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LANL INDIVIDUAL PERMIT FOR STORM WATER PROJECT UPDATE PUBLIC MEETING

July 12, 2012

Meeting Report

Opening

The LANL Individual Permit for Storm Water public meeting was held in the Cities of Gold Conference Center, Pojoaque, New Mexico, July 12, 2012. Poster boards were on display in the lobby area and a Map of the Individual Permit Poster Session 7-12-12 listing the names of the posters and the subject matter expert for each of the posters was one of the handouts. Other handouts included an agenda for the meeting and copies of the slides to be shown during the LANL presentations.

Bruce MacAllister, meeting facilitator, opened the presentation portion of the meeting promptly at 5:45 p.m. He gave an explanation of the presentations to be made, the purpose and scope of the meeting (Slide 2), the ground rules for the meeting (Slide 3), and the posters available for viewing in the lobby.

Introduction

Alison Dorries, Environmental Protection Division Leader at Los Alamos National Laboratory

Alison Dorries gave an introduction to the topic for the evening (the individual storm water permit for the individual sites) and to the individual speakers' topics: the regulatory deliverables that were accomplished during the most recent time period; the sampling that has been done and some of the results; field work examples and results. She also noted the talk to be given by Erin English, an engineer from Biohabitats in Santa Fe.

Dorries referred to the Laboratory outreach endeavors: the public Website dedicated to the Individual Storm Water Permit work; the email notifications sent to stakeholders and interested parties; these public meetings; and the Intellus Website and database (www.intellusnmdata.com).

Dorries stated that the permit helps ensure that the Laboratory is doing its part "to protect the surface water that is running off." She said that the water in Los Alamos is a very, very valuable resource, and that the Laboratory wants to be sure

that they are keeping any contaminants that are found on the LANL site from moving into the canyons or off of the site. She further stated that LANL is in compliance with its permit requirements and it wants to share with the public about how it is meeting the milestones of the permit and its data.

Dorries introduced the speakers and their topics to follow.

The Link between the Individual Storm Water Permit and the Consent Order

Steve Veenis, LANL Project Manager for Storm Water and Canyon Sediment Investigations

Steve Veenis reminded the participants that LANL has talked before about baseline control measures, how they were installed, what they look like, and how LANL is responsible for collecting confirmation samples.

Veenis said that results of the sampling drive further actions under the individual permit (IP). Once the sample results come back and LANL exceeds a target action level (TAL), LANL is required by the permit to go to the next step. The next step is either to (1) install enhanced control measures, which would require additional confirmation samples, (2) retain all the storm water discharging from the site, or (3) eliminate exposure to storm water at the sites. These alternatives would be followed by a Certificate of Completion under the New Mexico Environment Department (NMED) Consent Order.

Veenis said that the certificate of completion is the link between the Consent Order and the Individual Permit.

Referring to Slide 12, Veenis gave the Environmental Protection Agency definition of a solid waste management unit (SWMU, pronounced schmoo) as:

> Any discernible unit at which solid waste has been placed at any time, and from which the Department determines there may be a risk of a release of hazardous waste or hazardous waste constituents, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at the Facility at which solid wastes have been routinely and systematically released; they do not include one-time spills.

He defined areas of concern (AOCs) as

> Any area that may have had a release of a hazardous waste or hazardous constituent, which is not a SWMU.

Veenis said that when they talk about “the Department” they are talking about the NMED Hazardous Bureau.

Veenis explained how SWMUs are identified at the facility. (Slide 13) The EPA performs a Resource Conservation Recovery Act (RCRA) facility assessment (RFA) that includes:

Reviews of historical records, including any available data;

Interviews of employees and retirees; and

Performance of site inspections.

The RFA was completed at Los Alamos in 1990. They determined that they would take conservative approach to identifying sites that potentially could have had a release of some hazardous waste constituent. So back in the early 1990s a report was issued (RFA) that identified over 2000 SWMUs and AOCs that potentially could discharge a hazardous constituent. The report is a very large four-volume document.

The RFA report identified things such as surface disposal sites, construction debris sites, outfalls, septic systems, landfills. Anything that potentially could have stored a hazardous waste was identified as being a SWMU or AOC.

Veenis explained that the next step after identifying the SWMUs and AOCs is to perform a RCRA facility investigation. The investigation involves collecting soil and groundwater samples using a phased approach to determine what is at the SWMU or AOC and whether the SWMU or AOC requires additional investigation. Veenis states that this step has been on-going for 20 years.

The iterative phased approach over time helps make the determination whether a release has occurred and whether additional investigation is required at the SWMU. Up to about 2005, the investigation reduced the number of sites from about 2000 to about 1400 sites. The 1400 sites were carried over when the Consent Order was negotiated in 2005. The Consent Order mandates the continuation of investigation of the SWMUs and regulates correctives measures or actions at the remaining 1400 sites.

The Consent Order has three objectives:

Determine the nature and extent of contamination (depth, lateral extent) of releases from SWMUs and AOCs;

Identify and evaluate, where needed, corrective measures and alternatives; and

Implement corrective measures.

Veenis said that in the 2003 to 2006 timeframe, LANL negotiated and applied for an Individual Permit, the National Pollutant Discharge Elimination System (NPDES) under the Clean Water Act. This is in addition to the RCRA requirements.

The NPDES regulates discharges of storm water associated with industrial activity from SWMUs and AOCs. Three criteria were used to select individual sites for the IP:

> Conservatively assumed that all fourteen hundred of those sites had significant industrial materials;
>
> Assumed the materials were exposed to storm water.
>
> Assumed discharge of storm water could impact the waters of the US (could make it to a receiving stream such as a canyon, or a tributary)

Veenis reported that slightly over 400 of the 1400 SWMUs, about 30% of the sites, were selected for the IP.

Veenis discussed what LANL has learned from Consent Order data and Storm Water data to date. Because they have collected thousands of samples, they know lot more about the soil and sediment now than they did when the IP was applied for and issued.

LANL has used that data to make a determination about whether or not an actual release of industrial materials occurred by "comparing the soil and storm water data against each other to see if pollutants are being released from the SWMU or AOC." If they find that they are not, they can use that information to support a request for a Certificate of Completion.

Since the time the original application was submitted over the past six or seven years, a tremendous amount of progress was made in defining the nature and extent of materials in the SWMUs.

Of the number of SWMUs that are in corrective action, based on target action level (TAL) exceedences, nineteen have been submitted to NMED for Certificates of Completion, and 35 are eligible for Certificates of Completion, because they are below the applicable screening levels of background values.

With reference to Slide 16, Veenis stated that in 2011, samples were collected at 70 of the site monitoring areas (SMAs; a small watershed around a site). Of the 70 SMAs, 68 exceeded target action levels (TALs) for one or more constituents. The constituents in almost every case consist of aluminum, zinc, copper, gross alpha, and PCBs. So the constituents found were only a small subset of all of the types of contaminants that they look for.

Veenis said that they are now reviewing the TAL exceedences and comparing them against the soil data that has been collected, and trying to get determinations from the NMED Hazardous Waste Bureau whether or not Certificates of Completion are possible.

Veenis summarized by saying that the SMWUs and the AOCs are regulated under both the Consent Order and the IP. They have collected quite a bit of data that they didn't have before the permit application was submitted, and the data are beginning to tell a positive story. He asserted that it is good news, that they are not seeing the amount of contaminants that they might have expected. They have a lot more sampling to do. Veenis said that although they can't yet say it's a total success, at this time it's starting to feel as though the contaminant discharges from many of the SWMUs are not as bad as thought at the beginning.

Veenis stated that they are planning this year to complete corrective action at all 68 of the sites that exceeded the TAL by installing controls and adding protection. Additional samples must be collected after the controls are installed to determine success. Either the sites will no longer discharge and they won't collect a sample (the best case), or, if a sample is collected, it will be below the TAL. If not below the TAL, more work will be done.

They will continue to monitor the other 180 sites at which that they didn't collect samples. Of the 250 SMAs, samples were collected at 70, and samples will be collected at 180. Will go through same process at end of this year when get data back from the additional samples. As the data comes in, they will move into corrective action at those sites.

Vennis concluded that it is an on-going, iterative, staggered process. He said, "We're on our way."

Scott Kovac from Nuclear Watch New Mexico questioned Veenis: "On your last slide you mentioned that you're monitoring 180 SMAs, but samples have not been collected. So how do you monitor without taking samples?"

Veenis answered: "We install an automated sampler at all of those locations, they are set up already, and they trigger automatically by detection of flow. And so if it rains hard enough and a discharge occurs, it automatically triggers that sample. It will suck up the sample. And we send out crews to collect the sample, submit it to the Lab for analysis."

Kovac recapitulated Veenis' answer as "You monitor the site. If there's flow, a sample is collected at that time. So it's monitored until there's flow, and then when there's flow, a sample will be taken."

Veenis continued by saying that in the meantime they are inspecting and maintaining those controls that are already there. In some cases they do not ever collect a sample because the site is fairly flat and they have fairly robust controls in place, but the attempt to collect samples is made.

Ken Lagattuta, a retired LANL employee, asked: "You said that the Individual Permit is a Clean Water Act regimen and that is separate from the RCRA facility investigation. You also said that there are 405 SWMUs and areas of concern isolated under the Individual Permit, subject to the Individual Permit, and that 19 Certificates of Completion have been applied for out of that large pod of 405."

Veenis assured Lagattuta that was correct.

Lagattuta continued, "What about the rest of the 1400, the bulk of the 1400 SWUs and AOCs? You didn't talk about those at all."

Veenis answered that "those would still be addressed under the Consent Order, but they wouldn't be managed under the IP because they didn't meet those three criteria that I talked about. And so likely the determination was made that even if it did rain, the water wouldn't run off and make it to the waters of the US. So we tried to be very conservative up front about which sites would— run off would make it to the waters of the US, and so I think that's why we are seeing right now, that conservatism is kinda paying off because a lot of these sites aren't discharging, and, ya' know, we tried to make sure we got all of the ones that at least had that potential."

Joni Arends, Concerned Citizens for Nuclear Safety, asked "This issue of the Certificates of Completion [is] of grave concern for us, because we understand that the New Mexico Environment Department has issued over 200 Certificates of Completion for the SWMUs and AOCs. Part of the process is that a modification needs to be made to the permit, to the Consent Order, to the Hazardous Waste Permit. And that's a Class 3, and it's a public hearing. We can request, the public can request a public hearing. We need to talk about a schedule for bringing those 200 sites, or any more that you may be proposing. I saw in the annual report that you were saying maybe 30 were going to come in as Certificates of Completion

as part of the corrective action process. We really need to talk about a schedule because it's not going to be okay to submit a Class 3 modification for 200 Certificates of Completion with a 30-day comment period. ... maybe 10 at a time, to go through that process. Because it's going to take effort on the part of the public to participate fully in this process. And to be informed about whether we need a hearing or not."

Veenis replied that he had neglected to say that if a Certificate of Completion is indeed issued for an IP site, that doesn't mean that LANL is deleting it from the individual permit. It just means that they no longer have to collect samples, but they are compliant with corrective action.

Arends followed up by asking, "So, when the public is looking at the 405 sites, it's not clear from the annual,—well it is clear, if you ask for the Certificates of Completion. But then there's this regulatory limbo, because the last time the Certificates, the last time there was a process about the Certificates of Completion was back in the 2002-2003 timeframe, where you were asking for taking 85 of those sites off. Now those have been in regulatory limbo for almost a decade now. This is of concern for the Environment Department as well as the public, about how to get that process together. And we would be happy to talk with Alison and others about a schedule for that."

Veenis replied: "Sure. I think one point on that, Joni, of those 85, they are not all IP sites, for one thing. So we wouldn't really be involved in that aspect of it. But, for the ones that are, we probably would be."

David S. Rhodes, Department of Energy, Los Alamos Site Office, Environmental Office, said that he is responsible for the environmental remediation portion of the LANL storm water program, and would like to respond to a couple of the comments.

Rhodes said that the plutonium catch basins at TA 21 would show up under the Consent Order as a SWMU, but not under the IP as a SWMU, because they are buried tanks. They would plan on digging those tanks up under the Consent Order and that would not impact the IP process.

In response to another comment about where the SWMUs are located, Rhodes said that he has been doing the certification field visits to some of the sites that have had the recent enhanced controls put in. He stated that generally the locations for the samplers are at the low point in a settlement area were the

controls have to be taken. A stake is driven into the ground with a sample tube that is battery-powered or solar-powered so that it can collect samples at any time. The collection tube is at the sediment level (or within a quarter inch or so). There is also a wire trigger that's staked right at ground level.

Brian Shields with Amigos Bravos said he was curious about seeing 68 out of the 70 SMAs that were sampled did not meet water quality standards. He continued, "That's pretty high. Sixty-eight out of 70. I was just wondering if, in response to that, in terms of doing additional controls, whether that has actually triggered any change in where those samples are taken."

Veenis answered by saying that in some cases it does trigger a change in the sampling location. When they are building earthen berms or other structures near where the previous sampler was, they might move it. The goal is to minimize distance from the original sampling source. When they have a sampler moved, they document that and put that information on the Website in accordance with the permit requirements. They will update that in the Annual Storm Water plan.

Veenis added that "Once you start looking at the data, you can start seeing some patterns that are pretty interesting as far as the amounts of the exceedances and the types of the exceedances."

Shields followed up by asking whether NMED then has to review and certify the change in location where the samples are taken.

Veenis answered, "Certification of that wouldn't necessarily be required unless it was a very long distance, and then that might require an EPA—by the way, the EPA is the regulatory authority—and if it was a long or fairly far sampler move, that might require a permit mod. But there are some criteria listed in the permit that allow some minor adjustments based on scenarios—"

Shields asked whether there is an opportunity for the public to comment on changes in location.

Veenis replied "Not per se other than being notified about it, and you can bring it up at a public meeting, or, ya know, we are working with your technical folks on some of these issues. So, that might be an opportunity."

Compliance Update

Terrill Lemke, LANL Storm Water Permitting and Compliance Team Leader

Terrill Lemke presented Slides 19 through 30 while giving an overview of the implementation activities that have been on-going since the last public meeting in January 2012, including some of the deliverables, and some of the upcoming activities and the LANL permit status of its sites.

Lemke presented a slide listing the major sections of the permit:

Baseline Control Measures

Confirmation Monitoring

Corrective Action

Confirmation Monitoring

Additionally the slide showed the activities that correlate with and support the different phases of the permit:

Site Discharge Pollution Prevention Plan (SDPPP) Implementation

Inspections

Maintenance of Controls

Reporting

Public Involvement

Lemke stated that LANL has sites in all of the listed phases.

Lemke cited three major deliverables in the permit:

(1) Annual Report, a document that summarizes the year's activities, including monitoring, inspection and maintenance, the permit status for each site. The Annual Report for calendar year 2011 was completed by March 1, 2012.

(2) Compliance Status Report gives detailed information on the LANL storm water monitoring results. It is the same as a Discharge Monitoring Report. The 2011 calendar year Compliance Status Report was completed March 1, 2012.

(3) Site Discharge Pollution Prevention Plan, the document that identifies and details how LANL is implementing the permit at the sites. The required annual update was completed by May 1, 2012.

Lemke explained that the permit identified two monitoring periods during which LANL was required to collect two confirmation samples after baseline control measures were installed at each site. Collectively that became an 18-month period

from the effective date of the permit. The 18-month period ended April 30, 2012. During that period one sample was collected at each of 37 SMAs and two samples were collected at each of 33 other SMAs. Sampling is also continuing at another 180 SMAs.

Lemke reported that as a result of the sampling results, 68 of the SMAs had an exceedance of a target action level (TAL) and were moved into the corrective action phase. That equated to 113 sites. Of the 113 sites, 18 sites were high priority sites, and 95 were moderate priority sites.

He said the other two SMAs had results below the TALs. He stated that they will continue to inspect the sites and maintain the controls, but there is no additional confirmation monitoring required at those two SMAs.

Lemke stated that under corrective actions the permit gives LANL four options. They can do an enhanced control, which is building upon those baseline controls that are already in place; for example, better tailoring the control to the site. They can go for total retention of storm water. Or they can go for no exposure to storm water at the site. A Certificate of Completion from the New Mexico Environment Department can be obtained.

According to Lemke the numbers on the slides were already out of date. They now have 12 SMAs where they have enhanced control measures installed. Part of the permit requirement is that once the control measures are installed, they have to provide certification to EPA that they have completed the installation of the control measures.

Lemke reported that they have completed the installation and are completing the certification process for 12 SMAs. For three sites they have a Certificate of Completion from NMED that they will use to meet that corrective action requirement. They have 59 SMAs that are in various stages of installing control measures. Lemke pointed out that the last meeting was a corrective action.

Lemke noted that inspection and maintenance is an on-going process for LANL. One of the permit requirements is that for each site and SMA they have to do an annual erosion evaluation. They will assess the sites for changes in conditions, erosion problems, anything that might be different. The annual erosion evaluations for all 250 SMAs and 405 sites have been completed. He said that the goal was to get any needed maintenance work done before the rainy season started.

Lemke stated that storm event inspections were substantially non-existent until the week before this public meeting because they were waiting for the monsoons to begin. The storm event inspections are triggered by an intensity level of 1/4 inch within 30 minutes at a site.

Lemke stated that maintenance is on-going as they identify problems. According to Lemke, for the rest of the season, for the 180 SMAs where no samples were collected during the past 18-month period, monitoring will continue. The permit requirement is that monitoring be continued until a sample is collected, and then, based on the results of that single sample, if the sample is below the TALs no corrective is necessary, or if the sample is above the TAL, corrective action is required.

Lemke explained that for those sites that are already in a corrective action phase and for which they have installed or enhanced controls, they will initiate additional confirmation monitoring. It becomes an iterative process of taking correction action, then monitoring, then determining whether additional corrective action is necessary.

Lemke showed Slide 27 with pictures of various stages of construction of corrective action measures. He said that they are also have a number of sites for which they are in various stages of engineering design for more robust and rigorous controls such as the retention basin shown in the right hand photo on Slide 27.

Lemke summarized (referring to Slide 28) by stating that they have 180 SMAs with continuing extended baseline monitoring where they are still attempting to collect samples. They have 68 SMAs that are in various stages of the corrective action phase, from having control measures installed and starting the next round of sampling to having the enhanced controls in process of being installed. Additional controls are being maintained for two SMAs that do not require any additional monitoring.

With reference to Slide 29, Lemke added that since the last meeting Armand Groffman spear-headed a regional study in collaboration with DOE and the NMED oversight bureau establishing baseline levels of PCBs in various areas in northern New Mexico. This study is available to the public. They are using the information from this study in conjunction with their data analysis for their confirmation results and to help make decisions in their corrective action process.

Joni Arends of Concerned Citizens for Nuclear Safety asked about the corrective action process shown on Slide 24, where reference is made to NMED Certificates of Completion. She wanted to know how the public is notified that a submittal for a request for a Certificate of Completion is put forward to the NMED. She also questioned the opportunity to make public comment, “because it could be argued that the Certificate of Completion is really a permit modification, and that there should be additional notification to the public about that, and there should be an opportunity to request a public hearing on it.”

Lemke deferred to Kate Lynnes, from the Regulatory Management Division of the Environmental programs Directorate at LANL, to answer Joni Arends' question, saying that the Certificates of Completion are connected to the Consent Order.

Kate Lynnes, answered by saying that the procedure for issuance of a Certificate of Completion is in the Consent Order. For some sites it would be a long time after evaluation planning, implementation planning, and corrective measures, that a Certificate of Completion would be requested. For a lot of sites where there is no contamination, or something minor has been done, the Certificate of Completion is requested from the State and there isn't a public notification process in the Consent Order for that.

A follow-up question was asked off mike. Lynnes replied, "She is basically citing the general provision in the order that references incorporating all of the RCRA public participation process into the Order. But the actual issuance of a Certificate of Completion—it isn't permit modification until we submit to have it removed off the list in the permit. And that's when any procedural things under the permit would kick in. But the actual issuance of the Certificate of Completion is separate from that process, and it doesn't trigger anything until we petition to get it removed off of the permit."

Arends replied, "Right. And right now there's a decade delay in any permit modification request. So, what I'm trying to understand is: How do we move forward from this point?"

Lynnes answered, "I suspect as you were saying earlier, that's beyond the scope of this meeting since it focuses on the IP. But, like you mentioned earlier, that's probably something for another meeting with Alison's (Dorries, Environmental Protection Division Leader) group and with ours. Because it is not directly related to the IP."

Arends followed by saying, "Well it is directly related to the IP because once you get the Certificate of Completion you no longer have to monitor."

Bruce MacAllister, the facilitator, documented the question on the board so that someone could get back to Arends with an answer.

Ken Lagattuta, a retired LANL employee, asked, “So, as I understand there are two regulators involved here: the EPA under the Individual Permit and the NMED under the Consent Order. So, the Certificate of Completion comes from NMED?”

Lagattuta continued his question, “And what sign that the regulation has taken place, or that remediation has taken place, comes from EPA?” He stated that the EPA is the regulator under the Clean Water Act and the Individual Permit pertains to 405 sites. He asked, “What does EPA do in terms of validating the cleanup at these sites subject to the Individual Permit? Do they issue a certificate of some sort?”

Terrill Lemke replied: “Not for the— They don’t issue another certificate after NMED has issued a Certificate of Completion. So once that is issued, then we submit that, ya’ know, the documentation to the EPA identifying that we have met the correction action requirements.”

Lagattuta further asked whether EPA determines what the standard for the contaminant or suite of contaminants of concern will be.

Lemke replied that the EPA does not regulate the Certificate of Completion process. That is done by the State Environment Department.

Lagattuta said that he was trying to sort out the various areas of responsibility between the regulators, EPA and NMED. He asked, “So what is the EPA’s area of responsibility here? What do they do? How do you satisfy them?”

Lemke answered that “EPA is the regulator for NPDES permits for the Clean Water Act. So, our compliance with this permit is regulated by EPA. There is a provision in that permit, under the corrective actions. One of the four options for correction action, is, if we receive a Certificate of Completion from the New Mexico Environment Department, and, as Kate [Lynnes] mentioned, that receipt of that Certification of Completion is associated with the Consent Order under which they regulate that. Then that satisfies the requirement for corrective action. And that’s what EPA is looking for: Are we meeting the corrective action requirement? That’s one of the four options we have.”

David Rhodes from LASO added to Lemke's answer by saying, "Context is slightly different. Where the EPA regulates the storm water movement of those sediments, it does not regulate what the contents of that SMWU are. What the EPA has done by adding that fourth path is allowing the state to regulate how they clean up the content of the SMWU so you don't have to worry about the movement of sediments any more. So, they trust the state, NMED, to make that determination for the fourth path. And then they leave the other three to themselves."

Enhanced Storm Water Control Measures 2012

Jeff Walterscheid, LANL Engineering & Technology Directorate, Environmental Remediation Group, Stormwater Team

Jeff Walterscheid identified himself as being associated with the LANL team responsible for the control measure evaluation design and installation phase of the permit and thanked Erin English for the June 2012 tour and technicalmeeting in Santa Fe.

He stated that the Individual Permit provides that "if confirmation monitoring shows target action levels are not being met at a particular site, permittees must take corrective action through installation of [control] measures." He said that the 2011 sample results exceeding target action levels are currently being evaluated for installation of control measures and installations are on-going.

Referring to Slide 33, Walterscheid stated that an enhanced control measure is design and installation of additional, expanded, or better tailored control measures reasonably expected to achieve compliance with target action levels. He said that means: install additional controls; modify existing controls; or replace existing controls.

Walterscheid showed photographs of examples of some of the enhanced controls they are building. Slide 34 shows an earthen berm as a baseline control measure for run-on control and a smaller berm to control a former outfall from a sump at 2-SMA-1.65. A diversion berm was installed to take the runoff off the roadway and off a pad close to the outfall and disperse it around the site. A high efficiency matting and hydro-mulch was used to remedy the disturbance caused by the installation.

Walterscheid showed an example of modification of existing controls (Slide 37, STRM-SMA-5.05). A berm was installed when a former material storage area covering a large acreage was cleaned up in the mid-90s. Over time the berm became less effective. They modified the control by increasing the berm height to

create additional storage capacity behind the berm. They matted and reseeded the berm and provided a spillway. The sample location is on the other side of the spillway.

Walterscheid explained that Slide 36 shows an example of replacement of existing controls. An SMA with a small drainage area on the north side of TA-46 (CDB-SMA-0.25 in the Canada del Buey) was subject to a hot burn during the Cerro Grande fire. The area was reseeded, BMP work was done, and downed timber was used to make log check dams. The log check dams were replaced by a series of earthen berms for the more recent additional controls. The sampler sits on the lowest berm.

Walterscheid presented Slide 37 as an example of a combination of control approaches. He pointed out a holding pond that was modified by increasing berm height, thereby deepening the sediment area so it will hold more water.

Slide 38 shows a continuation of the area shown in Slide 37. Walterscheid stated that the outfall was in the patch of trees just behind the building shown in photos. They added controls because of the parking lot runoff into the area. They've increased the size of a swale, added rock check dams and a spillway. He noted that they had standing water in the controls as a result of the storm event of the previous night, which means that the controls are working. There is a decreased amount of run-on and if they get a small storm, there may not be any runoff.

Walterscheid showed an example of a firing site where they are currently working (Slide 39). They used two different maps: (1) a topographic map showing wattles; and (2) a newer map showing multiple earthen berms they have installed. Topographic maps can show the flow areas, the indication of changing elevations, but they do not show the vegetative cover.

Slide 40 has photos of the area shown in the topographic maps shown in Slide 39. Walterscheid stated that they have ideas for things they want to do in some heavily treed areas that are shown and that they'd like to install other types of controls on the lower sites where there is less tree coverage.

Walterscheid showed a photo of that same area (left photo in Slide 41) with the existing vegetation lower on the plateau where it is drier and small arroyos that run through the area, and a photo of a series of berms including spillways they installed throughout the entire area (right photo in Slide 41). They have matted, reseeded, and hydro-mulched the area.

2012 IP Monitoring Update: Start of the Annual Monitoring Effort and "A day in the life of the field crew"

Armand Groffman, LANL Environmental Division

Armand Groffman showed slides with a graph of 2011 monitoring results normalized to target action limits (Slide 43) and gave an explanation of the 2011 IP exceedances (Slide 44).

To give a context, Groffman said that a pico gram is one trillionth of a gram and that the PCB drinking water standard is 500 pico grams/L.

Groffman referred to the baseline upper tolerance limits presented in the Baseline PCB report and presented Slide 44 by saying, "We looked at the upper tolerance limit. And came up with 13 nanograms/liter for a baseline. It's not really a "background" because it is anthropogenic. He then proceeded to refer to it as "background" for the rest of the meeting.

Groffman said they took samples from remote watersheds north of the Laboratory, north of the townsite, and also looked at the western boundary, areas that are remote from industrial processes. And that represents deposition of airborne PCBs, which is very common throughout the world. In fact you find them in the Arctic."

Groffman noted the amounts of 13 ng/L in remote watersheds on the Pajarito Plateau, 24 ng/L in northern New Mexico tributaries to the Rio Grande, and 98 ng/L in urban runoff from a developed landscape. LANL combined its data with data from the NMED Oversight Bureau. He said that the 98 ng/L urban runoff was from paint stabilizers, construction materials, and caulking.

Groffman said that aluminum is naturally occurring; it is associated with minerals such as clays, feldspars, etc. Aluminum is not soluble at a neutral pH; most of it has pHs ranging between 6 and 8. He noted that a bit of copper and zinc are occurring naturally associated with urban runoff. So they are in the water rolling onto the sites, rolling over the SMWUs.

Gross alpha is naturally occurring uranium and thorium minerals. Groffman feels that a lot of the gross alpha exceedances are not associated with the SMWUs, but rather are associated with water rolling onto the SMWU and are just natural background.

For a second part of his talk, Groffman presented slides with photos depicting the activities of the LANL IP monitoring field team. They start early in the morning, before sunrise, sometimes with long commutes to LANL. They work 10- and 12-hour days starting at 7 a.m. Their 15- to 30-minute plan-of-the-day meetings cover safety and health, work distribution, upcoming weather, what is expected

for the day. Depending upon monsoon season when storm events occur, the working schedule can become very busy.

They test, change out, and recycle batteries from automated samplers. The batteries are replaced every 90 days or more frequently if needed. They have over 400 batteries for the sites.

Groffman presented Slide 50 saying that each area of LANL is defined by one of five routes. He noted that the Laboratory is over 40 square miles with a lot of it being wild land. There are different ways to get into the locations. Groffman then recited other factors making access to some areas for testing "laborious." There are delays of as much as several days even when there is water or they need to check for water. The delays are caused by

- A Q-cleared worker must accompany the monitoring field team.
- Sometimes LANL access control must be called before entering an area.
- Sometimes firing sites are in use and can't be entered.
- Sometimes weather conditions (red flag) necessitate walking into the area rather than using vehicles.
- Sometimes areas are in inaccessible terrain.

The monitoring teams use maps with the locations of the SWMUs and very detailed information on the sites. Last year they issued around 1600 work orders for site visits, checks for water samples, BMP inspections, and other tasks. Information from the work orders is kept in a database used for report writing and answering queries.

Groffman showed Slide 52 with photographs of a rock check dam being built partly by hand and using only light mechanized equipment because large equipment cannot be staged in a lot of areas of the Laboratory. And some of the BMPs don't demand having heavy equipment such as bulldozers and larger equipment. He stated that the work is very labor intensive.

Groffman explained that different land features require different BMPs. He presented Slide 53, which showed a wattle being installed. He said that a wattle has a particular life and environment and must be retired and replaced when it becomes no longer effective. The other photograph on Slide 53 showed installation of a geo-membrane on which to put a rock check dam.

Groffman showed pictures of an automated sampler with 12 bottles saying that organic materials are collected in glass bottles and inorganic materials are collected in plastic bottles. The sampler has an arm on it that rotates to fill up each container. It takes approximately one minute for each container to fill up.

The whole sampling process is connected to a logic unit that collects data, gives a time stamp indicating which bottles are filled at particular times on particular dates. All of that information goes onto the work order.

Groffman said that ISCO™ and other automated samplers are used. The presence of water in an intake tube closing a circuit activates the sampler. Once activated, the sampler starts collecting samples by filling the bottles.

Samples are brought from the field into the LANL processing facility where they are filtered, preserved, packaged in a cooler, and sent to the LANL sample management office which sends the sample to an external analytical laboratory with instructions for testing the sample.

Groffman showed pictures of a field technician, another automated sampler used for the PCB study, and workers who have worked until sunset. He said that the number of workers on the crew fluctuates, with about 10 in the winter and up to 18 in the summer.

Ken Lagattuta asked Walterschied whether in his travels around the check dams and berms and inspections of the sediments he was actually collecting samples that would be analyzed for the various contaminants that might be there, or if the samples would be collected later.

Walterschied replied that once they have a site with enhanced controls, that has been certified, they install an ISCO™ sampler that is turned on immediately upon certification. They then wait for the next rain to see whether there is flow.

Marian Naranjo of Honor Our Pueblo Existence asked Jeff Walterschied which TA was associated with the former outfall he talked about, where berms had been built.

Walterschied said that the first outfall slide he talked about with an outfall was associated with TA-3. He said the second slide was not an outfall; it was a material storage area. CDB 0.25 is associated with an outfall at TA-46 in Canada del Buey.

Marian Naranjo asked Armand Groffman whether the analytical lab where samples are sent is a local lab or if the samples are sent somewhere else.

Groffman answered that it is not a local lab. He said they use a contract laboratory, Gel Labs. He added that an employee of that lab was present at the meeting. He continued, “And they do the work specific to a Laboratory scope of work that defines how you analyze each particular constituent; and that’s according to EPA methods. So we work to the same methods mandated by the EPA for Clean Water Act.”

Kate Lynnes asked Groffman to clarify his discussion of Slide 44 where he was talking about the target action levels for PCBs and where he was talking about the background levels there in nanograms per liter and the TALS (target action levels) and pico grams per liter. She asked if he could explain what that means so that the units are consistent.

Groffman explained, “It’s really small. ... If you divide a nanogram by 1,000 you’ll get a pico gram. So there’s a thousand pico grams in one nanogram. It’s very, very small.” He mentioned a poster in the poster session that shows a site with a PCB exceedance and explained that the exceedance level is actually under their baseline or background level. He stated that the poster presents the same numbers that he has. He offered to discuss another poster, a PCB poster with Naranjo.

The facilitator prompted an explanation of a target action level being distinguishable from an exceedance.

Groffman answered by saying “The target action level which we work to is 0.64 nanograms, which is 640 pico grams.”

Lagattuta said, “That was a question that I had, too. Your target action level was 0.64 nanograms, 640 pico grams per liter. But all of the background levels that you measured locally are way beyond that. So, what does that really mean, that you have a TAL which is less than one nanogram per liter, but you are measuring concentrations up to almost a hundred nanograms per liter locally?”

Groffman: “Yep.” “That’s right.” He then asked for the question to be restated.

MacAllister restated the question as, “What is the target action level really going to be in light of it being so much lower than the actual background that you are measuring?”

Groffman elaborated: “That’s a great question. That really is. No, that’s a fantastic question. Because it makes no sense.” He confirmed that they are trying to work to a number that is below what background is, basically.

Someone else asked, “How did you arrive at that TAL?”

Groffman answered, “The TAL— I believe it’s EPA.”

Someone commented that the TAL is from the New Mexico Water Control Commission.

Groffman elaborated: “And what it is, the philosophy behind that TAL is: PCBs are magnified up through the food chain. So as you go up— And there’s been studies in the Arctic looking at Inuit Eskimo mother’s milk. And it is very high because they eat a lot of fish, and it’s lipophilic, so it is attracted to fat. So it goes up the food chain, and the fattier that animal is—polar bears are on top, walruses, seals are up there—and if you are eating a lot of that, then you’ve got a lot of PCBs in your body.”

MacAllister restated a question that was asked off the microphone: “What is the concentration of PCBs in our bodies?”

Groffman was asked, “Have you measured that?” He answered “Oh yeah.”

The questioner asked, “What is it?”

Groffman answered, “Give me some fat. You look kinda slender, but—”

Lagattuta asked, “You must have taken some measurements of all the tiers. What do you find? Is it 10 nanograms per liter? Or, 0.1 nanograms per liter? Or is it a hundred nanograms per liter? What is it?”

Groffman replied, “I don’t know. It’s a different unit. It’d be per mass per kilogram, probably. But I’ll tell you what. What they do is they look at butter all over the world, countries that produce butter. And measure PCBs as kind of a proxy for different countries.” Because butter is fatty, it can be used to determine what kind of PCB deposition you have from the atmosphere. He continued, “It’s

cycled in the atmosphere. Deposited, remobilized, deposited. It breaks down very, very slowly."

Green Infrastructure and Low Impact Development

Erin English, Engineer, Biohabitats, Santa Fe, New Mexico

Biohabitats, Santa Fe, is a technical advisory group that is working with Communities for Clean Water.

Erin English reported on a tour she participated in with persons from LANL at the end of June 2012, to look at non-Laboratory storm water approaches that have been completed in Northern New Mexico.

English commented on the LANL posters and photos by saying, "I'd love to know who your contractors are, because the work you have been doing looks extraordinarily good."

English presented a slide, "Principles of Green Infrastructure or Low Impact Design (GI/LID)," to list alternative approaches to storm water management.

These techniques either build upon or serve as alternatives to conventional storm water management. They are not necessarily intended to replace conventional techniques, but rather be used to augment or enhance conventional techniques or reform the way storm water is managed on a site.

English stated that her organization has been in close communication with the LANL storm water group about some of the green techniques and how they might be integrated into some of the more public areas of the Lab.

English recited some of the tenets of the GI/LID approach:

- Think like a watershed
- Infiltrate, evapotranspirate and slow down runoff
- Minimize erosion and sediment transport
- Treat storm water close to the source rather than further downstream
- Use pervious or planted areas for storm water treatment
- Harvest water within the landscape

English stated that most of the LANL approaches to storm water management do align well with the GI/LID guidelines. She commented that the rigorous storm water management work done by LANL would be publishable because of its nature as an emerging approach in the Southwest.

English presented examples of storm water management in Albuquerque and the City and county of Santa Fe where GI/LID is incorporated into efforts to restore the Santa Fe River.

English asked whether any of the meeting participants had seen any of the work being done on the Santa Fe River. She explained that even though there is no water there, there are erosion issues, pollution issues, and an opportunity to try new approaches. During the tour and meeting in June, 2012, Kenneth Francis, a landscape architect from Surroundings Studio who had just finished the new park design for downtown Santa Fe, pushed some interesting innovative storm water approaches in a presentation to the GI/LID meeting. English said those approaches are appropriate for an urban space along a river, and the concept of the acequia and storm water sponge concepts he presented have been written up by the Smithsonian. English showed slides from Kenneth Francis as examples of his work along the Santa Fe River.

English reported that Aaron Kaufman of Southwest Hydrology had made a presentation to the GI/LID meeting on a series of bioretention cells and some work along the Santa Fe River.

English said that the downtown corridor of the Santa Fe River historically would have had a much larger bosque or vegetated riparian area except for the fact that it has been channelized and deepened, with roads and hardscape places built along it. English proposed that this is relevant to the LANL situations where there are urban edges washing off into contaminated areas.

English cited this as an example of keeping the existing storm drainage system in place, but providing additional infiltration in the green space while also trying to keep the trees along the river better hydrated. She showed an architectural drawing of an oxbow swale that would provide micro-storage and treatment for water that is then allowed to go back out.

Using a photo montage format English demonstrated a small acequia alongside a sidewalk that was used to harvest and pick up some of the storm water for use in the green spaces with trees, rather than allowing it to shoot straight into the river.

By moving the water into little pockets of water in the green spaces biofiltration can be accomplished. She considers this to be impressive since it is right in the middle of downtown Santa Fe.

English presented highlights of their June 2012 tour starting at The Lofts on Cerrillos Road. She showed photos on slides of the central courtyard of The Lofts, which is designed around a storm water management system. It is a series of four or five ponds and swales that gather the roof runoff and also the parking lot runoff. She compared this to the series of ponds and swales that Jeff Walterscheid

had shown in his presentation earlier in the meeting. She said this is a good approach and that it provides good vegetative cover.

English showed photos of the new experimental bio-retention gardens planted over Memorial Day at the LaFarge Library. These areas will take runoff from a parking lot that was causing errosive trickle down into the road. Aaron Kaufman from Southwest Hydrology and a crew of volunteers built these so that the water comes into a basin with hand-placed rock work, thick mulch, and planted with the idea that the water will be slowed down and biologically treated. English stated that although these are small examples, they serve as examples of the type of bioretention that could be used in addition to berms such as those used by LANL.

An important stop on the June 2012 tour was a brand new outlet from a neighborhood storm drain that previously ran water directly down to the Santa Fe River. It is the Don Jose Storm Drain off of West Alameda. The new outlet features a series of deep ponds backfilled with rock and large boulders that treat the water as it slows down. She showed a photo of an area with underground wicks or French drains run off to the sides of the pond to move the water out into the landscape so that the water is dissipated beyond the actual volume of the pond itself.

The Don Jose Storm Drain system is an example of an end-of-pipe treatment that can be achieved. There is very little vegetation actually in the system, but there is a lot retention time, surface roughness, and opportunities to capture sediment and slow things down a bit.

English reported that the last stop on the tour was the Santa Fe Railyard Park and Plaza. Interesting from the green infrastructure perspective are the permeable asphalt strips incorporated into the plaza paving. These strips enable extensive rainwater harvesting. Water is stored in above-ground water tanks, in 75,000 gallons of underground storage, and two 25,000-gallon cisterns right outside the Farmer's Market, and then used to irrigate about 400 trees and a substantial portion of the park.

Extensive impervious areas such as large rooftops can be used for harvesting rainwater that is then used for irrigation rather than letting it run off.

English also presented photos of examples of storm water management at the New Belgium and Odell's Breweries in Colorado, and the Las Vegas Preserve in Nevada. The brewery has a lot of green infrastructure work around their parking lots. Permeable paving and bio-retention areas for storm water absorption are visible in the photos. Other photos showed a planted area replacing a raised median adjacent to a parking lot at the brewery and a large sheet flow off into a big vegetated field planted with native grasses.

These approaches are useful for areas where there are hardened urban edges that very quickly transition into more rural open-space.

English reiterated that the LANL storm water management approaches do align with many of the green approaches.

English explained that in the Las Vegas Springs Preserve, Nevada, storm water and pollution is managed in a rare situation where there is some constant flow of water. It is the original Army Corps of Engineers 14- or 15-acre retention basin that serves the Las Vegas Strip and much of the urban development around there. Las Vegas was originally built around the springs, which was just a giant scraped hole in the ground. But there was enough over-irrigation happening on the Strip to cause a constant trickle of water.

English reported that about seven or eight years ago, Biohabits worked with a Santa Fe landscape architect, Craig Campbell, to come up with the idea of regenerating the ciènaga and the wetlands using that little trickle. English compared this trickle to the regulated outfalls at LANL that need to be maintained.

She explained that this is an example of using the wetlands to create pools of water and habitat. She showed a concept plan and a picture of the redesigned area shortly after it was built and characterized the project as a "pretty good success story." She added that three hundred species of birds have shown back up in the Las Vegas Spring Preserve.

In closing, English gave references to resources for arid land green infrastructure and LID:

- Green Infrastructure for Southwestern Neighborhoods, free download. Information from Tucson, which has been aggressive about adopting green techniques.
- USEPA: Reducing Stormwater Costs through Low Impact development (LID) Strategies and Practices (2007).
- Denver Storm Drainage Criteria Manual. Includes information on engineered soils and mulch mixes.
- Albuquerque Area LID Site Tour, published document.

Invitation to Community for Clean Water Conference

Marian Naranjo invited everyone to the DOE-funded "Weaving Our Rio Grande Communities Together" conference sponsored by Communities for Clean Water

in Santa Fe and Northern in Española, July 26 and 27, 2012. Communities for Clean Water is a coalition of organizations that were represented at the meeting: Honor Our Pueblo Existence, Amigos Bravos, Concerned Citizens for Nuclear Safety, and the New Mexico Acequia Association.

She stated that the purpose of the conference is "to really show the relationships that have been made with community people, this lawsuit, and how going forward is so important for the public to see." Naranjo continued, "We heard it just tonight, where LANL and our expert people got together and got to see things that are meaningful to the public. And talks are beginning to start to incorporate some of these things." She distributed a flyer giving more detailed information on the conference.

Naranjo also announced that on July 26 and 27 the Santa Clara Pueblo Forestry Department will be presenting the Santa Clara footage on the detrimental situation resulting from several major runoff events that are increasing in volume. Erosion is terrible, she said.

Closing Comments and Questions

Beatta Tsosie from Santa Clara Pueblo, with reference to Slide 44, 2011 IP Exceedances, asked, "It just says Human Health Criteria in parentheses. I am just wondering what kind of human are they talking about."

Armand Groffman replied, "I don't know."

Beatta Tsosie explained, "Is it like an adult male human, or—"

Groffman answered, "I honestly don't know," and referred the question to Kate Lynnes.

Kate Lynnes answered off mike so her answer was not recorded.

Groffman said that, "I think what they do is they sorta have a standard person, standard weight, and use that for risk analysis. The standard man or standard woman."

Tsosie asked, "So that wouldn't protect women or children or elderly?"

Groffman reiterated, “I honestly don’t know. I don’t know. That’s a good question though.”

Tsosie also asked, “How do you know the difference between naturally occurring elements and industrial—?”

Groffman replied: “That’s another good question. What we do is we identify locations that are free from industrial processes, remote locations that nothing’s really occurred in, there have been no deposition of contaminants. And with respect to aluminum—I’ll use aluminum as an example—we sample, collected samples, about 36 samples from a remote, two remote locations. Different watersheds. I believe there’s Santa Clara and San Ildefonso land now. They were in the land transport, transfer, that’s Chupadera Canyon, Garcia Canyon, Corral Canyon, Las Latas, and these areas, there’s been no industrial activity. They are on Santa Fe National Forest Land. And so we are confident that the samples there represent a background.”

The meeting adjourned at 7:30 p.m.

CERTIFICATION

I hereby certify that the foregoing is a true and correct summation of the audio recording of the public meeting on the Individual Storm Water Permit at the Cities of Gold Conference Room, Pojoaque, New Mexico, on May 17, 2011.

/s/ Morrison Bennett
Meeting report completed August 9, 2012.

Acronyms and definitions

Acronym	Source Term and Definition
AOC	Area of Concern
BMP	Best management practice
EPA	Environmental Protection Agency (of the federal government)
GI/LID	Green infrastructure or limited impact design
IP	Individual (Storm Water) Permit
LASO	Los Alamos Site Office (of NNSA, DOE)
MDA	Material disposal area
NMED	New Mexico Environment Department
NPDES	National Pollutant Discharge Elimination System
PCB	polychlorinated biphenyl
RCRA	Resource Conservation and Recovery Act
RFA	RCRA facility area
SDPPP	Site Discharge Pollution Prevention Plan
SMA	Site monitoring area, a small watershed around a site
SWMU	Solid waste management unit.
TAL	Target action level; a benchmark from the permit that identifies whether LANL has to move into corrective action