Table 4-1. DQO Summary Table – Former Fuel Offloading Rack and Vadose Zone Interim Measures

DQO Step	Details of DQO Step per EPA DQO Guidance (2000)	Vadose Zone Interim Measures Removal of LNAPL	Vadose Zone Interim Measures Geophysics Lithology
1) State the Problem	Summarize the contamination problem requiring new data, resources available, and CSM.	Soil in the FFOR area. Residual LNAPL in the vadose zone may act as a potential source of LNAPL migration to the saturated zone.	Identify/locate geologic units controlling the migration of LNAPL and migration of LNAPL dissolved-phase contaminants
2) Identify the Decision	Identify the decision that requires new environmental data to address the contamination problem.	Determine where to excavate soils in the FFOR. Determine where to remediate high concentrations in the vadose zone indicative of LNAPL.	Determine the location of fine- grained lithologic units within the vadose and saturated zones at the BFF that control LNAPL and dissolved-plume migration.
3) Identify Inputs to the Decision	Identify the information needed to support the decision and specify which inputs require new environmental measurements.	Soil concentrations collected during Geoprobe® and "Step-Out" activities for excavation. Soil concentrations collected during vadose zone investigation can indicate the presence of LNAPL. PneuLog test results may also identify locations of high fuel concentrations / LNAPL within the vadose zone.	Measure borehole gamma, induction, and neutron logging in newly installed monitoring wells. Identify the areas of high and low permeability (fine- and coarse-grained materials) and preferential flow-path limits of LNAPL using its physical properties as a non conducting material.
4) Define the Study Boundaries	Specify the spatial and temporal aspects of the environmental media that the data must represent to support the decision.	The areas at the FFOR where the extent of TPH soil contamination above background and the extent of soil with hazardous constituents above NMED soil screening levels. The area(s) of the vadose zone beneath and east of the FFOR that have previously contained significant fuel concentrations.	Figure 2-1 shows the study boundaries.

Table 4-1. DQO Summary Table – Former Fuel Offloading Rack and Vadose Zone Interim Measures (Continued)

5) Develop a Decision Rule	Develop a logical "if…then" statement that defined the conditions that would cause the decision maker to choose among alternative actions.	If testing of the soil in the FFOR contains hazardous constituents above the NMED soil screening levels, the soil will be excavated to a depth of 20 ft. If laboratory sampling indicates the presence of LNAPL, use PneuLog vertical profiling to identify the highest concentration and the most permeable strata within the soil (PneuLog concentrations higher than 10,000 ppmv for a given strata).	If proposed groundwater monitoring wells being installed for the purpose of monitoring contamination within the LNAPL plume do not address areas that have been delineated as possible preferential flowpaths for LNAPL or dissolved-phase LNAPL to the groundwater table or within groundwater, consider modifying proposed SVE and monitoring well locations within the LNAPL plume. Obtain borehole geophysics measurements of less than 1 ft. Conduct borehole geophysics measurements following completion of each monitoring well before first sampling of well.

Table 4-1. DQO Summary Table – Former Fuel Offloading Rack and Vadose Zone Interim Measures (Concluded)

DQO Step	Details of DQO Step per EPA DQO Guidance (2000)	Vadose Zone Interim Measures Removal of LNAPL
6) Specify Limits on Decision Errors	Specify the decision maker's acceptable limits on decision errors, which are used to establish performance goals for limiting uncertainty in the data.	Concentrations/observation with a precision of 10%. UFP-QAPP and BFF-specific QAPP to be utilized.
7) Optimized Design	Identify the most resource-effective sampling and analysis design for generating data that are expected to satisfy the DQOs.	Geoprobe® "Step-Out" to properly identify total extents of excavation activities at the FFOR. Field data and PneuLog vertical profiling data to determine optimum interim measure locations.

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