EMID-700716

DEPARTMENT OF ENERGY
Environmental Management Los Alamos Field Office (EM-LA)
Los Alamos, New Mexico 87544

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EMLA-2020-1167-04-001

Mr. David Cobrain
Acting Bureau Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6303

Subject: Submittal of the 2019 Biennial Asphalt Monitoring and Removal Report for Area of Concern C-00-041, Guaje/Barrancas/Rendija Canyons Aggregate Area

Dear Mr. Cobrain:

Enclosed please find two hard copies with electronic files of the "2019 Biennial Asphalt Monitoring and Removal Report for Area of Concern C-00-041, Guaje/Barrancas/Rendija Canyons Aggregate Area."

According to the approved 2008 asphalt monitoring and removal plan, "Asphalt Monitoring and Removal Plan for Area of Concern C-00-041, Guaje/Barrancas/Rendija Canyons Aggregate" (Los Alamos National Laboratory document LA-UR-08-2666), the need to continue inspection and asphalt removal activities will be reevaluated with the U.S. Forest Service (USFS) and New Mexico Environment Department (NMED) every third inspection (i.e., every 6 years) beginning with the first biennial inspection and removal activity in the fall of 2009. The quantity of asphalt removed in 2015, 2017, and 2019 represents a minor increase relative to the quantity removed in 2013. The quantity of material removed in 2019 was slightly less than the material removed in 2017 and approximately 25% of the quantity removed in 2009. Based on these trends, the U.S. Department of Energy (DOE) Environmental Management Los Alamos Field Office (EM-LA) recommends changing from a biennial inspection and removal to a quadrennial inspection and removal.

If you have any questions, please contact Erik Loechell at (505) 695-8730 (erik.loechell@em-la.doe.gov) or Cheryl Rodriguez at (505) 257-7941 (cheryl.rodriguez@em.doe.gov).

Sincerely,

Arturo Q. Duran
Compliance and Permitting Manager
Environmental Management
Los Alamos Field Office

Enclosures:

1. Two hard copies with electronic files – 2019 Biennial Asphalt Monitoring and Removal Report for Area of Concern C-00-041, Guaje/Barrancas/Rendija Canyons Aggregate Area (EM2019-0409)

CC (letter with hard-copy enclosure[s]):
Erik Loechell, N3B
Cheryl Rodriguez, EM-LA

CC (letter with CD enclosure[s]):
Harry Burgess, Los Alamos County, NM (2 copies)

CC (letter and enclosure[s] emailed):
Laurie King, EPA Region 6, Dallas, TX
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PRS Website

December 2019
EM2019-0409

2019 Biennial Asphalt Monitoring and Removal Report for Area of Concern C-00-041, Guaje/Barrancas/Rendija Canyons Aggregate Area

N3B Los Alamos

EM2019-0409

2019 Biennial Asphalt Monitoring and Removal Report for Area of Concern C-00-041, Guaje/Barrancas/Rendija Canyons Aggregate Area

December 2019

Responsible program director:

Michael O. Erickson		Program Director	RCRA Remediation Program	12/4/19
Printed Name	Signature	Title	Organization	Date

Responsible N3B representative:

Erich Evered		Program Manager	N3B Environmental Remediation Program	12/5/2019
Printed Name	Signature	Title	Organization	Date

Responsible DOE EM-LA representative:

Arturo Q. Duran	D Mathes EM	Compliance and Permitting Manager	Office of Quality and Regulatory Compliance	12/13/19
Printed Name	Signature	Title	Organization	Date

EXECUTIVE SUMMARY

Area of Concern (AOC) C-00-041 is the site of a former asphalt batch plant located in the Rendija Canyon watershed within the Guaje/Barrancas/Rendija Canyons Aggregate Area at Technical Area 00. Asphalt was released during plant operations from the late 1940s to 1958. After the plant was removed, a portion of the area was transferred to Los Alamos County in 1965, and the remainder of the area was transferred to the U.S. Forest Service (USFS) in 1969. In 2007, investigation sampling was completed, and visible asphalt and tar were removed from the surface of the main drainage channel that crosses AOC C-00-041. Because of the potential for continued exposure of additional asphalt or tar by erosion during storms or other runoff events, the New Mexico Environment Department (NMED) requires biennial surveys for, and removal of, exposed asphalt and tar within the main drainage channel. The first biennial survey was conducted in October 2009, the second in November 2011, the third in November 2013, the fourth in October 2015, the fifth in October 2017, and the sixth in October 2019.

The 2019 activities included visual inspections of the entire site and removal and dispositioning of visible asphalt or tar. The inspections consisted of dividing the AOC into small manageable areas, performing numerous walkovers within the areas to identify and remove any visible asphalt or tar, and disposing of the waste. Inspections focused primarily on the main drainage channel at AOC C-00-041, but the entire site was inspected.

According to the approved 2008 asphalt monitoring and removal plan, “Asphalt Monitoring and Removal Plan for Area of Concern C-00-041, Guaje/Barrancas/Rendija Canyons Aggregate,” the need to continue inspection and asphalt removal activities will be reevaluated with the USFS and NMED every third inspection (i.e., every 6 yr) beginning with the first biennial inspection and removal activity in the fall of 2009. The 2015 inspection and asphalt removal activities presented the first opportunity to reevaluate the need to continue the biennial inspection and removal activities. The quantity of asphalt removed in 2015 represented a minor increase relative to the quantity removed in 2013 and the quantity of asphalt removed in 2017 was nearly equivalent to that removed in 2015. The quantity of material removed in 2019 was slightly less than the material removed in 2017 and approximately 25% of the quantity removed in 2009. Based on these trends, the U.S. Department of Energy Environmental Management Los Alamos Field Office recommends changing from a biennial inspection and removal to a quadrennial inspection and removal.

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Figures

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 Triad National Security, LLC. 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 approximately 36 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 (asl).

Corrective actions for solid waste management units (SWMUs) and areas of concern (AOCs) at the Laboratory are subject to the Compliance Order on Consent (the Consent Order). This report describes the work activities executed and completed at AOC C-00-041 in accordance with the Consent Order.

1.1 General Site Information

The Guaje/Barrancas/Rendija Canyons Aggregate Area consists of SWMUs and AOCs formerly part of Operable Unit 1071 within Technical Area 00 (TA-00). Figure 1.1-1 shows AOC C-00-041 with respect to the Laboratory boundary and surrounding landholdings. AOC C-00-041 is the site of a former asphalt batch plant.

1.2 Objectives

The objective of this report is to provide the results of the 2019 biennial asphalt monitoring and removal activities at AOC C-00-041, as required under the approved asphalt monitoring and removal plan (LANL 2008, 102726). Characterization sampling and hand-removal of surface asphalt were conducted at AOC C-00-041 in 2007 as part of the Guaje/Barrancas/Rendija Canyons Aggregate Area investigation. The investigation report concluded that the nature and extent of contamination have been defined and the site poses no unacceptable human-health risk for the residential scenario and no unacceptable ecological risk (LANL 2007, 099954). However, additional asphalt and tar may be unearthed by erosion during storms or other runoff events (e.g., snowmelt) within the main drainage channel that crosses AOC C-00-041. The New Mexico Environment Department's (NMED's) approval with direction for the aggregate area investigation report requires biennial inspection and removal of asphalt and tar exposed by storm events or erosion (LANL 2007, 099954; NMED 2007, 099632).

2.0 SITE DESCRIPTION AND OPERATIONAL HISTORY

AOC C-00-041 is located on Los Alamos County (LAC) land and U.S. Forest Service (USFS) land in a portion of a side slope and ephemeral stream drainage channel that flows into Rendija Canyon. Aerial photographs indicate the asphalt plant operated from the late 1940s to 1958, and the site history suggests the plant was removed sometime between 1958 and 1965 (LANL 1996, 054925, p. 1). After the plant was removed, a portion of the land was transferred from the U.S. Atomic Energy Commission (AEC) to LAC in 1965, and another portion was transferred from the AEC to the USFS in 1969 to manage as public land (Figure 2.0-1).

The Laboratory conducted a voluntary corrective action (VCA) at AOC C-00-041 in 1995 to remove asphalt from the stream channel, the area to which the asphalt was confined, and to break up and remove concrete blocks. Six soil samples, including two water samples, were collected from locations upstream, beneath the asphalt, at the upstream and downstream ends of the asphalt deposit, and from

downstream of the deposit. The 300 yd^3 of excavated asphalt material was disposed of at the LAC landfill. A USFS representative inspected the site, and the VCA was declared complete to USFS's satisfaction. The VCA report requested completion concurrence from DOE (LANL 1996, 054925, p. 2).

Figure 2.0-1 is a site map of AOC C-00-041. Currently, the site is undeveloped and is located in a grassy open meadow bisected south to north by an ephemeral stream. A hiking trail, the Dot Grant Trail, is located to the east of AOC C-00-041, and another hiking trail, Perimeter Trail, and Guaje Pines Cemetery are located to the west.

3.0 SITE CONDITIONS

3.1 Surface Conditions

Rendija Canyon is located immediately north of the Los Alamos townsite and has a drainage area of 9.5 mi^2. The canyon heads on the flanks of the Sierra de los Valles just west of the townsite at an elevation of 9826 ft asl. The channel extends approximately 9 mi east to its confluence with Guaje Canyon. The lowest elevation of the watershed is approximately 6300 ft asl (LANL 1997, 055622, p. 3-2). Rendija Canyon crosses USFS land and DOE land. Four tributaries are present in the Rendija Canyon watershed. Rendija Canyon and its tributaries contain ephemeral streams, arising from storm water runoff and snowmelt. The watershed drains portions of Los Alamos townsite, DOE land, and USFS land. As the surface water flows downstream, it infiltrates the alluvium and the underlying formations or is lost to evapotranspiration.

3.2 Subsurface Conditions

The stratigraphy in the Guaje/Barrancas/Rendija Canyons Aggregate Area consists of the Quaternary Cerro Toledo interval and the Tshirege Member of the Bandelier Tuff overlain by a thin layer of alluvium and soil. The 2007 sampling at the site did not exceed 3.0 ft below ground surface, and the only stratigraphic unit encountered at the site was surface soil. Saturated conditions were not encountered, and no subsurface structures are known to exist at the site (LANL 2007, 098670).

4.0 SCOPE OF ACTIVITIES

The 2019 activities at AOC C-00-041 took place on both USFS property and LAC property (Figures 4.0-1 and 4.0-2). The site was accessed through LAC property, and all work was subject to approval by the applicable property owner(s) through access agreements or the functional equivalent.

4.1 Site Inspection

AOC C-00-041 was inspected on October 17, 2019, per the approved asphalt monitoring and removal plan (LANL 2008, 102726; NMED 2008, 102289). The inspection was conducted to identify remnants of asphalt and tar that have been exposed at the surface by runoff or erosion since the 2017 monitoring and removal activities. The inspection was performed by traversing the site on foot and visually inspecting the ground surface. The site was divided into smaller areas, and multiple sweeps (or sweeps by multiple people) were performed in each area to ensure all newly exposed asphalt and tar were identified and removed. Several photographs were taken and a global positioning system unit was used to record all locations where asphalt and tar were collected within and directly adjacent to AOC C-00-041 (Figure 2.0-1).

4.2 Asphalt and Tar Collection

On October 17, 2019, exposed asphalt debris and tar fragments were found and removed during the site inspection of AOC C-00-041. Asphalt or tar was removed only if it was visible at the surface and involved no excavation or significant soil disturbance. The majority of material found and removed within AOC C-00-041 was asphalt debris (Figures 2.0-1 and 4.2-1). A few pieces of tar were found and removed in only one location within AOC C-00-041 (Figure 4.2-2). The tar pieces were less than 3 in. in length and 1 in. in width and were less than 0.25 in. thick. The asphalt pieces ranged in size from less than an inch up to several feet in length and 6 in. in width. Asphalt and tar pieces were collected in buckets and transferred to the bed of a pickup truck. A total of 820 lb of primarily asphalt debris was removed from within and directly adjacent to AOC C-00-041. While the total weight for asphalt collection slightly increased compared with the prior removal, the quantity of material decreased. This is due to the overall collection of asphalt pieces being larger than the prior removal. The larger pieces of asphalt were predominantly discovered towards the end of the channel along AOC C-00-041 in the highly eroded banks before the tributary reaches the main Rendija Canyon drainage. Figure 2.0-1 highlights the two predominant locations where asphalt was collected and the varied sizes of asphalt that were observed at each area. The asphalt and tar removed was transferred to the LAC Eco Station and recycled. Figures 4.2-1 through 4.2-6 are photographs of asphalt and tar collection activities.

4.3 Individual Permit Erosion Control Best Management Practice

In March of 2016, storm water erosion controls were installed upstream of storm water sampler R-SMA-1 to address headcutting erosion near the site of the former asphalt batch plant within AOC C-00-041. The work was performed under the U.S. Environmental Protection Agency National Pollutant Discharge Elimination System Individual Permit (IP) for Los Alamos National Laboratory. The additional controls installed consist of riprap areas and turf reinforcement matting in accordance with IP storm water and erosion control construction specifications. Excavated soils were placed within the boundary of AOC C-00-041. The riprap controls installed at R-SMA-1 are shown in Figure 2.0-1.

Work crews were directed to collect, track, and report the volume of asphalt encountered during construction activities. No asphalt was removed from AOC C-00-041 during construction of the storm water erosion controls.

5.0 CONCLUSIONS

Between 2007 and 2013, the overall quantity of asphalt debris and tar removed decreased. In 2007, approximately thirty-seven 55-gal. drums of asphalt and tar were removed from AOC C-00-041. In 2009, seven 55-gal. drums filled with asphalt and tar were removed from AOC C-00-041. In 2011, four 55-gal. drums filled with asphalt and tar were removed from AOC C-00-041. In 2013, one-half 55-gal. drum filled with asphalt and tar was removed from AOC C-00-041. In 2015, the quantity of asphalt and tar removed increased over the quantity removed in 2013. In 2015, an equivalent of two to three 55-gal. drums filled with asphalt and tar were removed and in 2017, an equivalent of two 55-gal. drums filled with asphalt and tar were removed from AOC C-00-041, nearly the same as the quantity removed in 2015. In 2019, an equivalent of one-and-a-half 55-gal. drums filled with asphalt and tar were removed from AOC-00-041, which is consistent with the previous two asphalt removals showing a slight decrease each project year.

According to the approved 2008 asphalt monitoring and removal plan (LANL 2008, 102726), the need to continue inspection and asphalt removal activities will be reevaluated with the USFS and NMED every third inspection (i.e., every 6 years) beginning with the first biennial inspection and removal activity in fall

of 2009. The 2015 inspection and asphalt removal activities presented the first opportunity to reevaluate the need to continue the biennial inspection and removal activities. The quantity of asphalt removed in 2015 represents a minor increase relative to the quantity removed in 2013. However, the quantity of asphalt removed in 2019 was nearly equivalent to the quantity removed in 2015 and 2017 and approximately only 20% of the amount removed in 2009. Based on these trends, the U.S. Department of Energy (DOE) Environmental Management Los Alamos Field Office (EM-LA) recommends changing from a biennial inspection and removal to a quadrennial inspection and removal.

6.0 REFERENCES AND MAP DATA SOURCES

6.1 References

The following reference list includes documents cited in this report. Parenthetical information following each reference provides the author(s), publication date, and ERID, ESHID, or EMID. This information is also included in text citations. ERIDs were assigned by the Laboratory's Associate Directorate for Environmental Management (IDs through 599999); ESHIDs were assigned by the Laboratory's Associate Directorate for Environment, Safety, and Health (IDs 600000 through 699999); and EMIDs are assigned by Newport News Nuclear BWXT-Los Alamos, LLC (N3B) (IDs 700000 and above). IDs are used to locate documents in N3B's Records Management System and in the Master Reference Set. The NMED Hazardous Waste Bureau and N3B maintain copies of the Master Reference Set. The set ensures that NMED has the references to review documents. The set is updated when new references are cited in documents.

LANL (Los Alamos National Laboratory), March 1996. "Voluntary Corrective Action Completion Report for Potential Release Site C-0-041, Former Asphalt Batch Plant Site," Los Alamos National Laboratory document LA-UR-96-434, Los Alamos, New Mexico. (LANL 1996, 054925)

LANL (Los Alamos National Laboratory), April 1997. "Core Document for Canyons Investigations," Los Alamos National Laboratory document LA-UR-96-2083, Los Alamos, New Mexico. (LANL 1997, 055622)

LANL (Los Alamos National Laboratory), August 2007. "Investigation Report for Guaje/Barrancas/ Rendija Canyons Aggregate Area at Technical Area 00," Los Alamos National Laboratory document LA-UR-07-5326, Los Alamos, New Mexico. (LANL 2007, 098670)

LANL (Los Alamos National Laboratory), November 2007. "Investigation Report for Guaje/Barrancas/ Rendija Canyons Aggregate Area at Technical Area 00, Revision 1," Los Alamos National Laboratory document LA-UR-07-7820, Los Alamos, New Mexico. (LANL 2007, 099954)

LANL (Los Alamos National Laboratory), April 2008. "Asphalt Monitoring and Removal Plan for Area of Concern C-00-041, Guaje/Barrancas/Rendija Canyons Aggregate," Los Alamos National Laboratory document LA-UR-08-2666, Los Alamos, New Mexico. (LANL 2008, 102726)

LANL (Los Alamos National Laboratory), March 2011. "Los Alamos National Laboratory Storm Water BMP Manual," Los Alamos National Laboratory document LA-UR-11-10371, Los Alamos, New Mexico. (LANL 2011, 602696)

NMED (New Mexico Environment Department), December 20, 2007. "Approval with Direction, Investigation Report for Guaje/Barrancas/Rendija Canyons, Revision 1," New Mexico Environment Department letter to D. Gregory (DOE-LASO) and D. McInroy (LANL) from J.P. Bearzi (NMED-HWB), Santa Fe, New Mexico. (NMED 2007, 099632)

NMED (New Mexico Environment Department), July 2, 2008. “Notice of Approval, Asphalt Monitoring and Removal Plan for Area of Concern C-00-041, Guaje/Barrancas/Rendija Canyons Aggregate,” New Mexico Environment Department letter to D. Gregory (DOE-LASO) and D. McInroy (LANL) from J.P. Bearzi (NMED-HWB), Santa Fe, New Mexico. (NMED 2008, 102289)

6.2 Map Data Sources

Drainage. Modeled Surface Drainage, 1991; Los Alamos National Laboratory, ENV Environmental Remediation and Surveillance Program, ER2002-0591; 1:24,000 Scale Data; Unknown publication date. NHD Route Drainage; National Hydrography Dataset Program, United States Geological Survey; Quadrangle 13020101; 08 October 2004.

Hypsography. Los Alamos National Laboratory, Environmental Restoration Project; 1991.

Los Alamos National Laboratory Boundaries. LANL Areas Used and Occupied; Los Alamos National Laboratory, KSL Engineering Services (Survey Department). Bureau of Land Management (BLM) April 2013 (northern boundary that touches the town site).

Technical Area Boundaries; Los Alamos National Laboratory, Site Planning & Project Initiation Group, Infrastructure Planning Division; 19 September 2007.

Asphalt: Point Feature Locations. GPS locations gathered utilizing Leica Zeno 20 GPS units. 18 October 2017.

Potential Release Sites. Los Alamos National Laboratory, Waste and Environmental Services Division, Geotechnical Services Group, EP2008-0095; 1:2,500 Scale Data; 02 February 2011

Roads and Trails. Forest Roads; County of Los Alamos, Information Services; as published 16 May 2006. Los Alamos County Land Parcels; County of Los Alamos, Information Services, as published 17 January 2008. Road Centerlines for the County of Los Alamos; County of Los Alamos, Information Services; as published 03 December 2007. Streets; County of Los Alamos, Information Services; as published 16 May 2006. Trails; County of Los Alamos, Information Services; as published 16 May 2006.

Structures. Approximate Location of Former Batch Plant; Investigation Work Plan for Guaje/Barrancas/Rendija Canyons Aggregate Area at Technical Area 00; Los Alamos National Laboratory Report LA-UR-05-3869; Figure 2.1-14 AOC C-00-041 site map; Map m201440; July 2005. Structures; County of Los Alamos, Information Services; as published 29 October 2007.

Watersheds. Los Alamos National Laboratory, ENV Environmental Remediation and Surveillance Program; EP2006-0942; 1:2,500 Scale Data; 27 October 2006.

Pan-sharpened ortho-photograph. Los Alamos National Laboratory and surrounding area, a total of 386 square miles. The scope of work involved LiDAR acquisition, data processing and classification of point cloud, and the development of canopy (DSM) and ground (DEM) digital raster models. Classified Point Cloud LiDAR (LAS v1.2 format), Canopy-DSM (TIFF formats), Ground -DEM (TIFF formats); as published 2014.

New Mexico Landownership: U.S. Bureau of Land Management - New Mexico State Office. Current delineation of the surface ownership and/or surface management in the state of New Mexico. As published 2012.

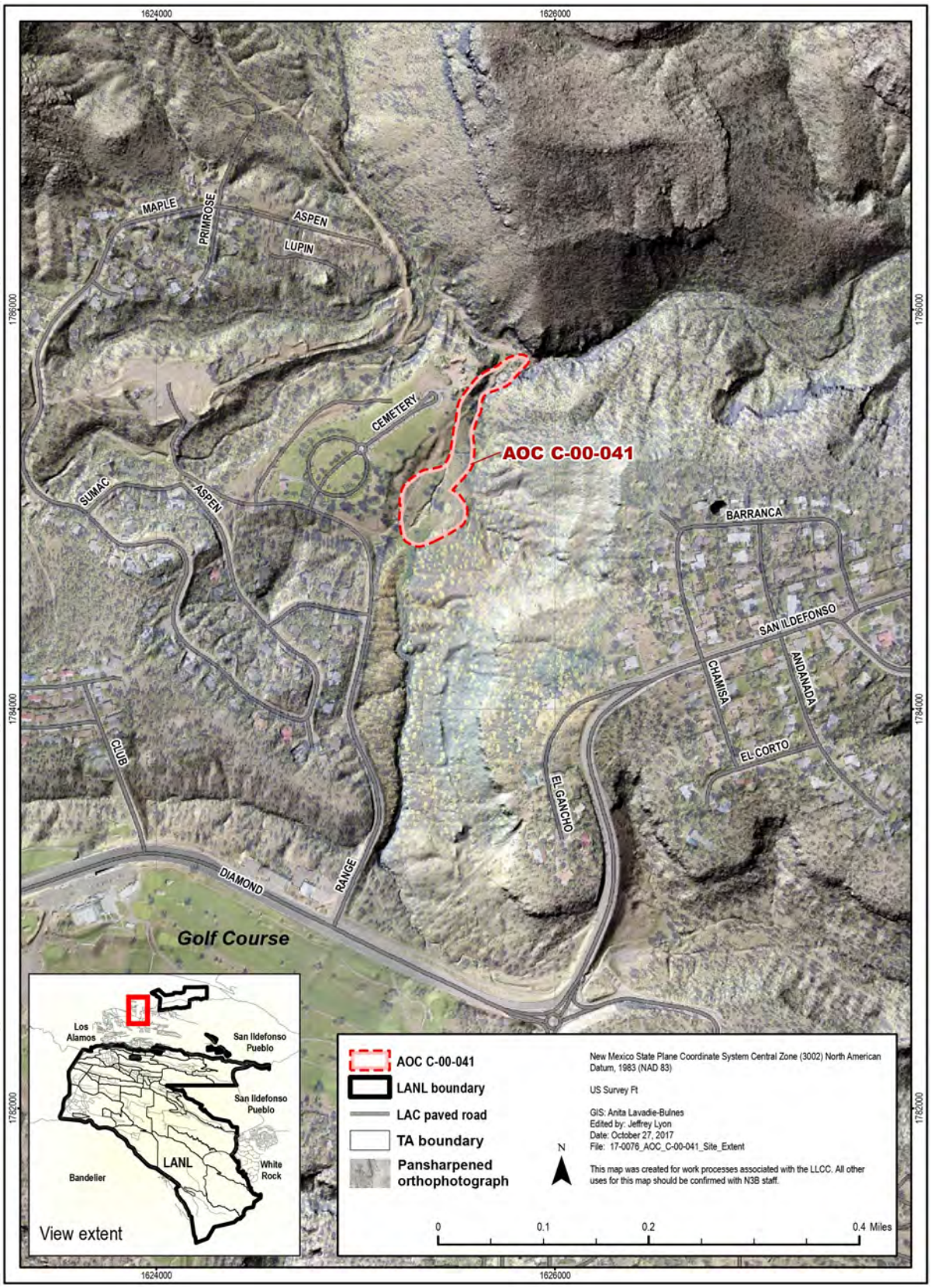

Figure 1.1-1 AOC C-00-041

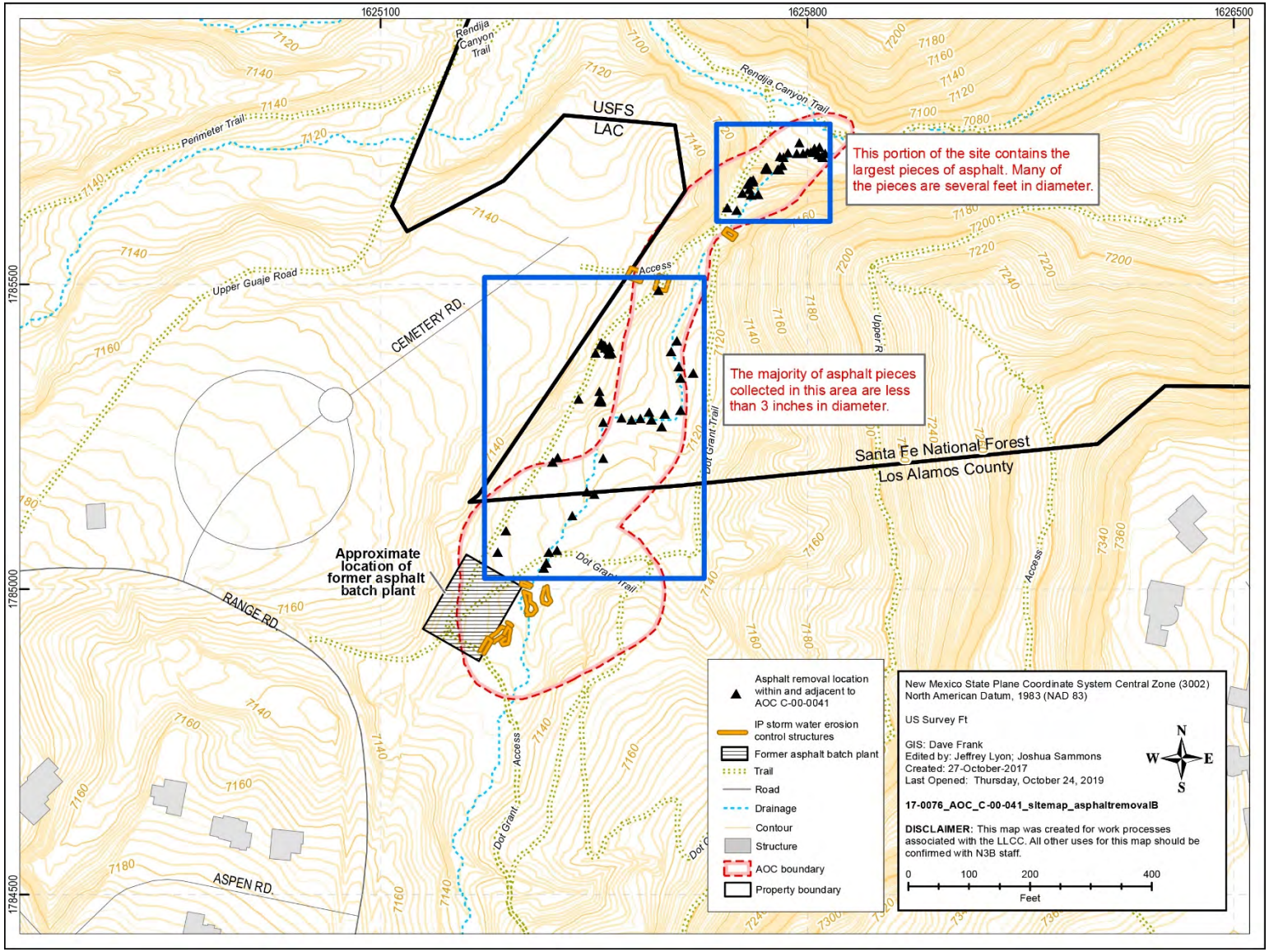

Figure 2.0-1 AOC C-00-041 site map, locations of asphalt and tar removed in 2019, and location of IP storm water erosion controls

Figure 4.0-1 AOC C-00-041 site conditions on USFS property looking northeast

Figure 4.0-2 AOC C-00-041 site conditions on LAC property looking southwest

Figure 4.2-1 Asphalt debris collected in 5-gal. buckets

Figure 4.2-2 Example of tar and asphalt in the banks of the drainage channel. The visual portion of the piece of asphalt is approximately 1 ft in height and width.

Figure 4.2-3 Field crew collecting asphalt debris in drainage channel within AOC C-00-041

Figure 4.2-4 **Example of asphalt in the soil in the drainage channel before removal. Asphalt pieces ranged in size from 0.5 ft to several feet in diameter.**

Figure 4.2-5 The area shown in Figure 4.2-4 after asphalt removal from the drainage channel

Figure 4.2-6 **Asphalt debris removed from AOC C-00-041; a total of 820 lb removed. The asphalt pieces were larger in size compared with the asphalt removed in 2017.**