

**STATEMENT OF WORK
CHS III**

Services supporting a Multi-agency Water Quality Portal (WQP) for National Water Information System (NWIS)

A-4.2 *Sample* Task Order #2: Services supporting a Multi-agency Water Quality Portal (WQP) for National Water Information System (NWIS)

This is a sample Task Order for evaluation of the proposal. The response to this Task Order is expected to demonstrate the Offeror's ability to plan a technical effort to support WQP deployment to a Cloud platform. The task plan should address the project management, systems and software engineering necessary to develop, modernize, enhance, maintain, and operate a science monitoring system and provide advanced interactive access to science information.

The response should consider:

- A task plan for this task order to included (at a minimum) approach, scope, schedule, staffing (using titles from the skill matrix) by month and the basis-of-estimate. It is requested that a schedule primarily focused on major milestones and key deliverables be provided in soft copy using Microsoft Project.
- A representative sample Monthly Status Report as described in Task Order Objectives, which includes performance metrics.
- This task order is labor hours.

Background

As the Nation's largest water, earth, and biological science and civilian mapping agency, the United States Geological Survey (USGS) collects, monitors, analyzes, and provides scientific data about natural resource conditions, issues, and problems. This diversity of scientific expertise enables USGS to carry out large-scale, multi-disciplinary investigations and provide impartial scientific information to resource managers, planners, and other customers. In support of USGS Mission Areas, USGS collects and analyses hydrologic, water quality, and related data needed to understand the Nation's water resources. WMA is dedicated to the deployment of high-end information technology products to enhance data storage and access methods against natural resources datasets.

The Water Quality Portal (WQP) is a cooperative service sponsored by the United States Geological Survey (USGS), the Environmental Protection Agency (EPA) (through an interagency agreement), and the National Water Quality Monitoring Council (NWQMC). It serves data collected by over 400 state, federal, tribal, and local agencies.

Assumptions

- All work and resources will be done within a cloud environment administered by the USGS.
- USGS DevOps staff will manage the hosting environment
- Cloud infrastructure must reside on U.S. soil
- This system is considered essential; all resources must be available in a production state in the new environment prior to the end of the previous contract and all transitional activities must be complete.

Requirements

The Contractor shall provide a geographically redundant environment for the deployment of the WQP, a government (in-house) developed application suite for Water Quality data distribution. WQP has a publicly accessible front end for users in science agencies and the general public. WQP also has an internal data refresh ingestion system which must be deployed to an environment that is limited to and accessible by the USGS internal network.

Deployment of WQP software

A. Compute Services

- a. A pool of application servers run WQP
 - i. Platform as a Service (PaaS)
 1. Linux operation system – Redhat, CentOS, Ubuntu are the USGS approved OS options for Linux
 2. Java 11 or equivalent- must be a long-term support (LTS) version
 3. Python 3.8 or higher - must be a long-term support (LTS) version
- b. The database server runs PostgreSQL 12 or higher database software. Server hardware and operating system must meet requirements for PostgreSQL and version.
- c. Geoserver 2.19.2 server for sharing of geospatial data related to water quality.
- d. Automatic scaling of application servers based on system load.
- e. Ability to set scaling limits and policies.
- f. Serverless processing for extraction, transformation, and loading processes.

B. Database

- a. PostgreSQL 12 or higher
 - i. WQP must reside in a PostgreSQL
 - ii. 398 Million records
 - iii. 1 TB of storage required with the ability to expand database storage as needed
 - iv. 9% growth from 2019 to 2021

C. Storage

- a. On demand storage for data, logs, support documentation and files.
- a. Stored data must be replicated for Business Continuity and Disaster Recovery requirements to a location that cannot be affected by the same impacts as the primary hosting location.

D. Centralized log archive

E. Real-time system and resource monitoring and alerting

F. Job scheduling services

G. Messaging services

H. Secrets Management services

I. Access

- a. Administrator access for a minimum of 3 USGS DevOps staff to manage the hosting environment.
- b. Ability to do fine grain access management and role assignment of resources.

J. Inputs

- a. EPA Storer Data – water quality data retrieved from the Environmental Protection Agency (EPA) via scripted file transfer of a Oracle 19c database and transformation to PostgreSQL 12.
- b. NWIS data via the Water Data For the Nation, Water Services API
- c. Location information via replication from the NatDB database
- d. Data upload via the EPA WQX - <https://www.epa.gov/waterdata/water-quality-data#wqxoverview>

K. Outputs

- a. Water Quality Portal public website - <https://www.waterqualitydata.us>
 - i. The WQP provides various input parameters on the form including location, site, sampling, and date parameters to filter and customize the returned results. The WQP can return site information (locations where samples were collected), or it can return sample results (analytical data of collected samples). Any field in the form left blank will cause a search for all parameters in that field.
- b. Water Quality services – REST API.
 - i. The WQP web services may be queried using a RESTlike (REpresentational State Transfer) technique. This method will retrieve the same data as the WQP form when the same retrieval parameters are specified.
 - ii. These services are used by many state and federal agencies for data retrieval and population of agency specific websites.

L. Availability

- a. Availability of 99% or a maximum of 3 days 15 hours unavailability in one year.

M. Usage

- a. 57,000 average daily users (January through March 2021)
- b. 11% growth in users compared to same quarter of 2020