

ROCKY FLATS SITE REGULATORY CONTACT RECORD 2014-07

Purpose: Abandonment of Sentinel well 88104 at the Rocky Flats Site, Colorado.

Contact Record Approval Date: July 21, 2014

Site Contact(s)/Affiliation(s): Scott Surovchak, U.S. Department of Energy (DOE); John Boylan, Linda Kaiser, David Ward, The S.M. Stoller Corporation, a subsidiary of Huntington Ingalls Industries (Stoller)

Regulatory Contact(s)/Affiliation(s): Carl Spreng, Colorado Department of Public Health and Environment (CDPHE); Vera Moritz, U.S. Environmental Protection Agency (EPA)

Date of Consultation Meeting: June 2, 2014

Consultation Meeting Participants: Carl Spreng, Walter Avramenko, CDPHE; Vera Moritz, EPA; Scott Surovchak, DOE; John Boylan, Linda Kaiser, David Ward, Jeremiah McLaughlin, George Squibb, Stoller; Jody Nelson, JGMS, Inc.

Discussion: Sentinel well 88104 casing is broken within the screened interval, approximately 10 feet below ground surface. This well monitors groundwater downgradient of former Building 881 (B881). The broken casing was observed during the second quarter 2014 sampling event, and it was noted that several feet of the well casing has filled with filter-pack sand. Site technical staff believes the damage was caused by movement of the soil on the hillside.

This condition and three primary response alternatives were discussed: (1) install a replacement well, (2) insert a smaller-diameter casing in the existing breached casing and continue to monitor this location until that inner casing also breaks, or (3) discontinue sampling and abandon the well. Recent data from well 88104 and the two closest wells that also monitor former B881, Evaluation well 88205 and Sentinel well 00797, were evaluated (see attached map for well locations).

The discussion included *Rocky Flats Legacy Management Agreement* (RFLMA) Attachment 2, Figure 8, "Sentinel Wells," flowchart which provides the evaluation protocols for Sentinel wells, including the "discontinue monitoring" criteria. Well 88104 meets one, but not both, exit criteria. Specifically, none of the analytes monitored at this well are represented by an 85th percentile concentration that exceeds RFLMA values (Sentinel well criterion #1)—in fact, the individual data are also below these values. On the other hand, the statistical trend in uranium, the constituent of interest that is most commonly detected in samples from this well, is neither decreasing nor indeterminate at this time (Sentinel well criterion #2). However, well 88104 is redundant considering the proximity of wells 88205 and 00797.

The following additional factors were evaluated to determine the appropriate course of action for breached well 88104:

- Sentinel wells 88104 and 00797 appear to be redundant due to the fact that: well 00797 is a short distance downgradient of well 88104. The objective of both of these Sentinel wells is to detect contaminant migration from the likely source area, former B881. Well 88104 is closer to this presumed source area than is well 00797, but well 00797 is close enough and properly positioned to detect contaminant migration toward surface water, particularly when combined with Evaluation well 88205.
- Evaluation well 88205 is located closer to former B881 than well 88104. (Well 88205 is located in the former parking lot, near the loading dock on the south end of the building; well 88104 is south of the road that was south of that parking lot.) Evaluation wells are intended to monitor source areas and help determine when monitoring of an area or plume can cease.
- Uranium concentrations in samples from well 88104 do not support any statistical trend that is 95% significant. However, an increasing trend of lower significance is suggested. Uranium concentrations in samples from well 00797 are on an increasing trend that has a 95% significance. Uranium concentrations in both wells are lower than the uranium threshold stated in RFLMA Figure 8 footnote: “Decisions related to uranium are based upon a 120 µg/L [micrograms per liter] threshold for AOC [Area of Concern] wells.”
- Samples from Sentinel well 88104 contain higher concentrations of uranium than do samples from Evaluation well 88205. However, high-resolution gamma spectrometry uranium analyses performed by Los Alamos National Laboratory (LANL) of samples from the original wells (88101 and 5187, respectively) prior to closure indicate that the uranium in the groundwater monitored by both wells is predominantly natural. A sample collected June 18, 2002, from well 88101 (later replaced by well 88104) contained a concentration of slightly more than 148 µg/L uranium that was characterized as 100.0% natural. A sample collected June 28, 2002, from well 5187 (later replaced by well 88205) contained approximately 13.2 µg/L of uranium that was characterized as 97.6% natural. Samples collected between June 1999 and June 2002 from two other wells in this area (abandoned wells 5287 and 5387) were also analyzed by LANL; of the six analyses from these additional wells, the uranium ranged from 98.6% to 100.0% natural.
- Samples collected from well 88205 have historically contained higher concentrations of volatile organic compounds (VOCs) than have samples from well 88104, which is consistent with the objectives of an Evaluation well (88205). VOCs concentrations in samples from well 88205 have been higher than the RFLMA Table 1, “Surface Water Standards,” concentrations on several instances. None of the VOCs detected in samples from well 88104 have been higher than RFLMA Table 1 standards, and the last reported detection of a VOC (through the end of 2013) was in 2010.
- Well 88104 is damaged. This damage is likely worsening; no damage was indicated in the fourth quarter of 2013, but during the second quarter of 2014 the broken 2-inch-diameter casing only allowed objects smaller than 1 inch in diameter to pass, and a significant portion of the well has filled with filter-pack sand. Restoring functionality to this well using an inner casing would be a temporary fix until the inner casing breaks. Given that well 88104 is redundant, resources required to replace it could be put to better uses. The groundwater monitoring network would continue to effectively monitor groundwater downgradient of former B881 if well 88104 was abandoned and not replaced.

Consistent with RFLMA Part 5, "Regulatory Approach," the RFLMA parties have determined that the above rationale is sufficient to abandon well 88104, in spite of not precisely meeting the RFLMA Attachment 2, Figure 8, "Sentinel Wells" Flowchart criteria. Therefore, well 88104 will be abandoned in place, per Volume 2 *Code of Colorado Regulations* 402-2, "Rules and Regulations for Water Well Construction, Pump Installation, Cistern Installation and Monitoring and Observation Hole/Well Construction." When RFLMA Attachment 2 is next revised, Table 2, "Water Monitoring Locations and Sampling Criteria," will be updated to remove well 88104.

The removal of this well will not result in a new intrusive activity below a depth of three feet, and therefore a Soil Disturbance Review Plan will not be required. The site staff will continue monitoring the B881 hillside for stability.

Resolution: Carl Spreng, CDPHE, approved this contact record.

Closeout of Contact Record: This contact record will be closed when the well is abandoned.

Contact Record Prepared by: John Boylan and David Ward

Distribution:

Carl Spreng, CDPHE

Scott Surovchak, DOE

Vera Mortiz, EPA

Linda Kaiser, Stoller

Rocky Flats Contact Record File

Figure 1

Contact Record 2014-07

