



Baker River Hydroelectric Relicensing GIS Services

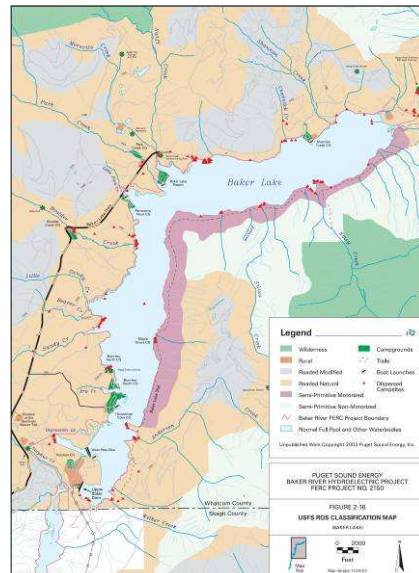
Baker and Skagit Rivers, Washington



Using the ArcGIS extensions Spatial Analyst and 3D Analyst, R2 assimilated a basin-wide terrain model by combining a newly acquired ASCII-based DTM with traditional USGS 10-meter DEMs. An array of 3D products have been output from the model to support slope classifications for new recreation site constraints; surface modeling for determining sediment deposition and erosion potential; and 5-foot contour slice generation within the reservoir drawdown zone for evaluating potential fish production.

R2 is currently providing GIS services to Puget Sound Energy in a multi-year relicensing effort of the Baker River Hydroelectric Project. Utilizing ESRI ArcGIS software tools, R2 GIS staff have produced numerous analytical and mapping products for five primary working groups focusing on the following resource areas: aquatic resources, terrestrial/wildlife, recreation/aesthetics, cultural/historical, and economics/operations.

R2 created flood inundation maps of the Skagit River to show inundation depths and flood wave characteristics of hypothetical dam failure scenarios for PSE's Emergency Action Plan. Mapped datasets such as elapsed time from dam failure to flood damage and to peak flood discharge were based on full equations stream flow routing software (FEQ) output.



In determining historic habitat conditions within riparian areas now occupied by the Baker River Project, R2 delineated the historic Baker River floodplain from 1880 and 1892 General Land Office (GLO) field survey notes, and a small-scale USGS topographic map from 1915. The GLO notes provided a metes and bounds alignment for the Baker River, partial alignment for the floodplain, and general notes about vegetation encountered during the survey.

Project Elements:

- Terrain Modeling
- Hydroelectric Relicensing
- Flood Inundation Mapping
- Historic Floodplain Delineation
- GIS (ArcInfo, ArcView, Spatial Analyst)