**QAPP Worksheet #11: Project/Data Quality Objectives**

**(UFP-QAPP Manual Section 2.6.1)**

**(EPA 2106-G-05 Section 2.2.6)**

This worksheet is used to develop and document project quality objectives (PQOs) or data quality objectives (DQOs) using a systematic planning process (SPP). Examples of SPP include: 1) the DQO Process[[1]](#footnote-1), and 2) the U.S. Army Corps of Engineers’ Technical Planning Process (TPP)[[2]](#footnote-2). The type of SPP used will vary based on the graded approach. This worksheet is mainly populated as text although some diagrams that capture decision processes are recommended. Regardless of the SPP applied, the QAPP must document the environmental decisions that need to be made and the level of data quality needed to ensure that those decisions are based on sound scientific data. The following guidelines are based on EPA’s 7-step DQO process.

1. State the Problem. The problem statement should be consistent with information contained in the CSM (Worksheet #10).
2. Identify the Goals of the Study. Identify specific study questions and define alternative outcomes. The goals for either decision or estimation problems should explain how the data will be used to answer questions and choose among the stated alternatives. Characterizing the “nature and extent of contamination” is a commonly stated but inappropriate study goal because it is vague and not focused on potential outcomes.
3. Identify Information Inputs. Specify the types of data that are required to fill gaps in the CSM. Explain in specific terms how all data will be used. In addition to analytical data, this could include published information on geology, climate, population distributions, endangered species, etc. Information inputs should be consistent with decisions made during project scoping, as documented on Worksheet #9.
4. Define the Boundaries of the Study. Specify the target population and characteristics of interest, define spatial /temporal limits and the scale of inference (i.e., which populations will be represented by which data.) Developing the list of target analytes presents one of the greatest opportunities for streamlining a project, as it can help avoid unnecessary costs associated with not only sampling, but also analysis, data review, reporting and management. Target analytes should be focused on specific constituents reasonably known or suspected to be present. The list of target analytes should be based on data gaps in the CSM. Focusing the list of analytes also provides better opportunities for optimizing method performance to best suit those analytes.
5. Develop the Analytic Approach. Define the parameter(s) of interest, specify the type of inference (e.g., “samples from groundwater monitoring wells x, y, and z will represent potable water at the site) and develop the logic for drawing conclusions from findings (i.e., which sample results will be used to support which decisions.) For decision problems, these are expressed as “if---then” statements, or decision rules, that link potential results with conclusions or future actions. For estimation problems, specify the estimator and the estimation procedure.
6. Specify Performance or Acceptance Criteria. For projects that involve hypothesis testing (e.g. presence or absence of contamination exceeding some threshold value) for decision-making, this will involve specifying probability limits for decision errors. For estimations and other analytic approaches (e.g. estimating the volume of groundwater or soil potentially requiring remediation), this will involve the development of performance criteria (for new data being collected) or acceptance criteria (for existing data being considered for use).
7. Develop the Detailed Plan for Obtaining Data. Worksheet #11 generally will briefly explain the basis for the sampling design, and then refer to Worksheet #17 – Sample Design and Rationale, for further details. Worksheets #19, 20, 24-28, and 30 will specify analysis design requirements.

1. Guidance on Systematic Planning Using the Data Quality Objectives Process, U.S. EPA, EPA QA/G-4, February 2006. [↑](#footnote-ref-1)
2. Technical Project Planning Process, U.S. Army Corps of Engineers, EM 200-1-2, August 1998 [↑](#footnote-ref-2)