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Work Plan for Installation of Stormwater Controls at Area of Concern 00-030(f)

Los Alamos
NATIONAL LABORATORY
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Prepared by the Environmental Programs Directorate

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EXECUTIVE SUMMARY

Area of Concern (AOC) 00-030(f) is the site of a former septic system located in the Pueblo Canyon Aggregate Area at Technical Area 00 (TA-00). The tank is located on private property near the United Church school building south of Canyon Road. The outfall is located across Canyon Road on Los Alamos County property. The former septic system consisted of two septic tanks that were connected with sewer lines in the “Apartment Area” and handled sanitary waste from a school, a post exchange, and some of the original Ranch School buildings; it did not receive waste from TA-01 operations. The tank ceased operating when the central wastewater treatment plant became operational in 1947.

Based on characterization results from sampling conducted in 2006, AOC 00-030(f) was proposed for corrective actions complete without controls. The New Mexico Environment Department (NMED) granted a certificate of completion for corrective action complete with controls because of potential impacts to surface water and is requiring permanent and appropriate stormwater controls to prevent downgradient transport of contaminants in stormwater from AOC 00-030(f).

The objective of this work plan is to describe the installation of stormwater controls required at AOC 00-030(f), in compliance with the NMED certificate of completion. This work plan also proposes additional sampling at AOC 00-030(f), based on a recently discovered drawing showing the outlet line and outfall. This additional sampling will improve the definition of nature and extent of potential contamination at the site.

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1.0 INTRODUCTION

Los Alamos National Laboratory (LANL or the Laboratory) is a multidisciplinary research facility owned by the U.S. Department of Energy (DOE) and managed by the Los Alamos National Security, LLC (LANS). The Laboratory is located in north-central New Mexico, approximately 60 mi northeast of Albuquerque and 20 mi northwest of Santa Fe. The Laboratory site covers 40 mi^2 of the Pajarito Plateau, which consists of a series of fingerlike mesas separated by deep canyons containing perennial and intermittent streams running from west to east. Mesa tops range in elevation from approximately 6200 to 7800 ft above sea level.

The site addressed in this work plan, Area of Concern (AOC) 00-030(f), is potentially contaminated with hazardous constituents. The New Mexico Environment Department (NMED), pursuant to the New Mexico Hazardous Waste Act, regulates cleanup of hazardous wastes and hazardous constituents. Corrective actions at the Laboratory are subject to the March 1, 2005, Compliance Order on Consent (the Consent Order). This work plan describes proposed work activities that will be executed and completed in accordance with the Consent Order.

1.1 General Site Information

The Pueblo Canyon Aggregate Area consists of solid waste management units (SWMUs) and AOCs that were formerly on Laboratory property within Technical Area 00 (TA-00). The Laboratory began operations at TA-00 in 1943 and had largely ceased using this area by 1986. Figure 1.1-1 shows the Pueblo Canyon Aggregate Area SWMUs and AOCs with respect to the Laboratory boundary and surrounding land holdings.

AOC 00-030(f) is the location of a former septic tank and outfall within the Pueblo Canyon Aggregate Area. It is adjacent to former TA-45 and the former wastewater treatment plant (WWTP) outfall that drained into the south fork of Acid Canyon (Consolidated Unit 45-001-00).

Characterization sampling was conducted at AOC 00-030(f) during 2006. Based on sample results, this AOC was proposed for corrective actions complete without controls in the Pueblo Canyon Aggregate Area investigation report (LANL 2008, 103243). In December 2008, NMED granted a certificate of completion for corrective action complete with controls, based on potential impacts to surface water. The letter granting the certificate of completion states that the site received a relatively high erosion index score (79.0) and that mercury exceeds the wildlife habitat water-quality criteria at gauging station E055.5, located downgradient of the site along the south fork of Acid Canyon and downgradient of former TA-45. For this reason, NMED is requiring installation of permanent and appropriate stormwater controls to prevent downgradient transport of contaminants in stormwater from AOC 00-030(f). As explained below, the location of the outfall at AOC 00-030(f) was previously unknown and for this reason, the Laboratory conservatively assigned this site an erosion score of 79.0. In January 2009, however, the exact location was discovered though new information. Based on the correct location, the erosion score for this site is 18.3 (see section 3.0).

1.2 Work Plan Objectives

The objective of this work plan is to describe the installation of stormwater controls required at AOC 00-030(f), in compliance with the NMED certificate of completion, dated December 30, 2008. This work plan also proposes sampling at the newly identified location for the AOC 00-030(f) outfall to improve definition of the nature and extent of chemicals of potential concern (COPCs) associated with this AOC.

2.0 BACKGROUND

2.1 Site Description and Operational History

AOC 00-030(f) is a former septic system consisting of two septic tanks located on private property near the United Church school building south of Canyon Road. The septic system outfall is located across Canyon Road on Los Alamos County property. The tanks connected with sewer lines in the "Apartment Area" and handled sanitary waste from a school, a post exchange, and some of the original Ranch School buildings; it did not receive waste from TA-01 operations (LANL 1996, 056432, p. 5). The tank ceased operating when the central WWTP became operational in 1947 (LANL 1992, 007667, p. 5-94; LANL 1996, 056432, p. 1).

2.2 Land Use

The current use of the area around the 00-030(f) septic tank is considered residential and is anticipated to remain residential for the foreseeable future. The current use of the area around the outfall is recreational, and it is anticipated to remain recreational for the foreseeable future.

2.3 Potential Contaminant Sources, Transport Mechanisms, and Receptors

Potential contamination at AOC 00-030(f) may have originated from either leaks from the tanks, associated drainlines, or effluent discharges from the associated outfall discharge line south of Canyon Road. Transport mechanisms include surface water and sediment runoff, and disturbance and uptake of contaminants in shallow soil by plants and animals. Potential receptors of any site contamination include residents, trail users, and ecological receptors (plants and animals).

2.4 Previous Site Investigations

Investigation activities were conducted at AOC 00-030(f) in 1994 and 2006. However, because of uncertainty regarding the location of the outfall, previous sampling activities focused on the area immediately around the septic tanks and the outlet lines. Only 2006 sample results were used in the evaluation of the site as presented in the Pueblo Canyon Aggregate Area investigation report (LANL 2008, 103243). Figure 2.4-1 shows the locations of samples collected in 2006 at AOC 00-030(f). Although the coordinates for location 00-25508 indicate that samples were collected outside of the tank footprint, the tanks were partially excavated and the samples collected through the floor of the actual tank. It is possible that proximity to structures and trees resulted in erroneous global-positioning-system readings for this location.

During site investigation activities in 2006, it was determined that portions of the tanks had been previously removed. The tanks could not be removed entirely because of the presence of a sidewalk and a retaining wall located above the tank remnants.

2.5 Summary of Data Evaluation

The investigation report for the Pueblo Canyon Aggregate Area (LANL 2008, 103243) concluded that the lateral and vertical extent of inorganic, radionuclide, and organic COPCs were defined for AOC 00-030(f). AOC 00-030(f) was evaluated for potential risk and dose using the residential and recreational scenarios. Based on the risk-screening assessment results, there is no potential unacceptable risk or dose from COPCs for the residential or recreational scenario at AOC 00-030(f).

3.0 SITE CONDITIONS

The exact location of the former AOC 00-030(f) outfall was unknown until January 2009 when a historical drawing was discovered that showed the tanks and the entire outlet line and provided coordinates for the former outfall location. The correct outfall location for AOC 00-030(f) was north of Canyon Road and southwest of the access road to the Los Alamos County yard (Figure 3.0-1). The former outfall discharged near the rim of the south fork of Acid Canyon, where other significant discharges occurred during the operation of the former TA-45 WWTP.

The location of the former outfall is now covered with a thick layer of leaf litter (Figures 3.0-2 and 3.0-3) that serves as a very effective control of stormwater runoff. There is no evidence of any run-on to the former outfall area. The only potential source of run-on to this area is from the county storage yard, located at the site of former TA-45, which currently drains to the south fork of Acid Canyon through a well-defined drainage channel.

Because the exact location of the outfall at AOC 00-030(f) was previously unknown, the Laboratory assigned this site a relatively high erosion score of 79.0 based on the conservative assumption that the outfall could have been anywhere near the head of the south fork of Acid Canyon. In 2009, the Laboratory reassessed the erosion score of this site based on newly discovered historical information that showed the correct location of the outfall. Based on the correct outfall location, a surface-water site assessment was recently completed and resulted in an erosion score of 18.3 (Appendix A).

4.0 SCOPE OF ACTIVITIES

4.1 Soil/Sediment Sampling

Based on the newly identified outlet line information, soil/sediment samples will be collected at the approximate locations shown in Figure 2.4-1 and analyzed to better define the nature and extent of contamination, if any, at the site. Four outfall locations will be sampled at two depths each (the surface of the undisturbed soil/sediment and at the tuff interface) for a total of eight samples. One location along the outlet line will be sampled at two depths (directly beneath the former line and 2 ft deeper). These samples will be submitted for analysis of target analyte list metals, cyanide, nitrate, perchlorate, polychlorinated biphenyls, pesticides, volatile organic compounds, semivolatile organic compounds, americium-241, and radionuclides by gamma spectroscopy. These are the same analyses conducted on all other samples collected at AOC 00-030(f) during the 2006 Pueblo Canyon Aggregate Area investigation.

4.2 Stormwater Controls

In compliance with the certificate of completion for corrective actions complete with controls, the Laboratory will install stormwater controls in accordance with best management practices (BMPs). A small berm is proposed for installation along the perimeter of the Los Alamos County storage area to eliminate the potential for stormwater run-on from this asphalt-covered area. The proposed berm would be approximately 1 ft high by 10 ft long and constructed of base-coarse material. The berm, as well as the drainage channel that routes stormwater from the storage area to Acid Canyon, will be inspected in accordance with the schedule and requirements set forth in the Laboratory's National Pollution Discharge Elimination System permit (the Individual NPDES Permit). In addition, a stormwater sampler/sensor will be installed below the former outfall location to verify that there is no discharge from the AOC 00-030(f) outfall, as required by the Laboratory's Individual NPDES Permit. Inspections and sampling will occur as defined in the Individual NPDES Permit.

5.0 METHODS

Soil/sediment samples will be collected at AOC 00-030(f) following standard operating procedure (SOP) 06.09, Spade and Scoop Method for the Collection of Soil Samples, and/or SOP-06.10, Hand Auger and Thin-Wall Tube Sampler. Field screening, sample handling and documentation, quality control, waste management, and decontamination procedures will be the same as those proposed in the Phase II investigation work plan for the Pueblo Canyon Aggregate Area (LANL 2008, 104580). The installation and inspection of BMPs at the AOC 00-030(f) outfall will be conducted in accordance with SOP-5217, Inspecting, Maintaining, and Installing BMPs.

6.0 SCHEDULE

Collection of soil/sediment samples from the AOC 00-030(f) outfall area will be conducted during the Pueblo Canyon Aggregate Area Phase II investigation. Analytical results and an amended evaluation of the nature and extent of contamination and potential human health and ecological risks from the site will be included in the Phase II investigation report, which will be submitted to NMED by June 30, 2010. If it is confirmed that AOC 00-030(f) is not the source of mercury and other analytes of concern measured in stormwater at gauging station E055.5, then the Laboratory will propose that stormwater controls would no longer be necessary at this AOC.

BMPs and the stormwater sampler/sensor will be incorporated into the rainfall inspection and sample collection schedule defined in the Individual Permit.

7.0 REFERENCES

The following list includes all documents cited in this appendix. Parenthetical information following each reference provides the author(s), publication date, and ER ID. This information is also included in text citations. ER IDs are assigned by the Environmental Programs Directorate's Records Processing Facility (RPF) and are used to locate the document at the RPF and, where applicable, in the master reference set.

Copies of the master reference set are maintained at the NMED Hazardous Waste Bureau and the Directorate. The set was developed to ensure that the administrative authority has all material needed to review this document, and it is updated with every document submitted to the administrative authority. Documents previously submitted to the administrative authority are not included.

LANL (Los Alamos National Laboratory), May 1992. "RFI Work Plan for Operable Unit 1071," Los Alamos National Laboratory document LA-UR-92-810, Los Alamos, New Mexico. (LANL 1992, 007667)

LANL (Los Alamos National Laboratory), June 1996. "RFI Report for Potential Release Sites, 0-030(eN,eS,f)," Los Alamos National Laboratory document LA-UR-96-2135, Los Alamos, New Mexico. (LANL 1996, 056432)

LANL (Los Alamos National Laboratory), July 2008. "Investigation Report for Pueblo Canyon Aggregate Area, Revision 1," Los Alamos National Laboratory document LA-UR-08-4765, Los Alamos, New Mexico. (LANL 2008, 103243)

LANL (Los Alamos National Laboratory), October 2008. "Pueblo Canyon Aggregate Area Phase II Investigation Work Plan," Los Alamos National Laboratory document LA-UR-08-6722, Los Alamos, New Mexico. (LANL 2008, 104580)

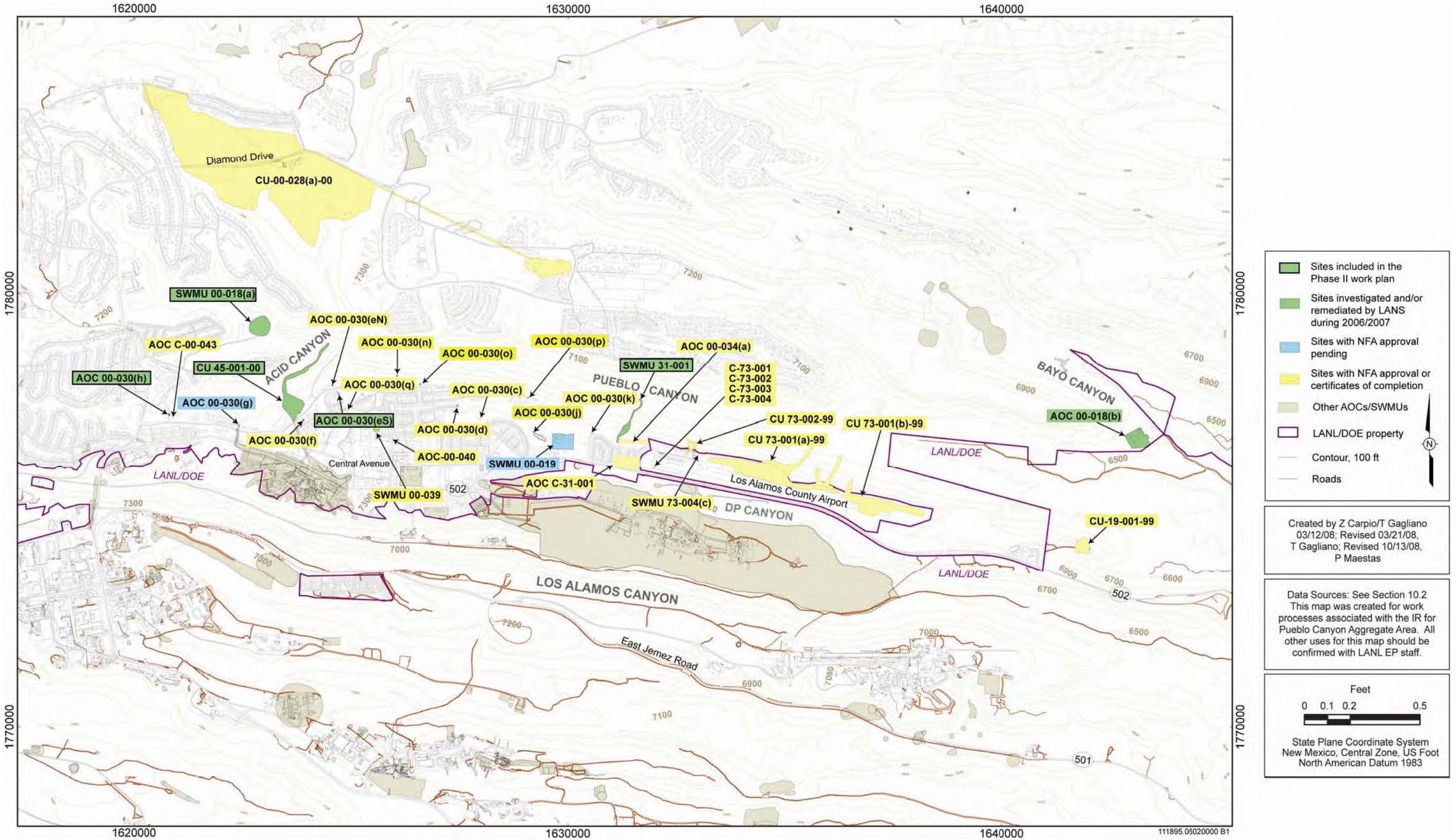


Figure 1.1-1 Locations of Pueblo Canyon Aggregate Area SWMUs, AOCs, and consolidated units

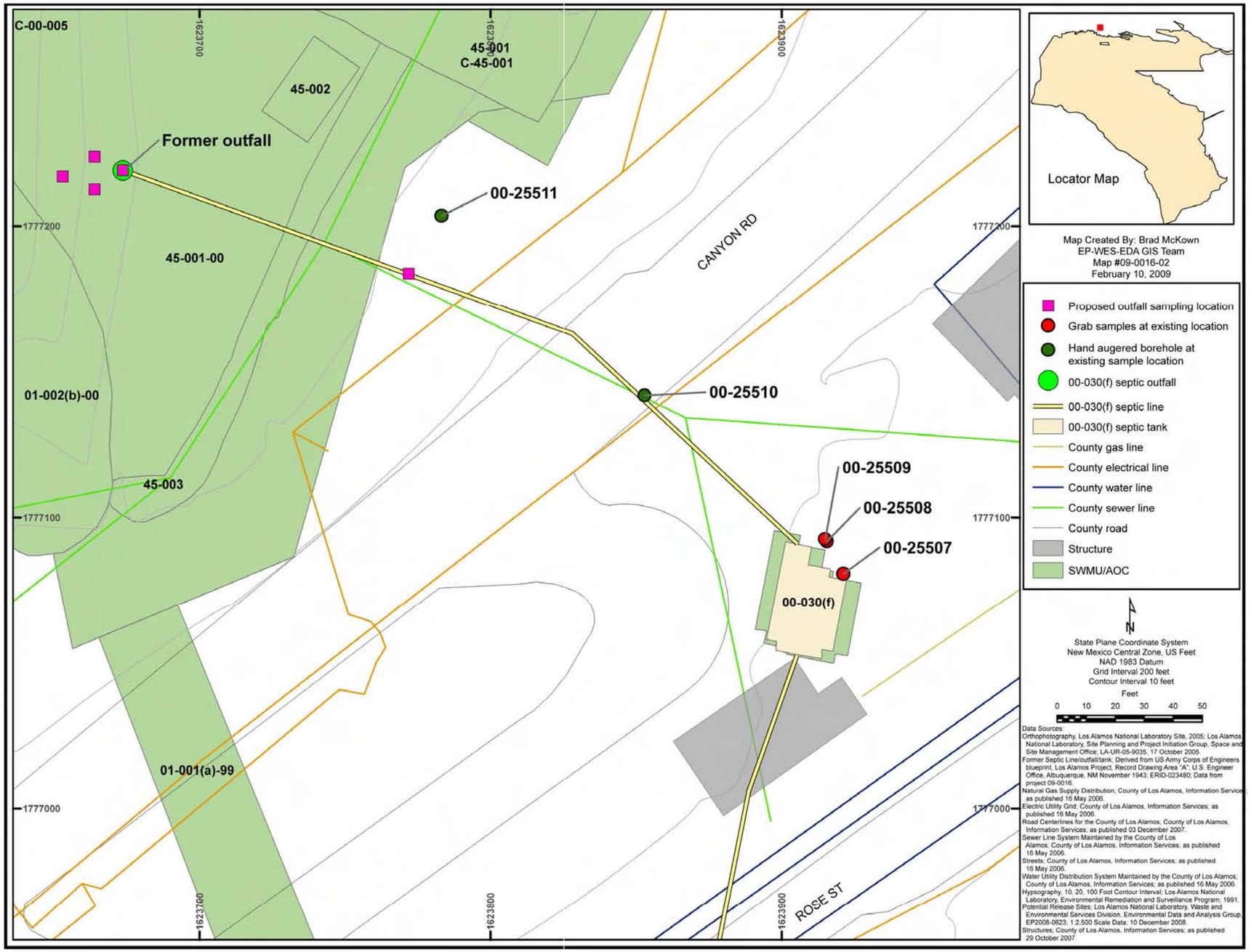
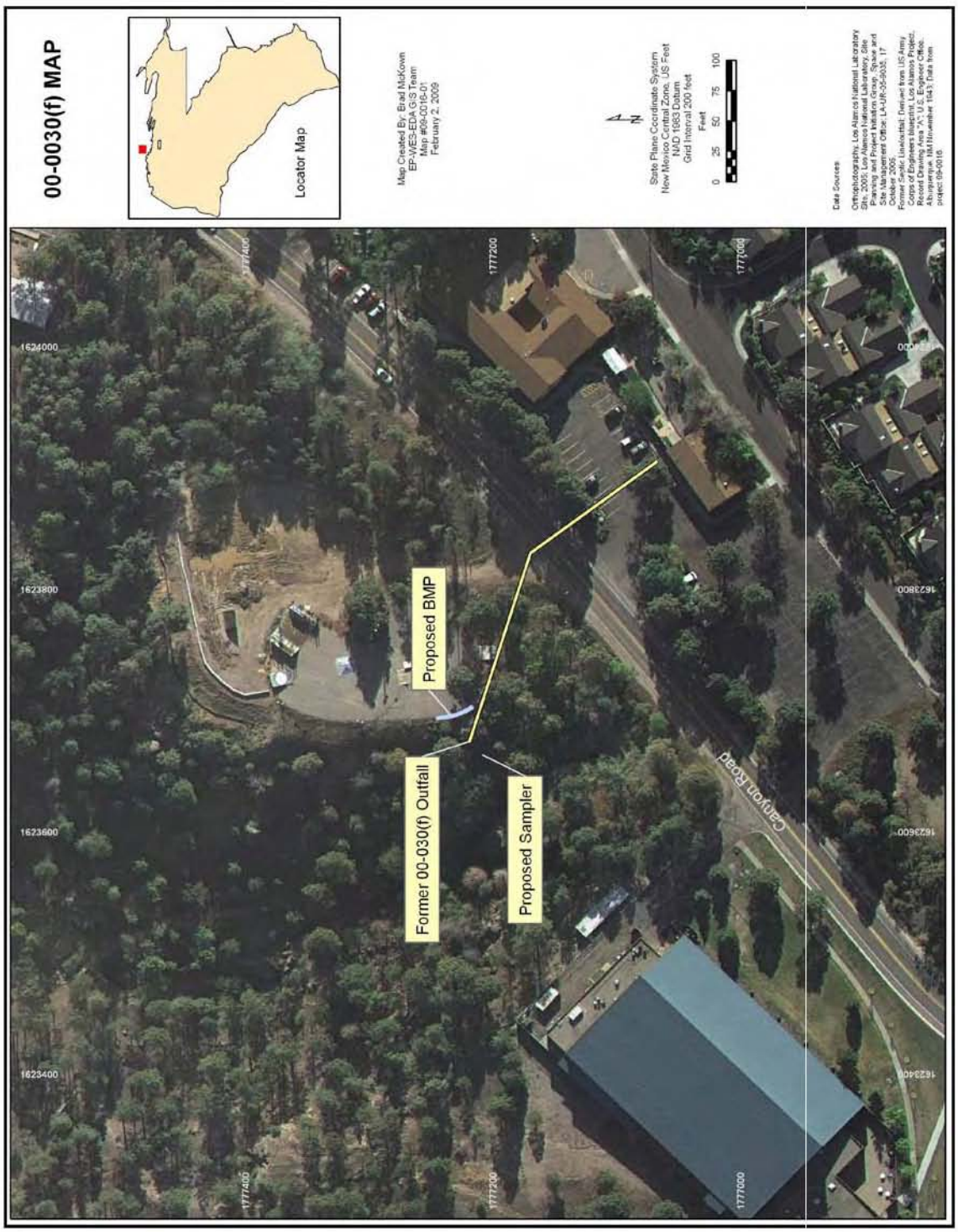


Figure 2.4-1 Existing and proposed sampling locations at AOC 00-030(f)



Notes: The proposed berm will be placed along the outside of the County yard fence. The sampler/sensor will be placed approximately 10 ft downslope from the former outfall location.

Figure 3.0-1 Former outfall for 00-030(f)

Notes: Global positioning system (GPS) unit is in approximate location of former outfall. Note the extensive groundcover and lack of visual evidence of erosion or stormwater runoff. Also note that the piece of corrugated metal culvert is not an outfall.

Figure 3.0-2 Upslope at the location of former outfall for 00-030(f)

Notes: Global positioning system (GPS) unit is in approximate location of former outfall. Note the extensive groundcover and lack of visual eviden erosion or stormwater runoff.

Figure 3.0-3 Downslope at the location of former outfall for 00-030(f)

Appendix A

Surface Water Site Assessment for Area of Concern 00-030(f)

Surface Water Site Assessment Form

Site ID: 03-030(f)	Nearest Structure (TA-Bldg) (optional)
Site Found: ☒ Yes ☐ No	GPS Used to Locate Site? ☒ Yes ☐ No

Topography (Check all that apply.)

☐ On Mesa Top ☒ On Bench in Canyon ☐ On Canyon Floor, Not Channel ☐ In Channel in Canyon Floor

Topography Explanation (optional):
Former outfall located on rim of trib. to Acid Canyon

Ground/Canopy Cover (Check all that apply.)

☐ Sparse (< 25%) ☐ Medium (25 - 75%) ☒ High (75 - 100%)

Ground/Canopy Cover Explanation (leaves, needles, rocks, vegetation, trees, structures, asphalt, etc.)
Thick Overstory + tree litter

Asphalt Cover: Surface covers PRS ☐ PRS on top of surface ☐ Unknown ☐

Slope at Area Impacted (Check all that apply.)

☐ Flat (< 10%) ☐ Gradual (10 - 30%) ☒ Steep (> 30%)

Slope Explanation (optional):

Potential Non-Storm water Impacts ☐ Yes –> Explain: ☒ No

☐ Fire Hydrant/fire suppression system ☐ Landscape watering
☐ NPDES outfall ☐ Other (Describe):

Exposure Is the site exposed to storm water? ☒ Yes ☐ No

Run-off Is there visible evidence of run-off from the Site? ☐ Yes ☒ No (If no, skip to Run-on section.)

Is run-off through a conveyance? (Skip if no above.) ☐ Yes ☐ No

Conveyance Type (Skip if no at left.) ☐ Man-made ☐ Natural

Explanation (Required if run-off is yes.)

☐ Natural Erosion feature(s) (i.e. arroyo, gully, drainage channel) ☐ Sheet Flow
☐ Pipe, culvert, drain, outfall, roof, ditch, other man-made conveyance ☐ Roadways (asphalt, dirt, etc.)
☐ Other (D&D activities, site storage, construction, etc.):

Surface Water Site Assessment Form

Run-off continued

Where Does Evidence of run-off Terminate? (Check only one. Skip if visible evidence of run-off is no.)

☐ Main Canyon Drainage/Receiving Stream (Describe) ☐ Mesa Top ☐ Meadow
☐ Significant Tributary to Canyon Drainage (Describe) ☐ Closed Retension Basin ☐ Canyon Bench / Slope
☐ Other (Describe):

Has Run-off Caused Visible Erosion (Skip if no run-off.)

☐ Yes --> Explain: ☒ No
☐ Sheet ☐ Gully ☐ Rill ☐ Other (Describe):

Run-on Is there visible evidence of run-on? ☐ Yes --> Explain: ☒ No

☐ Structures (Buildings, parking lots, culverts, roof drains, etc.)
☐ Natural Drainage
☐ Current Operations (construction, etc.)

Storm water collection/retention. Is there visible evidence storm water is collected and retained on Site?

☐ Yes --> Explain: ☒ No
☐ Retention Pond ☐ Depression (natural or man-made)
☐ Pool or pond ☐ Bermed area(s)
☐ Other (Describe):

Assessment Finding Based on the above criteria and the assessment of this Site, does soil-erosion potential exist?

☐ Yes ☒ No

Photos Taken? ☒ Yes ☐ No --> Explain
☐ Security Issues ☐ Camera not working ☐ Camera not available

Assessment Author (name/signature/Z#/title)	Assessment Date (mm/dd/yyyy)
Sam Loftin	2/2/09

Was work conducted in an area requiring field form to be surveyed for radiation contamination? ☐ Yes ☒ No

Form Completion Review (Initials/Z#/Date)	LANL Review (Initials/Z#/Date)
Sam Loftin / 152654 / 2/2/09	

Additional explanations, if needed (give section name):