DEPARTMENT OF
# ECOLOGY
State of Washington

Tutorial

Batch loading well and other groundwater-related locations into the Ecology Environmental Information Management (EIM) System

December 2011

Parts 1 - 5

# Tutorial Topics

- Important reminders about data formatting and loading
- Establishing X, Y, and Z coordinates for your groundwater locations*
- Where to find the latest version of the groundwater Locations template file
- Preparing your data in the loader template
- Uploading the data to EIM

*Note for this tutorial, the term "groundwater location" generally refers to wells, but can also include non-well locations like springs, seeps, and tile drains

# Batch Loading Groundwater Locations to EIM

Important Reminders about Data Formatting and Attributes

*Avoid Loading Duplicate Locations*

•Before loading your groundwater locations into EIM, always use the EIM map search tools to confirm that the locations are not already in the system (perhaps under a different name).

*Avoid Loading Duplicate Locations*

- If you confirm that your well already exists in EIM, but is stored using a different Location ID than you have been using:
    - <u>Don't</u> load a new (duplicate) version of the same well under your ID
    - Instead, load your new monitoring results using the existing EIM Location ID
    - You can add your version of the well ID to the Study Location Name field in the results loader template spreadsheet (or in the results editor). This will allow you to later search for your results using your version of the well ID.

## *Naming Groundwater Locations*

- Each groundwater location must have a Location ID that is unique from all other locations in EIM.

- Ecology *strongly encourages* that you use a State of Washington well tag ID to uniquely identify each of your wells (in the Location ID field):
  - Six character alpha-numeric value (e.g. AZP432)
  - By law, all wells should be tagged with a unique state well tag [WAC 173-160-311(1,2); WAC 173-160-420(5)]. Drillers are required to tag each well at the completion of well construction. Well tags can be obtained from Ecology's Water Resources Program.

*Naming Groundwater locations (cont.)*

- You <u>cannot</u> load multiple wells using a single well tag ID.  Each well must be tagged and identified separately.

- A help document has been prepared to provide guidance on naming groundwater locations (*www.ecy.wa.gov/eim/helpDocs/EIMHelp_NamingLocations.pdf*)

## X, Y, and Z Coordinates and Datums

• All groundwater locations are required to have X, Y, and Z coordinates reported in a major, standard datum – arbitrary site datums, or sea level-referenced datums are no longer allowed in EIM.

• If you already have survey-quality X/Y/Z information for your groundwater locations (referenced to a major datum), use those coordinates in your import file (you'll be required to provide the appropriate units and datums). Even if you have surveyed coordinates for your locations, don't forget to use the EIM map service to confirm the wells aren't already in the EIM system.

## *X, Y, and Z Coordinates and Datums (cont.)*

- If you don't have survey coordinates for your groundwater locations, use the EIM map service to determine X/Y/Z coordinates (video demo):
    - The mapping tools will generate a table with all the necessary X/Y/Z coordinate metadata that you can copy directly into your location import file.
    - Ecology encourages you to use the mapping tools to check and refine consumer-grade GPS-derived X/Y coordinates you collected in the field
    - Use of the EIM map tools to determine an elevation is preferred over consumer-grade GPS-derived elevations

*X and Y Coordinates and Datums (cont.)*

- All groundwater locations are required to have horizontal (X/Y) coordinates in a major, standard datum:
  - Allowable X/Y coordinates
    - LAT/LONG (decimal degrees or degrees/minutes/seconds)
    - State Plane (feet, north or south zone)
    - UTM (meters, zone 10 or 11)
  - Allowable X/Y datums
    - NAD83(HARN) - *preferred*
    - NAD83
    - NAD27
    - WGS84

*Establishing Elevations for Groundwater locations; Coordinates and Datums*

- All groundwater locations are required to have a location elevation (Z) reported in a major, standard datum:

    - Allowable Z coordinates
        - Elevation (feet or meters)
    - Allowable Z datum
        - NAVD88

- If you need to convert your location elevations to NAVD88 from a different datum system, we recommend you use the US Army Corps of Engineers CORPSCON/VERTCON program

- Well location elevations are no longer allowed in arbitrary or relative vertical site datums.

*Establishing Elevations for Groundwater locations; Coordinates and Datums (cont.)*

- You can report your groundwater location elevation in terms of:
    - The land surface at the well head (use this approach for non-well locations also)
    - The top of the well casing (one type of measuring point)
    - An alternatively defined water level measuring point on the well casing (like a water level measurement port)

- A detailed discussion about the water level measuring point concept is presented in the video tutorial describing how to load water level data to EIM – Ecology Publication No. 11-03-040

*Establishing Elevations for Groundwater locations; Coordinates and Datums (cont.)*

- If you already have surveyed elevations for your groundwater location, enter these coordinates (and the appropriate units and vertical datum) into the appropriate fields in the location loader template file (but please confirm that your wells aren't already in EIM).

## Establishing Elevations for Groundwater locations (cont.)

• If you don't already have elevation values for your groundwater locations, the EIM map service can be used to determine the land surface elevation at any point in Washington in a standard vertical datum (video demo).

• The EIM map service returns the most accurate DEM elevation available for the given X/Y position (generally LIDAR or 10-meter DEM). The appropriate vertical accuracy code (normally ~7 meters or better) will be assigned to the elevation reported for that location.

• The map service will generate a *.csv table with all the necessary elevation (Z) coordinate metadata that you can copy directly into your location import file.

*Establishing Elevations for Groundwater locations (cont.)*

•If you've given one well an arbitrary elevation (e.g. 100 feet) and surveyed all other site wells relative to that location, use the EIM map tools to determine a land surface elevation for the well, then recalculate the elevations for all the other wells.

•A help document has been developed that describes the procedures to convert arbitrary survey elevations to absolute elevations.  A link to this document can be found on the Groundwater Data Center home page

*Establishing Elevations for Groundwater locations (cont.)*

•If you submit your wells to EIM with the location elevation described in terms of *Land Surface*, you will need to also report information about the measuring point you use at the well, including:

> •water level measuring point ID
> •water level measuring point description
> •water level measuring point height/units above land surface

•Measuring point height information is *encouraged* even in cases when reporting the well elevation in terms of TOC (to allow water levels to also be reported in terms of depth below land surface).

<u>Using the EIM map service to:</u>

- Confirm the stations you plan to load don't already exist in EIM, and
- Determine X, Y, and Z (elevation) coordinates for your new groundwater locations

Start from the Ecology Groundwater Data Center home page


From the EIM internet site (for external data submitters)
www.ecy.wa.gov/eim/groundwater.htm

From the EIM intranet site (for Ecology staff):
http://aww.ecology/eim/groundwater.htm

Downloading the latest version of the EIM groundwater <span style="color:red">Locations</span> template file

If you are an external data submitter:

1.  Go to the Groundwater Data Center internet homepage
2.  Click on "Submit wells and groundwater data"
3.  Scroll down the page until you find the section titled "To submit data using EIM spreadsheets"
4.  Download the *.zip file that contains the data loader templates
5.  Open the *.zip folder,  then open the groundwater Locations template spreadsheet (*.xls)
6.  Save the template file to your hard-drive as a *.xls file

 If you work for Ecology:

1.  Go to the Intranet version of the Groundwater Data Center homepage
2.  Click on the "Bulk load wells and groundwater data" link
3.  Open the groundwater Locations template spreadsheet  from the Data Loader page (*.xls)
4.  Save the template file to your hard-drive as a *.xls file

# Preparing your Groundwater Locations spreadsheet file for upload to EIM

Preparing your Groundwater <span style="color:red">Locations</span> spreadsheet file for upload to EIM (cont.)

Validating and exporting your Groundwater Locations spreadsheet file prior to upload

Uploading your Groundwater Locations file to EIM
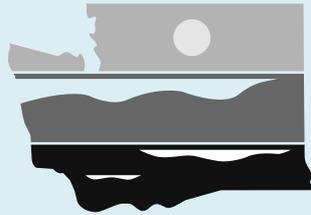
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Additional Resources

To find additional tutorial videos and supporting files, visit:
www.ecy.wa.gov/eim/groundwater.htm

To see additional help documentation, visit:
http://www.ecy.wa.gov/eim/help.htm

To submit a comment or question to the EIM Team, visit:
http://apps.ecy.wa.gov/eimreporting/ContactUs.asp