



# WATERS Services

*Standardized interfaces to perform common analyses of water program data*

## What are they?

The WATERS services are database and web-based services providing open interfaces to complex analyses. These services make extensive use of the NHD and referenced program data in the RAD, and also integrate other WATERS program data. Designed as modular units, the services are developed in a common architecture. The services currently under development or completed include:

Under Development:

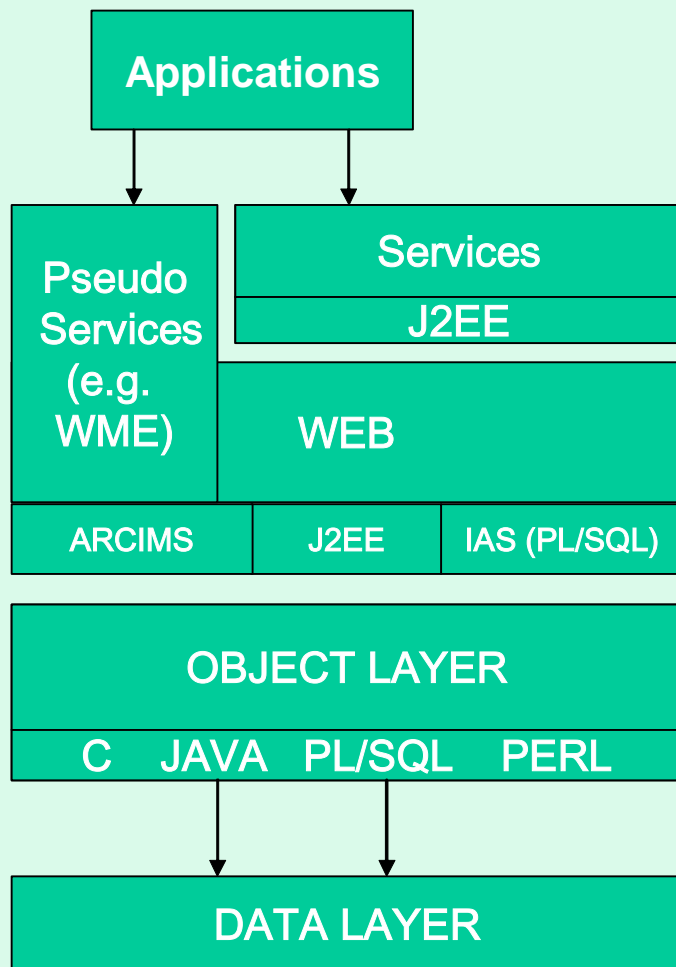
- Upstream/Downstream
- Total Waters
- RAD Mapping

Completed:

- Water Program Identify
- WATERS Spatial Analysis Engine

## What do they do?

These services provide applications reusable, extensible, standardized, and stable interfaces to common analyses of the EPA water program data. This approach both reduces the cost to develop applications by reducing duplication of functions, and improves application performance. In addition, analyses are modeled and implemented once ensuring consistent utilization of analysis models, reducing errors, and facilitating application developer review.



## Services Architecture

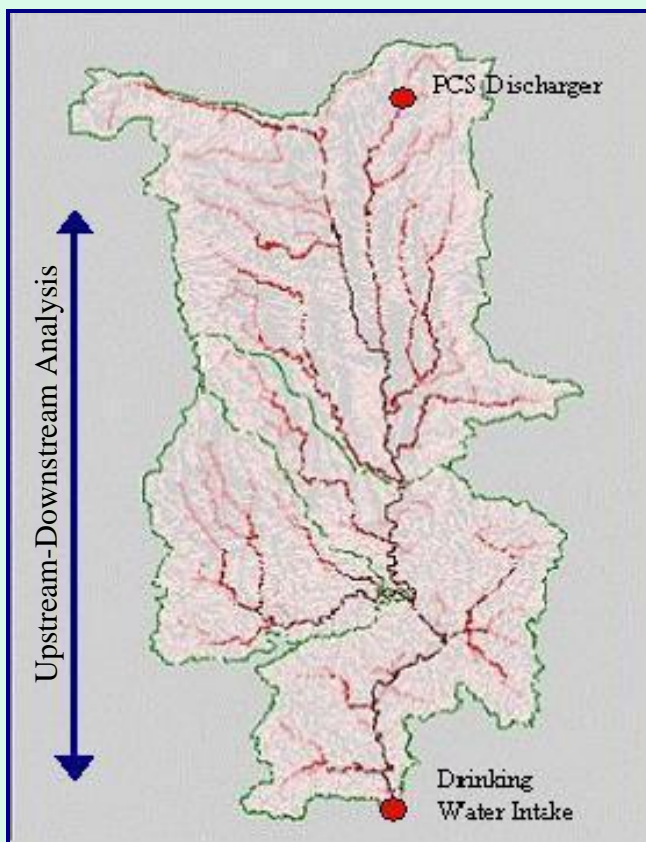
The design for WATERS services utilizes a layered approach with each layer having access to all layers below it in the diagram. At the top of the diagram is the application layer and at the bottom is the data layer. In the future, a selected set of these will become registered and documented web services using UDDI or WSDL.

## Brief Description of Current Services

### Upstream/Downstream

- Provides NHD feature information and/or indexed program information upstream or downstream on the NHD stream network of any waterbody or indexed event. Beginning and ending points of the navigation can be specified by a number of means including a waterbody, an event, a distance, or a boundary condition.

### Hypothetical Example



### Total Waters

- Provides counts and summary statistics of NHD features and referenced program data for boundaries (EPA regions/states/sub basins/etc.) as well as user defined areas (bounding box/local boundary data/custom area/etc.).

### Water Program Identify

- Returns program and NHD feature information from the RAD for any point on the NHD stream network.

### WATERS Spatial Analysis Engine

- Enables queries showing interactions based on the spatial extent of the referenced program data. Can be utilized with other program attributes to further extend the analysis. AskWATERS provides a user interface to results from this service.

### RAD Mapping

- Provides RAD features through an ESRI AXL file as either streaming features or map images. Also provides download interface to referenced EPA program data as ESRI shape files.

### Potential New Services Include:

- Single Program Query
- Location/Indexing Tools
- Geographic Extent
- Water Feature Names

### *For More Information, contact:*

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