A SUMMARY OF THE INITIAL PUBLIC MEETING OF THE

BUCKMAN DIRECT DIVERSION PROJECT INDEPENDENT PEER REVIEW

JANUARY 14, 2010

Jemez Room, Santa Fe Community College; Santa Fe, New Mexico

Above: Independent Peer Review team members Greg Miller, Tom Widner, Matthew Le, David Galbraith, Paul Scott, Erin Shay, Jim McCord, and Kerry Thuett. Present but not visible here: Dawn Kaback.

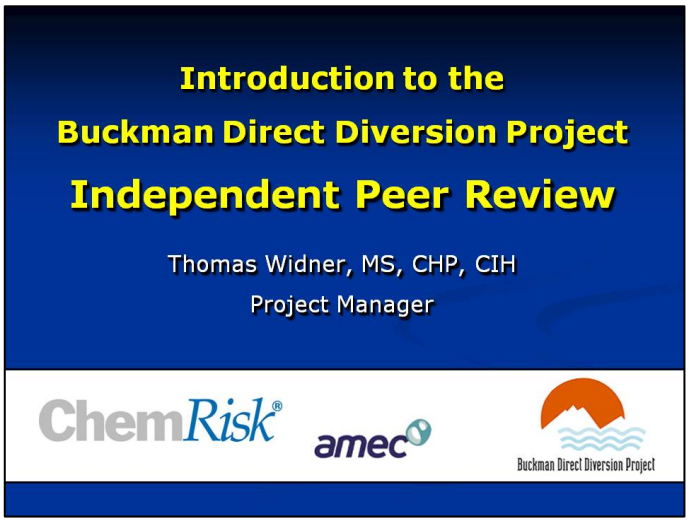
Several photographs of the meeting courtesy of Mario Hondros

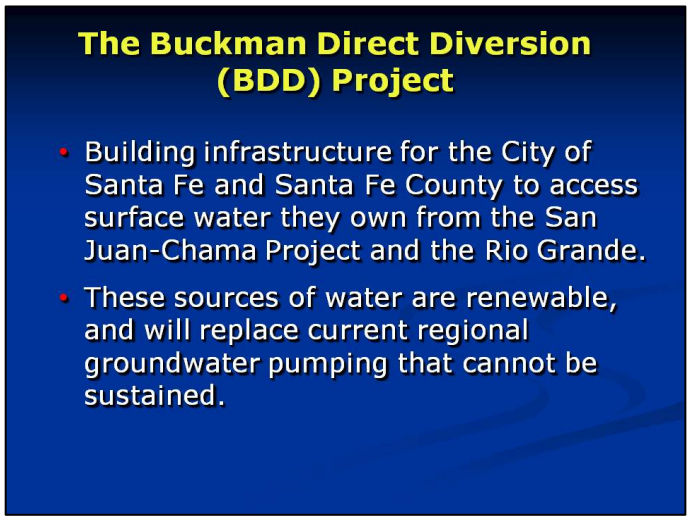
Project Team Members in Attendance

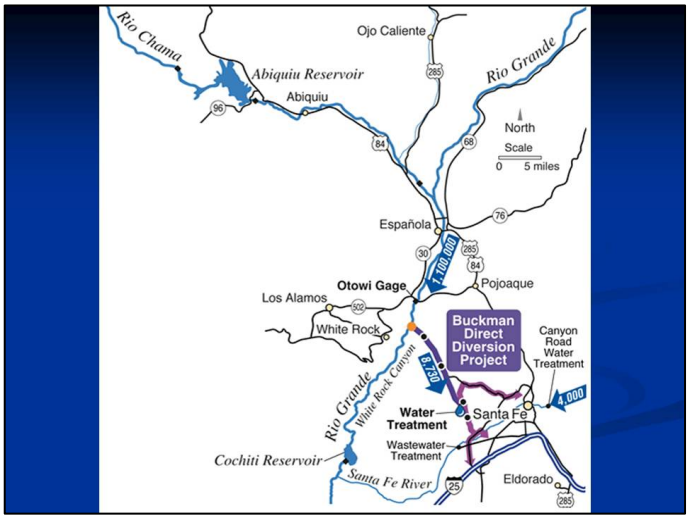
- From ChemRisk: Tom Widner, Erin Shay, Paul Scott, David Galbraith, Kerry Thuett, Matthew Le
- From AMEC: Greg Miller, Jim McCord, Dawn Kaback
- Attendees from public– approximately 75

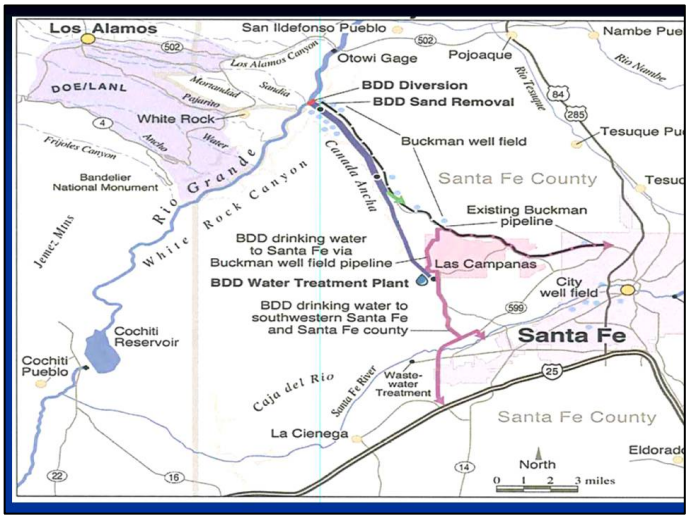
Opening: The meeting was opened at approximately 5:40 pm by Rick R. Carpenter, Buckman Direct Diversion (BDD) Project Manager. Mr. Carpenter discussed the progression of the BDD project from design to construction and into a startup and acceptance program. He emphasized that water quality is an important issue for the City of Santa Fe and the BDD Board and staff. He said he was very glad to have the meeting happening that night, with the ChemRisk-led team on board as the independent peer reviewers. He said that he really looks forward to following the process of the IPR and awaits its outcome. He welcomed everyone in attendance, thanked them for coming out to the meeting, and turned the meeting over to Tom Widner.

Opening Discussion by Tom Widner, Project Manager of the Independent Peer Review (IPR)



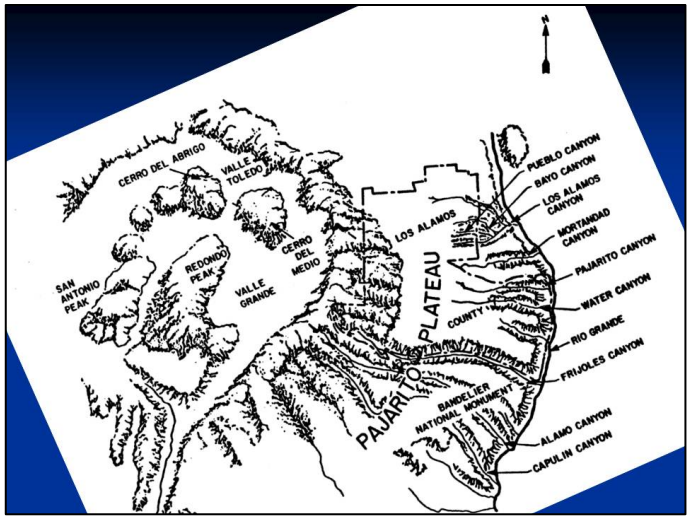






Major Components of the BDD: Surface **diversion** structure; Sediment removal facility and sand return; Pipelines, 5 pump stations, and surge facilities; 11 miles of raw water pipeline with more than 1,100 feet of lift; 15 million gallon per day Water Treatment Plant; and 26 miles of new "finished" water pipeline.

Important Dates: 2007 – Final Environmental Impact Statement for the BDD issued (the FEIS); 2008 – FEIS Record of Decision Issued; 2008 – Appeals to FEIS Filed with the US Forest Service Regional Office and the US Department of the Interior; 2008 – Appeals Denied; Record of Decision and FEIS Upheld



The canyon that drains LANL property directly to the Rio Grande upstream of the BDD diversion point is Los Alamos Canyon. Pueblo Canyon, Acid Canyon, DP Canyon, and Bayo Canyon all flow into Los Alamos Canyon.

Left: Untreated radioactive waste was discharged into Acid Canyon from 1944 to 1951.
Top right: Discharge of treated radioactive waste into DP Canyon (1973).
Bottom right: discharge of treated radioactive waste into Mortandad Canyon (1973).

The BDD Board sent a letter to LANL in 2007 asking LANL to:

- Stop migration of LANL contaminants
- Properly monitor transport of legacy contaminants
- Measure LANL legacy contaminants in an old river channel upstream from the BDD site
- Provide early warning system for flows from Las Alamos Canyon
- Monitor mass of contaminants
- Provide funding for BDD Board to hire an independent peer reviewer

The Scope of Work for the Independent Peer Review (IPR)

- Preparation and presentation of products that will describe, for technical and non-technical audiences, a critiqued synthesis of existing data, information, studies, and published risk assessment analyses
- Regarding exposure and risk to residents of the Santa Fe region from radionuclide, toxic, and hazardous contaminants known to be of LANL-origin and other origins of these contaminants.

The Scope of Work for the Independent Peer Review (IPR)

- The work will emphasize the tap water pathway, including the contaminants in Rio Grande water diverted into the BDD and removed by water treatment processes, as addressed by Kerry Howe.
- Will compare tap water pathway risks to other pathways of public exposure to LANL-origin contaminants and other natural and man-made radiation exposures.

What is a peer review?

- An in-depth critique of assumptions, calculations, extrapolations, alternate interpretations, methodology, and acceptance criteria employed, and of conclusions drawn in the original work.
- An effective peer review has the following characteristics:
  - ✓ Expert,
  - ✓ Independent,
  - ✓ External, and
  - ✓ Technical.

Who We Are

- ChemRisk is a scientific consulting firm providing state-of-the-art toxicology, industrial hygiene, radiological health, epidemiology, and risk assessment services to organizations that confront public health, occupational health, and environmental challenges.
- ChemRisk's staff of 55 scientists includes 12 consultants with Ph.D. degrees, one M.D., and 23 with Masters degrees.

Who We Are

- ChemRisk professionals have a long-standing reputation for thorough scientific analyses and for sharing results in the peer-reviewed scientific literature.
- The 400 papers published by scientists in the firm are frequently referenced in scientific literature, regulatory decision-making, and litigation.
- Almost all of our work is for private sector clients.

Our Studies of U.S. Nuclear Sites

Since 1990, ChemRisk has been a leader in the independent investigation of potential health risks from past operations at U.S. nuclear weapons plants:

- Rocky Flats Toxicologic Review and Dose Reconstruction (Colorado Dept. of Health)
- Oak Ridge Dose Reconstruction Feasibility Study (Tennessee Dept. of Health)
- Oak Ridge Dose Reconstruction (TN DOH)
- Los Alamos Historical Document Retrieval and Assessment Project (Centers for Disease Control and Prevention)

The scientists and engineers on the team that has performed the investigation of releases from Los Alamos has also researched operations at the Hanford Site, Idaho National Engineering Laboratory, and the Savannah River Plant.

Meet the Project Team

- **Tom Widner**
  B.S., Environmental Health (Purdue University)
  M.S., Health Physics & Occupational Health (Purdue)
  M.S., National Security & Public Safety (New Haven)
  Certified Health Physicist
  Certified Industrial Hygienist
- **Matthew Le**
  BS, Health Physics (Purdue University)
  M.P.H., Occupational and Environmental Health Sciences (Tulane University, to be awarded 2010)
  Certified Safety Professional
  Certified Radiological Emergency Mgr. (FEMA, 2006)

Meet the Project Team

- **David Galbraith**
  B.S., Chemistry (Stanford University)
  Doctor of Medicine (Yale University)
  >14,000 hrs attending phys. in emergency medicine
  >12 y of life sciences consulting
- **Paul Scott**
  B.S., Mathematics (Southwest Missouri State)
  Qualified Environmental Professional (QEP)
  >17 y environ. statistics, fate & transport modeling
- **Erin Shay**
  B.S., Environmental Health (Indiana Univ. of Penn.)
  >12 y of human health risk assessment

Meet the Project Team

- **Jim Keenan**
  B.S., Animal and Poultry Science (Virginia Tech)
  M.S., Veterinary Medical Sciences (VA-MD Regional College of Veterinary Medicine)
  Ph.D., Environmental Toxicology (UC Riverside)
- **Kerry Thuett**
  B.S., Biology and Math (Texas Tech)
  M.S., Environmental Toxicology (Texas Tech)
  Ph.D., Toxicology (Texas A&M)

Meet the Project Team

- **Greg Miller**
  B.S., Geology (New Mexico Tech)
  M.S., Geology (New Mexico Tech)
  Ph.D., Geoscience/Geochemistry (New Mexico Tech)
  Registered Professional Geologist in TN, KY, FL
  New Mexico Level 3 Water Systems Operator
- **Jim McCord**
  B.S., Civil Engineering (Virginia Tech)
  M.S., Hydrology (New Mexico Tech)
  Ph.D., Geoscience/Hydrology (New Mexico Tech)
  Professional Engineer in NM and CO

Tom, Matthew, David, Jim, and Kerry work out of ChemRisk's San Francisco office, while Paul and Erin work out of ChemRisk's Pittsburgh office. Greg and Jim work out of AMEC's Socorro, NM office, while Dawn works out of AMEC's Denver office.

Meet the Project Team

- Dawn Kaback
  B.S., Earth & Space Science (SUNY Stony Brook)
  M.S., Geological Sciences (University of Colorado)
  Ph.D., Geochemistry/Geological Sciences (University of Colorado)

Work in New Mexico for LANL or Sandia

- Dawn Kaback has participated in two other independent technical reviews of LANL. She has never worked for LANL or SNL.
- Greg Miller has never worked for LANL or Sandia or on studies of them for any client.
- Jim McCord worked at SNL 1990-1997
  - Development of Low Level Waste Facility Performance Assessment Methodology for the USNRC
  - PM of Site Wide Hydrogeologic Characterization Project
  - WIPP Hydrologic Parameter Bases, Hydraulic and Tracer Testing of Culebra Formation, Test Analyses
- In consulting since 1997, Jim has done no work for LANL and only a small document review for Sandia.

Steps in Performing the IPR

- Review BDD public communication materials
- Identify and gather relevant information
- Analyze and synthesize information relevant to contamination in the tap water of the Santa Fe region
- Analyze human exposures & health risks
- Prepare and refine project deliverables
- Plan, conduct, and follow-up on public meetings

BDD Public Communication Materials

- We are obtaining copies of the materials that have been prepared regarding contaminants of LANL origin for which review is desired.
- We will identify any recommendations for correction or improvement of the existing BDD public communications.
- Items to consider include technical accuracy, timeliness of information, suitability of terminology and concepts to the intended audiences, and appropriateness of any risk comparisons that are presented.

We will also consider avoidance of unnecessary or unimportant complexities, the degree of referencing of external sources of information that are utilized, effectiveness of use of graphical presentations of information, and the extent to which relevant but potentially opposing viewpoints are recognized and reflected.

Identify and Gather Relevant Information

- We will request relevant studies, reports, and data from DOE/LANL and NMED.
- We already have numerous relevant documents from our work on CDC's LAHDRA project.
- We are obtaining data from the RACER system, the LANL Water Quality Database, and the U.S. Geological Survey, to name a few.

Identify and Gather Relevant Information

Our collection of measurements and assessment data will have two components:

- Measurements of contaminants in the Rio Grande and in the Buckman Well Field-
  - *"Recent" measurements*
  - *Older data, when available, to address trends over time*
- Measurements or studies of contaminants that are present in environmental media-
  - *To address contamination that could reach the Rio Grande or well field in the future*
  - *To say what we can say about arrival timing and concentrations that could be expected*

It is recognized that the following contaminants are among those that have been observed in deep groundwater around LANL: tritium, perchlorate, chromium, nitrate, and high explosives.

Analyze & Synthesize Relevant Information

- We will characterize levels of contaminants in river water to be diverted into the BDD.
- We will reflect removal by planned water treatment processes.
- We will summarize what is known about the quantities of LANL contaminants that have reached the Rio Grande, and their distribution over time.
- Where possible, we will compare upriver levels to those downstream of LANL's contributions.

Analyze Human Exposures and Risks

- The exposure assessment will focus on residential users of tap water.
- Exposure from tap water can occur from use of tap water via food and drink, showering and bathing, laundering, dishwashing, and swimming.
- Direct exposure can occur via ingestion, dermal contact, and inhalation.
- Indirect exposure can result from consumption of homegrown produce and swimming in a tap water-filled pool.

The treatment methods selected will include a membrane filtration system with ozone and granular activated carbon (GAC) contactors. The report by Dr. Kerry Howe that characterizes the effectiveness of the proposed water treatment plant in removing radiological contaminants and other materials of interest will be a key reference in that regard.

Analyze Human Exposures and Risks

- Exposures will be evaluated for adult and child residents.
- Exposures will be quantified for central tendency and upper bound scenarios to provide a range of potential exposures.
- Standard USEPA exposure equations and accepted exposure parameters will be used.

Analyze Human Exposures and Risks

- We will calculate health risks using the methods of Federal Guidance Report No. 13 for the following four exposure scenarios:
  1. For concentrations equal to current Safe Drinking Water Act Maximum Contaminant Levels (MCLs);
  2. For concentrations equivalent to recent water quality in the Rio Grande;

Analyze Human Exposures and Risks

- We will calculate health risks *(continued)*:
  3. For drinking water with average recently measured levels, but with treatment that removes 95% of plutonium, americium, uranium, and gross alpha; and
  4. For drinking water that contains mean values of gross alpha-emitting radioactivity and dissolved uranium recently found in the Buckman well field.

Prepare and Refine Deliverables

- We will prepare, present, and refine written and graphic risk communication products that will meet potential readers' needs and interests at four levels:
  1. Summary for a lay audience,
  2. Spanish translation of the summary,
  3. Description for the BDD Board, and
  4. Documentation for the Board and a technical audience.

Schedule for Project Deliverables

- Preliminary Drafts — May 15
- Public Review Drafts (with responses to comments from LANL and BDD staff) — August 5
- Final Deliverables (with responses to comments) — November 4

Public Meetings

We will conduct three public meetings:

1. Introduction of the professional services effort (today)
2. Overview of the peer review and the public draft deliverables (August)
3. Presentation of the final deliverables (November)

This Meeting is Important

- After this meeting, we will not meet in public until our draft work products are complete.
- Tonight, we want to talk with you about:
  - Your questions about any aspects of the Independent Peer Review that are unclear
  - Your comments about what we have been asked to do and how we plan to do it
  - Any concerns you might have about particular contaminants, measurements, or exposure pathways

For the next 40 minutes…

- We will have members of the IPR project team positioned with you at your tables.
- They will facilitate the discussion and take note of key topics that are raised.
- We may not be able to answer some questions because we are so early in the process, but we will capture your question and get back with you as soon as possible.
- After the discussion period, each team member will summarize for all of us the key points that were raised at his or her table.

For information after this meeting…

- Please check these Web sites:
  - www.bddproject.org
  - www.chemrisk.com
- You can contact Tom Widner at:
  - (510) 301-5984 ……..mobile
  - (415) 618-3207 ……..office
  - 888-ChemRisk, ext. 3207 ….toll free, office (888-243-6747)

Thanks for coming!

ChemRisk® amec Buckman Direct Diversion Project

Group Roundtable Discussions

Upon completion of the introductory remarks by Tom Widner, each IPR team member led a round-table discussion to elicit and summarize the questions, comments, and concerns that attendees had regarding the BDD IPR project, its scope, methods, budget, and schedule. The following comments and questions were recorded by the IPR team members that facilitated the discussions.

Group Facilitated by Erin Shay

- Exposure/Risk Assessment
    - Tribes: in what ways will BDD affect tribes downstream?
    - What thought has been given to unforeseen events such as storms and fires that could potentially negatively affect operation of the BDD?
    - If ambiguity remains after our analysis, will the project be delayed?
- Treatment Technology
    - This was a big one. They wanted to fully understand the process with respect to what chemicals will be removed, how, and how efficiently. Are there chemicals that will not be removed that are of potential concern?
    - What will be done about chemicals that are water soluble? That is, any that are not removed because of their association with sediment particles. Is there treatment to remove water soluble chemicals?
- One person recalled a document from Science magazine that indicated that at least one plutonium isotope was water soluble, and therefore it would not be removed when sediment is removed.
- Conflicts of Interest
    - What other contracts with DOE does AMEC have?
    - ChemRisk too− were they all listed in the presentation?
- Transparency
    - Will/can the presentation be made available online?
    - Will members of the public be given the opportunity to comment on the risk assessment?
    - Will they be able to easily critique the risk assessment?
- Will the methods and resource documents be identified? Can they be put on the Web site (for example, the USEPA references referenced in the proposal)?
- There was a comment about “reference man” being the standard for exposure factors for risk assessment. There was discussion that risk assessment is moving away from use of reference man, as evidenced by the more recent USEPA guidance documents including the Child-Specific Exposure Factors Handbook. Some types of risk assessments still use reference man assumptions, so the IPR team will have to make sure that their methods are clearly stated for chemicals and radionuclides.
- We should fully explain our data selection process
- What data will we consider?

- Will we collect more data?
- How will we decide what data will be used for our analysis?
- Will we use data from only LANL sources and/or are there other sources?
- What is our confidence in the data we deem relevant?

Group Facilitated by Paul Scott

- Exposure/Risk Assessment
    - Are we looking at the impacts of Project Plowshare or Gas Buggy as part of our review?
    - Will our review include an evaluation of the impact of personal care products and pharmaceuticals in the Rio Grande?
    - Are we planning on considering potential exposures due to the use of BDD water for fire suppression?
    - How accurate are the costs associated with the operation of the water treatment facility?
    - What kind of monitoring program is going to be put in place to insure that radionuclide and chemical concentrations are at safe levels?
    - What is the impact of groundwater and surface water discharges from LANL on the Rio Grande water to be used by the BDD?
    - Will the independent peer review consider the impacts from the LANL fire from 2000? For example, will we consider the impact of deposition of LANL materials from that fire as part of our review?
- Filtration Technology
    - Will the water treatment remove arsenic?
    - What is the cost of disposal for water treatment waste that contains radionuclides and chemicals removed from the Rio Grande water?
    - Will the water treatment process that is being designed and built actually work?
    - Are there radionuclides that don't typical bind to solids/sediments and will the water treatment process remove them?
    - What is the quantity of radionuclides and other chemicals that will be removed during water treatment?
    - How will the water treatment residuals be disposed of? How will these wastes be handled at the treatment facility?
- Conflict of Interest
    - What mechanisms exist to avoid political pressure from biasing the work of the independent peer review?

- Transparency
    - How aggressive will be in getting any needed information/reports/data from LANL?

Group Facilitated by Matthew Le

- Exposure/Risk Assessment
    - Are we looking at all of the potential exposure pathways other than simply drinking the water?
    - Will the team be performing an epidemiologic study of incidence of cancer in the community?
- If not, are there plans for future work in this area?
- Will the team be relying on epidemiological data?
    - Will the potential impact on the safety and quality of the drinking water after large environmental events occur such as fires and floods be analyzed?
    - Will the team be using sediment and groundwater samples in addition to surface water samples during the assessment?
    - Specifically, will the team be considering any samples taken at the Cochiti reservoir?
- Filtration Technology
    - What does the filtration systems filter out? What is their efficiency?
    - Will the health impacts of both drinking the water prior to filtration and after filtration be studied?
- Conflicts of Interest
    - What is the direct impact from the potential contaminants on the project team members? Do any of the team members live in the areas impacted by the project?
    - Who is funding the BDD health assessment study?
    - What is the relationship between the BDD project and the Los Alamos Historical Document Retrieval and Assessment (LAHDRA) project?
- Transparency– Do we plan on working closely with the tribal governments during the project?
- Ron Kneebone is the tribal liaison for the Army Corps of Engineers
- Mr. Kneebone's contact information was provided

Group Facilitated by Kerry Thuett

- Exposure/Risk Assessment
    - Is there any concern for synergistic effects from a combination of contaminants in the Rio Grande?

- Will the team be using Maximum Contaminant Levels (MCL's) set by EPA during the analysis?
  - If not, what safe harbor levels will be used?
  - If a contaminant does not have an MCL, what level will be determined as safe?
  - Specific to perchlorate, will national or state standards be used?
- How can the team determine whether contaminants identified are from natural background or man-made origin?
- Will the team be assessing levels of contaminants due to personal care products?
  - Potential endocrine disruptors?
  - Pesticides?
- Will the team be using samples taken above the Otowi Bridge?
  - Samples taken around the Otowi Bridge may have been elevated? How will this be addressed? How do these samples affect the BDD project?
- What is the lateral dispersion from the Rio Grande into groundwater wells?
- Will the data be publically available?
  - Will the team disclose the source of data and names of researchers who compiled the data?
  - Will the team be using data available on the RACERNM database?
  - Will the team provide one location where all of the data used in the assessment is accessible?
- Will the team be relying on data and reports compiled by Kerry Howe?
  - Have those data been peer reviewed?
- Who do we contact to get information discussed at the public meetings?
- Will the team recommend monitoring locations along the system?
- What areas of the city and county will be supplied by the BDD?

- Filtration Technology
  - How will the contaminants removed from the water be disposed of?
  - How does the early warning system work? Will it be effective?
  - How efficient is the filtration system used?
    - What types of filtration mechanisms are used?
    - How is soluble plutonium removed?

- Transparency
  - Who is funding the project?
  - Who is on the BDD Board?
  - Who does the peer-review team report to?

- Cost/Schedule
    - What is the cost of the project?
    - Is the budget and schedule feasible?
    - What is the target completion date for the project?

Group Facilitated by David Galbraith

- Exposure/Risk Assessment
    - Belief that previous public statements and health evaluations have focused on adults and insufficient or no attention has been placed upon health effects in "at risk" population groups, such as:
        - Pregnant women
        - Children
        - Infants
    - What are the possible impacts of nanoparticles (not further described as to what types of nanoparticles might be of greatest concern)?
    - Will pharmaceuticals be an issue that is discussed, or be measured in future sampling of the Rio Grande water and our water supplies?
    - What about health endpoints that have not been addressed in the various studies that have so far been shared with the public? Have there been, or will there be in the future, studies that address health endpoints such as:
        - Infertility
        - Premature births
        - Birth defects
        - Animal health effects
    - If we already have data, or plan to obtain data on these, are there good public health measurements of background levels of these health endpoints to compare to, ideally from New Mexico? If New Mexican data are not available, what would be used to compare to?
    - A concern was voiced regarding the locations of historical and future sampling to determine contaminant levels. Do we know whether contaminant levels are higher or lower upstream compared to where the diversion is located and compared to downstream on the Rio Grande
    - Will the impact of radiation sources brought into the Santa Fe area by the jet stream (influence of nuclear testing overseas generating radiation into the air, etc.) be a factor that is included into the risk assessment process? (Additional non-LANL source of radiation that the speaker feels should somehow be measured or assessed in some way.)

- More generally, how will the IPR team take into consideration all alternative sources of local contamination/radioactive sources besides those that are felt to originate from LANL?
- Will there be any attention to the effect of mixtures of contaminants and the possibility that low levels of individual contaminants may not be felt to have a significant health risk, but additive or multiplicative interactions might result from these low levels and actually lead to a significant effect in some way? Is there any guidance from EPA or from the scientific literature regarding possible interactions between the contaminants of concern that could help the IPR team in assessing these possible effects?
- When rendering your conclusions regarding health risk and possible contamination of the Rio Grande and other water sources for Sante Fe city and county, will you also consider other risk variables for the health endpoints that are discussed, such as:
  - Dietary factors
  - Genetic predisposition or polymorphisms
  - Occupational exposures
  - General environmental/regional effects found in New Mexico (that may or may not be relevant for other regions of the United States)

- Filtration Technology
  - The sentiment was expressed that there was considerable variability in quality with respect to data that has already been obtained regarding water quality and contamination. In particular, the speaker voiced the belief that the LANL Water Quality Database was superior in technique and was more representative of actual contaminant levels compared to other data sources, particularly the RACER database, which was felt to not have "qualifiers," and did not have the same degree of data checking and validity compared to the LANL data. Will the peer review process perform qualitative evaluations of these data sources and determine whether they are more or less reliable to be used to assign health risk estimates?
  - Will the peer review process evaluate the recharging of the Buckman Field, specifically in the Santa Fe group, with respect to contamination that may have originated from LANL? The speaker believes that this contamination process may take generations, even hundreds of years to migrate from LANL to this water source, and is there any way to measure this risk for future generations? The speaker is concerned that this peer review may not have data that can determine whether there is a risk of future contamination, but desires that this potential risk at least be spoken to.

- Conflicts of Interest
  - What is the particular urgency for expanding our water supplies and spending so much of our taxpayer and water usage fees to perform this expansion? Who is the driving force for pushing this to be such an important issue?
  - Hope was expressed that the independent peer review process could begin to "bridge the gap" that seems to have historically existed between NMED and LANL, and that the public could feel more confident that their health and that of future generations was secure.

- The belief was voiced that the meeting announcement for this January 14 meeting indicated bias against LANL, and that they were de facto believed to be the source for any problems that might be discovered. Is this a correct inference, and is there current bias in the risk assessment and IPR against LANL?

- Transparency
    - Why is there so much public scrutiny and attention being devoted now, as to the risks of our water system and drinking water, when farmers and ranchers have been using potentially unsafe water from LANL contamination for generations, without apparent health harm to humans or livestock?
        - Is there some type of political motivation underlying this campaign?
        - What is it about the risks from LANL now, in particular, that makes it such a big deal?
    - Will there be a means for the public to continue communicating with the independent peer reviewers, should additional concerns or questions arise?
    - Are comments and complaints that have already been generated during prior public meetings and published reviews be made available to the peer reviewers?

Group Facilitated by Greg Miller

- Exposure/Risk Assessment
    - How far into the future are risk projections going to be made?
    - What is the ultimate fate of the treatment plant waste? Will the disposition become a risk factor in itself?
    - Is there going to be segregation of impacts related to LANL vs. impacts from other sources (e.g. fallout)?
    - What about the other water sources (e.g. City well field, Santa Fe River) and the effects of mixing and commingling of waters?
    - How is the risk from gross alpha going to be assessed?
    - Are CERCLA standards really met for recreational use of the slough area?
    - How will changing risk standards be addressed by the IPR?
- Filtration Technology
    - What is the early warning system and how it will work with respect to recreational use of the slough area?
- Transparency
    - How does the public know that all relevant data are being considered?
- Conflicts of Interest
    - There are issues regarding trust that are not alleviated by establishment of the IPR team; the IPR team itself introduces new trust issues?

- Are there obligations that will result from the IPR findings? Is anything about the IPR process binding on anybody (LANL/DOE/BDD/NMED)?

Group Facilitated by Jim McCord

- Exposure/Risk Assessment
  - Will we look at the exposure pathway of swimming pools, including the indoor public pools?
  - For the existing and historical water quality data for groundwater (both on- and off-site from LANL) and surface water (including the Rio Grande), does the list of analytes include all compounds that were used at, and potentially released from, LANL?
  - If EPA MCLs / standards are being used for evaluation of water quality, how protective of human health are they, and have standards changed for LANL Contaminants of Concern (COCs)?
  - Can we differentiate between hazardous and radioactive contamination observations that result from LANL sources and those created by other sources?
  - How will (or can) our risk assessment address potential changes in anthropogenic discharges / releases over time and into the future, including consideration of active efforts at reducing discharges and ongoing mitigation and cleanups?
  - How old, or recent, is the data that we will be using in our risk assessment?
  - Will the IPR develop opinions and/or recommendations related to ongoing and planned mitigation measures to reduce contaminated sediment transport under extreme flood events?
  - Will we be able to address impacts of potential climate change on risks projected by this project?
- Transparency
  - How will we "validate" data used in risk analysis? Will we review sampling plans, protocols, chain-of-custody, analytical QA procedures?

Group Facilitated by Dawn Kaback

- Exposure/Risk Assessment
  - Will the team consider the Triennial Review of standards, including the new lower tritium standard as well as potential new lower standards for plutonium, americium, cesium, strontium, and uranium?
  - Will impacts of climate change be considered? They are concerned about increases in concentrations of contaminants and recommend additional modeling to include this factor.
  - How will the team consider elements that were used at LANL but have no standards?
  - The people at the table recommend that multiple scenarios should be used to address health risk, such as *in utero* exposure. They mentioned that the RESRAD program [used for radiological risk assessment of residual radioactivity to support remediation decision making] typically considers five different scenarios, not simply adult and child.

- Will the team consider PCBs in the Rio Grande sediments and fish?
- Several attendees requested that the IPR team receive a groundwater issues briefing from Bob Gilkeson.

Closing Remarks

Each team member that facilitated a roundtable discussion presented a summary of the key points that were raised within their group. Those are the points that are summarized above.

Tom Widner provided e-mail addresses and telephone numbers for the public to use when questions or comments arise regarding the BDD Independent Peer Review project.

Tom Widner thanked everyone who attended the meeting for their participation, and asked that they remain involved as the IPR progresses.

The meeting ended at approximately 7:30 pm.
