



Tualatin Valley Water District AutoCAD to GIS Data Conversion

Purpose

To create a database of all waterline features to enable Tualatin Valley Water District (TVWD) employees to do simple spatial and attribute queries, complex GIS analysis, and track inventory by converting 99 square miles of the water district's utility data from AutoCAD to GIS. This data conversion was completed in just less than six weeks.

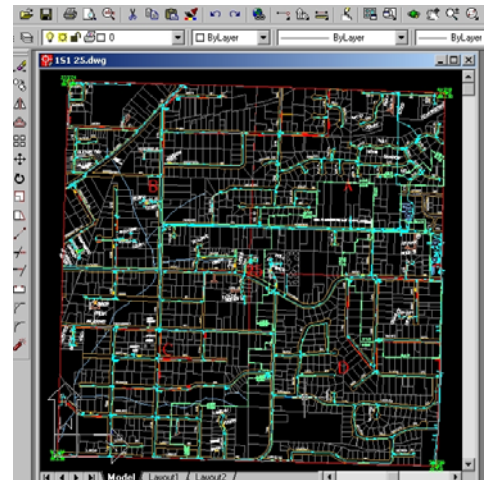
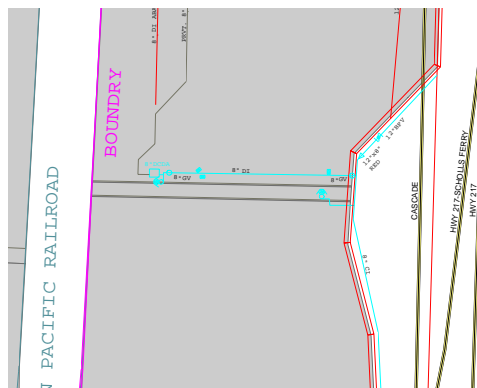
Tualatin Valley Water District GIS



The second phase will be to link the TVWD SQL customer database to the GIS, use an internet map server (ArcIMS) to distribute the GIS data to district employees over the intranet, and integrate the collection of GPS data to the GIS.

Methods

The first step was to convert 99 AutoCAD drawings to a GIS Geodatabase. The conversion process extracted waterlines classified by diameter and type of use (distribution, service), fittings by type (valve, meters, etc), as well as all text and notes from the AutoCAD drawings. This data was then aligned with Portland Metro's taxlot and road centerline data. After the TVWD data was adjusted, snapping and topology tools were used to ensure connectivity between waterlines and other features, such as valves and meters.



After the conversion was completed other related projects included:

- Comparing the TVWD customer database with Portland Metro's master address file. This process identified which parcels had service from TVWD, which are needed to complete the placement of meters and other features.
- Creating a set of query tools and map templates for TVWD staff to easily query on street name, address, meter number, or other attributes, and then quickly create maps.
- Automating the editing process so TVWD staff could efficiently make corrections and add new data. One example of this data automation was a routine for inserting hydrants that automatically snaps the correct tee fitting at the connection with the water distribution line, and a hydrant at the end of the service line when a new hydrant service line was drawn.
- Creating a process for TVWD to attach GPS data to the Geodatabase data layers.
- Setting up an Intranet map server to distribute the data.
- Writing an instruction manual for staff on the procedures used and how to use the queries, map templates and editing routines.

Results

Converted 99 AutoCAD maps into one ESRI GIS Geodatabase with 35 individual layers. The layers consisted of: 724 miles of water lines, 15,649 valves, 3,091 fittings, 394 commercial backflow devices, 15,645 water meters, 5,081 fire hydrants, 43 pressure regulators, 20 reservoirs, 22 cathodic locations, 21 residential backflow devices, 76 sampling stations, 10 pumping stations, 9,080 acres of right of ways, 66 pressure zones, 12,281 service lines totaling 34.5 miles, 92 miles of other water district water lines that connect to TVWD lines, 88 miles of abandoned waterlines, 2,151 abandoned features, 186 easements, 10 waterline casings, 4,392 fire service lines, 1,881 project locations, 3,416 subdivisions and 6,988 intersection locations.

