Response to the Notice of Disapproval for the 2012 Monitoring Plan for Los Alamos and Pueblo Canyons Sediment Transport Mitigation Project, Revision 1 Los Alamos National Laboratory, EPA ID No. NM0890010515, HWB-LANL-12-016, Dated June 14, 2012

INTRODUCTION

To facilitate review of this response, the New Mexico Environment Department's (NMED's) comments are included verbatim. Los Alamos National Laboratory's (LANL's or the Laboratory's) responses follow each NMED comment.

COMMENTS

NMED Comment

1) *The Permittees' response to NMED Comment 1 is not accurate. Specifically, the Permittees state that, "[r]etrieval of samples within 1 business day would not have allowed retrieval of more samples." In addition, Table 1 of the Response indicates that there would be no change at Gage Station E038 had samples been retrieved within one business day of an event.*

   NMED's evaluation, based on Table 2.2-1 and deviation descriptions within the Stormwater Performance Monitoring in the Los Alamos/Pueblo Watershed during 2011 *(2011 Report), shows that had the sample collected on 7/28/11 at E038 been retrieved on 7/29/11 and the sampler reset, then a sample would have been collected on 8/1/11, had that sample been retrieved on 8/2/11 and the sampler reset, a sample would have been collected on 8/3/11, and had that sample been retrieved on 8/4/11 and the sampler reset, yet another sample would have been collected on 8/5/11. Therefore, during one eight day period at one location alone, four samples that met sample triggering criteria would have been collected instead of only one. Also, the Permittees would have increased sample collection efficiency for this gage station to 80%, compared to their actual achievement of only 50%. In addition, the Permittees would have collected a more representative sample set overall. The Permittees collected only one sample at E038 with a maximum discharge rate between 20 and 180 cfs. Had the Permittees collected the samples within one business day as shown above, the sample set would have included four samples within the 20 to 100 cfs range.*

   While NMED agrees that only one sample may have been collected at station E040 that was missed if weekly inspections had been completed, that sample would have been the only sample collected at E040 in 2011. One sample out of three triggering events would be better than no samples at all. That said, NMED is amenable to decreasing the frequency for inspection of gage stations and samplers during dry periods to once every two weeks.

   Since the stormwater sampling season is a compressed time period with storm events occurring in rapid succession, it is imperative that repairs to damaged or malfunctioning equipment be conducted immediately. Because missed samples could not be directly attributed to repairs made beyond two business days in 2011, NMED is amenable to extending this requirement to five business days.

NMED understands that there may be issues outside of the monitoring group's control which would prohibit adherence to this protocol; however, the standard operating procedures must be:

- *retrieve samples within one business day*
- *repair damaged or malfunctioning equipment within five business days, and*
- *inspect gage stations and samplers a minimum once every two weeks during dry period.*

Deviations from the standard operating procedures must be documented and justified in the performance report.

LANL Response

1. LANL does not disagree with NMED's assessment of potential sample collection events based on Table 2.2-1 and descriptions of deviation in the report. LANL is committed to a robust stormwater monitoring and maintenance program and has increased resources and prioritization of Los Alamos/Pueblo (LA/P) watershed stormwater stations, especially in this post-fire runoff season.

   LANL's program for stormwater monitoring at canyon gages, specifically in the LA/P watershed, is to retrieve samples, inspect, and repair damaged or malfunctioning equipment as quickly as possible following a discharge event (typically within 24 h, exclusive of weekends and holidays). Gage station inspections not triggered by discharge are conducted on the following schedule: E050.1, E060.1, and E109.9 weekly throughout the year; the remaining stations weekly during the monitoring period (June 1 to October 31) and monthly for the remainder of the year. However, retrieving all samples in the LA/P watershed within 24 h is not always feasible or even possible and therefore cannot be accepted as a requirement for LANL. LANL's ability to consistently meet a 24-h sample-retrieval goal following a discharge event depends on a number of factors, including how many samplers are triggered in any given event and accessibility of gage stations following large floods. LANL prioritizes sample retrieval, inspection, and repair at E050.1, E060.1, and E109.9. Minor damages or malfunctioning equipment can be repaired quickly (almost always in less than 5 business days). More significant damage to a flume, stilling well, or support structure and other damages that require heavy equipment will likely require more time to repair. Sample retrieval, inspection, and repair of other gages and samplers in the LA/P watershed will be performed as quickly as possible.

   LANL is engaged in process improvements that will continue to reduce the length of time between sample collection and sample retrieval and is expected to improve LANL's ability to keep samplers and gages in an operational state. During 2012, radio telemetry is being installed at gage stations in LA/P Canyons such that near-real-time transmission of the state of sampling and gaging equipment will be available in the offices of LANL personnel. The telemetry system has the capability to notify LANL personnel by email or pager when samplers have collected water, when samplers have experienced accidental triggering, and when sampling and gaging equipment have experienced certain malfunctions. This improved telemetry will allow field personnel to target retrieval of samples more quickly and eliminate time-consuming station-by-station searches for water after precipitation events. Also, telemetry will allow daily remote inspection of certain sampler and gage functions and will allow targeted inspection of gage stations with identified failures. LANL is planning to report on the effectiveness of telemetry to improve sample retrieval and sampler operation status in the 2012 Los Alamos and Pueblo Watershed Stormwater Performance Monitoring Report.

LANL considers the program described above as proactive and protective and provides for sufficient data to evaluate the overall performance of the mitigation actions that have been implemented in the LA/P watershed. These data, coupled with the U.S. Department of Energy's funding of sampling at the Buckman Direct Diversion (BDD) intake, are sufficient to inform decisions related to BDD operations.

LANL will continue to describe any deviations from the work plan or inspection and maintenance schedule that may occur in its annual performance monitoring report to NMED.

NMED Comment

2) *The Permittees' response to Comment 2 is confusing. Specifically, Tables 2 and 3 do not correlate to Table 2.2-1 of the 2011 Report. It appears that the Permittees utilized yearly totals versus using totals only from the stormwater monitoring seasons. The evaluation must be based on events that occurred during the specific stormwater season, not annual totals.*

In addition, following discussion of silting issues at E109.9, the Permittees state, "[n]o silting issues occur at other Los Alamos/Pueblo stations." This statement is not accurate. The 2011 Report states that the intake for E042.1 was blocked by silt on 8/19/11, 8/22/11, 9/7/11, 9/15/11, and 10/4/11. This indicates a silting issue at E042.1. The sampler intake at E026 was also blocked by silt on two occasions.

Reevaluate gage stations E109.9 and E038 based on the stormwater sampling season events only and provide an evaluation of silting issues for both E042.1 and E026.

LANL Response

2.) During review of NMED's Comment 2, it was discovered that Table 2.2-1 in the 2011 monitoring report was incomplete. Several days with discharge, but without sampling, were omitted from the table and corresponding discussion, including July 27 and 30, August 28, and September 9. A revised Table 1 presenting discharge information has been prepared and is attached. The conclusions of the report are unchanged, although the ratio of samples collected to discharges is less than reported.

Tables 2 and 3 in LANL's response to the April 16, 2012, notice of disapproval have been reconciled with the updated Table 2.2-1 in the 2011 report (attached as Table 1) and are presented below as Tables 2 and 3, respectively. Only data from the stormwater monitoring period (June 1 to October 31) were used to produce these tables. An evaluation of gages E042.1 and E026 was performed similar to that performed on E109.9 and E038, the results of which are included in Tables 4 and 5, respectively.

For E109.9, the results indicate that moving the sampler intake from 5 cubic feet per second (cfs) to 10 cfs would be a suitable action to take to try to alleviate intake silting from bedload movement. The BDD Board requires a formal request to move the sampler intake, and LANL is in the process of preparing the request. Once the BDD Board approves the request, LANL personnel will move the intake.

For E038, the results indicate that moving the sampler intake from 10 cfs to 40 cfs would be a suitable action to take to alleviate intake silting from bedload movement.

For E042.1, the results indicate that moving the sampler intake would not be prudent to achieve the goal of collecting four samples over the monitoring period, particularly because LANL would like to collect water up- and downstream of the Los Alamos low head weir during the same storm event and the downstream station, E050.1, sampler intake is set to collect at 5 cfs.

For E026, the results indicate that moving the sampler intake would not be prudent to achieve the goal of collecting four samples over the monitoring period. Most years do not have four storms that exceed 10 cfs.

Table 1
Maximum Daily Discharge and Stormwater Sampling in the LA/P Watershed during 2011

Date	Los Alamos Canyon Discharge (cfs)								Pueblo and Acid Canyon Discharge (cfs)				
	DP Canyon			Los Alamos Canyon					Acid Canyon		Pueblo Canyon		
	E038	E039.1	E040	E026	E030	E042.1	E050.1	E109.9	E055.5	E056	E055	E059	E060.1
07/02/2011	19 S[a,b]	0 NS[c,d]	0 NS	0 NS	0 NS	0 NS	0 NS	0 NS	0 NS	0 NS	0 NS	0 NS	0 NS
07/22/2011	0 NS	0 NS	0 NS	0 NS	0 NS	0 NS	0 NS	53 S	0 NS	0 NS	0 NS	0 NS	0 NS
07/27/2011	0 NS	0 NS	0 NS	<1 NS[e]	0 NS	0 NS	0 NS	10 NS[f]	0 NS	0 NS	0 NS	0 NS	0 NS
07/28/2011	17 S	0 NS	0 NS	<1 NS	0 NS	0 NS	0 NS	13 S	0 NS	0 NS	0 NS	0 NS	0 NS
07/30/2011	14 NS	0 NS	0 NS	<1 NS	0 NS	0 NS	0 NS	0 NS	<1 NS	0 NS	0 NS	0 NS	0 NS
08/01/2011	97 NS	12 S	0 NS	0 NS	0 NS	0 NS	0 NS	<1 NS	0 NS	0 NS	0 NS	0 NS	0 NS
08/02/2011	9 S	0 NS	0 NS	0 NS	0 NS	0 NS	0 NS	0 NS	0 NS	0 NS	0 NS	0 NS	0 NS
08/03/2011	43 NS	9 NS	4 NS	0 NS	0 NS	0 NS	0 NS	81 S	0 NS	0 NS	0 NS	0 NS	0 NS
08/04/2011	42 NS	11 S	8 NS	0 NS	0 NS	0 NS	0 NS	3 NS	4 NS	<1 NS	0 NS	0 NS	0 NS
08/05/2011	73 NS	28 NS	12 NS	<1 NS	0 NS	0 NS	0 NS	70 S	4 NS	9 NS	0 NS	0 NS	0 NS
08/13/2011	14 S	2 NS	0 NS	<1 NS	0 NS	0 NS	0 NS	8 NS	0 NS	0 NS	0 NS	0 NS	0 NS
08/15/2011	4 S	0 NS	0 NS	0 NS	0 NS	0 NS	0 NS	0 NS	0 NS	0 NS	0 NS	0 NS	0 NS
08/19/2011	183 S	267 S	161 NS	<1 NS	8 NS	72 S	3 NS	3 NS	19 S	24 NS	13 NS	17 S	0 NS
08/21/2011	238 NS	290 NS	208 NS	<1 NS	30 S	93 NS	75 S	610 NS[g]	20 NS	143 NS	24 NS	131 S	0 NS
08/22/2011	0 NS	0 NS	<1 NS	31 S	95 S	172 S	91 S	95 S	0 NS	0 NS	2 NS	0 NS	0 NS
08/26/2011	0 NS	0 NS	0 NS	na[h] NS	0 NS	<1 NS	0 NS	35 S[g]	0 NS	0 NS	<1 NS	0 NS	0 NS
08/28/2011	12 NS	0 NS	0 NS	na NS	<1 NS	2 NS	0 NS	69 NS	0 NS	0 NS	0 NS	0 NS	0 NS
09/01/2011	na S	0 NS	0 NS	0 NS	<1 NS	2 NS	<1 NS	340 NS	0 NS	0 NS	0 NS	0 NS	0 NS
09/04-05/2011	7 S	2 NS	<1 NS	49 S	107 S	207 S	188 S	632 S	0 NS	0 NS	0 NS	0 NS	0 NS
09/05/2011	0 NS	0 NS	0 NS	0 NS	0 NS	0 NS	0 NS	81 NS	0 NS	0 NS	0 NS	0 NS	0 NS
09/07/2011	40 S	5 NS	8 NS	0 NS	1 NS	18 S	11 S	61 S	2 NS	8 NS	2 NS	0 NS	4 NS
09/09/2011	10 NS	6 NS	4 NS	1 NS	<1 NS	7 NS	<1 NS	<1 NS	0 NS	2 NS	4 NS	0 NS	0 NS
09/10/2011	7 NS	5 NS	3 NS	<1 NS	1 NS	15 S	15 S	70 S	0 NS	5 NS	9 NS	0 NS	<1 NS

Table 1 (continued)

Date	Los Alamos Canyon Discharge (cfs)								Pueblo and Acid Canyon Discharge (cfs)				
	DP Canyon			Los Alamos Canyon					Acid Canyon		Pueblo Canyon		
	E038	E039.1	E040	E026	E030	E042.1	E050.1	E109.9	E055.5	E056	E055	E059	E060.1
09/15-16/2011	na NS	12 S	9 NS	<1 NS	4 NS	26 S	11 S	8 NS	0 NS	3 NS	5 NS	0 NS	0 NS
10/02/2011	0 NS	0 NS	0 NS	14 NS	13 S	36 S	11 S	0 NS	0 NS	0 NS	0 NS	0 NS	0 NS
10/04/2011	9 S	<1 NS	0 NS	4 NS	8 NS	9 S	6 S	13 NS	0 NS	0 NS	0 NS	0 NS	0 NS
10/07/2011	8 NS	2 NS	1 NS	0 NS	<1 NS	0 NS	0 NS	14 NS	0 NS	<1 NS	0 NS	0 NS	0 NS
10/12/2011	1 S	0 NS	0 NS	0 NS	0 NS	0 NS	0 NS	0 NS	0 NS	0 NS	<1 NS	0 NS	0 NS
10/26-27/2011	10 NS	1 NS	<1 NS	<1 NS	<1 NS	6 NS	0 NS	0 NS	0 NS	0 NS	1 NS	0 NS	0 NS

[a] S = Sample was collected.

[b] Green highlight in cell indicates one or more samples were collected on a day with recorded discharge at that station.

[c] NS = Sample was not collected.

[d] No highlight in cell indicates that no discharge occurred at that station.

[e] Yellow highlight in cell indicates no sample was collected on a day with recorded discharge below the triggering threshold at that station.

[f] Blue highlight in cell indicates no sample was collected on a day with recorded discharge above the triggering threshold at that station.

[g] Flow is estimated.

[h] na = Discharge information is not available. The cell is highlighted in grey.

Table 2
E110/E109.9 Frequency of Potential Sampling

Year	5 cfs	10 cfs	15 cfs	20 cfs
2003	17	8	4	5
2004	3	2	1	1
2005	12	9	6	4
2006	12	6	4	4
2007	3	1	1	1
2008	2	2	2	1
2009	2	0	0	0
2010	4	4	4	4
2011	18	15	12	12

Table 3
E038 Frequency of Potential Sampling

Year	10 cfs	20 cfs	30 cfs	40 cfs	50 cfs
2000	19	15	12	11	10
2001	5	3	3	3	3
2002	9	7	7	3	2
2003	12	12	7	5	4
2004	12	10	9	9	6
2005	26	20	19	17	15
2006	27	21	14	9	7
2007	22	17	14	14	11
2008	19	13	10	9	8
2009	23	17	13	10	7
2010	18	16	13	11	9
2011	14	7	7	7	4

Table 4
E042/E042.1 Frequency of Potential Sampling

Year	10 cfs	15 cfs	20 cfs	25 cfs	30 cfs
1995	7	5	3	1	1
1996	6	5	2	1	1
1997	9	7	5	5	5
1998	2	2	0	0	0
1999	7	5	4	3	2
2000	5	5	4	4	4
2001	9	6	6	5	5
2002	1	1	1	1	1
2003	3	3	3	2	2
2004	6	5	1	1	1
2005	10	9	9	8	8
2006	10	9	8	8	8
2007	8	5	5	5	5
2008	5	3	3	2	2
2009	4	4	3	3	3
2010	7	5	3	3	3
2011	8	8	6	6	5

Table 5
E026 Frequency of Potential Sampling

Year	10 cfs	15 cfs	20 cfs
2001	6	6	5
2002	2	1	1
2003	4	3	2
2004	3	3	2
2005	12	5	1
2006	1	1	1
2007	0	0	0
2008	0	0	0
2009	1	0	0
2010	0	0	0
2011	3	2	2