

NPDES PERMIT NO. NM0028355
FACT SHEET

FOR THE DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES

APPLICANT

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AND

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DATE PREPARED

June 26, 2013

PERMIT ACTION

Proposed reissuance of the expired permit issued with an effective date of August 1, 2007, and an expiration date of July 31, 2012. The permit was re-applied for timely and was therefore subsequently administratively continued.

RECEIVING WATER – BASIN

Rio Grande (see details below) – Segment No. 20.6.4.126/128 of the Rio Grande Basin

DOCUMENT ABBREVIATIONS

In the document that follows, various abbreviations are used. They are as follows:

4Q3	Lowest four-day average flow rate expected to occur once every three-years
BAT	Best available technology economically achievable
BCT	Best conventional pollutant control technology
BPT	Best practicable control technology currently available
BMP	Best management plan
BOD	Biochemical oxygen demand (five-day unless noted otherwise)
BPJ	Best professional judgment
CBOD	Carbonaceous biochemical oxygen demand (five-day unless noted otherwise)
CD	Critical dilution
CFR	Code of Federal Regulations
cfs	Cubic feet per second
COD	Chemical oxygen demand
COE	United States Corp of Engineers
CWA	Clean Water Act
DMR	Discharge monitoring report
ELG	Effluent limitation guidelines
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
FCB	Fecal coliform bacteria
F&WS	United States Fish and Wildlife Service
mg/l	Milligrams per liter (one part per million)
ug/l	Micrograms per liter (one part per billion)
MGD	Million gallons per day
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NMIP	New Mexico NPDES Permit Implementation Procedures
NMWQS	New Mexico State Standards for Interstate and Intrastate Surface Waters
NPDES	National Pollutant Discharge Elimination System
MQL	Minimum quantification level
O&G	Oil and grease
POTW	Publically owned treatment works
RP	Reasonable potential
SIC	Standard industrial classification
s.u.	Standard units (for parameter pH)
SWQB	Surface Water Quality Bureau
TDS	Total dissolved solids
TMDL	Total maximum daily load
TRC	Total residual chlorine
TSS	Total suspended solids
UAA	Use attainability analysis
USFWS	United States Fish & Wildlife Service
USGS	United States Geological Service
WLA	Wasteload allocation
WET	Whole effluent toxicity
WQCC	New Mexico Water Quality Control Commission

WQMP Water Quality Management Plan
WWTP Wastewater treatment plant

STATE CERTIFICATION: The permit is in the process of certification by the State agency following regulations promulgated at 40 CFR124.53. A draft permit and draft public notice will be sent to the District Engineer, Corps of Engineers; to the Regional Director of the U.S. Fish and Wildlife Service; and to the National Marine Fisheries Service prior to the publication of that notice.

TRIBAL CERTIFICATION: Several Pueblos are located in the vicinity of Los Alamos National Laboratory. They include the following: San Ildefonso, Santa Clara, and Cochiti. The Santa Clara Pueblo has approved water quality standards (WQS); however, it is not adjacent to any stream where discharges are proposed to be authorized. Santa Clara is therefore not believed to be affected by the discharges proposed to be authorized by this permit. Neither San Ildefonso nor Cochiti Pueblo has submitted WQS for approval at this time; therefore, the only 401 certification is required from the State of New Mexico. However, pursuant to EPA's Tribal Consultation Policy, EPA offered, in letters of January 10, 2013, to San Ildefonso and Cochiti Pueblos, respectively, the opportunity to engage in government-to-government consultation because they are located downstream of the facility's discharges.

ENDANGERED SPECIES ACT: In accordance with requirements under section 7(a)(2) of the Endangered Species Act, EPA has reviewed this permit for its effect on listed threatened and endangered species and designated critical habitat. According to the most recent county listing of species, for the State of New Mexico revised as of 2012, the following species are listed in the county where the proposed NPDES discharge occurs: black-footed ferret (*Mustela nigripes*), southwestern willow flycatcher (*Empidonax traillii extimus*), and Mexican spotted owl (*Strix occidentalis lucida*). Bald eagle (*Haliaeetus leucocephalus*) is delisted since prior issuance of the permit in 2007. No other changes have been made to the US Fish and Wildlife list of threatened and endangered species and critical habitat designation in the area of the discharge since prior issuance of the permit.

During the re-issuance of this permit in 2000, EPA conducted informal consultation with the US Fish and Wildlife Service (the FWS or the Service) (Cons. #2-22-01-I-018). That consultation was concluded on December 7, 2000 with the Service concurring by letter with EPA's determination that the re-issuance of the NPDES permit for LANL would have "no effect" on Mexican spotted owl and "may affect, not likely to adversely affect" on the bald eagle and southwestern willow flycatcher. The FWS also found that black-footed ferret was not present in the permit action area.

The FWS concluded in the 2000 consultation letter: "Based on information in the BE (Biological Evaluation), the Service believes that the reissued permit should slightly improve effluent water quality at LANL over the 5-year permit. In addition, re-issuance of the NPDES permit will not measurably alter stream morphology, flow patterns, temperatures, water chemistry, or slit loads in any of the affected intermittent tributaries or the Rio Grande. Therefore, the Service concurs with the EPA determination that the re-issuance of the NPDES permit for LANL will have "no effect" on the Mexican spotted owl, and "may affect, not likely to adversely affect" the bald

eagle and southwestern willow flycatcher.”

EPA determined, when re-issuing the permit in 2007, that the re-issuance of Permit No. NM0028355 would not alter the environmental baseline; therefore, the 2007 action had “no effect” upon the previous consultation baseline on listed threatened and endangered species and it would not adversely modify designated critical habitat. EPA believes that the conclusion statements made by the FWS in 2000 and EPA’s determination made in 2007 are still true for this NPDES permit renewal action. There are changes of permit conditions and those changes are either because of the cessations of discharges or because of no reasonable potential of existing discharges to cause exceedances of WQS. Information available does not indicate increases of total discharge loads or additions of new pollutants which may cause adverse environmental impacts. EPA determines that this action results in no significant change to the environmental baseline (except for the removal of bald eagle from the federal endangered species list and reduction of discharge outfalls) established by the consultation conducted during previous issuance of the permit; therefore, EPA concludes that this re-issuance of the permit will not cause change to EPA’s previous determination as well as the FWS’s conclusions made during the 2000 consultation. EPA determines that this permitting action has “no effect” on the 2000 consultation baseline for willow flycatcher.

FINAL DETERMINATION: The public notice describes the procedures for the formulation of final determinations.

I. CHANGES FROM THE PREVIOUS PERMIT

Significant changes from the permit previously issued June 8, 2007, with an effective date of August 1, 2007, and an expiration date of July 31, 2012, are:

- A. Eliminate six Outfalls 02A129, 03A021, 03A028, 03A130, 03A158, and 03A185;
- B. Delete Water Quality-based effluent limitations (WQBEL) for aluminum at Outfall 001;
- C. Establish WQBEL for copper and zinc based on 50 mg/l of hardness and set hardness limitation of ≥ 50 mg/l at Outfall 051;
- D. Delete WQBEL and total phosphorus limit at Outfall 03A022;
- E. Delete all WQBEL, except for TRC, at Outfalls 03A027, 03A113, 03A181, and 03A199;
- F. Establish WQBEL for arsenic and selenium at Outfall 03A048;
- G. Add WQBEL for arsenic and cyanide at Outfall 03A160;
- H. Add WQBEL for selenium and cyanide at Outfall 03A199;
- I. Establish new critical dilutions at Outfalls 03A027 and 03A199;
- J. Delete Whole Effluent Toxicity (WET) testing requirements for Outfalls 03A048, 03A113, 03A160, and 03A181;
- K. Establish WET limit at Outfall 051; and
- L. Change sampling location of Outfall 13S.

II. APPLICANT LOCATION AND ACTIVITY

Under the Standard Industrial Classification (SIC) Codes 9922, 9711, 9661, and 9611, the applicant currently operates a large multi-disciplinary facility which conducts national defense

research and development, scientific research, space research and technology development, and energy development.

As described in the application, the plant site is located in Los Alamos County, New Mexico. The discharges are to receiving waters consisting of various tributaries in Waterbody Segment Code No. 20.6.4.126 and 20.6.4.128 of the Rio Grande Basin. Those discharges are:

<u>Tech. Area</u>	<u>Outfall Number</u>	<u>Receiving Stream</u>
3-22	001	Sandia Canyon
3-66	03A022	Mortandad Canyon
3-2327	03A027	Sandia Canyon
53-963, -964 -978, -979	03A048	Los Alamos Canyon
53-293, -952, -1032, SW	03A113	Sandia Canyon
35-124, -595	03A160	Ten Site Canyon
55-6	03A181	Mortandad Canyon
3-1837	03A199	Tributary to Sandia Canyon
16-1508	05A055	Canon de Valle
50-1	051	Mortandad Canyon
46-347	13S	Canada del Buey

There have been no discharges at Outfall 05A055 since November 2007 and at Outfall 051 since November 2010. The facility plans to eliminate four more outfalls (i.e., Outfalls 03A027, 03A160, 03A181, and 03A199) over the next 2 to 5 years.

Outfall Type Category (detailed descriptions of sources of discharges are provided in the application)

001	Power plant discharge and re-used treated sanitary wastewater
03A	Cooling tower blowdown, evaporative coolers, chillers, condensers, and air washer blowdown
05A	High explosive waste water discharge
051	Industrial and radioactive wastewater treatment plant
13S	Sanitary wastewater

III. EFFLUENT CHARACTERISTICS

A quantitative description of each discharge is presented in the EPA Permit Application Form 2C dated January 27, 2012. The maximum monthly flow and pollutants which were detected and reported above EPA defined minimum quantification levels (MQLs) at each outfall are used for the reasonable potential (RP) analysis.

IV. REGULATORY AUTHORITY/PERMIT ACTION

In November 1972, Congress passed the Federal Water Pollution Control Act establishing the NPDES permit program to control water pollution. These amendments established technology-based or end-of-pipe control mechanisms and an interim goal to achieve “water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water,” more commonly known as the “swimmable, fishable” goal. Further amendments in 1977 of the CWA gave EPA the authority to implement pollution control programs such as setting wastewater standards for industry and established the basic structure for regulating pollutants discharges into the waters of the United States. In addition, it made it unlawful for any person to discharge any pollutant from a point source into navigable waters, unless a permit was obtained under its provisions. Regulations governing the EPA administered NPDES permit program are generally found at 40 CFR §122 (program requirements & permit conditions), §124 (procedures for decision making), §125 (technology-based standards) and §136 (analytical procedures). Other parts of 40 CFR provide guidance for specific activities and may be used in this document as required.

It is proposed that this permit be reissued for a 5-year term following regulations promulgated at 40 CFR §122.46(a).

V. DRAFT PERMIT RATIONALE AND PROPOSED PERMIT CONDITIONS

A. OVERVIEW OF TECHNOLOGY-BASED VERSUS WATER QUALITY STANDARDS-BASED EFFLUENT LIMITATIONS AND CONDITIONS

Regulations contained in 40 CFR §122.44 requires that NPDES permit limits are developed that meet the more stringent of either technology-based effluent limitation guidelines, numerical and/or narrative water quality standard-based effluent limits, or the previous permit.

B. TECHNOLOGY-BASED EFFLUENT LIMITATIONS/CONDITIONS

Regulations promulgated at 40 CFR §122.44 (a) require technology-based effluent limitations to be placed in NPDES permits based on ELGs where applicable, on BPJ in the absence of guidelines, or on a combination of the two. In the absence of promulgated guidelines for the discharge, permit conditions may be established using BPJ procedures. EPA establishes limitations based on the following technology-based controls: BPT, BCT, and BAT. These levels of treatment are:

BPT - The first level of technology-based standards generally based on the average of the best existing performance facilities within an industrial category or subcategory.

BCT - Technology-based standard for the discharge from existing industrial point sources of conventional pollutants which may include BOD, TSS, pH, and O&G.

BAT - The most appropriate means available on a national basis for controlling the direct discharge of toxic and non-conventional pollutants to navigable waters. BAT effluent limits represent the best existing performance of treatment technologies that are economically achievable within an industrial point source category or subcategory.

Following are the summary of the BPJ-based limitations included in the administratively continued permit and EPA proposes to retain them in the permit:

Outfall 001 (Power Plant Effluent and re-used Treated Sanitary Wastewater) - Based on ELG for low volume waste discharge at electric steam power plants in 40 CFR 423.

	Monthly Average	Daily Maximum
Total Suspended Solids	30 mg/l	100 mg/l

Outfall Type 03A (Treated Cooling Water) - Based on ELG for low volume waste discharge at electric steam power plants in 40 CFR 423.

	Monthly Average	Daily Maximum
Total Suspended Solids	30 mg/l	100 mg/l
Total Phosphorus	20 mg/l	40 mg/l
pH	Range from 6.0 to 9.0 standard units	
(More stringent WQ-based pH applies to direct discharge outfalls if applicable)		

Outfall 05A055 (High Explosives Waste Water) – Total toxic organics (TTO) were based on ELG for metal finishing (40 CFR 433.11), TNT was based on permit limit established for the Pantex plant, and RDX was based on LANL effluent data. All these BPJ-based limitations were established in 2000 issued permit.

	Monthly Average	Daily Maximum
Chemical Oxygen Demand	125 mg/l	125 mg/l
Total Suspended Solids	30 mg/l	45 mg/l
Oil & Grease	15 mg/l	15 mg/l
Total Toxic Organics	1.0 mg/l	1.0 mg/l
Trinitrotoluene	20 µg/l	Report
Total RDX	200 µg/l	660 µg/l
Perchlorate	Report	Report
pH	Range from 6.0 to 9.0 standard units	

Outfall 051 (Radioactive and Industrial Waste Water) – TTO was based on 40 CFR 433.11.

	Monthly Average	Daily Maximum
Chemical Oxygen Demand	125 mg/l	125 mg/l
Total Suspended Solids	30 mg/l	45 mg/l
Total Toxic Organics	1.0 mg/l	1.0 mg/l
Total Chromium	1.34 mg/l	2.68 mg/l
Total Lead	0.423 mg/l	0.524 mg/l
Perchlorate	Report	Report
pH	Range from 6.0 to 9.0 standard units	

Outfall 13S (Sanitary Waste Water) – Based on the ELG for secondary treatment in 40 CFR 133.

	Monthly Average	Daily Maximum
Biochemical Oxygen Demand	30 mg/l	45 mg/l
Total Suspended Solids	30 mg/l	45 mg/l
pH	Range from 6.0 to 9.0 standard units	

The administratively continued permit contains mass limits at Outfalls 13S based on a long term average flow of 0.298 MGD and a projected flow of 0.318 MGD to cover increased flow due to a residential subdivision sewer line tie-in project. Because the sewer line tie-in project was cancelled, the mass load limitations are recalculated based on the new long term average flow of 0.29 MGD. The new monthly average and daily maximum loadings are 73 and 109 lb/day, respectively.

The permittee requested to change the sampling location from a point after the chlorine contact chamber to the flow measuring device in Canada del Buey because treated water will be conveyed to a sanitary reclamation recycling facility (SERF) and therefore no discharge occurs unless discharge is made directly to Canada del Buey. EPA determines that monitoring and sampling are not required for wastewater to be further treated and reused for other process, so proposes to change the sampling location to the flow measuring device in Canada del Buey in case discharge is made to Canada del Buey.

C. WATER QUALITY BASED LIMITATIONS

1. General Comments

Water quality based requirements are necessary where effluent limits more stringent than technology-based limits are necessary to maintain or achieve federal or state water quality limits. Under Section 301(b)(1)(C) of the CWA, discharges are subject to effluent limitations based on federal or state WQS. Effluent limitations and/or conditions established in the draft permit are in

compliance with applicable State WQS and applicable State water quality management plans to assure that surface WQS of the receiving waters are protected and maintained, or attained.

2. Implementation

The NPDES permits contain technology-based effluent limitations reflecting the best controls available. Where these technology-based permit limits do not protect water quality or the designated uses, additional water quality-based effluent limitations and/or conditions are included in the NPDES permits. State narrative and numerical water quality standards are used in conjunction with EPA criteria and other available toxicity information to determine the adequacy of technology-based permit limits and the need for additional water quality-based controls.

3. State Water Quality Standards

The general and specific stream standards are provided in NMWQS (20.6.4 NMAC amended through November 20, 2012). EPA approved three hardness-dependent metal criteria, aluminum, cadmium, and zinc on April 30, 2012. Therefore, new criteria were used for RP screening. The facility discharges into varied canyons in Segment No. 20.6.4.126 or 20.6.4.128 of the Rio Grande Basin. The designated uses of the receiving water are described below:

20.6.4.126 Rio Grande Basin - Perennial portion of ... Sandia canyon from Sigma canyon upstream to LANL NPDES outfall 001,

(A) Designated Uses: coldwater aquatic life, livestock watering, wildlife habitat and secondary contact.

20.6.4.128 Rio Grande Basin - Ephemeral and intermitten portions of watercourses within lands managed by U.S. department of energy (DOE) within LANL, including but not limited to: Mortandad canyon, Canada del Buey, Ancho canyon, Chaquehui canyon, Indio canyon, Fence canyon, Potrillo canyon and portions of Canon de Valle, Los Alamos canyon, Sandia canyon, Pajarito canyon and Water canyon not specifically identified in 20.6.4.126 NMAC.

(A) Designated Uses: livestock watering, wildlife habitat, limited aquatic life and secondary contact.

Water quality standards of chronic aquatic life and non-persistent human health do not apply to segment number 20.6.4.128.

As described earlier in this Fact Sheet, Los Alamos National Laboratory discharges to Sandia Canyon, Los Alamos Canyon, Mortandad Canyon, Canon de Valle, and Ten Site Canyon. The facility's discharges, most of which are intermittent in nature, are located from 6.9 to 10.4 miles from the Rio Grande. All of the receiving streams are ephemeral or intermittent in nature and do not generally reach the Rio Grande, except as the result of precipitation events. The State standards for livestock watering, wildlife habitat, acute aquatic life and general WQS apply to

the proposed discharges. Chronic aquatic life criteria could be applied at Outfall 001 because the effluent creates a perennial portion within Sandia Canyon which is designated also for cold aquatic life use. Discharges from Outfalls 03A027 and 03A199 which are located at downstream from Outfall 001 will reach the perennial portion of Sandia Canyon, so chronic aquatic life standards also apply. For discharges into receiving streams in segment number 20.6.4.128 which are either ephemeral or intermittent in nature, no in-stream dilution is used to calculate either the in-stream waste concentrations (IWCs) or the proposed limits. All WQ-based limits in the segment number 20.6.4.128 were calculated based on 100% effluent. For discharges at Outfalls 03A027 and 03A199, the long-term average effluent flow at Outfall 001 was used to calculate critical dilution for discharges from Outfalls 03A027 and 03A199 against chronic criteria because Outfall 001 effluent is the upstream flow of these two outfalls. However, because the discharge at Outfall 03A199 is to a stormwater drain prior to reaching Sandia Canyon, an additional RP was conducted against WQS for 20.6.4.128 waterbody. A statistical multiplier of 2.13, pursuant to NM Implementation Guidance, was applied to effluent data and the data were screened against water quality standards to determine whether the discharge has a reasonable potential (RP) to exceed the applicable water quality standards. Each effluent hardness value (except for Outfalls 03A027 and 03A199 at Sandia Canyon) was used to calculate the hardness-dependent standards. The hardness and TSS values of Outfall 001 effluent were used to calculate the RP for discharges at Outfalls 03A027 and 03A199. Because cooling tower blowdown has not been discharged at Outfall 03A022 since November 2011 and the effluent analytical results reported in the Form 2C were based on a sample taken when blowdown still discharged at that outfall, EPA decided not to conduct a RP screening for Outfall 03A022 based on effluent data no longer representative of the actual discharge from this outfall. Copper and TRC were the only two WQBEL established for Outfall 03A022 in the administratively continued permit. Because copper concentrations were reported below both effluent limitations and MQL for copper, and chlorine would not likely be used for storm runoffs, EPA is not requiring storm runoff data to conduct RP for this permit term. The Table below lists stream low flows, hardness and TSS values used for RP analysis.

Outfall Number	Effluent Flow (MGD)	Hardness (mg/l)	TSS (mg/l)	4Q3 Low Flow (cfs)
001	0.357	78.8	1.08	0.0
13S	0.29	102	2.17	0.0
03A027	0.102	78.8	1.08	0.55
03A048	0.104	179	1.0	0.0
03A113	0.09	167	1.8	0.0
03A160	0.002	118	1.0	0.0
03A181	0.0094	84.7	1.0	0.0
03A199 at the point of discharge	0.0395	122	4.3	0.0
03A199 at the point reaches Sandia Canyon	0.0395	78.8	1.08	0.55

4. Effluent Limitations

Effluent data from each outfall reported in Form 2C were screened against the current EPA approved NM WQS. Spread sheets used to calculate the reasonable potential can be found in the Appendix to this Fact Sheet. The initial screening results show that the following discharges have RP to exceed the WQS for the designated uses in 20.6.4.128:

Outfall No.	Parameters
03A048	Arsenic and Selenium
03A160	Arsenic, Copper and Cyanide
03A199	Selenium and Cyanide

Total Residual Chlorine (TRC) - Although only one outfall (Outfall 03A048) has reported TRC at detectable amounts, effluent limitations and monitoring requirements for TRC at administratively continued permit are retained because discharges would have potentials to exceed water quality standards for TRC when chlorine products are used for disinfection or algae control. However, because the effluent limitations and monitoring requirements for TRC are based on the permit writer's discretionary rather than RP, EPA determines to retain the existing monitoring frequency of 1/week, rather than the monitoring frequency recommended in the NMIP, at all applicable outfalls. In accordance with the NMIP, the permit writer may establish a case-by-case monitoring frequency based on the following factors: (1) the type of treatment process, including retention time; (2) environmental significance and nature of the pollutant or pollutant parameter; (3) cost of monitoring relative to the discharger's capabilities and benefit obtained; (4) Compliance history; (5) number of monthly samples used in developing the permit limit; and (6) effluent variability. The TRC applies to Outfall 13S only when discharge is made directly to Canada del Buey through the alternate discharge point.

E. coli - Monitoring requirements and effluent limitations apply at Outfalls 001, 13S, or 03A027 where final treated sanitary wastewater actually discharges. The monitoring frequency is 2/month based on the frequency recommended in the NMIP for a municipal facility with activated sludge technology and a design flow of $0.1 \leq 0.5$ MGD.

Outfall 001 - EPA approved new standards for hardness-dependent total aluminum on April 30, 2012, and the discharge has demonstrated no RP to exceed new standards. Therefore, the effluent limitations and monitoring requirements for aluminum in the administratively continued permit will be deleted from Outfall 001.

Outfall 03A022 - Because cooling tower blowdown has no longer been discharged at Outfall 03A022 but may only discharges emergency use potable cooling water from circulating tank and storm water from roof drain, all existing WQ-based limitations and BPJ-based phosphorus limitations in the administratively continued permit are proposed to be removed. Cooling tower blowdown is not authorized for discharge at this outfall.

Outfall 03A048 - Because the discharge at Outfall 03A048 has RP to cause or contribute to a water quality violation for arsenic and selenium, site-specific effluent limitations are established at the outfall. Limitations for selenium are based on wildlife habitat standards and limitations for arsenic are based on human health standard. EPA used the default non-zero harmonic mean flow of 0.001 MGD recommended by NMED to determine the RP for human health-based pollutants. The permittee may provide data to support a different “modified harmonic mean flow” as defined in the provision of 20.6.4.11 of the NMWQS. Because discharges at this outfall flow to an ephemeral/intermittent stream which does not support a drinking water use and also is unlikely to provide adequate habitat for fish propagation or growth, discharges to this stream would have limited on human health. EPA, on a case-by-case discretionary, proposes 1/year monitoring frequency for arsenic. However, selenium may affect wildlife downstream the outfall whenever there are discharges, EPA proposes 3/week monitoring frequency when discharge occurs.

Outfall 03A160 - Because the discharge at Outfall 03A160 has RP to cause or contribute to a violation for arsenic, copper, and cyanide, site-specific effluent limitations are established at this outfall. Limitations for copper are based on acute aquatic life standard, for cyanide are based on wildlife habitat standard and for arsenic are based on human health standard. EPA used the default non-zero harmonic mean flow of 0.001 MGD recommended by NMED to determine the RP for human health-based pollutants. The permittee may provide data to support a different “modified harmonic mean flow” as defined in the provision of 20.6.4.11 of the NMWQS. Because discharges at this outfall flow to an ephemeral/intermittent stream which does not support a drinking water use and also is unlikely to provide adequate habitat for fish propagation or growth, discharges to this stream would have limited on human health. EPA, on a case-by-case discretionary, proposes 1/year monitoring frequency for arsenic. However, copper and cyanide may affect aquatic life or wildlife around the outfall whenever discharges occur. EPA proposes 3/week monitoring frequency for copper and cyanide when discharge occurs.

Outfall 03A199 - Because the discharge at Outfall 03A199 has RP to cause or contribute to a violation for selenium and cyanide, site-specific effluent limitations are established at this outfall. Limitations for selenium and cyanide are based on wildlife habitat standard, and discharges may affect wildlife around the outfall whenever discharges occur. EPA proposes 3/week monitoring frequency for selenium and cyanide when discharge occurs.

Outfalls 03A027, 03A113, and 03A181 - Because discharges at these outfalls demonstrated no RP, WQ-based effluent limitations are not proposed and any WQ-based effluent limitations (except for TRC as described above) in the administratively continued permit are discontinued at these outfalls. Effluent limitations and monitoring requirements for E. coli apply if treated sanitary wastewater discharged at Outfall 03A027 or any other outfalls.

Outfalls 051 - The effluent is evaporated through a mechanical evaporator and has no discharge since November 2010. The facility includes the outfall in the application in case the evaporator becomes unavailable due to maintenance, malfunction, and/or capacity shortage. The facility did not include effluent characteristics in the application. The facility requests to modify the process to adjust the effluent hardness so the discharge has the same hardness value of 50 mg/l as the

influent has because the filtration and reverse osmosis treatment systems have caused low hardness in the effluent. LANL stated that low hardness in the effluent makes the discharge fail the WET test and effluent limitations for copper and zinc in the administratively continued permit are unattainable low. Both copper and zinc WQS are hardness-dependent and the copper and zinc limitations in the administratively continued permit were derived based on a near-zero low hardness value. Like pH adjustment, because the adjustment of hardness will make the effluent more suitable for aquatic life habitat, EPA proposes new effluent limitations for hardness-dependent metals based on adjusted effluent hardness. Effluent data showed that TSS concentrations in discharges were below 1 mg/l. Based on the 50 mg/l of hardness and 1 mg/l of TSS, the calculated total copper WQS is 14.3 µg/l and zinc is 191 µg/l. EPA proposes to establish water quality standards as effluent limitations for copper (0.014 mg/l Daily Max and Monthly Avg) and zinc (0.191 mg/l Daily Max and Monthly Avg). EPA also proposes to retain all other monitoring requirements for toxic pollutants in the permit and require LANL to take at least two samples per term from different discharge events for representative effluent characteristic analyses if discharges occur, so EPA may conduct RP screenings based on true effluent data. Because the effluent with a greater hardness will cause less toxicity to aquatic life, a hardness limitation of 50 mg/l or greater is established to ensure the effluent has a hardness value not less than 50 mg/l. Monitoring frequency for copper and zinc are increased from 1/month to 3/week when discharges occur.

Outfall 05A055 – There has been no discharge from the High Explosive Wastewater Treatment Facility (HEWTF) at Outfall 05A055 since November 2007. Normal operations since November 2007 have utilized the electric evaporator and eliminated the discharge. The applicant intends to continue to operate the HEWTF using the evaporator except under abnormal conditions (i.e., malfunction of the evaporator). There was no WQ-based effluent limitation established in the administratively continued permit and no change is proposed for this renewal action.

PCBs – The administratively continued permit has PCB effluent limitations and monitoring requirements at Outfall 001 and at Outfall 13S (if a direct discharge occurred at Outfall 13S), and monitoring and reporting only requirements at Outfall 051. The administratively continued permit restricts re-route, reuse, or discharge of PCB contaminated effluent at other outfalls, except at Outfall 001 or Outfall 13S. In order to avoid hindering any process or technology which could be considered for either PCB clean-up, PCB removal, water reuse or future discharge reduction, EPA determines not to include such restrictions in the proposed permit. If circumstances arise in which PCB contained effluent discharges at different outfalls, the same PCB effluent limitations and monitoring requirements established at Outfall 001 will apply to those outfalls unless the permit is modified to establish a site-specific limitation based on new discharge and/or stream flow data.

Since there have been no discharges at Outfall 13S and Outfall 051, monitoring data are not available for evaluation at those two outfalls. Effluent data from 2008 to 2011 indicated that discharges at Outfall 001 exceeded the interim monthly average limitation of 0.009 µg/l in 2009, and all data exceeded the final limitation (to be effective on July 30, 2012) of 0.000640 µg/l. Information provided by the applicant indicated that PCB analytical results from the October 23, 2012 sample was 0.000565 µg/l.

LANL requested removal of the requirement to use Method 1668A for PCB analysis for enforcement purposes because that method is not an EPA approved method, but LANL is willing to accept Method 1668A only for reporting purpose. The requirements of using Method 1668A and associated MQLs for PCB analysis and 0.00064 µg/l of total PCB limitation to protect human health in the administratively continued permit were based on the condition of State Certification dated March 30, 2006, and a letter addressing the amendment of State Certification dated February 1, 2007, respectively, when EPA reissued the permit in 2007.

EPA proposed Method 1668C when EPA proposed changes to analysis and sampling test procedures in wastewater regulations (i.e., 40 CFR 136), under the title “Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act; Analysis and Sampling Procedures”, in the Federal Register Vol. 75, No. 184, September 23, 2010. Method 1668 determines individual chlorinated biphenyl congeners in environmental samples by isotope dilution and internal standard high resolution gas chromatography/high resolution mass spectrometry (HRGC/HRMS). After consideration of all comments received by EPA, EPA in the final rule making decided to defer the final approval of Method 1668C to a later date.

In accordance with the provision of 40 CFR part 144.22(i)(1)(iv), to assure compliance with permit limitations, the permit shall have requirements to monitor effluents according to test procedures approved under 40 CFR part 136 for the analyses of pollutants having approved methods under that part, and according to a test procedure specified in the permit for pollutants with no approved methods. Because EPA deferred the final approval for Method 1668C, Method 1668C or previous versions (PCB congener method) is currently not an EPA approved 40 CFR part 136 method. Rather, Method 608 or 625 (PCB Aroclor method) is the current EPA approved method which can determine PCB quantities by Aroclors (e.g., PCB-1016, PCB-1221, ... PCB-1260).

Method 1668C or the latest congener method is proposed for monitoring purposes only and not for compliance purposes. But, Method 1668C or the latest congener method will be required whenever a congener method is promulgated and then the minimum levels of quantification (MLs) defined in the congener method procedures may be considered equivalent to MQLs for analytical and reporting purposes. The proposed permit allows the permittee to develop discharge-specific MQLs based on the minimum detection level (MDL) and that the MQL = 3.3 x MDL.

The State of New Mexico, Surface Water Quality Bureau (SWQB), stated in a letter dated December 20, 2012, that “the State will condition the permit certification to require the use of Method 1668, most recent revision thereof, with appropriate method specific MQLs, for purpose of PCB monitoring.” The basis for the NMED statement was the WQS found in 20.6.4.900(J)(2), which is 0.00064 µg/l, and NMED rendered that the method detection level of 0.2 µg/l was pointless for purposes of monitoring or compliance.

After considerations of EPA regulations, NMED pre-certification letter, and permittee’s request, EPA proposes that EPA published congener Method 1668 Revision and detection levels shall be used for reporting purposes only. Prior to the promulgation of Method 1668, the 0.2 µg/l minimum quantification level (MQL) listed in Appendix to Part II shall be used for compliance

purposes. EPA has developed MQLs to monitor compliance for permit limits below analytical values and uses those MQLs to establish defensible permits, so it is common for a MQL greater than the NMWQS. Since EPA has not coded Method 1668 neither developed MQLs for the method, both Method 1668 and its MQLs are not defensible by EPA for compliance purposes. If NMED requires Method 1668 to be used for compliance purposes and/or requires more stringent MQL for compliance purposes, NMED must specify those conditions in the State's Condition of Certification. The public notice for this proposed permit also provides notice that the State of New Mexico will be accepting comments for the State's CWA 401 certification and includes contact information for that process.

The human health-based limitation of 0.00064 µg/l was included in the administratively continued permit because that limitation was also based on the condition of State certification. The NMWQS, section 20.6.4.900.J (f) states "the criteria listed under human health-organism only (HH-OO) are intended to protect human health when aquatic organisms are consumed from waters containing pollutants. These criteria do not protect the aquatic life itself; rather, they protect the health of humans who ingest fish or other aquatic organisms." EPA understands that the HH-OO standards apply to the receiving stream, but has difficulty evaluating the human health impact of the discharge when ingestion of fish or other aquatic organism is unlikely to occur. EPA proposes to retain the monitoring frequency of 1/year for PCBs based on the case-by-case discretionary after considering the following facts: 1) an adverse impact to human health is not imminent; 2) PCBs have been prohibited for decades and LANL is not using PCBs in any process; 3) PCBs were likely deposited in the sewer system and the sewage flow rate is quite constant; 4) LANL has demonstrated its efforts to remove PCBs from discharges; and 5) the cost of Method 1668 is relatively high to the benefit obtained. Because HH-OO standards are established at the receiving water, EPA used the default non-zero harmonic mean flow of 0.001 MGD recommended by NMED to determine the RP for human health-based pollutants. The newly calculated PCB limitation is 0.000642 µg/l. LANL may provide data to support a different "modified harmonic mean flow" as defined in the provision of 20.6.4.11 of the NMWQS during the public comment period, so EPA may conduct a new RP screening and/or establish a new effluent limitation based on new flow information.

EPA determines not to retain the PCB effluent limitations of 0.009 µg/l and 0.014 µg/l based on the wildlife habitat and aquatic life standards because the discharge has no RP to exceed the standards for wildlife habitat and aquatic life based on data collected using the congener method.

5. Whole Effluent Toxicity (WET)

Procedures for implementing WET terms and conditions in NPDES permits are contained in the NMIP, March 15, 2012. Table 11 of Section V of the NMIP outlines the type of WET testing for different types of discharges.

OUTFALL 001

The administratively continued permit established WET biomonitoring with CD = 100%. DMR reports reveal three (3) passing test for both the *Ceriodaphnia dubia* and *Pimephales promelas* species during the last permit term. The EPA Reasonable Potential Analyzer (See Appendix A)

indicates that RP exists solely due to the limited number of test results used for RP analysis. Since LANL has not failed a WET test during their last permit term and is conducting tests at the maximum critical dilution, EPA concludes that this effluent does not cause or contribute to an exceedance of the State water quality standards. Therefore, WET limits will not be established in the proposed permit.

The critical dilution, CD, for this discharge is and will remain at 100% because the discharge is to an ephemeral/intermittent water body, but creates a perennial stream, Segment 20.6.4.126. Based on the nature of the discharge, industrial power plant/Sanitary Effluent Reclamation Facility (SERF), and the nature of the receiving water; perennial stream, the Table 11 of the NMIP directs the WET test to be a 7 day chronic test using *Ceriodaphnia dubia* and *Pimephales promelas* at a once per 5 year frequency. The proposed permit requires five (5) dilutions in addition to the control (0% effluent) to be used in the toxicity tests based on a 0.75 dilution series. These additional effluent concentrations shall be 32%, 42%, 56%, 75%, and 100%.

OUTFALL 03A027

The discharge at Outfall 03A027 is to the Rio Grande Basin segment 20.6.4.126 that encompasses the perennial receiving water, discharge to perennial portion of Sandia canyon from Sigma canyon upstream to LANL NPDES outfall 001.

An acute WET testing requirement with a 80% CD was established in the administratively continued permit because the NMIP establishes an acute-to-chronic ratio (10:1) when the critical dilution falls below 10% (e.g. An 8% critical dilution = 80% critical dilution for an acute test). The EPA Reasonable Potential Analyzer for Outfall 03A027 indicates that RP exists for *Daphnia pulex* and *Pimephales promelas*. But since reasonable potential for an excursion of toxicity does not actually exist because lethal (acute test) toxic events were not demonstrated, WET limits will not be established in the proposed permit for Outfall 03A027. Since the critical dilution is risen to 23%, the acute to chronic ratio (which would require an acute CD of 230%) is no longer applicable and chronic testing will be used in lieu of acute testing.

Facilities with discharges that qualify as minor (e.g. treated cooling water blow down that is characteristic of other industry) such as outfall 03A027 will have an one-time effluent characterization WET requirement that consists of chronic WET testing for the *Ceriodaphnida dubia* and *Pimephales promelas* test species. For outfall 03A027, table 11 of the NMIP directs the WET test to be a 7 day chronic test using at a once per five (5) years frequency.

The proposed permit requires five (5) dilutions in addition to the control (0% effluent) to be used in the toxicity tests based on a 0.75 dilution series. These additional effluent concentrations shall be 10%, 13%, 17%, 23%, and 31%. The low-flow effluent concentration (critical low-flow dilution) is defined as 23% effluent.

Since the testing frequencies for the outfall listed in this section is once a year or less, the tests should all occur in winter or springtime when most sensitive juvenile life forms are likely to be present in receiving water and colder ambient temperatures might adversely affect treatment processes. This time will generally be defined as between November 1st and April 30th.

Because the discharge at Outfall 03A027 passed acute WET test during the administratively continued permit term, if the discharge passes the chronic WET test during this permit term, EPA may waive the WET test in the future permit term at this outfall if the nature of discharge is not significantly changed.

OUTFALL 03A199

Facilities with discharges that qualify as minor (e.g. treated cooling water that is characteristic of other industry) such as outfall 03A199 will have an effluent characterization single WET sample event. A chronic WET test with a CD of 35% was established in the administratively continued permit and the discharge has passed the test. Because the discharge has reduced its flow, a new CD is calculated to be 10%. Because the discharge has demonstrated “pass” at a higher CD, EPA determines that further WET test is not required in accordance with the NMIP. A WET testing is not established at this outfall.

OUTFALLS 13S, 03A113, 03A048, 03A160, 03A181, and 05A055

The receiving water, Cañada del Buey for outfall 13S, Sandia canyon for outfall 03A113, Los Alamos canyon for outfall 03A048, Mortandad canyon for outfall 03A160 and 03A181, Water canyon and Cañon de Valle for outfall 05A055 are classified as Rio Grande Basin segment 20.6.4.128 waterbodies.

The NMIP classifies 20.6.4.128 waterbodies as ephemeral or intermittent. Because those waterbodies are designated for limited aquatic life use, EPA applies guidelines for ephemeral stream to determine the type and frequency of WET requirements. Facilities with discharges that qualify as minor (sanitary waste discharge with flow over 0.1 MGD but less than 1.0 MGD) such as outfall 13S will have WET requirements that consist of WET testing for the *Daphnia pulex* test species. For outfall 13S, table 11 of the NMIP directs the WET test to be a 48-hour acute test using *Daphnia pulex* at a once per two years frequency.

Other outfalls that qualify as a minor industrial (excluding some operations such as aquifer remediation and drinking water treatment facilities) such as 03A113, 03A048, 03A160, 03A181, and 05A055 and discharge to ephemeral waterbodies will have WET requirements of an effluent characterization single WET sample event by 48-hour acute test using *Daphnia pulex*. The critical dilution (CD) will be 100% since discharges at those outfalls referenced in this section are to ephemeral streams. Because the WET testing result for Outfalls 03A048, 03A113, 03A160 and 03A181 already demonstrated “pass” of 100% acute WET test, WET requirements are not proposed for these outfalls. There was no discharge at Outfall 05A055 and no WET result could demonstrate a “pass” of 100% acute WET for the discharge, therefore WET requirements are retained for Outfall 05A055.

The proposed permit requires five (5) dilutions in addition to the control (0% effluent) to be used in the toxicity tests based on a 0.75 dilution series. These additional effluent concentrations shall be 32%, 42%, 56%, 75%, and 100%. The low-flow effluent concentration (critical low-flow dilution) is defined as 100% effluent. A 3 hour composite rather than a 24 hour composite

sample is established for Outfall 05A055 because this discharge will be likely intermittent. The term "3-hour composite sample" means a sample consisting of a minimum of one (1) aliquot of effluent collected at a one-hour interval over a period of up to 3 hour discharge.

Since the testing frequencies for all outfalls listed in this section are once a year or less, the tests should all occur in winter or springtime when most sensitive juvenile life forms are likely to be present in receiving water and colder ambient temperatures might adversely affect treatment processes. This time will generally be defined as between November 1st and April 30th.

OUTFALL 051

The administratively continued permit has WET biomonitoring requirement with CD = 100%. DMR reports reveal nine (9) failing tests out of a total of fifteen (15) tests for the *Daphnia pulex* test species during the last permit term. The EPA Reasonable Potential Analyzer indicates that RP exists. EPA concludes that this effluent causes or contributes to an exceedance of the State water quality standards. Therefore WET limits will be established in the proposed permit.

EPA proposes to establish WET requirements for Outfall 051 based on requirements for a major discharge because of the nature of discharge, industrial and radioactive wastewater. Facilities that qualify as majors and discharge to ephemeral waterbodies will have WET requirements that consist of a 100% critical dilution and a 48-hour acute test using *Daphnia pulex* at a once per three (3) months frequency when a WET limit is established. Since the flow from this outfall is intermittent, A 3 hour composite rather than a 24 hour composite sample is established because the discharge is intermittent. The term "3-hour composite sample" means a sample consisting of a minimum of one (1) aliquot of effluent collected at a one-hour interval over a period of up to 3 hour discharge.

The proposed permit requires five (5) dilutions in addition to the control (0% effluent) to be used in the toxicity tests based on a 0.75 dilution series. These additional effluent concentrations shall be 32%, 42%, 56%, 75%, and 100%. The low-flow effluent concentration (critical low-flow dilution) is defined as 100% effluent. Monitoring and reporting requirements begin on the effective date of this permit. March 1, 2016, is proposed as compliance deadline for the Whole Effluent Toxicity limitations.

Because the WET test failures might be caused by low hardness effluent and LANL has adjusted its process to raise effluent hardness and the permit also establishes hardness limit at Outfall 051, EPA will reevaluate the WET RP based on new WET results during the next permit renewal process.

7. Sewage Sludge Management

LANL plans to compost biosolids at the Sanitary Wastewater System Plant and apply composted solids for beneficial uses. Since August 1, 2012, LANL has submitted its Registration package to NMED-Solid Waste Bureau and Notice of Intent to Discharge to NMED-Groundwater Quality Bureau for approval. LANL is also working with NMED-SWQB to resolve SWQB's concerns about storm runoffs.

VI. CWA 303(d) IMPAIRED WATER

Most of the streams within LANL property are impaired waterbodies and industrial point sources have been identified as one of several probable sources of impairment for Mortandad Canyon (where Outfalls 03A022, 03A181 and 051 discharge to) and Canada del Buey (where Outfall 13S discharges to). Industrial point sources were not identified as probable sources for other streams. Because EPA has conducted RP for discharge at each outfall and established effluent limitations if RP was demonstrated; and also because EPA realizes that most of those streams have been contaminated by pollutants carried by historical storm water runoff from Areas of Concern (AOCs) and Solid Waste Management Units (SWMUs) and EPA has issued an individual stormwater permit (NM0030759) to address storm runoffs from those AOCs and SWMUs; EPA determines that it is not necessary to require additional effluent data from these outfalls. NMED has also determined not to take any monitoring action to address the impairment issue for the next 10 years. If TMDLs for these impaired waterbodies are approved in the future, EPA will establish effluent limitations accordingly.

VII. ANTIDegradation

The NMAC, Section 20.6.4.8 “Antidegradation Policy and Implementation Plan” sets forth the requirements to protect designated uses through implementation of the State water quality standards. The limitations and monitoring requirements set forth in the proposed permit are developed from the State water quality standards and are protective of those designated uses. Furthermore, the policy sets forth the intent to protect the existing quality of those waters, whose quality exceeds their designated use. The permit requirements and the limits are protective of the assimilative capacity of the receiving waters, which is protective of the designated uses of that water, NMAC Section 20.6.4.8.A.2.

VIII. ANTIBACKSLIDING

The proposed permit is consistent with the requirements to meet antibacksliding provisions of the Clean Water Act, Section 402(o) and 40 CFR §122.44(l), which state in part that effluent limitations must be as stringent as those in the previous permit. If new effluent data demonstrates no RP for WQ-based limitations, those limitations are removed based on 40 CFR §122.44 (l)(B), new information that was not available at the time the previous permit was issued and was discussed in Part V above. WQ-based effluent limitations may be changed due to new discharge flow rate, new stream flow rate, or new criteria.

IX. HISTORICAL and ARCHEOLOGICAL PRESERVATION CONSIDERATIONS

The reissuance of the permit should have no impact on historical and/or archeological sites since such sites are not found in the mining area.

X. PERMIT REOPENER

Pursuant to the provision of 40 CFR 122.62, this permit may be reopened for modification.

XI. VARIANCE REQUESTS

No variance requests have been received.

XII. CERTIFICATION

The permit is in the process of certification by the State Agency following regulations promulgated at 40 CFR 124.53. A draft permit and draft public notice will be sent to the District Engineer, Corps of Engineers; to the Regional Director of the U.S. Fish and Wildlife Service and to the National Marine Fisheries Service prior to the publication of that notice.

XIII. FINAL DETERMINATION

The public notice describes the procedures for the formulation of final determinations.

XIV. ADMINISTRATIVE RECORD

The following information was used to develop the proposed permit:

A. APPLICATION(S)

EPA Application Form 2C package received February 8, 2012.

B. STATE OF NEW MEXICO REFERENCES

New Mexico State Standards for Interstate and Intrastate Surface Water, 20.6.4 NMAC, as amended through November 20, 2012.

Procedures for Implementing National Pollutant Discharge Elimination System Permits in New Mexico, March 15, 2012.

State of New Mexico 303(d)/305(b) Integrated Report, 2012 - 2014.