

Updates to monitoring within each watershed or monitoring group, including changes in monitoring frequency, analytical suites, and monitoring locations, are based on the following:

- Conceptual models in watershed investigation reports (IRs)
- Changes to the monitoring-well networks over time, including the addition of newly installed monitoring wells, the rehabilitation and conversion of multiscreen wells, and the removal of wells recently plugged and abandoned or planned for plugging and abandonment in the near-term
- Changes in well performance
- Monitoring objectives for the area-specific monitoring groups
- Programmatic data requirements to support decisions regarding corrective actions
- Regulatory direction specified in NMED approval letters related to earlier interim plans

1.2 Scope

The Interim Plan describes the objectives for monitoring, the locations of sampling stations, the frequency of sampling, the field measurements taken at each location, and the analytical suites included in the monitoring plan for each watershed or monitoring group.

Four occurrences of water are monitored in this plan:

- *Base flow*—persistent surface water that is maintained by precipitation, snowmelt, effluent, and other sources
- *Alluvial groundwater*—water within the alluvium in the bottom of the canyons
- *Perched-intermediate groundwater*—localized saturated zones within the unsaturated zone
- *Regional groundwater*—deep, laterally continuous groundwater beneath the Pajarito Plateau

Groundwater is monitored routinely by collecting samples at wells and springs and by analyzing them for specific constituents. Groundwater monitoring refers to collecting data not only for water-quality analysis but also for water-level measurements. Water-level data are critical to understanding the occurrence and movement of groundwater and the responses of groundwater levels to recharge and water-supply well pumping.

Surface water at the Laboratory is divided into the following three flow types:

- *Base flow*—persistent, but not necessarily perennial, stream flow. This stream flow is present for periods of weeks or longer. The water source may be effluent, springs, or shallow groundwater in canyons.
- *Snowmelt*—flowing water that is present because of melting snow. This type of water often may be present for several weeks or more (persistent) but may not be present at all in some years.
- *Storm runoff*—flowing water that is present in response to rainfall. These flow events are generally short-lived, with flows lasting from less than an hour to several days.

In some cases, depending on weather conditions, each flow type may be collected at a single location within a time span of a few days. At other times, the flow may represent a combination of these types.

Storm runoff and snowmelt monitoring is not addressed in this plan but rather through the National Pollutant Discharge Elimination System (NPDES) Individual Permit and Multi-Sector General Permit and under DOE Orders 436.1 and 458.1 for surveillance. Base flow (persistent water) and, in some cases, persistent flow derived from snowmelt are monitored under the Interim Plan.

Monitoring under the Interim Plan will take place in area-specific monitoring groups within seven major watershed groupings: Los Alamos/Pueblo Canyons, Sandia Canyon, Mortandad Canyon, Pajarito Canyon, Water Canyon/Cañon de Valle, the combined watersheds of Ancho/Chaquehui/ Frijoles Canyons, and White Rock Canyon. Monitoring outside the Laboratory boundary is conducted to collect baseline data in areas that have been affected by past Laboratory operations (e.g., Guaje and Rendija Canyons) or that have not been affected by Laboratory operations. To ensure water leaving the Laboratory boundaries does not pose an unacceptable risk, this plan also includes monitoring in off-site areas that could potentially be impacted by the Laboratory (e.g., the Rio Grande and springs in White Rock Canyon). Figure 1.2-1 shows the areas addressed in this Interim Plan.

The Interim Plan is updated annually to incorporate new information collected during the previous year. Sampling locations, analytes, and sampling frequencies are evaluated and updated, as appropriate, to ensure adequate monitoring and monitoring objectives for the individual monitoring groups continue to be met. Information gained through characterization efforts, aquifer test results, water-level monitoring, network assessments, and water-quality data may be used to refine the monitoring plan for each monitoring group. In addition, the need to sample for analytes previously eliminated from sampling in various monitoring groups may be reevaluated during the development of the annual updates to the Interim Plan. Regulatory input from NMED is also considered.

1.3 Reporting

Analytical results obtained from groundwater, base-flow, and spring samples collected under this Interim Plan are provided in periodic monitoring reports (PMRs) in accordance with Section IV.A.6 of the Consent Order. PMRs will be submitted quarterly on February 28, May 31, and August 31, and November 30. Seven PMRs are prepared and submitted annually to fulfill reporting requirements under the Consent Order: one for each of the six area-specific monitoring groups and one for the general surveillance monitoring group. Table 1.3-1 presents ~~a summary of monitoring group sampling events for MY2017 and the anticipated PMR submittal schedule for MY2017. The shaded dates indicate the seven PMRs that will be submitted to NMED in MY2017. Dates not shaded indicate partial lists of the seven PMRs that will be submitted to NMED in each of MY2018 and MY2019.~~ The PMR submittal dates presented in Table 1.3-1 are subject to change based on the actual completion dates of the quarterly sampling events that are reported in the PMRs. ~~MY2017 field sampling events.~~

The Laboratory reviews analytical data from all groundwater monitoring conducted under the Consent Order that were received during the previous month and notifies NMED monthly of any exceedances of six criteria in accordance with Section IV.A.3.g, Notifications, of the Consent Order.

Analytical results provided in PMRs and monthly notifications are also made available to the public at the Intellus New Mexico database (available at www.intellusnm.com). The results are subject to the Protocol for Protecting Confidential Pueblo Information included in the Memorandum of Agreement between the DOE/National Nuclear Security Administration and the Pueblo de San Ildefonso regarding the release of analytical data collected from groundwater and base-flow samples at locations within Pueblo of San Ildefonso boundary.