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SURFACE WATER QUALITY BUREAU

March 29, 2007

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Los Alamos National Security
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Re: Sixty-Day Notice of Intent to Sue Los Alamos National Laboratory ("LANL") for Violations of the Clean Water Act

Dear Sirs and Mesdames:

The SouthWest Organizing Project ("SWOP"), Tewa Women United, Concerned Citizens for Nuclear Safety ("CCNS"), Amigos Bravos, Embudo Valley Environmental Monitoring Group, Rio Grande Restoration, Partnership for Earth Spirituality, the New Mexico Acequia Association, the Don Gabino Andrade Community Acequia, Kathy Sanchez, and Gilbert Sanchez (hereinafter collectively referred to as "Concerned Citizens") hereby provide notice of their intent to pursue a citizen suit against Los Alamos National Laboratory, the U.S. Department of Energy (as owners), Los Alamos National Security LLC (as operators), and any subsequent owners or operators of the Los Alamos National Laboratory (hereinafter collectively referred to as "LANL" or "the Facility") for violations of the Federal Water Pollution Control Act (hereinafter "Clean Water Act"or "CWA"), 33 U.S.C. §§ 1251-1387.

This notice is provided pursuant to, and in compliance with, § 505 (b)(1)(A) of the CWA, 33 U.S.C. § 1365 (b)(1)(A), and the CWA's notice regulations at 40 C.F.R. § 135. Upon expiration of sixty days from the postmark date on this letter, Concerned Citizens intends to pursue a citizen suit enforcement action against LANL pursuant to § 505 (a)(1) of the CWA, 33 U.S.C. § 1365 (a)(1).

I. INTRODUCTION

The CWA violations outlined in this sixty day notice stem from LANL's historic and continued failure to conduct the requisite monitoring and reporting and ensure that effective limitations and pollution control measures are in place for approximately 1,405 *active* industrial stormwater discharge sites strewn throughout the Facility.

For the past sixty plus years, LANL's nuclear testing and industrial activities, i.e., high explosives testing and chemical and material science research, have generated an enormous amount of solid, hazardous, and radioactive waste. High explosives such as RDX, HMX, TNT; volatile organic compounds and semi-volatile organic compounds; metals such as arsenic, barium, beryllium, cadmium, chromium, copper, lead, mercury, molybdenum, selenium, silver, zinc; inorganic compounds such as ammonia, nitrate, and fluoride; perchlorate; and PCBs (hereinafter "contaminants") have all been released at the Facility and detected in the Facility's surface water, groundwater, and/or sediments. See Order of Consent at 5; Draft SWEIS at 4-36, 4-37. High levels of PCBs and chromium are particularly prevalent in LANL's Los Alamos,

applicable laws. LANL Standard Operating Procedure (SOP) 02.01 at 9.[4]

Notably, receiving NFA status is *the only way* LANL's industrial stormwater sites (i.e., SWMUs, AOCs, and/or PRSs) are removed from further regulation. In other words, unless a site has received a formal NFA determination it still has the potential to discharge contaminants and thus is subject to regulation under the CWA.[5]

Today, there are approximately 1,405 sites at LANL that *have not* received NFA status. In other words, there are approximately 1,405 sites that remain active at LANL (as mentioned earlier, some sites that have received NFA status may still be active). These sites typically include old material and liquid disposal areas, hazardous waste landfills, old dilapidated structures, contamination areas, dumping grounds, explosive testing sites, storm drains, firing ranges (active and dormant), septic systems, and seepage pits. See Attachment Number ("Attach. No.") 1 (Master List of sites at LANL).

Following rain or snow melting events contaminants from these approximately 1,405 sites run off into the soils, surface water, and shallow groundwater of LANL's seven watersheds and canyons eventually traveling down-gradient to the Rio Grande. See Draft SWEIS at 4-34. These stormwater runoff events are well-documented by LANL, NMED, and EPA.

According to LANL, stormwater runoff "is the principal agent for moving Laboratory-derived constituents off-site and possibly into the Rio Grande." Environmental Surveillance at Los Alamos During 2004 at 157. Such runoff can "redistribute sediment in a streambed to locations *far downstream* from where [a] release or spill occurs." Id. at 158 (emphasis added). Indeed, test results have confirmed the presence of contaminants (i.e, metals, explosive compounds, organic constituents, PCBs and even radionuclides (RADs) in LANL's sediments, surface water, shallow groundwater, and the Rio Grande from these sites. This is precisely why such sites are regulated as point sources subject to a National Pollution Discharge Elimination System (NPDES) permit under the CWA. See 33 U.S.C. § 1342 (p); § 1323; 40 C.F.R. § 122.26

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[4] NFA status does not necessarily mean that a site is fully remediated and no longer has the potential to discharge. For instance, site 21-024 (m), a drain line that received NFA status on December 23, 1998 was recently documented by NMED as being a major source of PCB contamination in Los Alamos Canyon. On August 25, 2003 NMED detected PCB levels at 21-024 (m) at 14,178 ng/L (the water quality criteria for wildlife is 14 ng/L). As such, any sites that received formal NFA status but still have the potential to discharge contaminants (or actually discharge contaminants) are therefore within the scope of this 60 day notice, must be regulated under the CWA, and identified and included in LANL's NPDES permit.

[5] Sites that contain *only* certain types of radioactive waste regulated under the Atomic Energy Act (42 U.S.C. § 210 et seq.) may be exempt from CWA regulation because the definition of "pollutant" in 40 C.F.R. § 122.2 does not include certain radioactive wastes. However, radioactive waste sites that contain other pollutants from industrial activities – known as "mixed waste" sites -- are subject to CWA regulation.

Pueblo Canyon, Mortandad, and Sandia Canyon watersheds.[1]

Once generated these contaminants are often dumped, discharged, and stored at various pits, tanks, landfills, and material disposal areas ("MDAs") located throughout the Facility. In fact, back in the 1940's, 1950's, 1960's, and early 1970's, LANL often dumped its toxic waste directly into the various canyons and watersheds which dissect the Facility.

The State of New Mexico's Environment Department ("NMED"), the Environmental Protection Agency ("EPA"), and LANL refer to such hazardous dump and discharge sites or storage areas as Solid Waste Management Units ("SWMUs"), Areas of Concern ("AOCs"), or Potential Release Sites ("PRSs").[2] For the purposes of this sixty day notice, all SWMUs, AOCs, or PRSs, will collectively be referred to as "sites" or "stormwater sites."

Originally, there were an estimated 2,093 documented stormwater sites at LANL. However, by 1995 EPA determined that approximately 542 of these sites required No Further Action ("NFA").[3] NMED subsequently determined that an additional 146 sites qualified for NFA status. To date, approximately 688 of the total 2,093 sites have received formal NFA status.

NFA status is given by the regulatory agency (now NMED) as part of the RCRA corrective action process. NFA status indicates a decision by the regulatory agency that no further investigation or remediation of a site is warranted because: (1) the site could not be located or does not exist; (2) no waste or contamination is associated with the site; (3) no release to the environment from the site occurred; (4) a release from the site occurred, but the site was fully remediated; or (5) the site was fully characterized and remediated in accordance with all

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[1] LANL's own Draft SWEIS concedes that PCBs have been detected "in sediment in nearly every canyon" and detected in surface waters in "Sandia Canyon runoff." Draft SWEIS at 4-36.

[2] By definition a SWMU is "any discernable site at which solid wastes have been placed at any time, regardless of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at or around a facility at which solid wastes *have been routinely and systematically released*, such as waste tanks, septic tanks, firing sites, burn pits, sumps, landfills (material disposal areas), outfall areas, canyons around LANL, and contaminated areas resulting from leaking product storage tanks (including petroleum)." SOP-02.01 (emphasis added). An AOC is "any area that may have had a release of a hazardous waste or hazardous constituent, which is not [classified] as a SWMU." Id. A PRS is "a site suspected of releasing or having the potential to release contaminants into the environment. A PRS is a generic [DOE term] that includes all SWMUs, hazardous waste sites . . . and sites identified as radioactive AOCs." SOP-02.01 at 5.

[3] EPA's original number of sites given "NFA" status included 709 sites but the number was adjusted downward following correspondence with NMED.

(industrial stormwater regulations).

At present, LANL is operating under a one-size fits all NPDES permit for all of its industrial stormwater sites commonly known as a Multi-Sector General Permit (MSGP). However, in the course of reviewing LANL's current MSGP for the approximately 1,405 industrial stormwater sites at the Facility, EPA realized that LANL was failing to comply with the terms and conditions of its permit in a number of significant respects. Most notably, LANL was failing to effectively monitor and control runoff from such sites.

In response, on February 3, 2005 LANL and EPA entered into a Federal Facility Compliance Agreement (FFCA). The purpose of the FFCA was to establish a program and schedule of compliance for regulation of stormwater discharges from all sites (i.e., SWMUs, AOCs, and PRSs) at LANL until EPA issues a new individual NPDES stormwater permit to regulate those discharges. EPA determined that the unique nature and shear volume of the number of industrial stormwater sites at LANL warranted the issuance of an individual NPDES permit for such sites (as opposed to a one-size fits all MSGP). The FFCA is designed to bring LANL into compliance with the CWA until a new, individual NPDES permit is issued.

In EPA's own words, "the FFCA is an enforcement tool used by [EPA] to bring a federal facility [like LANL] into compliance with its [NPDES] stormwater permitting program." EPA letter (dated 2/3/05). In this respect, the FFCA is "a bridge to cover the time until issuance of a new [individual NPDES] permit." Towards this end, the FFCA requires LANL to implement pollution control measures and monitoring at all sites that scored over 40 on LANL's Erosion Matrix Score ("EMS") assessment.

Pursuant to LANL SOP 02.01, LANL evaluated approximately 1,336 of the 1,405 sites using its Erosion Matrix Scoring ("EMS") assessment to determine whether a particular site has the potential to adversely affect water quality. LANL initiated the EMS assessment procedure back in 1997.

Basically, the EMS examines whether a particular site "has the potential to adversely affect surface-water quality." SOP 02.01 at 4. This examination includes: (1) taking sediment and surface water samples (if available) to test for constituents; (2) documenting the location of the site (i.e., in the canyon floor, in channel of canyon, or on a mesa top); (3) taking photographs of the site (to document the field characteristics); (4) documenting the "percentage of canopy and ground cover" present at the site; (5) documenting the slope of the site; and (6) and applying various "runoff factors." SOP 02.01 at Attach. B. The runoff factors include looking at whether there is "visible evidence of water and/or sediment discharging from the [site]," whether the runoff is channelized, where the runoff terminates, and whether the runoff has caused visible erosion. Id.

After completing the EMS assessment each of the 1,336 sites assessed were given an EMS "score" and categorized as to their low, medium, or high potential for constituents to migrate off-site. If the score was equal to or less than 40, then the site was put in the "low

potential" category. This means the site is considered to have a low potential for constituents in surface water and/or sediment in stormwater runoff to migrate off the site and impact surface water quality. Approximately 1,042 sites at LANL were put in this "low potential" category.[6]

Sites that scored between 40 and 60 on the EMS assessment were put into a "medium potential" category. This means that the site is considered to have a medium potential for constituents in surface water and/or sediment in stormwater runoff to migrate off the site and impact surface water quality. Approximately a 196 sites were put into this category.

Sites that scored over 60 on the EMS assessment were put into the "high potential" category. These are sites that are considered to have a high potential for constituents in surface water and/or sediment in stormwater runoff to migrate off the site and impact surface water quality. Approximately 98 sites were deemed to be high potential sites.

At issue in this 60 day notice is LANL's prolonged and continued failure to comply with the CWA, and in particular the terms and conditions of its NPDES permit, with respect to *all* 1,405 active industrial stormwater sites.[7]

Specifically, this notice targets LANL's failure to properly monitor and install effective pollution control measures or best management practices ("BMPs") at the approximately 1,405 sites. While LANL's interim compliance with the FFCA is a step in the right direction, it does not go far enough or bring LANL into compliance with the terms and conditions of its current NPDES permit.

In particular, LANL: (1) is still failing to assess and evaluate all industrial discharges sites at the Facility (approximately 69 sites have yet to be evaluated); (2) is failing to monitor at the site specific level and ensure that effective BMPs are in place for each of the approximately

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[6] One site – 49-003 – scored a 64.8 in the 1997 EMS assessment but is reported as only scoring 36.8 in the most recent EMS assessment. Still other sites received low potential scores (or even NFA status) but are still discharging contaminants. See e.g., site 21-024 (m) (low EMS score and received NFA status but recently determined to be a major source of PCB contamination in the Los Alamos Canyon watershed).

[7] There may be more such sites located at LANL that are similar to the approximately 1,405 sites described herein or sites whose precise location in a particular watershed is unknown. Such sites are known, or should be known, to the owners and operators of the Facility and may be included in future actions without further notice. Also for organizational purposes, this 60 day notice is organized by "Technical Area" (TA) and watershed. When overlap occurs, sites in a particular TA will be addressed in the watershed with the majority of such sites. For instance, TA-53 is home to a number of sites and is located in both the Los Alamos and Sandia Canyon watersheds. Because a majority of the sites in TA-53 are located in the Sandia canyon watershed, all sites within TA-53 are addressed in the "Sandia Canyon Watershed" section of the 60 day notice even though some sites are located in the Los Alamos Canyon watershed.

1,405 sites; (3) is *only* proposing to monitor and install pollution control measures on a small percentage of the total sites that underwent an EMS assessment (approximately 25%); (4) will only commit to conduct monitoring and pollution control at such sites at the site monitoring area ("SMA") or watershed level (instead of at each individual outfall or discharge point); and (5) has failed to conduct new EMS assessments for many of the sites following the May, 2000 Cerro Grande fire which burned over 7,000 acres of LANL property.

II. FACTUAL BACKGROUND

LANL is a 40-square-mile research facility under the administration of the U.S. Department of Energy ("DOE") and currently managed and operated by the Los Alamos National Security ("LANS") LLC – a partnership between Bechtel, the University of California, BWX Technologies, and Washington Group International. LANL is located in north-central New Mexico, approximately 60 miles north-northeast of Albuquerque and 25 miles northwest of Santa Fe, New Mexico.

LANL is bordered by Bandelier National Monument to the south, the town of White Rock and the Rio Grande river to the east, San Ildefonso Pueblo to the northeast, and the Jemez Mountains and the Santa Fe National Forest to the west. LANL is upstream from Cochiti Pueblo.

The Facility and the associated residential and commercial areas of Los Alamos and White Rock are situated on the Pajarito Plateau – a high elevation plateau dissected by a series of deep west-to-east oriented canyons that drain east, towards the Rio Grande. Surface and ground water from the area is a major source of drinking water for the region, including the cities of Santa Fe and Albuquerque. In fact, Los Alamos County residents rely 100% on the regional aquifer for their drinking water.

LANL's west-to-east canyons are within seven distinct watersheds on the property. These watersheds include (from north to south): (1) the Los Alamos/Pueblo Canyon watershed; (2) the Sandia Canyon watershed; (3) the Mortandad Canyon watershed; (4) the Pajarito Canyon watershed; (5) the Water/Canon de Valle watershed; (6) the Ancho Canyon watershed; and (7) the Chaquehui Canyon watershed.

Notably, all ground and surface water flow within these seven watersheds is towards the Rio Grande. See Draft SWEIS at 4-34. Streams in the upper reaches of the watersheds flow year round due to the discharge of springs and seeps along the flanks of the Jemez Mountains. However, surface flow from such springs is typically depleted by evapotranspiration and infiltration as the streams traverse the Plateau. Nonetheless, some watersheds still have perennial flow (in some parts) and all of the seven watersheds flow intermittently following rain or snowmelt events. During such events, surface water flows are generally sufficient to reach the Rio Grande several times each year. Some of the waters also receive discharges of wastewater from sewage treatment plants and LANL industrial operations.

In May, 2000 the Cerro Grande fire, the largest fire in New Mexico history, burned for sixteen days on the Pajarito Plateau. The fire destroyed over 100 structures at LANL and many homes in the nearby community of Los Alamos. The fire also burned thousands of acres of adjacent forest and Pueblo lands including major forested portions of the seven watersheds.

In LANL's own words, "the Cerro Grande fire changed the water resources environment by removing vegetation and surface organic layers, [and] decreasing the ability of the soil to take in water. These changes caused increased surface water runoff and soil erosion to adversely affect local water resources by accelerating the movement of contaminants in sediments transported in stormwater downstream of LANL." Draft SWEIS at 4-33. According to NMED, "the Cerro Grande fired burned 43,000 acres of land along the eastern flanks of the Jemez Mountains and on the Pajarito Plateau. Approximately 1,200 acres, nearly 80% of the upper Pueblo Canyon watershed [was] subjected to a high intensity burn." Report, DOE Oversight (October, 2004). The fire resulted in a "complete loss of vegetative cover (overstory, understory, and ground cover) and intense heat [that] created conditions that reduced the soil's ability to absorb moisture, thereby increasing runoff." Id. These conditions "led to a greater frequency and magnitude of stormwater flows in the canyons on the Pajarito Plateau."

Indeed, since the fire, LANL has documented a dramatic increase in the amount of surface water runoff and erosion levels in the watersheds. Despite "some successful watershed rehabilitation, stormwater runoff and sediment yield increased significantly after the Cerro Grande fire." Id. According to LANL, "flow volumes in Pueblo Canyon remain more than 5 times higher than the pre Cerro Grande fire average." Environmental Surveillance at Los Alamos During 2004 at 158.

As mentioned earlier, there are approximately 1,405 active sites located at the Facility and strewn throughout LANL's seven watersheds. Many of these sites are located within the heavily burned areas of Pueblo Canyon. Following significant rain or snow melting events contaminants from these approximately 1,405 sites run off into the soils, surface water, and shallow groundwater eventually traveling down-gradient to the Rio Grande. A description of each of these 1,405 active sites (organized by watershed) follows.

A. The Los Alamos/Pueblo Canyon Watershed

The Los Alamos/Pueblo Canyon watershed is the northern most watershed at LANL. In all, the watershed encompasses roughly 57 square miles and contains numerous springs as well as perennial, seasonal, ephemeral, and intermittent streams and alluvial groundwater systems. The watershed is comprised of a number of sub-watersheds which include Rendija, Barrancas, Guaje, Bayo, Pueblo, Acid, Los Alamos (Upper, Middle, and Lower), and DP Canyons.

At present, there are approximately 277 active sites within 16 Technical Areas ("TAs") in the Los Alamos/Pueblo Canyon watershed. The TAs include: 62, 43,41, 2, 21, 73, 74, 72, 00, 01, 10, 19, 26, 31, 32, and 45. Parts of TA-3 and TA-53 are also located within the Los

Alamos/Pueblo Canyon watershed (these TAs are discussed in the Sandia watershed section below).[8]

TA-62 is reserved for multi-use experimental science, public and corporate interface, and environmental research and buffer zones. There are no documented sites located within TA-62.

TA-43 is adjacent to the Los Alamos Medical Center. Research performed at this site include structural, molecular, and cellular radio biology; biophysics; mammalian radiobiology; mammalian metabolism; biochemistry; and genetics. There are a total of 9 sites within TA-43. See Attach. No. 1 at 26 (site no. 43-001(a) to 43-005); at 37 (site no. C-43-001). These sites include a carcass storage area, waste storage, radioactive liquid storage, incinerators, and waste lines. See id. Four of these 9 sites in TA-43 received NFA status from EPA. Five sites remain active according to EPA's and NMED's data. These 5 sites were evaluated by LANL using the EMS assessment. Four of these 5 sites were categorized as "low potential" sites: (1) 43-001 (a1) (old waste lines); (2) 43-001 (a2) (old waste lines); (3) 43-001 (b2) (outfall); and (4) 43-002 (incinerator). One site – C-43-001 (outfall) – was classified as a medium potential site (EMS score of 45.4). Site C-43-001 is a storm drain outfall that flows into Los Alamos Canyon. The outfall collects runoff from Building 43-1's loading dock and also functions as the overflow from the lift station. This particular outfall picks up overflows from the area's sanitary waste lines and, in the past, may have received radioactive, non-sanitary cooling water.

TA-41 is the "W-site." LANL personnel at this site engage primarily in engineering design and development of nuclear weapons components, including fabrication and evaluation of test materials for weapons. There are 11 sites within TA-41. See Attach. No. 1 at 25-26 (site no. 41-001 to 41-004); at 37 (site no. C-41-001 to C-41-005). These sites include sewage treatment plants, sumps, container storage areas, underground tanks, and storm drains. See id. Five of these 11 sites have received formal NFA status from EPA. Six sites remain active. Of these 6 sites, 5 scored less than 40 on the EMS and 1 scored over 40 on the EMS. This site – C-41-004 – is a storm drain system surrounding Building 41-4. LANL reports that operational tritium release from emission stacks located between Building 41-4 and Building 41-30 may have resulted in surface contamination of the storm drain system. The suspect contaminants at this site are radionuclides and inorganic chemicals.

TA-2 is home to the Omega West Reactor, and 8 MW nuclear research reactor. The reactor was placed in "shutdown condition" in 1993. It is currently being removed from the nuclear facilities list and will be transferred into the decommissioning and decontamination (D&D) program. There are presently 37 sites within TA-2. See Attach. No. 1 at 3 (site no. 02-001 to 02-013); at 32 (site no. C-02-001). These sites are comprised of open burning areas, a reactor facility, reactor facility storage tanks, acid waste lines, old structures, storm drains, effluent lines,

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[8] The concept of technical areas (TAs) was implemented during the first 5 years of LANL's existence. However, the early TA designations did not cover all land with the LANL boundary and, as such, in the early1980's, LANL's TA numbering system was revamped to provide complete coverage.

and even a "metal nugget pile." See id. Two sites within TA-2 have received NFA status by EPA and NMED. There are presently 34 active sites within TA-2. To date, LANL has evaluated 33 of these 34 sites using it's EMS assessment (1 site remains unevaluated). Nine of these 33 sites scored over 40. See LANL's NPDES Stormwater Individual Permit Application (hereinafter "Permit Application") at page 17 of 54 (March, 2005).

TA-21 is home to two primary research areas: DP West and DP East. DP West has been in the D&D program since 1992. About half of the facility at TA-21 has been demolished. DP West continues to provide office space for on-going functions. DP East is a tritium research site and includes the Tritium Science and Fabrication (TSFF) and Tritium Systems Test Assembly (TSTA). There are approximately 122 sites located within this TA. See Attach. No. 1 at 19-21 (site no. 21-001 to 21-030); at 36-37 (site no. C-21-001 to C-21-037). Most of these sites are storage tanks, areas where contamination spills have occurred, material disposal areas (MDAs), industrial waste lines and sumps, and septic systems. See id. Fifty-one sites located within TA-21 have received formal NFA status from EPA and NMED (47 from EPA and 4 from NMED). As such, there are presently 75 active sites located within this TA. Thirteen of these active sites scored over 40 on LANL's EMS assessment. See Permit Application at page 25 of 54 (listing sites).

TA-73 is the Los Alamos Airport which is owned by DOE but managed by the County of Los Alamos pursuant to a leasing agreement. There are currently 22 sites located within TA-73 including a number of old landfills, septic tanks, miscellaneous airport structures, underground storage tanks, and excavation trenches. See Attach. No. 1 at 32 (site no. 73-001 (a) to 73-007); at 38 (site no. C-73-001 to C-73-005 (f)). Five of these sites have received NFA status from EPA or NMED. There are therefore17 active sites located within TA-73 – 11 of which have been assessed by LANL using the EMS system (6 sites have not been assessed). Of the 11 that underwent the EMS assessment, 4 sites scored over 40. See Permit Application at page 51 of 54.

TA-74 is known as the "Otowi Tract." This large area borders the Pueblo of San Ildefonso to the east and is isolated from most of the Facility. The TA contains LANL's water wells and future well fields. According to LANL's and NMED's data, there are currently no active sites located in TA-74. See Attach No. 1 (Master List of sites). TA-74 was purportedly transferred to San Ildefonso Pueblo and Los Alamos County.

TA-72 is home to a live firing range and site of the "Protective Forces Training Facility." TA-72 is home to four sites: (1) 72-001 (firing range); (2) 72-002 (firing site); (3) 72-003 (a) (septic system); and (4) 72-003 (b) (septic system). Three of these sites were given formal NFA status by EPA. One site - 72-001- has never been evaluated by LANL using the EMS assessment.

TA-00 is now the Los Alamos townsite, which surrounds Ashley Pond. This TA was originally the site of the Manhattan Project buildings and operations. There are a total of 76 sites located within TA-00. See Attach. No. 1 at 1 (site no.00-001 to 00-040); at 32 (site no. C-00-001 to C-00-044). Of these sites, approximately 23 have received formal NFA status from either EPA or NMED. There are presently 53 active sites located within TA-00. To date, LANL has

assessed 43 of these sites using its EMS assessment (4 remain unevaluated). Seven of these 4 sites scored over 40. These areas include a firing range, an inactive underground industrial waste line system, a former wastewater treatment plant, and various septic tanks. See Permit Application at 1 of 54 to 8 of 54.

TA-01. There are 73 sites located within TA-01. See Attach. No. 1 at 1-3 (site no. 01-001 (a) to 01-007 (p)). Of these sites, approximately 34 have received formal NFA status from EPA and NMED. There are now approximately 39 active sites located within TA-01. All of these sites were evaluated by LANL's EMS assessment. Eleven of these sites scored over 40. See Permit Application at page 9 of 54. These sites include old septic tanks, disposal areas, storm drains, outfalls/drainlines, industrial waste lines, demolition debris, and even an old dump site for a paint, carpentry, and furniture repair shop. Id. at page 15 of 54.

TA-10. There are 29 documented sites located within TA-10. See Attach. No. 1 at 9-10 (site no. 10-001 (a) to 10-009)); 34 (site no. C-10-001). All of these sites remain active (i.e., none received NFA status) and all were evaluated by LANL's EMS assessment. All 29 sites scored less than 40. These sites include firing sites (inactive), former liquid disposal complexes, septic tanks, burn sites, and the former Bayo landfill.

TA-19. There are 4 documented sites located within TA-19. See Attach. No. 1 at 18 (site no. 19-001 to 19-003); at 36 (site no. C-19-001). All of these sites remain active (no NFA determinations) and all were evaluated by LANL's EMS assessment. All 4 sites scored less than 40. These sites include the former East Gate Laboratory and septic system and soil contamination areas.

TA-26. There are 4 documented sites located within TA-26. See Attach. No. 1 at 21 (site no. 26-001 to 26-003). All sites remain active. All four of these sites were evaluated by LANL's EMS assessment. These sites include surface disposal areas, a septic tank, and former acid sump and drainage systems. One site – 26-001– scored over 40. See Permit Application at 35 of 54. This site is a disposal area on the south-facing slope of Los Alamos Canyon that contains debris from a five room concrete storage vault that was decommissioned and dismantled in 1966. The vault was originally used to store radioactive sources.

TA-31. There are 2 documented sites within TA-31. See Attach. No. 1 at 21 (site no. 31-001); at 37 (site no. C-31-001). Site C-31-001 was given NFA status by EPA. Thus, site 31-001 is the only active, documented site within TA-31. This site was evaluated by LANL's EMS assessment and received a score under 40. The site is an outfall from an old sanitary septic system.

TA-32. There are 8 documented sites located within TA-32. See Attach. No. 1 at 21 (site no. 32-001 to 32-004); at 37 (site no. C-32-001). All sites remain active as they have not received formal NFA status from either EPA or NMED. Of these 8 sites only 4 were evaluated by LANL's EMS assessment. All 4 evaluated sites scored under 40. The remaining 4 sites remain unevaluated. The sites located within TA-32 include an old incinerator, septic tanks, drainlines

and outfalls, and transformer sites.

TA-45. There are 5 documented sites located within TA-45. See Attach No. 1 at 26 (site no. 45-001 to 45-004); at 37 (site no. C-45-001). All 5 sites remain active and all 5 sites were evaluated by LANL's EMS assessment. Of these 5 sites, 2 scored over 40 on LANL's EMS assessment: (1) 45-001; and (2) 45-004. See Permit Application at page 43 of 54. These sites consist of a wastewater treatment facility and sanitary treatment outfall.

In sum, there are approximately 277 *active* sites (i.e., sites that have not received NFA status) located within above mentioned TAs the Los Alamos/Pueblo Canyon watershed. Approximately 34 of these sites have never been evaluated by LANL or undergone an EMS assessment. Forty-nine sites that were evaluated by LANL in the above mentioned TAs in Los Alamos/Pueblo Canyon watershed are considered to have a medium or high potential for constituents in surface water and/or sediment in stormwater runoff to migrate off the site to impact surface water quality i.e., scored over 40 on the EMS (as a reminder, some of the sites located in the Los Alamos/Pueblo Canyon watershed are discussed in the other watersheds and vice versa because they are in a TA that exists predominately (though not entirely) in another watershed). The remaining 195 active sites in the watershed are considered to have a low potential for constituents in surface water and/or sediment in stormwater runoff to migrate off the site to impact surface water quality (i.e., scored under 40 on the EMS).

Over the years, these 277 active sites have generated an enormous amount of solid and hazardous waste. When significant precipitation events occur contaminants from these approximately 277 sites runoff into Los Alamos and Pueblo Canyon's surface waters, soils, and shallow groundwater, eventually making their way to the Rio Grande. According to NMED, runoff from the Los Alamos/Pueblo Canyons' sites "have contributed to contaminant releases within the canyon systems. Metals, perchlorate, nitrates, hydrocarbons, other contaminants, and radionuclides . . .have been detected in the Los Alamos/Pueblo Canyons watershed groundwater." Order of Consent at 56.[9]

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[9] The specific contaminants have been found in sediments, soils, and surface water in the Los Alamos/Pueblo watershed in concentrations higher than background levels include: aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, methylmercury (+1), nickel, silver, selenium, thallium, uranium, vanadium, zinc, americium-241, cesium-134, cesium-137, cobalt-60, europium-152, plutonium-238, plutonium-239, ruthenium-106, sodium-22, strontium-90, uranium-234, uranium-235, uranium-238, acenaphthene, acetone, aniline, anthracene, aroclor-1254, aroclor-1260, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, benzoic acid, delta-BHC, gamma-BHC, bis(2-chloroethyl)ether, bis(2-ethylhexyl) phthalate, bromomethane, n-butylbenzene, butylbenzylphthalate, carbazole, alpha-chlordane gamma-chlordane, 4-chloro-3-methylphenol chloroethane, chloromethane, 2-chlorophenol, chrysene, 4,4-DDD, 4,4-DDE, 4,4-DDT, dibenz(a)anthracene, dibenz(a,h)anthracene, dibenzofuran, 1,2-dibromomethane, 1,1-dichloroethane, 2,4-dimethylphenol, di-n-octylphthalate, di-n-butylphthalate, 1,4-

According to LANL, "[p]lutonium has moved down Pueblo Canyon, through Los Alamos Canyon, off-site across San Ildefonso Pueblo lands, and reaches the Rio Grande near the Otowi Bridge." Environmental Surveillance at Los Alamos During 2004 (hereinafter "ES") at 168 (citations omitted). Other, "[n]onradiological constituents detected *at significant concentrations* in the Los Alamos Canyon watershed include [PCBs], benzo(a)pyrene, mercury, copper, lead, and zinc." Id. at 170. LANL even concedes that PCB levels in the watershed were detected at "at a concentration estimated to be 70 times greater than the New Mexico human health standard and 7 times the wildlife standard . . .[and] benzo (a) pyrene [was detected] in sediment samples . . . at 11 times the EPA residential soil screening level and in a sediment sample from Los Alamos Canyon below DP Canyon at 22 times the residential screening level." Id.

At present, both Los Alamos and Pueblo Canyons are water quality impaired. Los Alamos Canyon is impaired for gross alpha and selenium. NMED's stormwater sampling in Los Alamos Canyon in 2003 showed extremely high levels of PCBs in the Canyon. Samples collected from a site on August 25, 2003 had concentrations of PCBs at 14,178 ng/L (the standard for wildlife is 14 ng/L). This site – 21-024 (m) – was considered a "low potential" site because it scored under 40 on the EMS. A stormwater sample taken from a watershed monitoring station in Los Alamos Canyon (EO30) upstream from DP Canyon had PCB concentrations of 16,900 ng/L. A September 6, 2003 stormwater sample taken from a watershed monitoring station in lower Pueblo Canyon – E060 – had PCB concentrations of 2,493 ng/L. Pueblo Canyon is also impaired for gross alpha, selenium, and mercury. On June 10, 2000 a stream sediment sample taken in Pueblo Canyon by NMED showed PCB concentrations at 8,878.9 ng/kg. Sediment samples taken on January 23, 2001 in Graduation Canyon (a small tributary of Pueblo Canyon) showed PCB concentrations ranging from 309,852 to 723,032 ng/kg.

NMED has identified the approximately 277 active sites within the Los Alamos/Pueblo Canyons watershed as a source of the impairment and PCB contamination. Notably, according to NMED's DOE Oversight Bureau, a number of sites located within the Los Alamos/Pueblo Canyons watershed that received a "low potential" erosion score on the EMS assessment (i.e., under 40) contributed high levels of PCBs in runoff.

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dichlorobenzene, dieldrin, diethylphthalate, 2,4-dinitrotoluene, dioxins, endosulfan I, endosulfan II, endrin, endrin aldehyde, endrin ketone, fluoranthene, fluorine, furans, heptachlor epoxide, 2-hexanone, indeno(1,2,3-cd)pyrene, isopropyltoluene, 4-isopropyltoluene, 4,4-methoxychlor, methylene chloride, 2-methylnaphthalene, 4-methylphenol, naphthalene, 4-nitrophenol, n-nitroso-di-n-propylamine, pentachlorophenol, phenanthrene, pyrene, tetrachloroethene, toluene, 1,2,,4-trichlorobenzene, 1,1,1-trichloroethane, trichloroethene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and xylene. The following contaminants have been found in perched alluvial groundwater: nitrate, americium-241, plutonium-238, plutonium-239/240, strontium-90, and tritium. The following contaminants have been found in perched intermediate groundwater: nitrate, americium-241, cesium-137, plutonium-238, plutonium-239/240, strontium-90, tritium, and OCCD. The following contaminants have been found in groundwater in the regional aquifer: nitrate, perchlorate, americium-241, plutonium-238, plutonium-239/240, strontium-90, and tritium.

B. The Sandia Canyon Watershed

The Sandia Canyon watershed is approximately 5.5 square miles in area and is comprised of two smaller sub-watersheds: Upper and Lower Sandia. The head of the Canyon is located on the Parajito Plateau in TA-3. Perennial stream flow and saturated alluvial aquifer conditions occur in the upper and middle portions of the canyon system because of sanitary wastewater and cooling tower discharges to the canyon from operating facilities. A wetland of approximately 7 acres has developed as a result of the wastewater and cooling tower discharges in the upper portions of the canyon. The only known perennial spring in the watershed (Sandia Spring) is located in lower Sandia Canyon.

There are approximately 180 active sites located within the Sandia Canyon watershed. The TAs located in the Sandia Canyon watershed include: TA-3, TA-20, TA-53, TA-60, and TA-61. TA-72 (discussed above) is also located in the Sandia Canyon watershed.

TA-3 is the "core area." The administrative complex contains the Director's office, administrative offices, and support facilities. Laboratories for the several divisions are in the main office complex. TA-3 contains major facilities such as the Chemistry and Metallurgy Research (CMR) Building, the Sigma Complex, the Main Shops, and the Materials Science Laboratory (MSL). Other buildings house central computing facilities, chemistry and materials science laboratories, physics laboratories, technical shops, cryogenics laboratories, the main cafeteria, and the Study Center. There are approximately 268 sites located within TA-3. See Attach. No. 1 at 3-7 (site no. 03-001 (h) to 03-059); at 32-33 (site no. C-03-001 to C-03-022). These sites are comprised of storm drains and outfalls, effluent storage tanks, former building locations, storage areas, spill areas, wastewater treatment plants, burn sites, firing sites, septic systems, disposal areas, drainlines, drum storage, and satellite accumulation areas. Ninety-nine of these sites have received formal NFA status from EPA and an additional 34 where given NFA status by NMED. As such, there are approximately 135 active sites still located within TA-3. To date, LANL has evaluated 119 of these 135 sites using its EMS assessment (16 sites remain unevaluated). Seventeen of the 119 sites evaluated by LANL scored over 40 on the EMS. See Permit Application at 1 of 16.

TA-20. There are approximately 16 sites located in TA-20. See Attach. No. 1 at 18-19 (site no. 20-001 (a) to 20-005); at 36 (site no. C-20-001 to C-20-003). These sites include spill areas, non-intentional release areas, storage buildings, landfills, firing sites, and septic tanks and systems. See id. Four of these 16 sites where given formal NFA status by EPA. As such, there are presently 12 active sites located within TA-20. All of these sites where assessed by LANL. Nine sites scored under 40 on the EMS and the remaining 3 sites scored over 40. See Permit Application at 9 of 16.

TA-53 is home to the Los Alamos Neutron Science Center (LANSCE), the LANSC linear proton accelerator, the Neutron Scattering Center, and a medical isotope production facility. Also located at TA-53 are the Accelerator Production and Tritium Project Office, including the

Low-Energy Demonstration Accelerator (LEDA), and research and development activities in accelerator technology and high-power microwaves. There are currently 65 sites located within TA-53. See Attach. No. 1 at 29-30 (site no. 53-001 (a) to 53-015); at 37-38 (site no. C-53-001 to C-53-019). These sites include transformers, spill areas, storage areas, disposal pits, outfalls, container storage, underground tanks, and lead shot sites. Forty-eight of these 65 sites have received formal NFA status from either EPA or NMED. As such, there are presently 17 active sites located within TA-53. All of these sites were assessed by LANL. Three of these 17 sites scored over 40 on the EMS. See Permit Application at 11 of 16.

TA-60 is the "Sigma Mesa" area. This area contains physical support and infrastructure facilities, including the Test Fabrication Facility and Rack Assembly and the Alignment Complex. There are approximately 23 sites located within TA-60. See Attach. No. 1 at 31 (site no. 60-001 (a) to 60-007 (b)); at 38 (site no. C-60-001 to C-60-004). These sites include underground tanks, PCB containing capacitors, spill areas, PCB leak areas, subsurface contamination, storage areas, septic tanks, release areas, and an oil-water separator. See id. Twelve of the 23 sites in TA-60 have received NFA status from EPA. Thus, there are 11 active sites located in TA-60. To date, LANL has assessed 10 of these 11 sites (1 remains unevaluated). One of these sites – 60-007 (b) – scored over 40. See Permit Application at 13 of 16.

TA-61 is the "East Jemez Road" area. This area is used for physical support and infrastructure facilities, including the Los Alamos County sanitary landfill. There are approximately 11 sites in TA-61. See Attach. No. 1 at 31 (site no. 61-001 to 61-007); at 38 (site no. C-61-001 to C-61-002). These sites include subsurface contamination areas, PCB leak area, burn sites, septic tanks, landfills, and a waste oil tank. See id. Six of these 11 sites have received NFA status from either EPA or NMED. As such, there are approximately 5 active sites located in TA-61. To date, LANL has evaluated all of these sites using its EMS assessment. One site – 61-007 – scored over 40.

Over the years, these 180 active sites in the Sandia Canyon watershed have generated an enormous amount of solid and hazardous waste. When significant precipitation events occur contaminants from these approximately 180 sites runoff into Sandia Canyons' surface waters, soils, and shallow groundwater, eventually making their way to the Rio Grande.

According to NMED "PCBs have been detected in sediment samples obtained from [Sandia Canyon's] wetland area and mercury has been detected in surface water samples." Order of Consent at 69.[10] LANL's own findings confirm that the "upper portion of [Sandia] canyon

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[10] The specific contaminants found in sediments, soils, and surface water in the Sandia watershed in concentrations higher than background levels include: antimony, arsenic, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, nickel, silver, uranium, zinc, cesium-137, cobalt-60, europium-152, plutonium-238, plutonium-239, strontium-90, uranium-234, uranium-235, uranium-238, acenaphthene, acetone, anthracene, aroclor-1016, aroclor-1254, aroclor-1260, benzene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i) perylene,

contains some of the highest PCB concentrations of any watercourse within [LANL's] boundaries." ES at 177. Three "samples collected below the Sandia Canyon wetland contained Aroclors 1254 and 1260 concentrations greater than the New Mexico stream standards for fish consumption/human health and wildlife protection by up to 350 and 35 times, respectively." Id. Below an approximately two-mile segment of Sandia Canyon, below TA-3, LANL also found high concentrations of "chromium, copper, mercury, and zinc in surface water and sediments." Id. at 178.

In a recent letter, NMED expressed concern over the elevated levels of chromium showing up in Sandia Canyon. Sampling results in Sandia reveal "chromium levels between 375 and 404 parts per billion (ppb), several factors above the New Mexico Water Qaulity Control Commission standard of 50 ppb and several times the Safe Drinking Water Act Maximum Contaminant Level of 100 ppb." NMED surmises that the historic use (1950 to mid-1970s) of chromium is cooling towers located at TA-3 that discharged to upper Sandia Canyon is the "plausible source" of the elevated levels of chromium in the watershed. A "1987 Department of Energy document reports that on a daily basis, roughly 36 pounds of chromate-phosphate-zinc type corrosion inhibitors were discharged along with 128,000 to 288,000 gallons of water to upper Sandia Canyon. Hexavalent chromium was measured in the discharge up to 34 parts per million (ppm). Four miles downstream from the discharge, chromate levels averaged 10 to 15 ppm." In addition, "chromium VI was detected in surface water approximately two miles downstream of the outfall." LANL's continued discharge from a historic sewage treatment plant still provides a "continual head for downward and down gradient migration of contaminants" in Sandia Canyon.

Currently, Sandia Canyon from the San Ildefonso boundary to its headwaters is impaired for PCB-1254 and PCB-1260. On January 10,2001 stream sediment samples taken in Sandia Canyon show PCB concentrations ranging from 611,471 to 2,464,497 ng/kg. On October 28, 2000 stormwater samples in Sandia near TA-53 reported PCB levels at 224.63 ng/L. On August 8, 2002 stormwater samples taken below the wetlands in Sandia Canyon reported PCB levels at 252.64 ng/L. The New Mexico water quality criteria for wildlife habitat is 14 ng/L and the human health standard is 1.7 ng/L.

C. The Mortandad Canyon Watershed

The Mortandad Canyon watershed is located in the central portion of the Facility and covers approximately 10 square miles. The Mortandad Canyon watershed contains several smaller tributary canyons including Ten Site Canyon, Pratt Canyon, Effluent Canyon, Cedro Canyon, and Canada del Buey.

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benzo(k)fluoranthene, bis(2-ethylhexyl)phthalate, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno (1,2,3-cd)pyrene, 4-isopropyltoluene, phenanthrene, pyrene, tetrachloroethene, toluene, and 1,1,1-trichloroethane. The following contaminants have been found in groundwater in the regional aquifer: cesium-137, plutonium-239/240, strontium-90, and tritium.

There are approximately 216 active sites located within 11 TAs within the Mortandad Canyon watershed. These include: TA-35, TA-46, TA-48, TA-50, TA-54, TA-51, TA-52, TA-55, TA-42, TA-5, and TA-4. Portions of TA-3, TA-18, and TA-57 are also located within the Mortandad Canyon watershed but they are discussed in other sections.

TA-35 is known as the "Tent site." Activities at this TA include nuclear safeguards research and development that are concerned with techniques for nondestructive detection, and identification and analysis of fissionable isotopes. Research is also done on reactor safety, laser fusion, optical sciences, pulsed-power systems, high energy density physics, metallurgy, ceramic technology, and chemical plating. There are currently 101 sites located within TA-35. See Attach. No. 1 at 23-24 (site no. 35-001 to 35-018 (b)); at 37 (site no. C-35-001 to C-35-008). These sites include former underground storage tank (UST) sites, operational release areas, soil contamination areas, a leaking transformer, wastewater treatment plants, outfalls, storage areas, former structures, septic systems, underground storage tanks, sumps, and oil spill sites. See id. Thirty-four sites located within TA-35 have received formal NFA status from either EPA or NMED. As such, there are presently 67 active sites in the TA. To date, 65 of these 67 active sites have been evaluated by LANL (2 remain unevaluated). Twenty-three of the sites evaluated scored over 40 on the EMS.

TA-46 is the "WA-site." Activities at this site include applied photochemistry research such as the development of technology for laser isotope separation and laser enhancement of chemical processes. A new facility completed during 1996 houses research in inorganic and materials chemistry. The Sanitary Wasterwater System Consolidation Plant is located at the east end of this site. There are approximately 68 sites located within TA-46. See Attach. No. 1 at 26-27 (site no. 46-001 to 46-010 (misc)); at 37 (site no. C-46-001 to C-46-003). These sites include stack emissions, spill areas, septic systems, outfalls, sumps, waste lines, storage areas, and operational release areas. Sixteen sites located within TA-46 have been given NFA status by either EPA or NMED. As such, there are approximately 52 active sites in the TA. To date, LANL has evaluated all of these sites. Twenty-five sites received an EMS over 40.

TA-48 is the radiochemistry area. Research and development activities at this site include a wide range of chemical processes such as nuclear and radiochemistry, geochemistry, biochemistry, actinide chemistry, and separations chemistry. Hot cells are used to produce medical radioisotopes. There are approximately 23 sites located within this TA. See Attach. No. 1 at 27-28 (site no. 48-001 to 48-011). These sites include septic systems, sumps and tanks, waste lines, soil contamination areas, transformer leaks, outfalls, and container storage areas. See id. Seven of these 23 sites have received formal NFA status from EPA. As such, there are approximately 16 active sites located within TA-48. To date, all of these sites have been evaluated by LANL. Seven of the sites evaluated received an EMS score over 40.

TA-50 is a waste management area. Activities within this TA include management of the industrial liquid and radioactive liquid waste received from various TAs. Activities also include development of improved methods for solid waste treatment and containment of radionuclides removed by treatment. There are approximately 27 sites located within this TA. See Attach. No.

1 at 28 (site no. 50-001 (a) to 50-011 (b)); at 37 (site no. C-50-001). Seven of these sites have received formal NFA status from EPA. As such, there are presently 20 active sites located in TA-50. All of these sites have been evaluated by LANL. Three of these sites received an EMS score over 40.

TA-54 is another waste disposal site. Activities at this TA consist of radioactive and hazardous solid waste management, including storage, treatment, and disposal operations. There are approximately 45 sites located within TA-54. See Attach. No. 1 at 30 (site no. 54-001 (a) to 54-022) (a number of these sites are actually located in the Pajarito Canyon watershed). These sites include storage areas, MDAs, septic systems, various storage tanks (both above and below ground), PCB spills, and sumps. Thirteen of these 45 sites have received formal NFA status from either EPA or NMED. As such, there are approximately 32 active sites located within TA-54. Thirty-one of these 32 active sites have been evaluated by LANL (1 site remains unevaluated). Five of these evaluated sites received an EMS score over 40.

TA-51 is the environmental research site. Research and experimental studies on the long-term impact of radioactive waste on the environment and types of waste storage and coverings are studied at this site. There are presently 5 sites located within TA-51. See Attach. No. 1 at 28-29 (site no. 51-001 to 51-002 (b)); at 37 (site no. C-51-001 to C-51-002). These sites include usage areas, storage areas, and former buildings. See id. Four of these 5 sites received formal NFA status from EPA. As such, there is only one active site within TA-51. This site – 51-001 – was evaluated by LANL and received an EMS score under 40.

TA-52 is the reactor development area. A wide variety of theoretical and computational activities related to nuclear reactor performance and safety are done at this site. There are presently 16 sites located within TA-52. See Attach. No. 1 at 29 (site no. 52-001 (d) to 52-004); at 37 (site no. C-52-001 to C-52-002). These sites include former transformer sites, septic systems, a waste treatment facility, industrial waste line, evaporator, and uranium high temperature reactor experiment (UHTREX) equipment. See id. Thirteen of these sites have received formal NFA status from either EPA or NMED. As such, there are presently 3 active sites located within TA-52. All 3 sites were evaluated by LANL and received an EMS score under 40.

TA-55 is the plutonium facility site. This facility provides research and applications in chemical and metallurgical processes for recovering, purifying, and converting plutonium and other actinides into many compounds and forms, as well as research into material properties and fabrication of parts for research and stockpile applications. Additional activities include the means to safely and securely ship, receive, handle, and store nuclear materials, as well as manage the wastes and residues produced by TA-55 operations. The Nuclear Materials Storage Facility (NMSF) is also located at this TA. There are approximately 20 sites located within TA-55. See Attach. No. 1 at 30-31 (site no. 55-001 to 55-013 (b)). These sites include a cement plant, radio active storage area, containment areas, a glass breaker, storm drains, thermal combustion units, and a filtration unit. Eighteen of the 20 sites in TA-55 have received formal NFA status from EPA. As such, there are presently 2 active sites located within TA-55. These two sites have been

evaluated by LANL and both scored under 40 on the EMS assessment.

TA-42 is the former location of a radioactive waste incinerator complex, which included a control building, two ash holding tanks and indoor and outdoor storage facilities where contaminated equipment was decontaminated. There are approximately 7 sites located within TA-42. See Attach. No. 1 at 26 (site no. 42-001 (a) to 42-004). These sites include incinerator complexes, former structures, and a canyon disposal area. See id. One of these sites has received formal NFA status from EPA. As such, there are presently 6 active sites located within TA-42. All of these 6 sites have been evaluated by LANL. Five of the 6 sites scored over 40 on the EMS.

TA-5 is the beta site. This site contains some physical support facilities such as an electrical substation, test wells, and environmental monitoring and buffer areas. There are approximately17 sites located within TA-5. See Attach. No. 1 at 7-8 (site no. 05-001 (a) to 05-006 (h)); at 33 (site no. C-05-001). These sites include former building locations, firing sites, a calibration chamber, french drain, septic systems, and soil contamination areas. Five of these 17 sites have received formal NFA status from EPA. As such, 12 sites remain active within TA-5. All of these 12 sites were evaluated by LANL. Ten of these 12 sites scored over 40 on the EMS.

TA-4 was the Alpha site. This TA is the former location of testing firing for small charges, where residual material was bulldozed over the edge of the canyon to the surface disposal site. This TA also contained laboratory control and photoprocessing buildings and associated outfalls. There are approximately 6 sites located within TA-4. See Attach. No. 1 at 7 (site no. 04-001 to 04-004); at 33 (site no. C-04-001). These sites include former building locations, firing sites, drain lines, outfalls, and soil contamination areas. One site in TA-4 has received formal NFA status from EPA. As such, there are 5 active sites located within this TA. All 5 sites were evaluated by LANL and all 5 sites scored over 40 on the EMS.

In sum, there are approximately 216 active sites located within the Mortandad Canyon watershed. Over the years, these 216 active sites have generated an enormous amount of solid and hazardous waste. When significant precipitation events occur contaminants from these approximately 216 sites runoff into Mortandad Canyon's surface waters, soils, and shallow groundwater, eventually making their way to the Rio Grande.

According to NMED, the "Mortandad Canyon watershed contains several tributary canyons that have received contaminants released during Facility operations. . . [t]he primary source of contamination in this watershed include historic releases of contaminants from outfalls and spills at TA-35 and TA-50, including the Radioactive Liquid Waste Treatment facility at TA-50." Order of Consent at 61. NMED goes on to state that "RCRA constituents, including metals and VOCs, have historically been released into [Mortandad Canyon]. Nitrates, perchlorate, molybdenum, manganese, and radionuclides . . .are some of the contaminants that have been detected in the Mortandad Canyon alluvial groundwater. In addition, nitrate, perchlorate, fluoride, and radionuclides . . .were detected in samples of intermediate zone groundwater during

the drilling of regional aquifer well R-15 . . . [p]erchlorate also was detected." Id.[11] LANL reports that radioactive materials (i.e., plutonium and cesium) have been detected in Mortandad Canyon. LANL's analysis also "detected dissolved copper concentrations above the New Mexico Acute Aquatic Life stream standard by 2 to 4 times in base-flow and runoff samples" collected in Mortandad." ES at 179.

At present, the Mortandad Canyon watershed is water quality impaired for gross alpha and selenium. Stormwater data from 2003 also shows high levels of PCBs in Mortandad Canyon. In samples collected at a site (35-008) on October 6, 2003 PCB concentrations were at 41.4 ng/L. Also, in December, 2005 the National Security Administration reported that chromium-6 levels found in a monitoring well in Mortandad Canyon were more than 4 times federal drinking water standards and 8 times the state ground water quality standard (chromium can cause liver and kidney damage).

D. The Pajarito Canyon Watershed

The Pajarito Canyon watershed is located in the central portion of the Facility and is approximately 13 square miles in area. The head of the watershed in located in the Sierra de los Valles. Two major tributary canyons – Two Mile and Three Mile – intersect Pajarito Canyon on the Facility property.

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[11] The specific contaminants found in sediments, soils, surface water, and groundwater in the Mortandad watershed in concentrations higher than background levels include: aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, lead, mercury, nickel, selenium, silver, thallium, vanadium, zinc, americium-241, cesium-134, cesium-137, cobalt-60, europium-152, plutonium-238, plutonium-239, ruthenium-106, sodium-22, strontium-90, uranium-234, uranium-235, uranium-238, acenaphthene, acenaphthylene, acetone, aldrin, anthracene, aroclor-1242, aroclor-1254, aroclor-1260, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, benzoic acid, alpha-BHC, delta-BHC, gamma-BHC, bis(2-ethylhexyl)phthalate, 2-butanone, carbazole, 4-chloroaniline, chrysene, dibenz(a,h)anthracene, dibenzofuran, 1,1-dichloroethene, dieldrin, diethylphthalate, di-n-butylphthalate, di-n-octylphthalate, 4,4-DDD, 4,4-DDE, 4,4-DDT, endosulfan II, endrin, endrin aldehyde, fluoranthene, fluorene, heptachlor epoxide, 2-hexanone, indeno(1,2,3-cd)pyrene, 4-isopropyltoluene, 4,4-methoxychlor, methylene chloride, 2-methylnaphthalene, 4-methylphenol, naphthalene, pentachlorophenol, phenanthrene, phenol, pyrene, styrene, toluene, trichloroethene, 1,1,2,1-trichloro-1,2,2-trifluoroethane, trichlorofluoromethane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene.The following contaminants have been found in perched alluvial groundwater: nitrate, perchlorate, americium-241, cesium-137, plutonium-238, plutonium-239/240, strontium-90, and tritium. The following contaminants have been found in perched intermediate groundwater: nitrate, perchlorate, and tritium. The following contaminants have been found in groundwater in the regional aquifer: nitrate, perchlorate, chromium, plutonium-238, plutonium-239/240, strontium-90, and tritium.

There area approximately 245 active sites in the Pajarito Canyon watershed. The following TAs are located within the Pajarito Canyon watershed: TA-6, TA-7, TA-8, TA-9, TA-15, TA-18, TA-22, TA-27, TA-36, TA-40, TA-12, TA-59, and TA-69. Portions of TA-3 and TA-54 are also located within the Pajarito Canyon watershed (TA-3 is addressed in the Sandia Canyon section and TA-54 is addressed in the Mortandad Canyon section).

TA-6 is the "Two Mile Mesa" site. This site is mostly undeveloped and contains gas cylinder staging and vacant buildings pending decommissioning. There are approximately 42 sites located within TA-6. See Attach. No. 1 at 8 (site no. 06-001 (a) to 06-008); at 33 (site no. C-06-001 to C-06-021). These sites include explosive storage areas, septic systems, firing sites (old and active), material disposal areas (MDAs), sumps, and former building locations. See id. Four sites within TA-6 have receive formal NFA status from either EPA or NMED. As such, there are presently 38 active sites located within TA-6. To date, LANL has evaluated 24 of these 38 sites (14 remain unevaluated). Of the sites evaluated by LANL, 23 scored under 40 on the EMS and 1 scored over 40.

TA-7. There are approximately 6 sites located within TA-7. See Attach. No. 1 at 8 (site no. 07-001 (a) to 07-00d (1)). These sites are primarily former firing sites. See id. Two sites within TA-7 have received formal NFA status from NMED. There are presently 4 active sites located within TA-7. LANL has evaluated all 4 of these active sites. Three of these sites scored over 40 on the EMS.

TA-8 is the "GT" or "Anchor Site West." This is a dynamic testing site operated as a service facility for LANL. The TA maintains capability in all modern nondestructive testing techniques for ensuring quality of material, ranging from test weapons components to high pressure dies and molds. Principal tools include radiographic techniques (x-ray machines), radioisotope techniques, ultrasonic and penetrant testing, and electromagnetic test methods. There are approximately 49 sites located within TA-8. See Attach. No. 1 at 8-9 (site no. 08-001 (a) to 08-011(b)); at 33-34 (site no. C-08-001 to C-08-020). These sites include buildings, storage areas, MDAs, septic systems, drain lines, outfalls, a firing site, and container storage areas. See id. Thirty-two sites within TA-8 have received formal NFA status from either EPA or NMED. As such, there are approximately 17 active sites located within TA-8. All of these 17 sites have been evaluated by LANL. Thirteen of the 17 sites scored under 40 on the EMS and the remaining 4 sites scored over 40.

TA-9 is the "Anchor Site East." In this area, fabrication feasibility and physical properties of explosives are explored. New organic compounds are investigated for possible use as explosives. Storage and stability problems are also studied. There are approximately 64 sites located within TA-9. See Attach. No. 1 at 9 (site no. 09-001 (a) to 09-016); at 34 (site no. C-09-001 to C-09-010). These sites include underground tanks, buildings, burn sites, "non-intentional" releases, firing sites (active and inactive), settling tanks, sumps, and pipes. See id. Twenty-three of these site have received formal NFA status from either EPA or NMED. As such, there are approximately 41 active sites remaining in TA-9. To date, LANL has evaluated 39 of these sites. Six sites scored over 40 on the EMS.

TA-15 houses the Pulsed-High Energy Radiation Machine Emitting X-Rays (PHERMEX) Facility, a multiple-cavity electron accelerator capable of producing a very large flux of x-rays for dynamic experiments and hydrodynamic testing. TA-15 also is the site for the Dual Axis Radiographic Hydrodynamic Test (DARHT) Facility whose major feature will be its intense high resolution, dual machine radiographic capability. This site is also used for the investigation of weapons functioning and systems behavior in nonnuclear tests, principally through electronic recordings. There are approximately 76 sites located within TA-15. See Attach. No. 1 at 11-12 (site no. 15-001 to 15-014 (l)); at 34 (site no. C-15-001 to C-15-013). These sites include buildings, surface disposal areas, transformers, "non-intentional" releases, underground tanks, firing sites, manhole bunkers, storage areas, septic tanks, former structures, wastewater treatment, outfalls, and drain lines. See id. Twenty of these sites have received NFA status from either EPA or NMED. As such, there are approximately 56 active sites located within TA-15. All of these sites have been evaluated by LANL. Fifteen of these 56 sites scored over 40 on the EMS.

TA-18 is home to a nuclear facility that studies both static and dynamic behavior of multiplying assemblies of special nuclear materials (SNMs). SNMs are used to support a wide variety of activities for stockpile management, stockpile stewardship, emergency response, nonproliferation, and safeguards. In addition, this facility provides the capability to perform hands-on training and experiments with SNMs in various configurations below critical. There are approximately 40 sites located within TA-18. See Attach. No. 1 at 18 (site no. 18-001 (a) to 18-013); at 36 (site no. C-18-001 to C-18-003). These sites include laboratories, buildings, storage areas, inactive firing sites, septic systems, tanks, sumps, outfalls, and transformers. See id. Eleven of these sites have received formal NFA status from either EPA or NMED. As such, there are approximately 29 active sites still located within TA-18. Twenty-seven of these active sites have been evaluated by LANL (2 remain unevaluated). Five sites received a EMS score over 40.

TA-22 is the TD site where special detonators are developed to initiate high explosive systems and rapid shock-induced reactions are researched. There are approximately 22 sites located within TA-22. See Attach. No. 1 at 21 (site no. 22-001 to 22-016). These sites include septic systems, drain lines, sumps, wastewater treatment, disposal pits, satellite accumulation areas, and buildings. See id. Ten of these sites have received NFA status from EPA. As such, there are approximately 12 active sites located within TA-22. All of these sites have been evaluated by LANL. Two sites scored over 40 on the EMS.

TA-27 was the Mason Physics Facility. There are approximately 4 sites located within TA-27. See Attach. No. 1 at 21 (site no. 27-002 to 27-004). These sites include an abandoned firing site, a building, and a bazooka impact area. See id. One of these sites has received formal NFA status from NMED. As such, there are presently 3 active sites located within TA-27. Two of these sites have been evaluated by LANL (1 remains unevaluated). Both evaluated sites scored under 40 on the EMS.

TA-36 is known as the "Kappa site." This TA has four active firing sites that support explosive testing. Nonnuclear ordnance tests are conducted here, including tests for armor and armor defeating mechanisms, as well as tests of shockwave effects on explosives and propellants. Phenomena of explosives, such as detonation velocity, are investigated at this testing site. There are approximately 26 sites located within TA-36. See Attach. No. 1 at 24-25 (site no. 36-001 to 36-009); at 37 (C-36-001 to C-36-006 (e)). These sites include storm drains, surface disposal areas, former firing sites, septic systems, active firing sites, storage areas, an open detonation area, and burn pits. See id. Ten sites within TA-36 have received formal NFA status from either EPA or NMED. As such, there are approximately 16 active sites remaining in TA-36. Fifteen of these sites have been evaluated by LANL (1 remains unevaluated). Of these sites, 11 scored over 40 on the EMS.

TA-40 is used in the development of special detonators to initiate high-explosives systems. Fundamental and applied research in support of this activity includes investigating phenomena associated with the physics of explosives. There are approximately 22 sites in TA-40. See Attach. No. 1 at 25 (site no. 40-001 (b) to 40-010); at 37 (site no. C-40-001). These sites include usage sites, septic systems, container storage areas, burn areas, open detonation sites, sumps, operational release areas, and active firing sites. See id. Six sites within TA-40 have received formal NFA status from either EPA or NMED. As such, there are approximately 16 active sites within TA-40. Eleven of these active sites were evaluated by LANL (5 remain unevaluated). Seven of the evaluated sites scored over 40 on the EMS.

TA-12 was called the TD-site and was part of the Explosives Division. There are approximately12 sites within TA-12. See Attach. No. 1 at 10-11 (site no. 12-001 (a) to 12-004 (b)); at 34 (site no. C-12-001 to C-12-006). These sites include buildings, former firing sites, storage areas, a radiation test facility, and pipes. See id. Two sites within TA-12 have received formal NFA status from EPA. As such, there are presently 10 active sites in the TA. All ten sites were evaluated by LANL and received EMS scores under 40.

TA-59 is where occupational health and safety and environmental activities are conducted. Environmental, safety, and health offices, and emergency management facilities are also located here. There are approximately 5 sites located within TA-59. See Attach. No. 1 at 31 (site no. 59-002 to 59-004); at 38 (site no. C-59-001). These sites include PCB capacitors, and transformers, container storage areas, an outfall, and sumps. See id. Three sites in the TA received formal NFA status from either EPA or NMED. There are presently 2 active sites within the TA. One of these sites was evaluated by LANL and received an EMS score under 40.

TA-69 is an undeveloped area that serves as an environmental buffer for the dynamic testing area. There are, however, approximately 3 sites located within TA-69. See Attach. No. 1 at 31-32 (site no. 69-001 to 69-002 (b)). These sites include two septic systems, and an incinerator (and associated equipment). See id. Two of these sites have received formal NFA status from EPA. One sites remains active. This site was evaluated by LANL and scored under 40 on the EMS assessment.

In sum, there are approximately 245 active sites located within the Pajarito Canyon watershed. Over the years, these 245 active sites have generated an enormous amount of solid and hazardous waste. When significant precipitation events occur contaminants from these approximately 245 sites runoff into Pajarito Canyon's surface waters, soils, and shallow groundwater, eventually making their way to the Rio Grande.[12]

According to NMED, "Facility related contamination has been detected in water samples obtained from perennial and ephemeral streams, alluvial groundwater systems, and springs supplied by intermediate zone groundwater from the Bandelier Tuff." Order of Consent at 66. The "contaminant release history [from the sites] includes releases from outfalls, septic systems, spills, open detonations from firing sites, and MDAs." Id. LANL reports high levels of "americium-241, plutonium-238, and plutonium-239, 240" in Pajarito Canyon. ES at 179. LANL also "detected dissolved copper concentrations greater than the New Mexico Acute Aquatic Life standard in channels throughout the Pajarito Canyon watershed." Id. Some of the constituents "were found at high concentrations in post-Cerro Grande fire runoff samples." Id. Today, the Pajarito Canyon watershed is impaired for gross alpha and selenium. High levels of PCBs have also been detected in the canyon (a August 5, 2001 sample revealed PCBs at 298.18 ng/L).

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[12] The specific contaminants found in sediments, soils, surface water, and groundwater in the Pajarito watershed in concentrations higher than background levels include: antimony, arsenic, barium, beryllium, cadmium, chromium cobalt, copper, iron, lead, manganese, mercury, nickel, selenium, silver, thallium, uranium, vanadium, zinc, americium-241, cesium-137, polonium-210, plutonium-238, plutonium-239, strontium-90, technetium-99, uranium-235, 4-amino-2,6-dinitrotoluene, 4-amino-4,6-dinitrotoluene, HMX, RDX, tetryl, 1,3,5-trinitrobenzene, acenaphthene, acetone, anthracene, aroclor-1254, aroclor-1260, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, benzoic acid, bis(2-ethylhexyl)phthalate, 2-butanone, butylbenzylphthalate, carbon disulfide, chloroethane, chloromethane, chrysene, dibenz(a,h)anthracene, dibenzofuran, 2-chloronaphthalene, 1,2-dibromo-3-chloropropane, 1,2-dichlorobenzene, 1,3-dichlorobenzene, dichlorodifluoromethane, 1,1-dichloroethane, diethylphthalate, 2,4-dimethylphenol, di-n-butylphthalate, di-n-octylphthalate, ethylbenzene, fluoranthene, fluorine, hexachlorobenzene, 2-hexanone, indeno(1,2,3-cd)pyrene, isopropylbenzene, 4-isopropylbenzene, isopropyltoluene, 4-isopropyltoluene, 4,4-methoxychlor, methylene chloride, 2-methylnaphthalene, 4-methyl-2-pentanone, 4-methylphenol, phenanthrene, pyrene, tetrachloroethene, toluene, 1,2,4-trichlorobenzene, 1,1,1-trichloroethane, trichloroethene, 1,1,2,1-trichloro-1,2,2-trifluoroethane, vinyl chloride, xylene. The following contaminants have been found in springs discharging in the Pajarito watershed: perchlorate, 2-amino-2,6-dinitrotoluene, 4-amino-2,6-dinitrotoluene, nitrobenzene, HMX, RDX, tetryl, di-n-butylphthalate, 4-nitrophenol, pentachlorophenol, pyrene, bis(2-ethylhexyl)phthalate, bis(2-ethylhexyl)phthalate, 1,2-diphenylhydrazine, benzoic acid, di-n-butylphthalate, 2-nitrophenol, bromomethane, benzo(b)fluoranthene, benzo(k)fluoranthene, 2-chlorophenol, and naphthalene.

E. The Water/Canon de Valle Watershed

The Water/Canon de Valle watershed is located in the southern portion of the Facility (just north of Ancho) and encompasses an area of approximately 19 square miles. The smaller sub-watersheds in the watershed include Canon de Valle, S-Site (Martin), Upper and Lower Water Canyons, and Indio. The watershed supplies numerous springs, ephemeral and perennial surface water flow, and alluvial groundwater systems. There are approximately 395 active sites located within the following TAs in the Water/Canon de Valle watershed: TA-11, TA-14, TA-16, and TA-13. Portions of TA-9, TA-15, TA-49, and TA-39 are also located within the Water/Canon de Valle watershed (these TAs are addressed in other sections).

TA-11 is the "K-site." These facilities are used for testing explosive components and systems, including vibration testing and drop testing, under a variety of extreme physical environments. The facilities are arranged so that testing may be controlled and observed remotely and so that devices containing explosives or radioactive materials, as well as those containing nonhazardous materials, may be tested. There are approximately 35 sites within this TA. See Attach. No. 1 at 10 (site no. 11-001 (a) to 11-012 (d)); at 34 (site no. C-11-001 to C-11-003). These sites include laboratories, release areas, inactive firing sites, mortar impact areas, firing ranges, drop test towers (and related structures), septic systems, container storage, wastewater treatment facilities, and buildings. See id. Seven of these sites have received formal NFA status from either EPA or NMED. As such, there are approximately 28 active sites located within TA-11. To date, LANL has evaluated 27 of these sites (1 remains unevaluated). Twelve of the evaluated sites scored over 40 on the EMS assessment.

TA-14 is the "Q-site." This dynamic testing site is used for running various tests on relatively small explosive charges for fragment impact tests, explosives sensitivities, and thermal responses. There are approximately 32 sites located within this TA. See Attach. No. 1 at 11 (site no. 14-001 (a) to 14-010); at 34 (site no. C-14-001 to C-14-009). These sites include buildings, firing sites (active and inactive), burn areas, incinerators, landfills, surface disposal areas, storage areas, and open burning grounds. See id. Three sites within TA-14 have received NFA status from either EPA or NMED. As such, there are approximately 29 active sites in TA-14. Twenty-one of these sites have been evaluated by LANL. Eight of these evaluated sites scored over 40 on the EMS.

TA-16 is the "S-site." Investigations at this site include development, engineering design, prototype manufacture, and environmental testing of nuclear weapons components and subsystems. It is the site of the Weapons Engineering Tritium Facility (WETF) that focuses on research and applications using tritium. Development and testing of high explosives, plastics, and adhesives, and research on process development for manufacture of items using these and other materials are accomplished in extensive facilities. There are approximately 405 sites within TA-16. See Attach. No. 1 at 12-18 (site no. 16-001 (a) to 16-037); at 34-36 (site no. C-16-001 to C-16-075). These sites include underground tanks, buildings, former structures, storage areas, septic systems, generation areas, drum storage, spill areas, sumps, former steam plants, burn grounds, wastewater treatment plants, surface disposal sites, flash pads, magazines, MDAs,

outfalls, transformers, and leak areas. See id. Seventy-two of these sites have received formal NFA status from EPA or NMED. As such, there are approximately 333 *active* sites located within TA-16. Of these sites, LANL has evaluated 280 using its EMS assessment (53 remain unevaluated). Twenty-nine sites scored over 40 on the EMS assessment.

TA-13. There are approximately 5 sites within TA-13. See Attach. No. 1 at15 (site no.13-001 to 13-004). These sites include firing sites, landfills, soil contamination areas, septic systems, and disposal pits. See id. To date, no sites in TA-13 have received formal NFA status from either EPA or NMED. All 5 sites remain active. LANL evaluated these 5 sites. All 5 sites scored less than 40 on the EMS assessment.

In sum, there are approximately 395 active sites located within the Water/Canon de Valle watershed. Over the years, these 395 active sites have generated an enormous amount of solid and hazardous waste. When significant precipitation events occur contaminants from these approximately 245 sites runoff into the Water/Canon de Valle's surface waters, soils, and shallow groundwater, eventually making their way to the Rio Grande.[13]

According to NMED, "stormwater runoff [from the Canyon's sites] may have contributed to the contamination detected within the watershed. The contaminants detected in the soil, rock, and sediment samples obtained from various locations within the watershed . . .include barium and other RCRA metals, explosive compounds, VOCs, pesticides, and radionuclides." Order of Consent at 63. Contaminants "detected in groundwater samples obtained from wells located within the watershed include barium, explosive compounds and their associated degradation

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[13] Specific contaminants found in sediments, soils, and groundwater in the Pajarito watershed in concentrations higher than background levels include: aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, selenium, silver, thallium, uranium, vanadium, zinc, americium-241, cesium-137, europium-152, plutonium-238, plutonium-239, sodium-22, thorium-228, thorium-230, thorium-232, uranium-234, uranium-235, uranium-238, 2-amino-4,6-dinitrotoluene, 4-amino-2,6-dinitrotoluene, 1,3-dinitrobenzene, 2,4-dinitrotoluene, 2,6-dinitrotoluene, HMX, nitrobenzene, 2-nitrotoluene, 3-nitrotoluene, 4-nitrotoluene, PETN, RDX, TATB, tetryl, 1,3,5-trinitrobenzene, 2,4,6-trinitrotoluene, acetone, acenaphthene, anthracene, aroclor-1260, benzene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, benzoic acid, benzoic alcohol, benzyl alcohol, bis(2-ethylhexyl)phthalate, carbazole, chrysene, dibenz(a,h)anthracene, dibenzofuran, dichlorodifluoromethane, 1,4-dichlorobenzene, 4,4-DDT, diethylphthalate, di-n-butylphthalate, fluoranthene, fluorine, indeno(1,2,3-cd)pyrene, 4-isopropyltoluene, methylene chloride, 2-methylnaphthalene, 4-methyl-2-pentanone, 4-methylphenol, naphthalene, n-nitrosodiphenylamine, phenanthrene, pyrene, pyridine, tetrachloroethene, toluene, 1,1,1-trichloroethane, trichloroethene, trichlorofluoromethane, xylene. The following contaminants have been found in groundwater or springs: HMX, RDX, 2,4,6-trinitrotoluene, tritium, acetone, butylbenzylphthalate, di(2-ethylhexyl)adipate, di(2-ethylhexyl)phthalate, diethylphthalate, di-n-butylphthalate, tetrachloroethene, and trichloroethene.

products, and VOCs." Id. at 64. LANL reports elevated "concentrations of barium, HMX, and RDX have been previously measured in sediment and surface water." ES at 181. In 2004, "dissolved barium was present in the base flow at up to 85 % of the New Mexico groundwater standard, and RDX occasionally is present in surface water above the 6.1 ppb EPA tap water health advisory." Id. Today, the watershed is impaired for gross alpha and selenium.

F. The Ancho Canyon Watershed

Ancho Canyon is comprised of two smaller sub-watersheds – North Ancho and South Ancho – that merge into one larger canyon that flows into the Rio Grande. There are approximately 36 active sites located within 3 TAs (from east to west) in Ancho: TA- 49; TA-39; and TA-70.[14]

TA-49 which has been in use at LANL since the mid-1940s is referred to as the "Frijoles Mesa Site." From1959 to August 1961, underground hydronuclear and related experiments were conducted at TA-49. Other activities conducted at TA-49 include: (1) nuclear device safety tests and high explosive (HE) detonations conducted in 37 shafts at depths ranging from 30 to 78 ft (releasing materials including HE, lead, beryllium and RADs in Material Disposal Area AB); (2) development and experiments with containment and sample recovery techniques (resulting in contamination with beryllium, lead and radio nuclides in the area known as Area 4; (3) radiochemistry operations and small-scale shot experiments involving HE detonations (some containing lead and radio nuclides) in Area 11; and (4) confinement experiments consisting of HE detonations in sealed metal "bottles" in Area 12 on 1960 and 1961. The Hazardous Devices Team Training Facility and the Antenna Test Range are also located in this TA. A helicopter pad used for wildlife responses and storage for interagency wildfire response suppliers can also be found within TA-49. TA-49 "is currently restricted to carefully selected functions because of its location near Bandelier National Monument and past use of high-explosives and radioactive materials experiments.

At present, TA-49 contains approximately 20 sites (some are located in the Water/Canon de Valle watershed). See Attach. No. 1 at 28 (site no. 49-001 (a) to 49-009). These sites are comprised of MDAs, underground tanks, a leach field, sumps, burn sites, firing sites, and various septic systems. Three sites within TA-49 have received NFA status by EPA. These sites area 49-007 (a), 49-007 (b), and 49-009. As such, there are presently 17 active sites located within TA-49. To date, LANL has evaluated 16 of the 17 active sites using the EMS assessment (1 site remains unevaluated). Thirteen of the evaluated sites scored less than 40 on the EMS assessment. Three sites in TA-49 – 49-001 (a), 49-001 (g), and 49-005 (a) – scored over 40 on the EMS (these sites are actually located outside of Ancho). See Permit Application at 39 of 42.

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[14] Some sites within these TAs may be located in the neighboring Chaquehui Canyon watershed. For the purposes of organization, however, they will be discussed in this section. In addition, a few sites in TA-33 are located in Ancho Canyon. These sites are addressed in the Chaquehui Canyon watershed section.

TA-39. Just east and down gradient from TA-49 is TA-39 which is known as the Ancho Canyon Site because it is located entirely within the Ancho Canyon watershed (unlike TA-49 or TA-33). TA-39 is the area where LANL studies the "behavior of non nuclear weapons . . . primarily by photographic techniques." In this area, LANL also investigates "various phenomenological aspects of explosives, interactions of explosives, explosions involving other materials, shock wave physics, equation of state measurements, and pulsed-power system design."

At present, TA-39 contains approximately 26 sites in Ancho Canyon (all the sites are located in North Ancho Canyon). See Attach. No. 1 at 25 (site no.39-001(a) to 39-010). Seven sites in TA-39 have received formal NFA status from either EPA or NMED. Thus, there are presently 17 active sites located within TA-39. To date, LANL has evaluated 16 of these 17 sites with its EMS assessments (1 site remains unevaluated). Of the sites evaluated, 11 sites scored under 40 and 5 scored over 40. These 5 high potential sites in Ancho Canyon include: (1) 39-004 (a), a firing site that scored a 74.0 on the EMS assessment; (2) 39-004 (b), a firing site that scored a 74.5 on the EMS assessment; (3) 39-004 (c), a firing site that scored a 74.5 on the EMS assessment; (4) 39-004 (d), a firing site (open detention – active RCRA unit) that scored a 74.0 on the EMS assessment; and (5) 39-004 (e), a firing site that scored a 78.5 on the EMS assessment.

By way of example, with respect to 39-004 (a) (active firing site) LANL's December 16, 1997 EMS assessment documented that the site was located on the Canyon floor, had been bermed to prevent run-on but had no other BMPs in place, had sparse land cover, showed visible evidence of run-off discharge from the site, and was likely contributing potential pollutants to Ancho Canyon. In fact, LANL documented "visible trash and debris in the watercourse." Based on these factors, LANL gave 39-004 (a) a EMS score of 74.

TA-70. The final TA in Ancho Canyon – TA-70 – is the Rio Grande Site. As an undeveloped area, TA-70 serves as an environmental buffer for the high explosive test areas (i.e, TA-39 , TA-68). There are no documented sites located within TA- 70.[15]

In sum, the approximately 36 active sites in Ancho Canyon have generated an enormous amount of solid and hazardous waste. As mentioned earlier, when significant precipitation events occur contaminants from these approximately 34 sites runoff into Ancho's surface waters, soils, and shallow groundwater, eventually making their way to the Rio Grande. According to NMED, "contaminants that have been detected in sediments, surface water, or shallow groundwater during previous investigations conducted in the Ancho watershed include mercury and other metals, explosive compounds, organic constituents, and radionuclides (RAD)."

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[15] There are a number of sites in TA-33 that are located in Ancho. However, because the majority of sites in TA-33 are located in the Chaquehui Canyon watershed, they are addressed in that section of the notice.

NMED/LANL Order on Consent at 71.[16]

G. The Chaquehui Canyon Watershed

The Chaquehui Canyon watershed is located in the southeast portion of the Facility at TA-33. There are approximately 56 active sites within TA-33. Surface water flow in the watershed is ephemeral; however two springs are present along the south-facing wall of the main drainage.

TA-33 is the High Pressure or "HP" area. Here, the "old, High-Pressure (HP) Tritium Laboratory Facility" is being decommissioned. Tritium operations at this site were suspended in 1990, and the tritium inventory and operations were moved to WETF at TA-16. The National Radio Astronomy Observatory's Very Large Baseline Array Telescope is also located at this area. LANL SWEIS, Table S.1.1-1. (Overview of Technical Areas and Their Associated Activities).

TA-33 contains approximately 64 sites. See Attach. No. 1 at 21-23 (site no. 33-001 (a) to 33-017); at 37 (site no. C-33-001 to C-33-003). These sites include MDAs, firing sites, septic systems, outfalls, landfills, former structures, transformers, and soil contamination areas. See id. Eight of these 64 sites have received formal NFA status from either EPA or NMED. Thus, there are approximately 56 active sites located within TA-33. To date, LANL has evaluated these sites using its EMS assessment. Approximately 36 sites scored under 40. Twenty sites scored over 40 and thus are considered to be medium to high potential sites.

The approximately 56 active sites in the Chaquehui Canyon watershed have generated an enormous amount of waste. When significant precipitation events occur contaminants from these approximately 56 sites runoff into Chaquehui's surface waters, soils, and shallow groundwater, eventually making their way to the Rio Grande. According to NMED, "contaminants above background levels have been detected in historical samples of sediments and surface water obtained from [Chaquehui] canyon." Order of Consent at 71.[17]

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[16] The specific contaminants found in sediments, soils, and groundwater in the Ancho watershed in concentrations higher than background levels include: antimony, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, mercury, nickel, silver, thallium, uranium, zinc, cesium-134, europium-152, ruthenium-106, sodium-22, thorium-228, 230, 232, uranium-235, HMX, RDX, anthracene, benzoic acid, bis(2-chloroethyl)ether, bis(2-ethylhexyl)phthalate, butylbenzylphthalate, chrysene, di-n-butylphthalate, and naphthalene. In addition, according to LANL's environmental surveillance reports and their on-line water quality database, the following contaminants have been detected in Ancho's springs: bis(2-ethylhexyl)phthalate, 2,4-dinitrotoluene, HMX, RDX, and tetryl.

[17] The specific contaminants found in sediments, soils, surface water, and groundwater in the Chaquehui watershed in concentrations higher than background levels include: aluminum, antimony, arsenic, barium, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, selenium, silver, thallium, uranium, vanadium, zinc, cesium-137, plutonium-239,

III. REGULATORY BACKGROUND

A. The Clean Water Act

The objective of the Clean Water Act ("CWA"), 33 U.S.C. §§ 1251-1387, is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters" by, among other methods, eliminating "the discharge of pollutants into the navigable waters. . . by 1985." Id. 33 U.S.C. § 1251 (a). Towards this end, the "discharge of any pollutant by any person shall be unlawful" unless in compliance with a section 402 NPDES permit. 33 U.S.C. § 1311 (a).[18] Compliance with an NPDES permit will be deemed compliance with the CWA. See 33 U.S.C. § 1342 (k). Conversely, noncompliance with the terms and conditions of an NPDES permit is a violation of the CWA. Id.

At LANL, the approximately 1,405 industrial stormwater sites in the seven watersheds outlined above are regulated as industrial stormwater discharges requiring NPDES permit coverage under section 402 (p) of the CWA. See 33 U.S.C. § 1342 (p) (3)(A) (permits required for industrial stormwater discharges); 40 C.F.R. § 122.26 (stormwater regulations defining industrial activity); 40 C.F.R. § 122.26 (b)(14) (defining "stormwater discharges associated with industrial activity"). Each one of the approximately 1,405 active sites is a "point at which stormwater associated with industrial activity discharges to waters of the United States." See id. Each one of these approximately 1,405 active sites are point sources "from which pollutants are or may be discharged." 40 C.F.R. § 122.2. In EPA's own words the sites are point sources the regulation of which is critical to ensuring compliance with the Clean Water Act.

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uranium-234, uranium-235, uranium-238, 2-amino-4,6-dinitrotoluene, 4-amino-2,6-dinitrotoluene, 2,4-dinitrotoluene, nitrobenzene, 2-nitrotoluene, 3-nitrotoluene, 4-nitrotoluene, RDX, tetryl, 1,3,5-trinitrobenzene, aroclor-1016, aroclor-1221, aroclor-1232, aroclor-1242, aroclor-1248, aroclor-1254, aroclor-1260, acenaphthene, acenaphthylene, anthracene, acetone, azobenzene, bis(2-ethylhexyl)phthalate, benzene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, butylbenzylphthalate, carbazole, chrysene, 4,4-DDE, 4,4-DDT, dibenz(a,h)anthracene, dibenzofuran, 1,4-dichlorobenzene, 2,4-dimethylphenol, 2,4-dimethylphenol, dieldrin, di-n-butylphthalate, endosulfan I, endosulfan II, endrin aldehyde, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, methylene chloride, 2-methylnaphthalene, 2-methylphenol, 4-methylphenol, naphthalene, phenanthrene, pyrene, pyridine, toluene, trichloroethene, 1,2,4-trimethylbenzene, xylene. The following contaminants have been found in a spring discharging near the mouth of Chaquehui Canyon: 2-Amino-4,6-dinitrotoluene, 4-chloroaniline, 2,4-dinitrotoluene, RDX, 1,3,5-trinitrobenzene.

[18] The term "discharge of a pollutant" means any "addition of any pollutant to navigable waters from a point source." 33 U.S.C. § 1362 (12). In turn, the term "point source" means "any discernable, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock . . . vessel . . . from which pollutants are or may be discharged." 33 U.S.C. § 1362 (14).

B. LANL's NPDES Multi-Sector General Permit (MSGP) for the Sites

Since the promulgation of stormwater regulations by EPA under the NPDES program in 1990, LANL has pursued permit coverage for stormwater discharges from the sites. LANL originally obtained a "General Permit" from EPA to cover industrial activities identified based on Standard Industrial Codes (SIC) as required by 40 C.F.R. § 122.26 (b)(14)(i-xi).

In 1995, EPA modified the NPDES stormwater permit and issued an industrial "sector" permit known as the Multi-Sector General Permit (hereinafter "MSGP"). The MSGP is a one size fits all permit authorizing the discharge of pollutants from various types or sectors of industrial activity i.e., asphalt paving, primary metals, landfills, scrap recycling, and hazardous waste treatment, storage, and disposal. LANL has applied for and received coverage under the MSGP since 1995.

At present, all discharges and runoff from the approximately 1,405 sites located in the seven watersheds are or should be regulated under LANL's MSGP (permit numbers NMR05A734 (University of California) and NMR05A735 (DOE)), which became effective on December 23, 2000 and expired on December 23, 2005 but has been administratively extended pending the issuance of a new MSGP. Most of the approximately 1,405 sites fall within sector K (hazardous waste treatment, storage, or disposal facilities) of the MSGP but may also include: sector L (landfills and land application sites); sector D (asphalt paving and roofing materials); sector F (primary metals); sector N (scrap recycling facilities); sector O (steam electric generating facilities); sector P (land transportation); and sector AA (fabricated metals products).

As written, the MSGP includes a number of mandatory requirements for each of the sites which are outlined in greater detail below (see violations section). Generally, however, the MSGP includes: (1) the requirement to prepare a Stormwater Pollution Prevention Plan (SWPPP) with effective pollution control measures or BMPs; (2) a site map identifying all potential pollutant sources and outfalls; (3) monitoring requirements; (4) numeric limitations on the amount and types of pollutants discharged; (5) sector specific requirements; and (6) various reporting requirements.

C. The FFCA and LANL's Individual Stormwater NPDES Permit Application for the Sites

As mentioned earlier, in the course of reviewing LANL's MSGP for the sites (which expired in December, 2005 but remains in effect) EPA realized that LANL was failing to comply with the terms and conditions of its NPDES stormwater permit in a number of significant respects. In EPA's own words, the "existing [MSGP] does not address all of the [sites], their specific pollutants, and the parameters to be monitored because of LANL's unique circumstances." Given these violations, and the overall unique nature of LANL's industrial sites, both EPA and LANL decided that an Individual NPDES permit for the sites as opposed to a one size fits all MSGP would make more sense. Towards this end, on February 3, 2005 LANL and EPA entered into the Federal Facility Compliance Agreement ("FFCA").

The purpose of the FFCA was to establish a program and schedule of compliance for regulation of industrial stormwater discharges from all sites (i.e., SWMUs, AOCs, and PRSs) at LANL until EPA issues an individual NPDES stormwater permit to regulate those discharges. The "FFCA is an enforcement tool used by [EPA] to bring a federal facility [like LANL] into compliance with its [NPDES] stormwater permitting program." EPA letter (dated 2/3/05). The FFCA requires LANL to implement BMPs and monitoring at all sites that scored over 40 on LANL's EMS assessment. The FFCA also requires LANL to prepare a new SWPPP for the sites and a Stormwater Monitoring Plan (SWMP).

Today, LANL's application for an individual NPDES stormwater permit for the sites (dated March, 2005) is still pending. When a draft individual permit will be available for public review comment and a final permit issued is unknown. EPA reports that since LANL "is extremely large, with unusual geography and unique pollutants, it is difficult to predict the specific time frame for development and issuance of the NPDES permit."

Regardless, having submitted an individual NPDES permit application to EPA and having agreed to comply with the FFCA in the interim *does not* relieve LANL of its obligation to comply with the terms of its current MSGP. During the period the FFCA is in effect, LANL must comply with the MSGP. In EPA's own words, "[u]ntil [we] issue an individual permit, [LANL] must comply with the schedule established by this agreement for monitoring and reporting of stormwater discharges from the Sites . . . [and] must comply with all requirements of the current [MSGP]. This Agreement does not constitute a waiver or modification of the terms or conditions of any NPDES permit." FFCA, p. 3-4.

IV. CLEAN WATER ACT (CWA) VIOLATIONS

Any MSGP "noncompliance constitutes a violation of the CWA and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial or a permit renewal application." 9.1 MSGP (Duty to Comply).

As outlined below, LANL – while taking a step in the right direction by signing the FFCA and submitting an individual permit application – is still failing to comply with the terms and conditions of its MSGP in a number of significant respects. As such, LANL has violated, and continues to violate, the CWA. Each of these violations are outlined below.

A. Monitoring Violations

1. Failure to conduct quarterly visual monitoring

Section 5.1.1. of the MSGP outlines the necessary procedures and requirements for quarterly visual monitoring. These procedures and requirements "are applicable to all facilities covered under [the MSGP]." 5.1.1.

Specifically, LANL is required to "perform and document a quarterly visual examination of a stormwater discharge associated with industrial activity *from each outfall*" except for exempted discharges, i.e., discharges for which a waiver has been obtained. 5.1.1.1. (emphasis added). An outfall – which is a "point source" – is the place "from which pollutants are or may be discharged." 40 C.F.R. § 122.2. An outfall is "the point at which stormwater associated with industrial activity discharges to waters of the United States or a separate storm sewer system" (i.e., roads with drainage systems, streets, catch basins, curbs, gutters, ditches, man-made channels or storm drains).

The visual examinations must be conducted at each outfall and "must be made during daylight hours" (e.g., normal working hours). Visual examinations must also be made of samples collected within the first 30 minutes of a storm or snow melt event (or as soon thereafter as is practicable but not to exceed one hour of when the runoff or snowmelt begins discharging from [the] facility). In conducting such examinations, the examiner should look for variations in color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious pollution indicators.

If "no storm event resulted in runoff from the facility during a monitoring quarter, [LANL] is excused from visual monitoring for that quarter, provided [that LANL] document in [its] monitoring records that no runoff occurred. [LANL] must sign and certify the documentation in accordance with Part 9.7." 5.1.1. With respect to "inactive and unstaffed" sites, LANL may exercise a waiver of these visual monitoring requirements if: (1) the "facility remains inactive and unstaffed;"(2) LANL maintains a certificate with its SWPPP stating that the site is inactive and unstaffed; and (3) LANL determines, in the certificate, that "performing visual examinations during a qualifying event *is not feasible*." 5.1.1.3.

LANL is currently violating section 5.1.1. of the MSGP by failing to conduct and document quarterly (4 times a year) visual examinations of stormwater discharges from *each outfall*. The date(s) of these violations are the 4 times a year that LANL has failed, and continues to fail to conduct the requisite monitoring. For the purposes of this notice, LANL violated this monitoring requirement by failing to conduct quarterly visual monitoring over the past six years, in 2001, 2002, 2003, 2004, 2005, and the first quarter of 2006. These violations are on-going.

As outlined earlier, and according to LANL's own data, there are approximately 1,405 active sites at LANL. Based on LANL's own data, and until accurate NFA determinations are made for individual sites, each one of these approximately 1,405 sites located at LANL qualifies as an outfall that must be visually monitored by LANL.[19]

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[19] In United States v. Earth Sciences, the Tenth Circuit noted that "point sources" must be interpreted broadly to effectuate the remedial purposes of the Act. 599 F.2d 368, 373 (10Th Cir. 1979). The EPA itself stated its intent to "embrace the broadest possible definition of point source consistent with the legislative intent of the Clean Water Act." 55 Fed. Reg. 47990, 47997. This definition includes "any seeps coming from identifiable sources of pollution (i.e. mine workings, land application sites, ponds, pits, etc..)." EPA, Region 8, Letter from Director of

At present, LANL *is not* conducting quarterly visual monitoring at each of the approximately 1,405 sites. This is a direct violation of 5.1.1 of the MSGP and CWA. Pursuant to a the SWPPP (prepared in response to the FFCA and submitted with LANL's new individual permit application), LANL is proposing to only conduct site specific monitoring at the "site-monitoring area" (SMA) level (a large area relating to one or more sites based on a common drainage area) and only at a small fraction of the approximately 1,405 active sites. A SMA is often downstream from multiple sites and other waters that can dilute the sampling.

In the Los Alamos/Pueblo Canyons watershed, there are approximately 278 active sites. See Section II. A. Of these 278 active sites, LANL is only proposing to monitor 57 sites at the SMA level and none at the individual outfalls. The rest of the monitoring will be done on an imprecise watershed basis. In the Sandia Canyon watershed, there are approximately 180 active sites. See Section II. B. Of these 180 sites, LANL is only proposing to monitor 19 sites at the SMA level and none at the individual outfalls. The remaining sites will be monitored via 8 watershed monitoring stations. In the Mortandad Canyon watershed there are approximately 216 active sites. See Section II. C. Of these 216 active sites, LANL is only proposing to monitor 91 (less than 50%) at the SMA level. The remaining sites will be monitored via 9 watershed monitoring stations. In the Pajarito Canyon watershed there are approximately 245 active sites. See Section II. D. LANL is proposing to monitor approximately 54 of these sites (less that 30%) at the SMA level. The remaining sites will be monitored via 9 watershed monitoring stations. In the Water/Canon de Valle watershed, there are approximately 395 active sites. See Section II. E. LANL is only proposing to monitor 81 of these sites (just over 20%) at the SMA level. The remaining sites will be monitored via 9 watershed monitoring stations.

In Ancho, LANL is proposing to conduct SMA monitoring below approximately 5 of the 36 active sites. These 5 sites – all of which scored over 40 on LANL's EMS Assessment – include: (1) 39-004 (a) - Firing site – 74.0 (EMS 1997); (2) 39-004 (b) - Firing site – 74.5 (EMS 1997); (3) 39-004 (c) - Firing site (open detention - active RCRA unit) – 74.5 (EMS 1997); (4) 39-004 (d) - Firing site (open detention – active RCRA unit) – 74.0 (EMS 1997); and(5) 39-004 (e) - Firing site – 78.5 (EMS 1997). In the Chaquehui Canyon watershed, LANL is proposing to conduct SMA monitoring for only 23 of the 56 active sites. The rest of the watershed will be "monitored" via two watershed monitoring stations: E338 and E340.

While proposing to monitor some sites at the SMA level is a step in the right direction and an improvement over the current situation (i.e., no monitoring at all), this failure to monitor at each outfall and at less than 10 % of the total sites does not protect human health and the environment and does not bring LANL into compliance with its current MSGP or the CWA. All of the approximately 1,405 active sites have a potential to discharge and none of these approximately 1,405 active sites have been given a "No Further Action" (NFA) determination. Moreover, nowhere in the current SWPPP does LANL exercise and receive a waiver from such monitoring pursuant to 5.1.1.3 of the MSGP.

Water Management Division.

2. Failure to conduct the requisite benchmark monitoring

Pursuant to 5.1.2 of the MSGP, LANL is required to conduct benchmark monitoring at each outfall, i.e., at each point of discharge at each of the approximately 1,405 active sites. The specific requirements for benchmark monitoring (how often, what type, and for what) – which are organized, and vary, by industrial sector (as mentioned earlier, most of the sites fall within sector K or sector L) - are outlined in 5.1.2 of the MSGP.

Overall, benchmark monitoring is used to determine the effectiveness of LANL's SWPPP in controlling the discharge of pollutants to receiving waters. Benchmark values (organized by industrial sector), are not viewed as effluent limitations. As such, an exceedance of a benchmark value does not, in and of itself, constitute a violation of the MSGP. However, if exceedances do occur, then the inference is that the existing BMPs are ineffective, the SWPPP needs to be updated, and that a violation of water quality standards may be occurring. In addition, an exceedance of a benchmark value may identify facilities that would be more appropriately covered under an individual permit.

At present, LANL is *not conducting any* benchmark monitoring for the approximately 1,405 active sites located in the Facility. LANL's failure to conduct any benchmark monitoring for these 1,405 sites is a direct violation of section 5.1.2 of the MSGP and CWA. Under the MSGP, LANL was to conduct benchmark monitoring between October 1, 2001 and September 30, 2002 (year two of the MSGP) and between October 1, 2003 and September 30, 2004 (year four of the MSGP). See 5.1.2.1. LANL is required to monitor quarterly (4 times a year) during at least one, and potentially both, of these monitoring periods. Thus, the date(s) of these violations are the 4 times a year that LANL has failed, and continues to fail, to conduct the requisite benchmark monitoring. These violations occurred first during year two of the MSGP, from October 1, 2001 to September 30, 2002, and again during year four of the MSGP (from October 1, 2003 to September 30, 2004) at each outfall and at each site. These violations are on-going.

Pursuant to a new SWPPP and SWMP (prepared in response to the FFCA and submitted with LANL's new individual permit application), LANL is only proposing to conduct such benchmark monitoring on a limited watershed basis. Approximately 49 "gaging stations" will used to monitor approximately 1,405 active sites. This watershed based plan defeats the very purpose of conducting benchmark monitoring in the first place. If exceedances occur, LANL will be unable to determine where the problem is occurring. How will LANL will be able to determine if exceedances of numeric limitations occur, BMPs are effective, or if the SWPPP needs to be updated if it cannot determine the cause or source of the exceedance? Indeed, in a July 12, 1999 Inspection Report, EPA questioned LANL's watershed monitoring plan, stating that the Facility's "watershed basis" monitoring results in the "dilution" and may not meet sampling requirements of the permits." NMED agrees, stating that LANL's watershed monitoring does not meet the Facility's NPDES requirements.

By way of example, there are approximately 36 active sites in Ancho Canyon located upstream from E274 and E275 – the two proposed watershed monitoring stations for the Ancho

watershed. If masked by dilution from flows other than from each outfall and if exceedances are reported at E274 or E275, how will LANL know which site is the source of the problem? Even worse, there are approximately 18 sites in Ancho Canyon's TA-33 (some of these sites are located in Chaquehui Canyon) that are adjacent to the Rio Grande and down-gradient from these two proposed monitoring stations. No benchmark monitoring, let alone effective outfall monitoring, is proposed for these sites. As with the visual monitoring, nowhere in the current SWPPP does LANL exercise and receive a waiver from such monitoring pursuant to 5.1.2.3 of the MSGP.

3. Failure to conduct compliance monitoring

Pursuant to 5.1.4 of the MSGP, LANL is required to conduct compliance monitoring to evaluate compliance with numerical effluent limitations at each outfall, i.e., at each of the approximately 1,405 discharge points for most sectors. The specific requirements for compliance monitoring (how often, what type, and for what) – which are organized, and vary, by industrial sector (most sites fall within sector K or sector L) - are outlined in part 6 of the MSGP. See 6.K. (Table K-1); 6.L (Table L-1).

At present, LANL is *not conducting any* compliance monitoring for the approximately 1,405 active sites located at LANL. LANL's failure to conduct any compliance monitoring for these 1,405 sites is a direct violation of section 5.1.4 and 6.K. of the MSGP and CWA. Pursuant to the MSGP, LANL was to conduct compliance monitoring once a year during each year of the term of the MSGP. See 6.K.5. The date(s) of these violations therefore are the one time a year, over the past five years, that LANL has failed, and continues to fail, to conduct the requisite compliance monitoring. For the purposes of this notice, LANL violated this monitoring requirement by failing to conduct compliance monitoring in 2001, 2002, 2003, 2004, and 2005. These violations are on-going.

Pursuant to a new SWPPP and SWMP (prepared in response to the FFCA and submitted with LANL's new individual permit application), LANL is also not proposing to conduct any compliance monitoring on either a watershed, site-management area (SMA), or site-specific basis. As with the other monitoring requirements, nowhere in the current SWPPP does LANL exercise and receive a waiver from such monitoring pursuant to 5.3 of the MSGP.

4. Failure to obtain representative monitoring data

Section 9.16.1 of the MSGP, all "[s]amples and measurements taken for the purposes of monitoring *must be representative* of the monitored activity." LANL's current monitoring of the approximately 1,405 sites located at LANL (which, in essence, is no monitoring) and proposed monitoring plan for such sites in the current SWPPP and SWMP is not representative of the activity that needs to be monitored. Thus, LANL has violated, and continues to violate, this requirement of the MSGP. This violation occurred in 2001, 2002, 2003, 2004, and 2005. This violation is on-going.

As mentioned earlier, LANL is proposing to only conduct "site specific monitoring" at the SMA level and only below a small fraction of the total active sites (less than 10%) . The remaining sites will be monitored at the imprecise watershed level. For the purposes of determining where exceedances are occurring or where pollution control measures need to be repaired or altered, such watershed monitoring is useless and not representative of the monitored activity.

B. Reporting Violations and Exceedances

1. Failure to submit analytical monitoring (benchmark and compliance) results for each outfall on a discharge monitoring report (DMR) form

Pursuant to 7.1 of the MSGP, LANL is required to "submit analytical monitoring results [i.e., benchmark and numeric limitations] obtained from *each outfall* associated with industrial activity . . . on a Discharge Monitoring Report (DMR) form (one form must be submitted for each storm event sampled)." (emphasis added).

At present, LANL has yet to submit even one site-specific DMR for any of the approximately 1,405 active sites located at LANL (LANL only submits DMRs for its watershed monitoring stations). This is a direct violation of the MSGP and CWA. Under the MSGP, such DMRs for monitoring of numeric limitations are to be submitted to the EPA by the 28th day of the month following the monitoring period. For the past 5 years, LANL has failed, and continues to fail, to submit DMRs by the 28th day of the month following the monitoring period. These violations occurred approximately 12 times a year (i.e., on a monthly basis) in 2001, 2002, 2003, 2004, and 2005. For benchmark monitoring, LANL is to save and submit its results for the first monitoring year (2001-2002) by January 28, 2003 and save and submit its results for the second monitoring year (2003 - 2004) by January 28, 2005. Thus, the violations for reporting benchmark monitoring occurred on January 28, 2003 and January 28, 2005 for each parameter. These violations are on-going.

Based on LANL's action in other watersheds at the Facility and on representations made in LANL's current, individual permit application (that watershed monitoring or gaging stations are "outfalls"), the Parties anticipate that LANL will only submit DMR forms for benchmark monitoring from approximately 49 watershed monitoring stations. Such monitoring stations, however, are not outfalls as that term is defined in the regulations and implemented by regulatory agencies. Rather, the approximately 1,405 active sites located in LANL each have individual outfalls (some have multiple outfalls) and are point sources where contaminants may be discharged into the waters of the U.S. Pursuant to section 7.1, therefore, LANL must, but has failed to, submit DMR forms for each of these sites and outfalls.

2. Failure to produce a site map identifying all outfalls

Pursuant to section 4.2.2 of the MSGP, LANL must prepare "a legible site map" identifying, among other things, the: (1) directions of stormwater flow; (2) locations of all

existing BMPs; (3) locations of all surface water bodies; (4) locations of potential pollutant sources; (5) locations of major spills or leaks; (6) locations of activities that may expose waste to precipitation events; and (7) locations of stormwater outfalls. LANL has, and continues to violate section 4.2.2 of the MSGP by failing to produce such a map of the Facility that identifies all BMPs, potential pollutant sources, and outfalls. This violation is on-going.

C. Pollution Control Violations

1. Failure to have "effluent limitations" in place for each point source

All NPDES permits must contain "effluent limitations for point sources." 33 U.S.C. § 1311 (b)(1)(A). An "effluent limitation means any restriction . . .on quantities, rates, and concentrations of chemical, physical, biological, and other constituents which are discharged from point sources into navigable waters." 33 U.S.C. § 1362 (14). By way of example, effluent limitations for industrial stormwater point sources could, by definition, include numeric limitations (where feasible) and best management practices See 61 Fed. Reg. 57425-26. Here, only a small percentage of the approximately 1,405 active sites in LANL have effluent limitations in place.

In Los Alamos/Pueblo Canyon watershed there are approximately 278 active sites. See Section II. A. Of these, only about 30 sites – just over 10% – have effluent limitations in place (in this case BMPs). In the Sandia Canyon watershed, there are approximately 180 active sites. Of these, only about 12 have effluent limitations (BMPs) in place.

In the Mortandad Canyon watershed there are approximately 216 active sites. Of these, only 66 sites actually have effluent limitations (BMPs) in place. In the Pajarito Canyon watershed there are approximately 245 active sites. Of these, only 25 sites actually have effluent limitations (BMPs) in place. In the Water/Canon de Valle watershed there are approximately 395 active sites. Of these, only 58 actually have effluent limitations (BMPs) in place.

In the Ancho Canyon watershed, of the approximately 36 active sites – sites where industrial materials or activities are exposed to stormwater – only 5 sites actually have "effluent limitations" in place (in this case BMPs). These 5 sites include: (1) 39-004 (a) (Firing site with sandbags and asphalt/concrete to retain sediment and divert runoff); (2) 39-004 (b) (Firing site with sandbags, straw wattles, and rock check dam to retain sediment and to assist with dissipation); (3) 39-004 (d) (Firing site with earthen berm, sandbags, and retention structure/artificial wetland to retain sediment); (4) 39-004 (c) (Firing site with rock check dam for dissipation); and (5) 39-004 (e) - Firing site. In the Chaquehui Canyon watershed, there are approximately 56 active sites. See Section II.G.. Of these, only 9 sites have effluent limitations (BMPs) in place.

Thus, of the 1,405 total active sites located in LANL, only 205 actually have effluent limitations in place (this is a rough estimate – a number of sites that scored under 40 on the EMS

may also have BMPs in place). The remaining 1,200 active sites have no BMPs in place or any other type of numeric or non-numeric effluent limitation. This is a violation of sections 301 and 402 of the CWA. See 33 U.S.C. §§ 1311, 1342. This violation has occurred over the past five years, since the MSGP took effect (from 2001-2005), and is on-going. LANL is has violated, and continues to violate, the CWA and implementing regulations every day that it fails to have effluent limitations (either numeric or non-numeric) in place for the approximately 1,200 active sites at LANL. These violations are on-going.

2. Failure to have best management practices (BMPs) in place (or a plan to implement BMPs) for all potential pollution sources

Section 4.2.7 requires LANL to "[d]ecribe the type and location of existing . . .BMPs selected for each of the areas where industrial materials or activities are exposed to stormwater. All of [these] areas . . .should have a BMP identified for the area's discharge." For areas where BMPs are not currently in place, LANL is required to "describe [the] appropriate BMPs that [it] will use to control pollutants in stormwater discharges."

LANL is currently violating 4.2.7 of the MSGP. As mentioned earlier, of the approximately 1,405 active sites located at LANL – sites where industrial materials or activities are exposed to stormwater – only 205 sites actually have BMPs in place. Sites like 50-006 (d) in Mortandad Canyon that scored 89 on the EMS (one of the highest scores) and 01-003 (a) that scored 79 on the EMS have no BMPs in place. At present, there are no affirmative plans to install more BMPs (or, at the very least, has not described any such plans or what type of BMPs it will use and when) for the remaining sites in LANL's SWPPP. This is a violation of section 4.2.7 of the MSGP.

These violations have occurred over the past five years, since the MSGP took effect (from 2001-2005), and are on-going. LANL has violated, and continues to violate section 4.2.7 of the MSGP every day and for every site that it fails to have BMPs (or even an affirmative plan to install BMPs) in place for approximately 1,200 active sites (see above). These violations are on-going for every day and for each site.

3. Failure to conduct a comprehensive facility inspection

Pursuant to section 4.2.7.2.1.5, LANL is required to "inspect *all areas* of the facility where industrial materials or activities are exposed to stormwater." The inspection must include "an evaluation of existing stormwater BMPs." The SWPPP must identify how often such inspections will be conducted. In addition, any deficiencies in the implementation of the SWPPP must be corrected as soon as practicable, but no later than within 14 days of the inspection. The results of this inspection must be documented in LANL's SWPPP.

LANL has violated, and continues to violate, this section of the MSGP because there are a number of active sites located in the Facility that have never been inspected and/or assessed by LANL or identified in the SWPPP.

In the Los Alamos/Pueblo Canyon watershed these uninspected sites include, but are not limited to: (1) 73-007 (septic tank and drain lines); (2) C-73-005 (a) (excavation-septic tank/outhouse trench); (3) C-73-005 (b) (excavation-septic tank/outhouse trench); (4) C-73-005 (c) (excavation-septic tank/outhouse trench); (5) C-73-005 (d) (excavation-septic tank/outhouse trench); (6) C-73-005 (e) (excavation-septic tank/outhouse trench); (7) C-73-005 (f) (excavation-septic tank/outhouse trench); (8) C-00-41 (asphalt and tar remnant site); (9) C-00-44 (lead contaminated area); (10) 00-010 (b) (surface disposal site); (11) 00-011 (d) (mortar impact area); (12) 00-017 (waste lines); (13) 00-030 (k) (septic system); (14) 00-031 (a) (soil contamination beneath former service station); (15) 00-034 (a) (landfill, eastern area); (16) 00-0034 (b) (landfill, western area); and (17) 32-004 (drainline and outfall).[20]

In the Sandia Canyon watershed these uninspected sites include, but are not limited to: (1) 03-001 (e) (storage area); (2) 03-001 (I) (satellite accumulation area); (3) 03-003 (d) (storage area); (4) 03-003 (e) (storage area); (5) 03-003 (f) (tank); (6) 03-003 (g) (spill area); (7) 03-003 (h) (storage area); (8) 03-003 (i) (storage area); (9) 03-003 (j) (storage area); (10) 03-003 (k) (storage area); (11) 03-003 (l) (storage area); (12) 03-003 (n) (storage area); (13) 03-003 (o) (storage area); (14) 03-008 a (firing site); (15) 03-014 (a2) (wastewater treatment facility); (16) 03-014 (w) (wastewater treatment facility); (17) 03-014 (x) (wastewater treatment facility); (18) 03-014 (y) (wastewater treatment facility); (19) 03-014 (z) (wastewater treatment facility); (20) 03-025 (c) (tank); (21) 03-026 (a) (sump); (22) 03-026 (c) (tank); (23) 03-027 (separation site); (24) 03-034 (a) (tank); (25) 03-038 (c) (waste lines); (26) 03-038 (d) (waste lines); (27) 03-038 (f) (waste lines); (28) 03-041 (underground tank); (29) 03-043 (b) (aboveground tank); (30) 03-043 (f) (above ground tank); (31) 03-043 (g) (aboveground tank); (32) 03-047 (g) (drum storage); (33) 03-051 (a) (soil contamination); (34) 03-051 (b) (soil contamination); (35) 03-053 (operational facility); (36) 03-055 (c) (outfall); and (37) 03-056 (b) (container storage area); (38) 03-056 (h) (transformer storage area).

In the Mortandad Canyon watershed these uninspected sites include, but are not limited to: (1) 54-001 (b) (storage area); (2) 54-001 (e) (storage area); (3) 54-002 (storage area); (4) 54-007 (e) (septic system); (5) 54-009 (treatment tanks); (6) 54-012 (a) (drum compactor); (7) 54-014 (a) (MDA); (8) 54-015 (j) (storage area); and (9) 54-016 (b) (sump).

In the Pajarito Canyon watershed the uninspected sites include, but are not limited to: (1) C-06-003 (building for explosive shots); (2) C–6-007 (boiler for steam generation); (3) C-06-008 (magazine for explosives); (4) C-06-009 (magazine); (5) C-06-010 (magazines for explosive storage); (6) C-06-011 (magazine for explosive storage); (7) C-06-012 (magazine for explosive storage); (8) C-06-013 (magazine for explosive storage); (9) C-06-014 (magazine for explosive storage); (10) C-06-015 (magazine for explosive storage); (11) 40-007 (b) (storage area); (12) 40-007 (c) (storage area); (13) 40-007 (d) (storage area); (14) 40-007 (e); (15)18-002 (c) (drop tower); (16) 18-005 (b) (storage area); (17) 18-005 (c) (storage area); (18) 18-008 (underground

[20] There are more such "uninspected" sites located throughout the LANL Facility beyond the specific sites described herein. Such sites are known, or should be known, to the owners and operators of the Facility and may be included in future actions without further notice.

tank); and (19) 18-011 (soil containment area).

In the Water/Canon de Valle watershed the uninspected sites included, but are not limited to: (1) 16-003 (q) (sump and drainlines); (2) 16-008 (b) (surface impoundment); (3) 16-017 (a)-99 (former structures); (4) 16-017 (b)-99 (former structures); (5)16-017 (c)-99 (former structures); (6) 16-017 (d)-99 (former structures); (7) 16-017 (e)-99 (former structures); (8)16-017 (f)-99 (former structures); (9)16-017 (g)-99 (former structures); (10)16-017 (h)-99 (former structures); (11) 16-017 (i)-99 (former structures); (12) 16-017 (j)-99 (former structures); and (13)16-017 (k)-99 (former structures).

In Ancho, the uninspected sites include, but are not limited to: (1) 49-005 (a) (Landfill east of Area 10); (2) 49-005 (b) (Landfill - Area 5); (3) 39-002 (d) (Storage area); (4) 39-002 (e) (Storage area); (5) 39-002 (f) (Storage area); (6) 39-007 (e)(Storage area).[21]

This violation has occurred over the past five years, since the MSGP took effect (from 2001-2005), and is on-going. LANL is has violated, and continues to violate, section 4.2.7.2.1.5 of the MSGP every day that it fails to conduct the requisite comprehensive facility inspection. These violations are on-going for every day and for every site.

4. Failure to maintain effective BMPs

Section 4.3 of the MSGP mandates that all BMPs identified in LANL's SWPPP "be maintained in effective operating condition." If site inspections identify BMPs that are not operating effectively, maintenance "must be performed before the next anticipated storm event, or as necessary to maintain the continued effectiveness of stormwater controls." Here, LANL is violating section 4.3 of the MSGP by failing to maintain effective BMPs.

By way of example, in the Los Alamos/Pueblo Canyons watershed, 30 of the approximately 49 sites in that scored over 40 on the EMS (medium to high potential for erosion/runoff) already have BMPs in place. In the Sandia Canyon watershed 12 of the 25 sites that scored over 40 on the EMS (moderate to high potential for runoff of contaminants) already have BMPs in place. In the Mortandad Canyon watershed 66 of the 83 sites that received an EMS score over 40 already have BMPs in place. In the Pajarito Canyon watershed, 25 of the 54 sites that scored over 40 on the EMS already have BMPs in place. In the Water/Canon de Valle watershed 58 of the sites that scored over 40 already have BMPs in place.

In the Ancho Canyon watershed the 5 sites that scored *greater than 40* on LANL's EMS have BMPs in place. These sites include: (1) 39-004 (a) - Firing site – 74.0 (EMS 1997); (2) 39-004 (b) - Firing site – 74.5 (EMS 1997); (3) 39-004 (c) - Firing site (open detention - active

[21] There is some confusion regarding two "undocumented" sites: (1) 39-002 (d); and (2) 39-002 (f). LANL does not include these two sites on its master list of sites that underwent an EMS assessment. However, Concerned Citizens did discover an earlier assessment for these two sites dated August 4, 1997.

RCRA unit) – 74.5 (EMS 1997); (4) 39-004 (d) - Firing site (open detention – active RCRA unit) – 74.0 (EMS 1997); and (5) 39-004 (e) - Firing site – 78.5 (EMS 1997). Each of these 5 sites are considered to have a high potential for constituents in surface water and /or sediment in stormwater runoff to migrate off the site an impact surface water quality. In the Chaquehui Canyon watershed, 9 of the 20 sites that scored over 40 on the EMS already have BMPs in place.

Clearly, the BMPs currently in place for the sites are not working and are not effective. Most of the highest scoring sites – those that pose highest potential for contaminated stormwater runoff – have BMPs in place. Indeed, site 01-003 (e), a surface disposal site in the Los Alamos/Pueblo Canyons watershed that received the highest EMS score in the watershed (83.0), has BMPs in place.

Without question, the BMPs are not effectively controlling runoff from these sites. Moreover, LANL does not have an affirmative plan in place to conduct maintenance activities to improve the BMPs at these sites. This is a violation of section 4.3 of the MSGP. This violation has occurred over the past five years, since the MSGP took effect (from 2001-2005), and is on-going. LANL has violated, and continues to violate, section 4.3 of the MSGP every day that it fails maintain effective BMPs. These violations are on-going.

5. Failure to avoid causing violations of water quality standards

Section 3.3 of the MSGP mandates that discharges "must not be causing or have the reasonable potential to cause or contribute to a violation of water quality standard[s]." Here, LANL is violating section 3.3 of the MSGP because the approximately 1,405 active sites have caused, and continue to cause, violations of water quality standards.

In the Los Alamos/Pueblo Canyons watershed, LANL's approximately 259 active sites have caused, and continue to cause, violations of New Mexico's water quality standards for gross alpha, selenium, mercury, and PCBs. In the Sandia Canyon watershed, LANL's approximately 180 active sites have caused, and continue to cause, violations of New Mexico's water quality standards for PCBs. In the Mortandad Canyon watershed, LANL's approximately 216 active sites have caused, and continue to cause, impairment of water quality standards for gross alpha, selenium, and PCBs. In the Pajarito Canyon watershed, LANL's approximately 245 sites have caused, and continue to cause, impairment of water quality standards for gross alpha and selenium. In the Water/Canon de Valle watershed, LANL's approximately 395 active sites have caused, and continue to cause, impairment of water quality standards for gross alpha and selenium.

These violations have occurred over the past six years, since the MSGP took effect (from December 23, 2000 to the present). LANL has violated, and continues to violate, section 3.3 of the MSGP every day that continues to violate New Mexico's water quality standards. These violations are on-going for each outfall.

D. Section 313 Violations

Pursuant to section 313 of the CWA, 33 U.S.C. § 1323, each department, agency, or instrumentality of the Federal government having jurisdiction over any property or facility or engaged in any activity resulting, or which may result, in the discharge or runoff of pollutants "shall be subject to, and comply with, all Federal, State, interstate, and local requirements . . .respecting the control and abatement of water pollution."

With respect to the approximately 1,405 stormwater sites at issue in this notice (and other sources of impairment from the Facility, i.e., outfalls, legacy waste, construction activity, etc. . .) LANL is currently violating section 313 of the CWA by failing to comply with all Federal and State requirements including, but not limited to, New Mexico's water quality standards for the seven watersheds on the Parajito Plateau located within the Facility (including standards for all perennial and intermittent and ephemeral waters) and the Rio Grande. See Draft SWEIS at 4-36, 4-37 (list of water quality impaired reaches on the LANL property).

E. Unauthorized Discharges

1. Sites not identified in the MSGP or surface water pollution prevention plan (SWPPP)

Pursuant to the MSGP, LANL is only authorized to discharge stormwater from those sites that are "specifically identified by outfall or discharge location in the SWPPP." Thus, LANL is only authorized to discharge stormwater from those sites identified in the SWPPP.

Currently, there are a number of unidentified sites at LANL. By "unidentified," the Parties mean that the site does not appear on any of LANL's EMS Assessments and is not included in the FFCA, SWMP, or SWPPP. The site does, however, appear on NMED's April 28, 2005 "Master List" of all sites (SWMUs and AOCs) located at LANL. See Attach. No. 1.

In the Los Alamos/Pueblo Canyon watershed these unidentified sites include, but are not limited to: (1) 73-007 (septic tank and drain lines); (2) C-73-005 (a) (excavation-septic tank/outhouse trench); (3) C-73-005 (b) (excavation-septic tank/outhouse trench); (4) C-73-005 (c) (excavation-septic tank/outhouse trench); (5) C-73-005 (d) (excavation-septic tank/outhouse trench); (6) C-73-005 (e) (excavation-septic tank/outhouse trench); (7) C-73-005 (f) (excavation-septic tank/outhouse trench); (8) C-00-41 (asphalt and tar remnant site); (9) C-00-44 (lead contaminated area); (10) 00-010 (b) (surface disposal site); (11) 00-011 (d) (mortar impact area); (12) 00-017 (waste lines); (13) 00-030 (k) (septic system); (14) 00-031 (a) (soil contamination beneath former service station); (15) 00-034 (a) (landfill, eastern area); (16) 00-0034 (b) (landfill, western area); and (17) 32-004 (drainline and outfall).[22]

[22] There are more such "unidentified" sites located throughout the LANL Facility beyond the specific sites described herein. Such sites are known, or should be known, to the owners and operators of the Facility and may be included in future actions without further notice.

In the Sandia Canyon watershed these unidentified sites include, but are not limited to: (1) 03-001 (e) (storage area); (2) 03-001 (I) (satellite accumulation area); (3) 03-003 (d) (storage area); (4) 03-003 (e) (storage area); (5) 03-003 (f) (tank); (6) 03-003 (g) (spill area); (7) 03-003 (h) (storage area); (8) 03-003 (i) (storage area); (9) 03-003 (j) (storage area); (10) 03-003 (k) (storage area); (11) 03-003 (l) (storage area); (12) 03-003 (n) (storage area); (13) 03-003 (o) (storage area); (14) 03-008 a (firing site); (15) 03-014 (a2) (wastewater treatment facility); (16) 03-014 (w) (wastewater treatment facility); (17) 03-014 (x) (wastewater treatment facility); (18) 03-014 (y) (wastewater treatment facility); (19) 03-014 (z) (wastewater treatment facility); (20) 03-025 (c) (tank); (21) 03-026 (a) (sump); (22) 03-026 (c) (tank); (23) 03-027 (separation site); (24) 03-034 (a) (tank); (25) 03-038 (c) (waste lines); (26) 03-038 (d) (waste lines); (27) 03-038 (f) (waste lines); (28) 03-041 (underground tank); (29) 03-043 (b) (aboveground tank); (30) 03-043 (f) (above ground tank); (31) 03-043 (g) (aboveground tank); (32) 03-047 (g) (drum storage); (33) 03-051 (a) (soil contamination); (34) 03-051 (b) (soil contamination); (35) 03-053 (operational facility); (36) 03-055 (c) (outfall); and (37) 03-056 (b) (container storage area); (38) 03-056 (h) (transformer storage area).

In the Mortandad Canyon watershed these unidentified sites include, but are not limited to: (1) 54-001 (b) (storage area); (2) 54-001 (e) (storage area); (3) 54-002 (storage area); (4) 54-007 (e) (septic system); (5) 54-009 (treatment tanks); (6) 54-012 (a) (drum compactor); (7) 54-014 (a) (MDA); (8) 54-015 (j) (storage area); and (9) 54-016 (b) (sump).

In the Pajarito Canyon watershed these unidentified sites include but are not limited to: (1) C-06-003 (building for explosive shots); (2) C–6-007 (boiler for steam generation); (3) C-06-008 (magazine for explosives); (4) C-06-009 (magazine); (5) C-06-010 (magazines for explosive storage); (6) C-06-011 (magazine for explosive storage); (7) C-06-012 (magazine for explosive storage); (8) C-06-013 (magazine for explosive storage); (9) C-06-014 (magazine for explosive storage); (10) C-06-015 (magazine for explosive storage); (11) 40-007 (b) (storage area); (12) 40-007 (c) (storage area); (13) 40-007 (d) (storage area); (14) 40-007 (e); (15)18-002 (c) (drop tower); (16) 18-005 (b) (storage area); (17) 18-005 (c) (storage area); (18) 18-008 (underground tank); and (19) 18-011 (soil containment area).

In the Water/Canon de Valle watershed the uninspected sites included, but are not limited to: (1) 16-003 (q) (sump and drainlines); (2) 16-008 (b) (surface impoundment); (3) 16-017 (a)-99 (former structures); (4) 16-017 (b)-99 (former structures); (5)16-017 (c)-99 (former structures); (6) 16-017 (d)-99 (former structures); (7) 16-017 (e)-99 (former structures); (8)16-017 (f)-99 (former structures); (9)16-017 (g)-99 (former structures); (10)16-017 (h)-99 (former structures); (11) 16-017 (i)-99 (former structures); (12) 16-017 (j)-99 (former structures); and (13)16-017 (k)-99 (former structures).

In Ancho, the uninspected sites include, but are not limited to: (1) 49-005 (a) (Landfill east of Area 10); (2) 49-005 (b) (Landfill - Area 5); (3) 39-002 (d) (Storage area); (4) 39-002 (e) (Storage area); (5) 39-002 (f) (Storage area); (6) 39-007 (e)(Storage area).

Following significant precipitation events contaminants from these unauthorized sites run off into the soils, surface water, and shallow groundwater of the seven watersheds, eventually traveling down-gradient to the Rio Grande. Discharges from each outfall from each of the sites represents an unauthorized discharge under the CWA because they are not covered by, or identified in, LANL's MSGP.

LANL's meteorological data from TA-53 (a weather tower in between Los Alamos and Sandia Canyons) over the past two years, from April 10, 2004 to April 10, 2006 (the most recent data) such unauthorized discharges have occurred in the northern watersheds approximately 74 times. The dates of these violations (based on a presumption that a precipitation even greater than 0.1 inch per 24 hours triggers a run-off event) by month/day/year are: 4/10/2004, 4/11/2004, 4/17/2004, 4/23/2004, 6/25/2004, 6/29/2004, 7/15/2004, 7/18/2004, 7/23/2004, 7/24/2004, 7/27/2004, 7/29/2004, 8/10/2004, 8/15/2004, 8/19/2004, 8/20/2004, 9/4/2004, 9/18/2004, 9/19/2004, 9/25/2004, 9/27/2004, 10/3/2004, 10/11/2004, 10/13/2004, 10/25/2004, 10/27/2004, 11/13/2004, 11/20/2004, 11/21/2004, 11/23/2004, 11/29/2004, 12/29/2004, 1/3/2005, 1/4/2005, 1/29/2005, 1/30/2005, 2/11/2005, 2/12/2005, 2/18/2005, 2/23/2005, 2/24/2005, 3/14/2005, 3/15/2005, 3/20/2005, 3/25/2005, 3/26/2005, 4/10/2005, 4/16/2005, 4/24/2005, 5/1/2005, 5/3/2005, 5/28/2005, 7/17/2005, 8/4/2005, 8/5/2005, 8/11/2005, 8/12/2005, 8/13/2005, 8/22/2005, 8/24/2005, 8/25/2005, 9/22/2005, 9/28/2005, 9/29/2005, 10/9/2005, 10/10/2005, 10/15/2005, 10/18/2005, 10/19/2005, 11/11/2005, 1/26/2006, 3/22/2006, 3/27/2006, and 4/5/2006. These violations will continue to occur when significant precipitation events occur (even when such events produce less than 0.1 inch of rain) and until corrective action is taken. These violations are thus on-going.

LANL's own data from TA-6 (a weather town near the Pajarito Canyon watershed) for the middle canyons, i.e., Mortandad, Pajarito, and Water/Canon de Valle, over the past two years (from April 10, 2004 to April 10, 2006) reveal approximately 81 unauthorized discharges. The dates of these violations are: 4/10/2004, 4/23/2004, 6/25/2004, 6/29/2004, 7/12/2004, 7/18/2004, 7/19/2004, 7/23/2004, 7/24/2004, 7/27/2004, 8/11/2004, 8/13/2004, 8/15/2004, 8/18/2004, 8/19/2004, 8/20/2004, 8/21/2004, 9/4/2004, 9/19/2004, 9/25/2004, 9/27/2004, 10/3/2004, 10/4/2004,10/5/2004, 10/11/2004, 10/13/2004, 10/25/2004, 10/27/2004, 11/13/2004, 11/20/2004, 11/21/2004, 11/23/2004, 11/29/2004, 12/29/2004, 1/3/2005, 1/4/2005, 1/27/2005, 1/29/2005, 1/30/2005, 2/1/2005, 2/7/2005, 2/11/2005, 2/12/2005, 2/18/2005, 2/23/2005, 2/24/2005, 3/14/2005, 3/15/2005, 3/20/2005, 3/25/2005, 3/26/2005, 4/16/2005, 4/24/2005, 5/3/2005, 5/27/2005, 7/15/2005, 7/20/2005, 7/26/2005, 8/4/2005, 8/5/2005, 8/9/2005, 8/11/2005, 8/12/2005, 8/13/2005, 8/21/2005, 8/22/2005, 8/24/2005, 8/25/2005, 9/2/2005, 9/4/2005, 9/7/2005, 9/22/2005, 9/28/2005, 9/29/2005, 10/9/2005, 10/10/2005, 10/15/2005, 10/18/2005, 10/19/2005, 1/25/2006, 3/12/2006, 3/19/2006, 3/22/2006, and 4/5/2006. These violations will continue to occur when significant precipitation events occur (even when such events produce less than 0.1 inch of rain) and until corrective action is taken. These violations are thus on-going.

LANL's data from the TA-49 (a weather station in Ancho Canyon) for the southern watersheds reveals that the same two year period (April 10, 2004 to April 10, 2006) unauthorized

discharges have occurred approximately 77 times.[23] The dates of these violations (i.e., based on the presumption that a precipitation event of 0.1 inch or more will trigger a run-off event) by month/day/year are: 4/10/2004, 4/23/2004, 6/25/2004, 6/28/2004, 6/29/2004, 7/12/2004, 7/15/2004, 7/23/2004, 7/24/2004, 7/27/2004, 7/29/2004, 8/11/2004, 8/14/2004, 8/19/2004, 8/20/2004, 8/21/2004, 9/4/2004, 9/18/2004, 9/19/2004, 9/25/2004, 10/3/2004, 10/4/2004, 10/5/2004, 10/11/2004, 10/13/2004, 10/17/2004, 10/22/2004, 10/25/2004, 10/27/2004, 11/13/2004, 11/20/2004, 11/21/2004, 11/23/2004, 11/29/2004, 12/29/2004, 1/3/2005, 1/4/2005, 1/27/2005, 1/29/2005, 1/30/2005, 2/1/2005, 2/7/2005, 2/12/2005, 2/18/2005, 2/19/2005, 2/23/2005, 2/24/2005, 3/14/2005, 3/15/2005, 3/20/2005, 3/25/2005, 3/26/2005, 4/10/2005, 4/16/2005, 4/24/2005, 5/1/2005, 5/3/2005, 5/27/2005, 7/15/2005, 7/17/2005, 7/26/2005, 8/4/2005, 8/5/2005, 8/11/2005, 8/12/2005, 8/13/2005, 9/2/2005, 9/4/2005, 9/5/2005, 9/28/2005, 9/29/2005, 10/15/2005, 10/19/2005, 11/11/2005, 3/12/2005, 3/22/2006, and 3/27/2006. These violations will continue to occur when significant precipitation events occur (even when such events produce less than 0.1 inch of rain) and until corrective action is taken. These violations are thus on-going.

2. The discharge of contaminants – via a hydrological connection between tributary ground and surface water – from LANL to seeps and springs along the Rio Grande

Under the CWA, the term "navigable waters" is defined broadly as the "waters of the United States, including the territorial seas." 33 U.S.C. § 1362(7). Congress intended the term "navigable waters" to "embrace virtually 'every creek, stream, river, or body of water that in any way *may affect* interstate commerce.'" Washington Wilderness Coalition v. Hecla Mining Company, 870 F. Supp. 983, 989 (E.D. Wash. 1994) (quoting Quivira Mining Company v. E.P.A., 765 F.2d 126, 129 (10th Cir. 1985)) (emphasis added). In the Tenth Circuit the term"navigable waters" includes discharges into *tributary* groundwater. See Quivira Mining Company, 765 F.2d at 129 ; Friends of Santa Fe County v. LAC Minerals, 892 F.Supp. 1333, 1357-1358 (D.N.M. 1995); Sierra Club v. Colorado Refining Company, 838 F.Supp. 1428, 1432-1433 (D.Col. 1993).

Tributary groundwater is groundwater that flows into and affects surface water. Unlike isolated groundwater, tributary groundwater is hydrologically connected to surface water and as such, has the potential to impact the quality of that water. Thus, discharges to tributary groundwater which eventually makes its way into surface water, is subject to regulation under the CWA.

[23] LANL's TA-49 weather station is a 46-m tower instrumented for wind, temperature, and precipitation. TA-49 is located on high ground between two small tributaries of Ancho Canyon.

Here, there is an overwhelming amount of evidence indicating that contaminants from LANL, including contaminants from the approximately 1,405 active sites located within the Facillity, are being discharged into tributary groundwater i.e., groundwater that flows in a generally southeasterly direction towards the Rio Grande and emerges at a series of seeps and springs along the River and its tributaries. The evidence is compelling.

According to NMED, LANL "waste discharges have contaminated the shallow alluvial, intermediate, and deep ground-water systems. . . . Alluvial aquifers recharge intermediate perched ground-water zones, which recharge the regional aquifer. These recharge pathways allow for the migration of contaminants from surface water and alluvial aquifers to the regional aquifer. Highly mobile ground-water contaminants including chloride, nitrate, perchlorate, and tritium have migrated into the regional aquifer, and are discharging in several White Rock Canyon springs." NMED's Ground-Water Quality Atlas for New Mexico, USA. White Rock Canyon is the canyon through which the Rio Grande flows as it passes the LANL site.

Although NMED acknowledges that the exact migration pathways of contaminants – via alluvial, intermediate and regional groundwater systems – are not defined, the Ground-Water Quality Atlas provides information on occurrences of LANL-derived contaminants, including perchlorate, chloride and nitrate, in springs in White Rock Canyon and in regional groundwater.

In a July 2004 report, entitled New Mexico's Right to Know: The Potential for Groundwater Contaminants from Los Alamos National Laboratory to Reach the Rio Grande (hereinafter "Rice Report"), George Rice, a hydrologist, concludes that there are "two cases where a clear relationship to LANL activities can be established and [where] the data appear[s] to be reliable. They are the explosives at Ancho Spring and Spring 6 and the perchlorate in Spring 4 and Spring 4C. In both cases, the contaminants were detected in springs that are down gradient of contaminant sources. In addition, tritium analyses indicate that at least a portion of the water emanating from these springs was recharged after LANL began operating. Therefore, it is concluded that LANL-derived contaminants have emerged at springs along the Rio Grande." Rice Report at 49.

These discharges are not authorized by LANL's MSGP or any individual NPDES permit and, as such represents a violation of the CWA and implementing regulations. These violations have occurred over the past five years, since the MSGP took effect (from 2001-2005), and are on-going. LANL has violated, and continues to violate the CWA for each discharge and for every day that it fails to subject its "tributary groundwater" discharges to the terms and conditions of an individual NPDES permit or MSGP. These violations are on-going.

V. FEDERAL FACILITY COMPLIANCE AGREEMENT (FFCA) VIOLATION

In *addition* to the CWA violations and unauthorized discharges outlined above, LANL is also violating the FFCA. The terms and conditions of the FFCA are mandatory and enforceable by citizen suit pursuant to section 505 of the CWA, 33 U.S.C. § 1365. FFCA at 18, ¶ 51.

Here, LANL has violated, and continues to violate, the FFCA's requirement that LANL comply with all requirements of the MSGP. During the period of the FFCA (i.e., until a final individual permit is issued), LANL is required, by the FFCA, to "comply with all requirements of the current [MSGP]. [The FFCA] does not constitute a waiver or modification of the terms or conditions of any NPDES permit. Compliance with the terms and conditions of [the FFCA] does not relieve [LANL] of its obligations to comply with any applicable federal, state, or local law or regulation." FFCA at 3, 4.

As outlined above, LANL is currently violating the requirements of its MSGP in a number of significant respects. Accordingly, in addition to violating the CWA (as described above) LANL is also violating the FFCA's mandate that LANL comply with the MSGP. This violation first occurred on February 4, 2005 (the day after the FFCA was signed and finalized), has occurred every day since February 4, 2005, and is on-going.

VI. CONCLUSION

With this letter, Concerned Citizens hereby puts LANL (and all relevant parties) on notice that if the aforementioned violations of the CWA and FFCA are not remedied within 60 days of the postmark date of this letter, we intend to file a citizen suit for declaratory and injunctive relief pursuant to section 505 of the CWA, 33 U.S.C. § 1365.

Sincerely,

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