

LANL

TA-03



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Date: May 20, 2004
Refer to: ER2004-0268

Mr. John Young, Project Leader
Permits Management Program
NMED – Hazardous Waste Bureau
2905 Rodeo Park Drive East
Building 1
Santa Fe, NM 87505-6303



SUBJECT: DELAY IN IMPLEMENTING THE MORTANDAD GROUNDWATER WORK PLAN AND ACCELERATING THE DRILLING OF REGIONAL AQUIFER WELLS R-6 AND R-18

Dear Mr. Young:

The endangered Mexican Spotted Owl has been observed in Mortandad Canyon and is expected to occupy the canyon area during its breeding season that ends in September. The Laboratory site plan protecting this species prohibits noise-making operations, such as well drilling in areas occupied by the owl, until the end of the breeding season. The exact home range of the owl is not known but appears to coincide with the upper portion of the canyon west of the confluence of Mortandad and Ten Site Canyons. Therefore, the planned drilling activities under the Mortandad Canyon groundwater work plan (LA-UR-04-0165) will be delayed by four months (June through September).

The delay primarily affects the start dates for constructing alluvial and intermediate wells in the upper part of Mortandad Canyon. The planned locations for regional wells R-33 (Ten Site Canyon) and R-34 (Cedro Canyon) are outside the restricted area and are currently scheduled to be constructed this summer. In addition, the Laboratory is hopeful that the work planned for the area in Mortandad Canyon east of the confluence with Ten Site Canyon can begin prior to September, but this decision cannot be made until additional owl surveys are conducted.

The delay in initiating fieldwork in Mortandad Canyon this year will result in a four-month extension in delivering the Mortandad Canyon investigation report, currently scheduled for June 30, 2006. Next year's field activities may also be delayed as a result of further restrictions.

Because drilling activities in Mortandad Canyon are delayed, well drilling resources will be redirected to wells at other locations where the scope for future scheduled canyons work can be accelerated. The Laboratory proposes to accelerate the construction of two regional groundwater wells at the following locations:



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- R-6 – TW-3 replacement in Los Alamos Canyon
- R-18 – Pajarito Canyon watershed

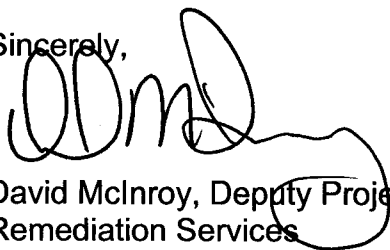
Well R-6 will be located near the east end of TA-21. R-6 has not been sited yet, but the preferred location is downgradient of contaminant releases at the 21-011(k) outfall near the water supply well Otowi-4. The R-6 investigation will include a mesa-top regional aquifer well and a canyon-bottom core hole. The regional aquifer well will meet multiple objectives, including investigating radionuclide and hazardous waste constituents, particularly those associated with releases from TA-21, TA-53, and TA-2. The well will also replace TW-3, an old well without a proper annulus seal. R-6 will be completed with a screen placed near the top of the regional zone of saturation. The canyon-bottom core hole will provide information about infiltration in lower DP Canyon by collecting contaminant profiles through the vadose zone. The core hole will also investigate the possible presence of perched groundwater in the upper part of the Puye Formation near Otowi-4. Data needs and characterization activities for R-6 are provided in Attachment 1. R-6 will be added to the work scope of the Los Alamos Canyon and Pueblo Canyon intermediate and regional groundwater work plan (LA-UR-03-9191) through a separate letter.

Well R-18 is proposed for a location within TA-14 on the south rim of Pajarito Canyon, 8000 ft west of the confluence with Twomile Canyon and 3100 ft northeast of characterization well R-25. R-18 is primarily designed to investigate the potential impacts on groundwater quality of effluent discharges from high explosives fabrication and machining sites in the near-source region downgradient of TA-9 and crossgradient north of TA-16. At TA-9, the release sites of most concern are consolidated SWMUs 09-004(a)-99 and 09-004(o). R-18 will be completed with a single screen in the top of the regional zone of saturation. If a perched zone is present at R-18, either a multiscreen well will be installed this year or an intermediate well will be installed at a later date under provisions of the Pajarito Canyon work plan (LA-UR-98-2550). Data needs and characterization activities for R-18 are provided in Attachment 1. R-18 will satisfy the requirement for installing a regional aquifer well in this general area under the Pajarito Canyon work plan, which is being reviewed by NMED.

In summary, four regional wells are planned for construction by October 2004: R-33 and R-34, as described in the Mortandad Canyon groundwater work plan, and R-6 and R-18, as discussed in this letter.

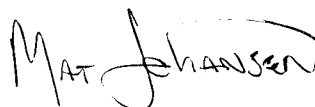
Please provide a written response indicating your approval for the extension in delivering the Mortandad Canyon investigation report (to be delivered 10/29/06) and accelerating drilling of wells R-6 and R-18 into this year's drilling schedule. If you have any questions, please contact Kent Rich at (505) 665-4272 or Tom Whitacre at (505) 665-5042.

Sincerely,



David McInroy, Deputy Project Director
Remediation Services
Los Alamos National Laboratory

Sincerely,



Mathew Johansen
Groundwater Program Compliance Manager
National Nuclear Security Administration
Los Alamos Site Operations

CN/MJ/DB/KR/th

Enclosure: Attachment 1: Preliminary Data Needs Matrix for CY04 Regional Aquifer Wells

Cy:

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Attachment 1

Preliminary Data Needs Matrix for CY04 Regional Aquifer Wells

	Well R-6	Well R-18
Conceptual Model Uncertainty	R-6 is a regional aquifer well located near the east end of TA-21, up gradient of water supply well Otowi-4. R-6 will provide information about potential impacts to regional groundwater down gradient of SWMUs at TA-21, TA-2, and TA-53. In particular, R-6 will investigate impacts to regional groundwater due to releases of radioactive liquid effluent from the 21-011(k) outfall, a major source of contamination in DP and Los Alamos Canyons. DP Canyon may act as a line source of recharge to the regional aquifer, although uncertainties exist where infiltration is taking place. R-6 will determine if the regional aquifer contains contaminants at this location and, if present, whether these contaminants represent a threat to water supply well Otowi-4. R-6 is of particular interest to the Laboratory because DOE Orders require protection of drinking water supplies from potential radionuclide contamination. R-6 replaces TW-3, a 55 year old monitoring well that shows evidence of deterioration and does not meet current standards for a monitoring well. R-6 may also provide valuable information on the effects of pumping of the supply well Otowi 4 on the regional aquifer and will provide an opportunity for hydraulic testing among the Otowi-4, TW-3, and R-6 wells.	R-18 is primarily designed to investigate potential impacts on groundwater quality from effluent discharges from HE fabrication and machining sites in the near-source region down gradient from TA-09 and cross gradient north of TA-16. These SWMUs at TA-9 became active in 1952 and include the industrial waste plumbing systems that serviced buildings used for HE research and development activities. Prior to the 1990s, effluent from the settling tanks was discharged to Bulldog Gulch via former NPDES-permitted outfalls 05A066 and 05A067. Bulldog Gulch empties into Pajarito Canyon 2100 ft down stream of outfall 05A066 and 2800 ft downstream of the outfall 05A067. Both Bulldog Gulch and Pajarito Canyon may have acted as line sources of recharge to deeper groundwater systems. Bulldog and Keiling Springs in Bulldog Gulch contain detectable levels of RDX. R-18 will also provide information about the extent of high-explosive contamination that was identified in TA-16 by characterization well R-25. It will constrain how far perched groundwater and potential HE contamination extends in a north-northeasterly direction from release sites in Canon de Valle.
Projected Depth	A regional well and shallow core hole will be drilled. The R-6 bore hole will be 1255 ft deep if it is sited on the TA-21 mesa. The shallow core hole will be sited near the confluence of DP and Los Alamos Canyon; the target depth is 300 ft, or refusal.	1,400 ft: penetrate to a depth of 150 ft below the regional water table.
Geology	Little new geologic information because of proximity to other deep wells; confirm stratigraphic contacts identified in the TW-3 and Otowi-4 lithologic logs.	Identify geologic contacts for Bandelier Tuff and Cerro Toledo interval, dacite, and Puye Formation for site-wide models. Constrain the northern extent of hypothesized channel in the top of the Otowi. A north-south trending channel may be the reason for thick Cerro Toledo interval encountered in R-25 and TA-16 intermediate wells.
Hydrology	Identify the presence of perched intermediate groundwater, if present. Determine hydraulic gradient, hydraulic conductivity, and evaluate localized flow patterns in the regional aquifer.	Identify the presence of perched intermediate groundwater, if present. Determine hydraulic gradient, hydraulic conductivity, flow direction, and extent of saturation in Puye Formation. Evaluate localized flow patterns in the regional aquifer.
Geochemistry	Evaluate effect of releases from sites in Los Alamos and DP	Evaluate effect of releases from TA-9, and other surface release sites

	Well R-6	Well R-18
	Canyons on water quality in the regional aquifer. Constrain location and rate of percolation from vadose zone to regional aquifer.	on water quality in the regional aquifer.
Vadose Zone Sampling	In the core hole, collect core and analyze for anions, metals, radionuclides, and stable isotopes. Collect water samples if perched water is encountered during drilling.	Collect water samples if perched water is encountered during drilling.
Core Needs	Collect core samples from surface to core refusal (target 300 ft) for contaminant, metal, and anion analyses. Identify contacts for Bandelier Tuff and Cerro Toledo interval, Puye Formation, and Cerros del Rio basalt for site-wide models.	No core will be collected. The RRES-Remediation Services project is planning to install two intermediate depth borings north of TA-9 that will provide core for vadose zone contaminant profile analysis.
Regional Aquifer Sampling	Collect screening water samples during drilling at the top of the regional aquifer. Install well screen to collect water quality data for the regional aquifer.	Collect screening water samples during drilling at the top of the regional aquifer Install well screens to collect water quality data for the regional aquifer.
Hydraulic Testing	Conduct hydrologic testing in the screen completely below the regional water table.	Conduct slug test and/or injection/straddle packer test in the screens completely below the regional water table.
Geophysical Testing	In regional aquifer bore hole, run full array of contract geophysical logs; suite and timing of geophysical logging to depend on bore hole conditions. In core hole and regional aquifer bore hole, LANL's bore hole video camera to be used when open hole conditions in the vadose zone are favorable for logging.	Run full array of contract geophysical logs; suite and timing of geophysical logging to depend on bore hole conditions. Laboratory bore hole video camera to be used when open hole conditions in the vadose zone are favorable for logging.
Number of Well Screens	R-6 will be completed with a single well screen located near the top of the regional zone of saturation. A single screen well will be installed in the core hole if perched water is found during drilling.	One in the Puye Formation at the top of the regional zone of saturation.