	Line	Map at activity type level
Instream	Engineered structures	Flow deflector installed: rock/boulder	Line	Map at activity type level
Instream	Engineered structures	V structure installed: concrete weirs	Line	Map at activity type level
Instream	Engineered structures	V structure installed: log	Line	Map at activity type level
Instream	Engineered structures	V structure installed: log and rock/boulder	Line	Map at activity type level
Instream	Engineered structures	V structure installed: rock/boulder	Line	Map at activity type level
Instream	Engineered structures	Weir installed (not below culvert): log	Line	Map at activity type level
Instream	Engineered structures	Weir installed (not below culvert): log and rock/boulder	Line	Map at activity type level
Instream	Engineered structures	Weir installed (not below culvert): rock/boulder	Line	Map at activity type level
Instream	Instream habitat (anchored): Structure placement	Anchored habitat structures placed	Line	Map at activity type level
Instream	Instream habitat (not anchored): Boulder placement	Boulders placed	Line	Map at activity type level
Instream	Instream habitat (not anchored): Large wood placement	Large wood placed	Line	Map at activity type level
Instream	Instream habitat (not anchored): Other placement	Brush bundles placed	Line	Map at activity type level
Instream	Instream habitat (not anchored): Other placement	Rootwads placed	Line	Map at activity type level
Instream	Instream invasive plant control	Instream treated for non-native or noxious plant species	Line	Map at activity type level
Instream	Off-channel habitat	Alcoves created with tributary/spring input	Line	Map at activity type level

Instream	Off-channel habitat	Alcoves created without tributary/spring input	Line	Map at activity type level
Instream	Off-channel habitat	Off-channel ponds created with tributary/spring input	Line	Map at activity type level
Instream	Off-channel habitat	Off-channel ponds created without tributary/spring input	Line	Map at activity type level
Instream	Off-channel habitat	Side channels created / excavated	Line	Map at activity type level
Instream	Off-channel habitat	Side channels reconnected to stream or access improved	Line	Map at activity type level
Instream	Other instream activity	Other treatment	Line	Map at activity type level
Instream	Salmon carcass placement	Salmon carcasses placed	Line	Map at activity type level
Instream Flow	Instream water right transfers/leases	Instream water right transferred / leased	Point	Map each water right
Instream Flow	Irrigation practice improvement	Other irrigation practice improvement (for instream flow)	Point	Map at activity type level
Instream Flow	Water flow gauges	Water flow gauges installed	Point	Map each site
Riparian	Livestock stream access/crossing created or improved	Livestock stream access/crossing created or improved	Point	Map each site
Riparian	Nurse log placement	Nurse logs placed	Line	Map at activity type level
Riparian	Other riparian activity	Other treatment	Line	Map at activity type level
Riparian	Riparian conifer restoration (hardwood conversion)	Riparian conifer restoration (hardwood conversion)	Line	Map at activity type level
Riparian	Riparian fencing	Riparian fencing	Line	Map at activity type level
Riparian	Riparian invasive plant control	Riparian treated for non-native or noxious plant species	Line	Map at activity type level
Riparian	Riparian tree planting	Riparian trees planted: conifer	Line	Map at activity type level
Riparian	Riparian tree planting	Riparian trees planted: conifer and hardwood	Line	Map at activity type level
Riparian	Riparian tree planting	Riparian trees planted: hardwood	Line	Map at activity type level
Riparian	Riparian vegetation management	Debris/structures removal to allow riparian vegetation growth	Line	Map at activity type level
Riparian	Riparian vegetation management	Nursery operation	Point	Map site of the nursery
Riparian	Riparian vegetation management	Other riparian vegetation management	Line	Map at activity type level
Riparian	Riparian vegetation planting	Riparian shrubs or herbaceous vegetation planted/reseeded	Line	Map at activity type level
Riparian	Voluntary riparian tree retention	Voluntary riparian tree retention	Harvest Measure Line	Map each harvest area (line)
Riparian	Water gap development	Water gap constructed	Point	Map each site
Road	Other road activity	Other treatment	Line	Map at activity type level
Road	Peak flow passage improvement	Stream crossings with log fills/culverts removed and not replaced	Point	Map at activity type level
Road	Peak flow passage improvement	Structures modified by improving inlet condition	Point	Map at activity type level
Road	Peak flow passage improvement	Structures replaced to meet 50+ year flow requirements	Point	Map at activity type level
Road	Road closure	Road effectively closed to public use	Line	Map at activity type level
Road	Road decommission	Road obliterated, decommissioned, or vacated	Line	Map at activity type level
Road	Road grass seeding	Grass seeding and mulching	Line	Map at activity type level
Road	Road reconstruction	Road upgraded/improved (Legacy Road Reconstruction)	Line	Map at activity type level
Road	Road relocation	Road relocated outside RMA or stream banks	Line	Map at activity type level

Road	Road relocation	Road relocated to reduce washout potential	Line	Map at activity type level
Road	Road stabilization	Large landslides stabilized	Line	Map at activity type level
Road	Road stabilization	Road pulled back and stabilized	Line	Map at activity type level
Road	Road survey	Road surveyed	na	Road surveys are not mapped
Road	Surface drainage improvement	Culverts added at locations other than above stream crossings	Line	Map at activity type level
Road	Surface drainage improvement	Existing culverts with outlet erosion protection added	Line	Map at activity type level
Road	Surface drainage improvement	Permanent cross-drains added above stream crossings	Line	Map at activity type level
Road	Surface drainage improvement	Road down-cutting ditch rocking	Line	Map at activity type level
Road	Surface drainage improvement	Road durable rocking or quality hard road rocking prior to haul	Line	Map at activity type level
Upland	Conservation buffers	Conservation buffers	Polygon	Map at activity type level
Upland	Conservation tillage	Low-till agriculture	Polygon	Map at activity type level
Upland	Conservation tillage	No-till agriculture	Polygon	Map at activity type level
Upland	Grazing management	Grazing management: livestock rotation (pasture forage improvement through rotational livestock grazing)	Polygon	Map at activity type level
Upland	Grazing management	Other grazing management practice	Polygon	Map at activity type level
Upland	Irrigation system improvement	Irrigation system improved: converted from dirt ditch to pipeline delivery	Line	Map at activity type level
Upland	Irrigation system improvement	Irrigation system improved: converted from flood irrigation to gated pipe	Polygon	Map at activity type level
Upland	Irrigation system improvement	Irrigation system improved: converted from flood to sprinkler irrigation	Polygon	Map at activity type level
Upland	Irrigation system improvement	Irrigation system improved: tailwater collection system improved	Polygon	Map at activity type level
Upland	Irrigation system improvement	Irrigation system improved: water measurement devices installed	Polygon	Map at activity type level
Upland	Irrigation system improvement	Other irrigation system improvement	Polygon	Map at activity type level
Upland	Nutrient/manure management	Constructed wetland for wastewater treatment or water quality improvement	Polygon	Map at activity type level
Upland	Nutrient/manure management	Livestock manure management	Polygon	Map at activity type level
Upland	Nutrient/manure management	Other nutrient management (not manure management)	Polygon	Map at activity type level
Upland	Off-channel livestock or wildlife watering	Off-channel watering sites developed	Point	Map each site
Upland	Other upland activity	Other treatment	Polygon	Map at activity type level
Upland	Terracing	Upland terraces installed, constructed or rebuilt	Polygon	Map at activity type level
Upland	Upland erosion control	Filter strip establishment	Polygon	Map at activity type level
Upland	Upland erosion control	Grassed waterway established	Polygon	Map at activity type level
Upland	Upland erosion control	Gully/grade stabilization	Polygon	Map at activity type level
Upland	Upland erosion control	Mud management / Heavy use area protection	Polygon	Map at activity type level
Upland	Upland erosion control	Other upland erosion control practice	Polygon	Map at activity type level
Upland	Upland erosion control	Windbreak installed	Polygon	Map at activity type level
Upland	Upland fencing	Upland fencing	Polygon	Map at activity type level
Upland	Upland invasive plant control	Upland treated for non-native or noxious plant species	Polygon	Map at activity type level

Upland	Upland tree planting	Upland trees planted	Polygon	Map at activity type level
Upland	Upland vegetation management	Other upland vegetation management	Polygon	Map at activity type level
Upland	Upland vegetation management	Upland treated for juniper by clearing, burning, thinning, or removal	Polygon	Map at activity type level
Upland	Upland vegetation planting	Upland shrubs or herbaceous vegetation planted/reseeded	Polygon	Map at activity type level
Upland	Voluntary upland tree retention	Voluntary upland tree retention	Polygon	Map at activity type level
Upland	Water/sediment control basins	Water/sediment control basins installed	Polygon	Map at activity type level
Urban	Catch basin cleaning	Catch basin cleaning	Polygon	Map at activity type level
Urban	Detention facility	Detention facility	Polygon	Map at activity type level
Urban	Off-channel flood storage	Off channel flood storage	Polygon	Map at activity type level
Urban	Other urban activity	Other treatment	Polygon	Map at activity type level
Urban	Pesticide use reduction	Pesticide use reduction	Polygon	Map at activity type level
Urban	Storm & sanitary sewer separation	Storm & sanitary sewer separation	Polygon	Map at activity type level
Urban	Street sweeping	Street sweeping	Polygon	Map at activity type level
Urban	Sustainable stormwater management	Bioswales installed	Polygon	Map at activity type level
Urban	Sustainable stormwater management	Ecoroof or roof garden installed	Polygon	Map at activity type level
Urban	Sustainable stormwater management	Other stormwater/wastewater facility installed or modified (not bioswales, rain gardens, rainwater collection, or ecoroofs)	Polygon	Map at activity type level
Urban	Sustainable stormwater management	Rain garden (vegetated infiltration basin) installed	Polygon	Map at activity type level
Urban	Sustainable stormwater management	Rainwater harvesting	Polygon	Map at activity type level
Urban	Wet detention facility	Wet detention facility	Polygon	Map at activity type level
Wetland	Other wetland activity	Other treatment	Polygon	Map at activity type level
Wetland	Wetland creation	Non-wetland created into forest wetland	Polygon	Map at activity type level
Wetland	Wetland creation	Non-wetland created into grass/herb meadow wetland	Polygon	Map at activity type level
Wetland	Wetland creation	Non-wetland created into open water wetland (>6 ft. deep)	Polygon	Map at activity type level
Wetland	Wetland creation	Non-wetland created into shrub/scrub wetland	Polygon	Map at activity type level
Wetland	Wetland improvement	Existing forest wetland improved	Polygon	Map at activity type level
Wetland	Wetland improvement	Existing grass/herb meadow wetland improved	Polygon	Map at activity type level
Wetland	Wetland improvement	Existing open water wetland (>6 ft. deep) improved	Polygon	Map at activity type level
Wetland	Wetland improvement	Existing shrub/scrub wetland improved	Polygon	Map at activity type level
Wetland	Wetland invasive plant control	Wetland treated for non-native or noxious plant species	Polygon	Map at activity type level
Wetland	Wetland restoration	Previously filled or drained wetland returned to forest wetland	Polygon	Map at activity type level
Wetland	Wetland restoration	Previously filled or drained wetland returned to grass/herb meadow wetland	Polygon	Map at activity type level
Wetland	Wetland restoration	Previously filled or drained wetland returned to open water wetland (>6 ft. deep)	Polygon	Map at activity type level
Wetland	Wetland restoration	Previously filled or drained wetland returned to shrub/scrub wetland	Polygon	Map at activity type level

Wetland

Wetland vegetation planting

Wetland vegetation planted

Polygon

Map at activity type level