

Introduction to the Buckman Direct Diversion Project Independent Peer Review

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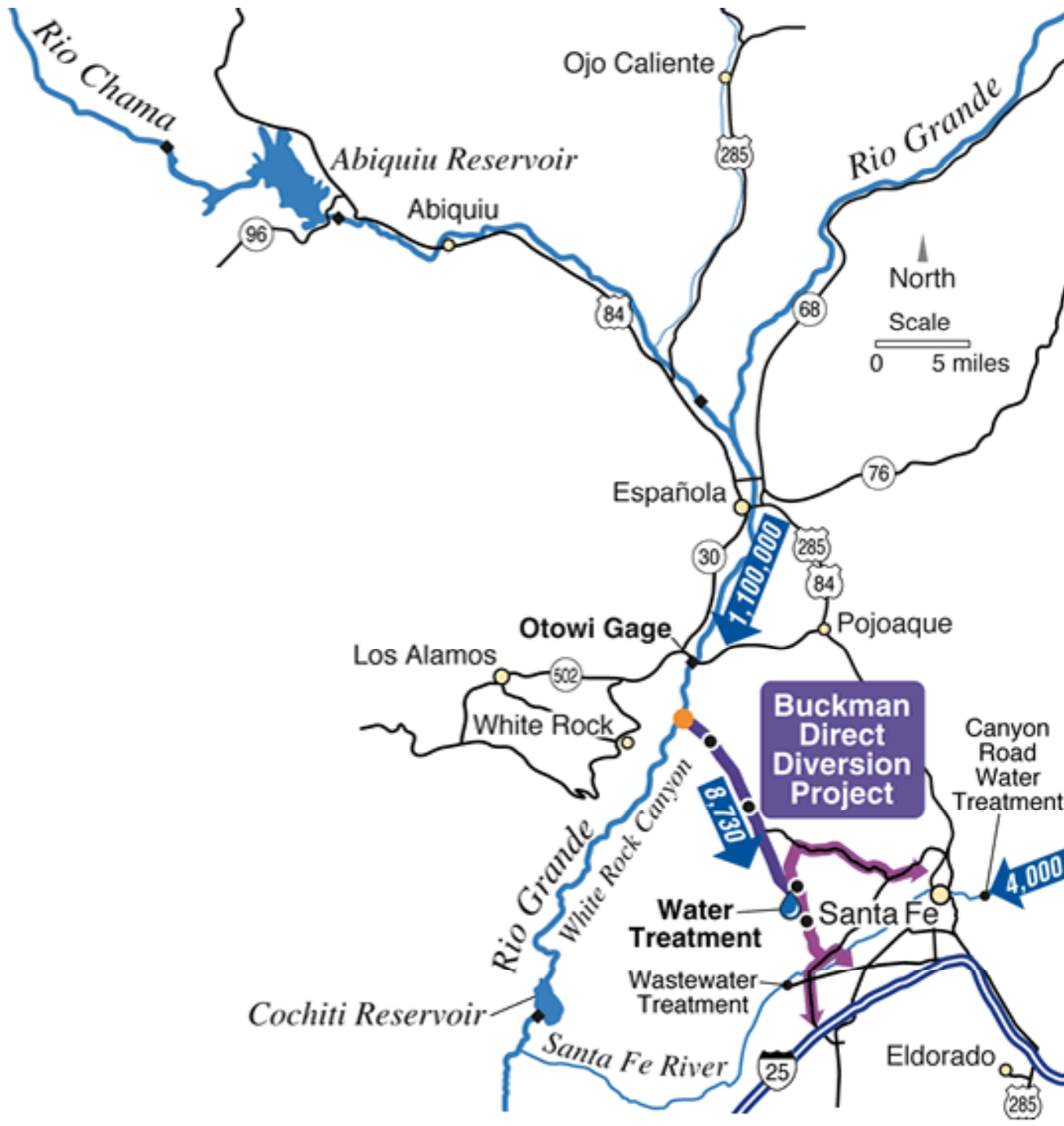
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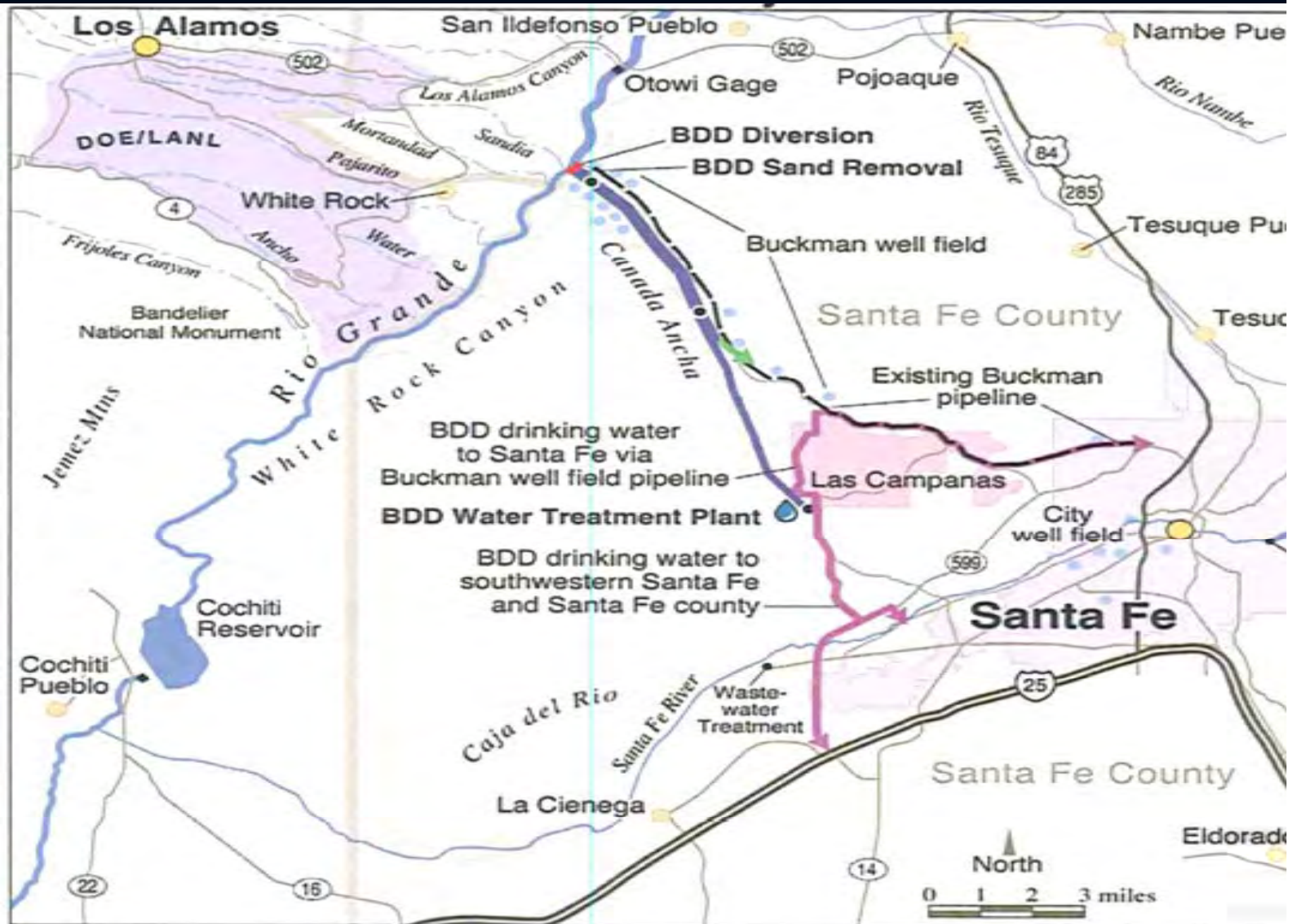
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The Buckman Direct Diversion (BDD) Project

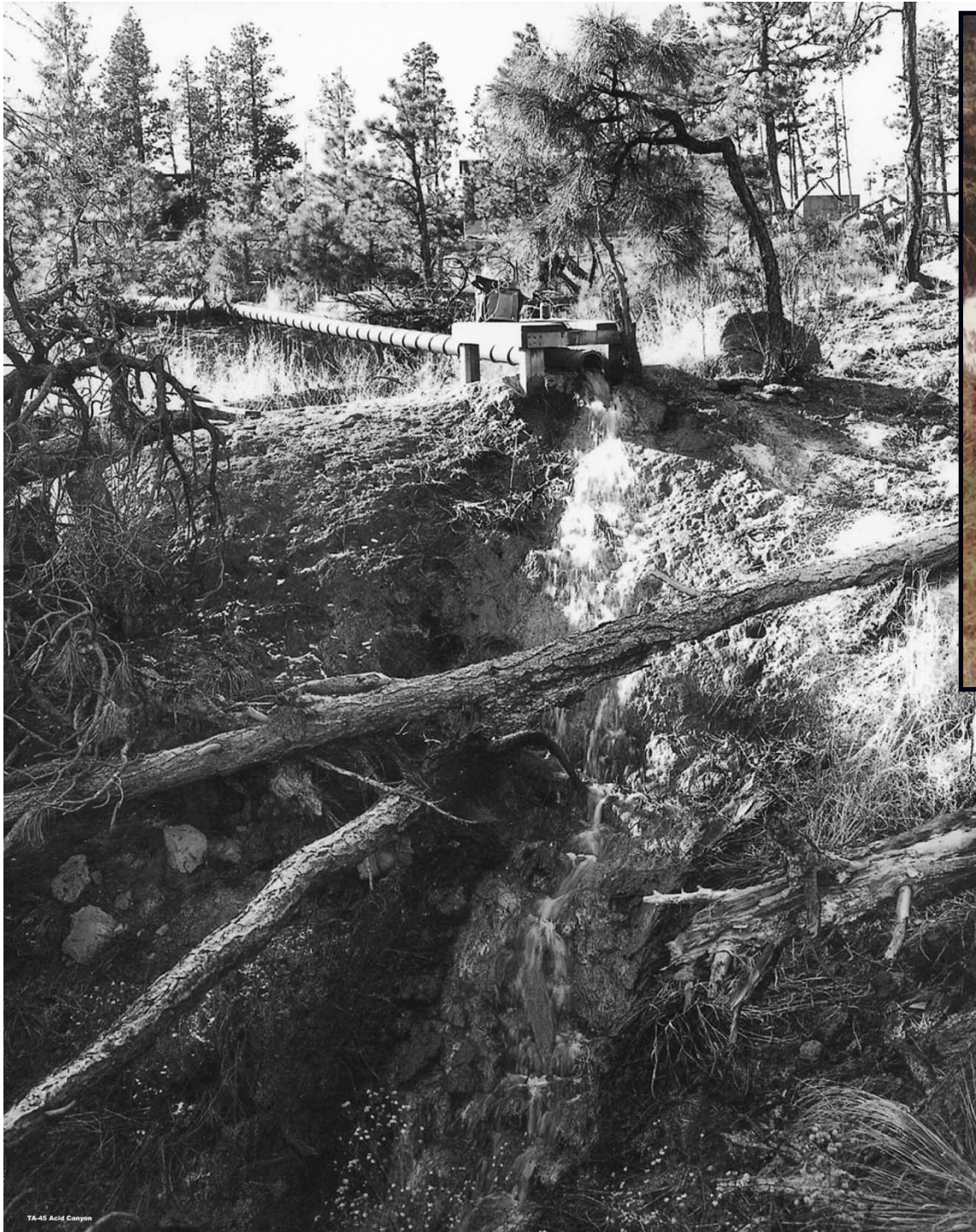
- Building infrastructure for the City of Santa Fe and Santa Fe County to access surface water they own from the San Juan-Chama Project and the Rio Grande.
- These sources of water are renewable, and will replace current regional groundwater pumping that cannot be sustained.











TA-45 Acid Canyon



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)

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

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)

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.

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*

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.

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. 3207toll free, office
(888-243-6747)

Thanks for coming!

