

# Attachment 8: Quality Assurance

The following attachment presents the City of San Bruno's well-defined Quality Assurance and Quality Control (QA/QC) plan for the proposed South Westside Basin Shallow Groundwater Study, as described in Attachment 4, Project Description. This attachment describes the QA/QC plan and the measures that will be used in each task. Quality Assurance and Quality Control measures are built into each task and reinforced through the personnel qualifications.

## **Task 1: Public Outreach**

The primary QC activities in Task 1 relate to the development of presentation materials for the Groundwater Task Force and the development of the project website. The presentation materials and website will be reviewed once by the consultant and a second time by San Bruno staff. Necessary revisions will be made prior to presentation to the Groundwater Task Force or posting online.

Quality assurance is part of the intent of the public outreach activity as a whole. By presenting the methodologies and results to the Groundwater Task Force and stakeholders at a series of meetings, these materials are reviewed by a wider audience, allowing for the incorporation of any needed changes in the project.

## **Task 2: Shallow Well Water Level and Lithology Data Collection**

Data collection will be supervised by a California Professional Geologist familiar with basin conditions to ensure that data is accurately collected and entered into the spreadsheets. Data entry will be QC'ed by searching for outliers and comparing those outliers to the original source document.

## **Task 3: Shallow Well Water Quality Data Collection and Field Study**

Field study QC will focus on water quality sampling and analysis. The sampling will follow the guidelines of the *Sampling and Testing Protocol for the Westside Basin* and the International Atomic Energy Association's (IAEA) *Sampling Procedures for Isotope Hydrology*. Sampling will be performed by San Francisco Public Utility Commission's (SFPUC) existing consultant who is familiar with the facilities and will be under the supervision of project consultant staff experienced with the requirements for the needed analyses. Sampling will include the collection of field blanks and duplicate samples (approximately ten percent of the total samples). Field blanks detect possible constituent sources contributed from sampling methods and equipment. Examples include, but are not limited to, improperly cleaned sampling equipment, persistent airborne constituents in the

sampling environment, and constituent sources in the sample containers. Field duplicates monitor matrix consistency or heterogeneity, and variations attributed to lab analytical variability or constituent sources introduced in the laboratory, field, or sampling equipment.

The analytical laboratory will be selected so that it has all relevant certifications. The laboratory's QA/QC Program Manual will be reviewed to ensure that the lab is capable of producing accurate and reliable results. The results of the lab analysis will be reviewed by a senior geologist or engineer upon receipt to identify potential errors or omissions in the results. The analytical laboratory will use standard methodologies for their analyses: US Environmental Protection Agency (EPA) Method 300.0, 200.7, 6010, 906, and SM2320B, or equivalent. The specialized oxygen-18, deuterium, nitrogen-15, and helium-3 analyses will be performed at the well-regarded University of California at Davis Stable Isotope Facility. Age dating analysis will be performed by a qualified lab, such as Lawrence Livermore National Laboratory, the University of Utah, Columbia University, or the US Geological Survey. Tritium will be analyzed using the helium ingrowth and helium-3 will be analyzed by the copper tube method. Laboratory results will be reviewed by experienced staff for errors and omissions.

#### **Task 4: Shallow Well Data Analysis**

Analysis methodology will be confirmed by QC within the project team to ensure the appropriate methodology is applied in an accurate manner. Work will be reviewed by qualified individuals who were not directly involved in developing the analysis to provide QC for the results.

#### **Task 5: Reporting**

For the technical memorandum, reviewers, including the principal-in-charge level, will be assigned to review the document at the beginning of the project. The assignment will be entered into the consultant's enterprise project management system, which provides reminders to the reviewer and the project manager to ensure reviews take place. Hours and time are allotted for the reviews in the budget and schedule.

#### **Task 6: Project Management and Coordination**

The monthly progress reports, quarterly reports, and final reports will be reviewed prior to submittal to San Bruno and DWR.

#### **Task 7: Administration**

The quarterly reports and final reports will be reviewed prior to submittal to DWR.

#### **Personnel Qualifications**

The proposed project staff includes the following:

- Jim Blanke, project manager, a registered California Professional Geologist and Certified Hydrogeologist with 10 years experience working in Westside Basin groundwater issues.
- John Fio, an expert in stable isotope field sampling and analysis, groundwater-flow modeling, and with nearly 20-years experience in the Westside Basin.
- Mesut Cayar, PhD, a registered California Professional Engineer and an experienced groundwater practitioner.
- Ali Taghavi, PhD, principal-in-charge, a registered California Professional Engineer with more than 10 years of experience working in Westside Basin groundwater issues.