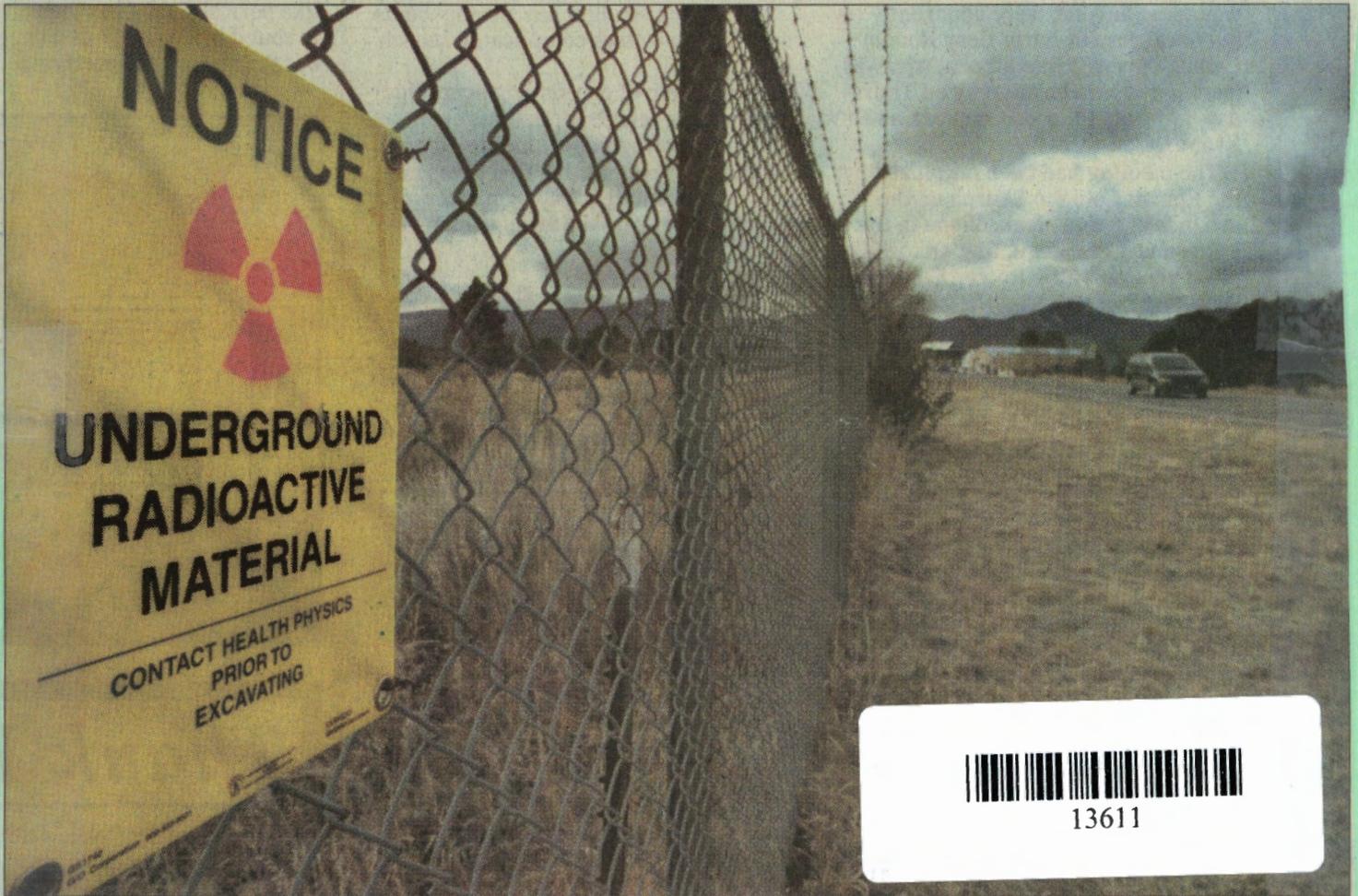


General
3/10/02

A toxic legacy

More than a decade and \$700 million into LANL's current cleanup program, plenty of work remains to be done



Signs lining the fence along DP Road near Technical Area 21 in Los Alamos warn of buried radioactive waste. Los Alamos National Laboratory has 839 sites where the question of contamination must be addressed.

Story by Jeff Tollefson ♦ Photos by Julie Graber ♦ The New Mexican

LOS ALAMOS — Like many people here, Randy Smith works across the street from a radioactive-waste dump.

Not the new kind, requiring hundreds of millions of dollars in environmental safeguards, decades of study and political capital extending all the way to the Oval Office. It's just an old-fashioned pit, where some of mankind's worst waste was bulldozed over with dirt, topped with a blanket of asphalt in places and surrounded by a barbed-wire fence.

"It's kind of strange when you park your car 20 feet away from a radioactive dump site," Smith says, "but we've never had any problems. You see people out there testing, and you just have to trust that if there were a problem,



Steve Yanicak of the New Mexico Environment Department takes water from a spring near the Rio Grande to test for contaminants.

it would get handled properly." Welcome to Los Alamos, birthplace of the atom bomb. Nuclear-weapons research and fabrication is a messy process: Everything from the usual industrial solvents

and chemicals to standard explosives and radioactive materials has left its mark at Los Alamos National Laboratory.

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■ Only nine years ago, Los Alamos National Laboratory dumped waste from 141 pipes into its canyons. Today, that number is 21 and it has reduced its use of water. **Page A-7**

■ A Bush proposal would squeeze the lab's cleanup budget by 37 percent next year. **Page A-7**

■ LANL plans to install an experimental barrier to contain contaminants in Mortandad Canyon. **Page A-7**

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A toxic legacy

Nuclear: Budget cuts hinder lab cleanup

Continued from Page A-1

Twelve years and \$700 million into its current environmental-restoration program, the lab has 839 sites where the question of contamination needs to be addressed. To date, the lab has gone about environmental cleanup largely on its own, working with and occasionally prodded by the New Mexico Environment Department.

But things are about to change. State regulators are putting the final touches on an order that could, among other things, lay the foundation — and set a schedule — for cleanup throughout the 43-square-mile laboratory.

That plan already faces challenges. The lab's cleanup funding has dropped by more than 50 percent in the last decade. Even at current funding levels, lab officials say, the lab will not be able to meet the state's expectations in the upcoming order, and DOE headquarters is proposing to cut the cleanup budget by another 37 percent next year. Using those figures, the lab would only be able to complete about half the work.

"If they don't meet the terms of the order, then they are in noncompliance, and we will take enforcement action against them," says Greg Lewis, director of the Water and Waste Management Division at the Environment Department.

This path leads into a legal morass that is not to be taken lightly. Ultimately, however, the state can assess \$25,000 in fines each day for each violation until the lab comes into compliance. So says the law, anyway.

Regardless of how that scenario might play out, such a legally binding order should significantly increase the state's leverage. If the lab is bound by law to clean up its mess, Lewis explains, DOE will be much more likely to request proper funding to complete the job. For reasons not entirely clear, New Mexico has never taken this step, although other states with DOE facilities have.

"I think there's plenty of time to go around," Lewis says. "We haven't been as aggressive as we should have been historically, and the lab's certainly been reluctant to be regulated."

The department expects to release the document for public comment this spring.

Cleanup hazards

Notice: Underground Radioactive Material. To read signs on a fence across the street from Randy Smith's hardware store, Los Alamos Home Improvement. Road ultimately leads to Technical Area 21, a now-secure facility that housed plutonium after World War II. Over the years, the area developed a commercial corridor. Not all that long ago, the area wasn't there. Weeds grew from cracks in asphalt used as a parking lot. Now, plutonium — like that usually packaged and sent to the Waste Isolation Pilot Plant in Carlsbad today — who knows what kind of

officials hesitate when talking about cleanup. They



Julie Graber/The New Mexican

Dynatech, a U.S. Department of Energy subcontractor, drills a well into the deep aquifer as part of the groundwater-monitoring program in Los Alamos Canyon.

know where the waste is.

Removal would involve potential exposure to workers, not to mention the disruption of business along DP Road, according to Julie Canepa, who heads the lab's Environmental Restoration Project. Once you get it out of the ground, the waste would need to be repackaged and put back into the ground, presumably in a better-designed facility.

"Where I think this is headed is, we are probably not going to be digging it up," Canepa says. "But then we have the long-term stewardship components as an institution."

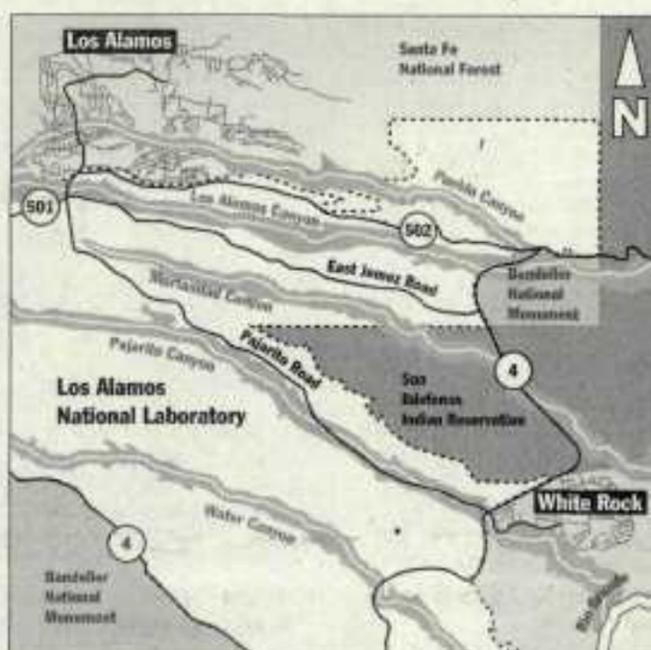
In other words, if you don't dig it up, how do you monitor for potential health hazards in the future? How do you ensure the contamination will stay put? Nature has a way of dispersing things.

The same question will arise again and again as the laboratory looks at this and other waste-disposal areas. Twenty-six are on the current list, and more low-level radioactive waste is going into the ground at Area G each year.

Questions remain about the state's role in regulating this disposal, as evidenced by the New Mexico attorney general's position that Area G has never been properly permitted and is thus out of compliance. State regulators plan to address that and other operations in an operating permit later this summer.

Even the current disposal sites will go through the formal cleanup process, which includes investigation and possible remediation or further stabilization. Currently, the lab is conducting a pilot project at one disposal area to see how the sites can be addressed.

Environmentalists, meanwhile, see it as a simple issue of priorities. Funding for the lab's overall operations has doubled since the Cold War, which indicates the money is there, says Greg Mello, who heads the Los Alamos Study Group, a local environmental



Robert Martinez/The New Mexican

paper only, Canepa says many of those sites showed little or no contamination. The laboratory and state regulators have identified about two dozen sites that will require major investigations and cleanup.

The state Environment Department has cited all the waste dumps as a primary concern. Although the federal government has sole jurisdiction over radioactive waste, the dumps also contain a host of solvents, heavy metals and other materials that are governed by the state, which enforces federal hazardous-waste laws.

The waste dumps are on the top of bluffs that overlook myriad canyons at the base of the Jemez Mountains. But this is only part of the picture of contamination. Over the years, the laboratory has dumped contaminated sludges, liquids and solids directly into the canyons below.

Much, though certainly not all, of the contamination took place before the passage of modern environmental legislation in the 1970s. Since then, state officials say, it has taken awhile for the law to catch up to the laboratory. In other words, until laws were

Fe Public Schools operating budget — is just another way of delaying real cleanup.

"What's happened is Los Alamos has turned its cleanup program into a research program," Mello says. "Everyone feels like a scientist if they can just get more data, but there's no end to this."

The laboratory is well aware of this kind of mistrust. It cites the Acid Canyon cleanup as an accomplishment, as well as the \$1.7 million removal of about 3,400 cubic yards of soil contaminated with PCBs at an old storage site. That waste went into Area G, the current disposal site. Another \$25 million went into the recent cleanup of an old landfill in which fist-sized chunks of high explosives were littered among rubble from old buildings and the like. Canepa says the site was so dangerous that the major work was done with a remote-control backhoe.

From Canepa's perspective, environmental remediation is always a slow and expensive process. Just figuring out what kind of waste is present at a particular site requires on-the-ground work and expensive analysis. Then comes the risk analysis, and finally cleanup, but each of those steps involves reams of paperwork going back and forth between the lab and state regulators.

An air of mistrust

Then again, it can be difficult to view the laboratory as an agency beleaguered by unfair criticism. Only five years ago, for example, the laboratory was dumping highly contaminated water without treatment at Technical Area 16. Technicians ran water over pieces of TNT and other explosives as they were ground down and shaped for proper combustion.

The water was pink with TNT. Officials with the state's Oversight Bureau are only half joking when they

minating a canyon because nobody told them not to.

The lab has since built a treatment plant to remove high explosives from the charge water. But it should be obvious that it would have been much cheaper to stop polluting years ago. Cleanup as the lab says, is expensive.

As if to illustrate the long-term costs, the lab found traces of high explosives in the deep groundwater after drilling a well at Technical Area 16. Yanicak wasn't surprised, but the well project was so beset with problems that some people have speculated the contamination was introduced into the deep aquifer when the well was drilled.

For Joni Arends, a Santa Fe activist with Concerned Citizens for Nuclear Safety, the lab tends to use its technical expertise to undermine environmental discussion with citizens. One refreshing exception, she says, is the Community Radiation Monitoring Group, a lab-sponsored citizen group that tracks air emissions at Los Alamos.

But establishing that group bypassed a Clean Air Act suit filed by Concerned Citizens in 1994. The group bypassed the lab's agreement with EPA, reached after the lab was found to be out of compliance at 31 of 33 facilities that emit radionuclides, and argued in federal court the lab was still failing to properly monitor emissions.

Arends says the lab has since come into compliance and now pays for independent scientific review to help the citizens group understand and debate technical issues. She would like to see the lab take this approach on other issues.

"It's an excellent model," Arends says. "Many times we don't speak in scientific terms, our concerns are dismissed."

The environment and public health

For the most part, lab officials say threats to public health do not appear imminent. The quality of well water is of concern to both Los Alamos County and San Ildefonso Pueblo, but that to its remote location, most of the current problems facing the lab are environmental. With proper cleanup and long-term monitoring, the stress, the public should be safe.

Not everybody shares that view, of course. Practically speaking, radionuclides are forever. It's difficult to plan for that.

Fred Brueggeman is the deputy administrator for Alamos County. He has been working on an effort to transfer more laboratory land into county hands for development. First and foremost comes an agreement that the lab will maintain responsibility for contamination found in the future, but just in case, the county is looking at environmental insurance as a second layer of defense against the unexpected.

The current round includes land along DP Road, and many have suggested one day using the buildings at Technical Area 21 as an

A toxic legacy

Bush plan would squeeze cleanup funding

By JEFF TOLLEFSON
The New Mexican

The Bush administration's proposal to reform cleanup of the nation's defense complex would cut the baseline cleanup funding at Los Alamos National Laboratory by 37 percent next year.

This year's cleanup budget of about \$47 million — about 2.4 percent of the lab's overall spending — would decrease by about \$18 million next year, according to Julie Canepa, who heads the lab's Environmental Restoration Project. That is down from a high of about \$120 million in 1992, she said, although the numbers are not entirely comparable because of changes in the program.

"It's ugly," Canepa said. "As disappointing as the budget reduction is, we need to be motivated and understand there is a sense of urgency and look for creative ways of getting our job done."

As will the New Mexico Environment Department's Oversight Bureau, an independent program that has broad public support for its independent review of environmental matters at U.S. Department of Energy facilities. The bureau is funded by DOE, which has proposed cutting the budget to \$725,000 — less than half what bureau officials say is needed to maintain a viable program.

The same thing happened last year, but the DOE in Albuquerque scraped up an additional \$950,000 to keep funding level, according to George Rael, director of the Environmental Restoration Division. This compares to a budget of more than \$3 million in the early 1990s.

Congress will have the final say, but Energy Secretary Spencer Abraham is proposing the creation of an \$800 million account that would be allocated competitively to facilities that can secure expedited or alterna-

tive cleanup agreements with state regulators. Overall funding for the Environmental Management program would remain the same at \$6.7 billion, including the new cleanup account. That means baseline funding would decrease nationwide, as evidenced by the projections for Los Alamos.

Skeptics say the reform amounts to blackmail, fearing "expedited cleanup agreements" could translate into lower cleanup standards. At the same time, the call for reform is an old one. The DOE has been widely criticized — by environmental groups, politicians, even the DOE's Office of Inspector General — for wasting money on overhead and bureaucracy rather than getting things done. Los Alamos is not free of such criticism.

Citing such inefficiency and a \$300 billion cleanup forecast, Abraham last year ordered a "top-to-bottom review" of the program. The result is the current incentive policy.

Canepa says the laboratory has a few proposals that might be able to tap into that account. For instance, the lab might be able to work with the state to break off its current study of contamination in Los Alamos and Pueblo canyons and try to complete on-the-ground cleanup within several years.

The state is open to such ideas. Many believe such an approach could work. If the work gets done more quickly — and properly — why complain?

But opposition to this approach is growing. DOE announced this week the first proposal to tap into the new account. DOE's Hanford site in Washington state would receive \$433 billion for a plan to accelerate cleanup by 35 to 40 years. This sounds like a lot of money, but it actually adds up to about the same amount Hanford received this year, since the baseline budget would be sig-



The DOE's Mat Johansen shows areas of Pueblo Canyon where groundwater wells have been drilled to test for contaminants.

nificantly cut.

From a reform standpoint, it looks good: same price, faster cleanup. But groups like the Alliance for Nuclear Accountability in Washington, D.C., are already lining up against it, saying the proposal would require the state of Washington to roll over and allow certain liquid nuclear waste to remain in the underground storage tanks.

"It is a poor way to do environmental planning, and in many states, a violation of the legal obligation to fully fund existing cleanup agreements," said the Alliance's Bob Schaefer, who believes the proposal is a long shot in Congress. "The notion that Congress is going to give DOE a blank check to spend \$800 million at the discretion of the secretary ... seems hypothetical."

Most agree it would be more difficult for Los Alamos to tap into the fund, as the lab isn't on line for closure and is still in the investigation phase of most contaminated sites. At the current funding level, the lab's projections extend the cleanup project through 2030. With a budget of \$70 million to \$80 million annually, the timeline decreases by a decade or more.

She says her current bud-

get is split up this way: 50 percent goes to groundwork, including sampling and characterization efforts, risk assessments and cleanup; another 25 percent goes to processing information about hundreds of sites that do not require groundwork but have not been officially removed from the environmental program; the last 25 percent goes to overhead — lights, phones, salaries and other expenses.

One DOE official, however, said the lab's overhead is actually around 40 to 45 percent, depending on how you count.

Such figures lead some critics to call for real reform, perhaps shifting cleanup from the University of California, which runs the lab, to DOE and a team of contractors. Greg Mello of the Los Alamos Study Group also suggests DOE set aside part of the cleanup funding for the New Mexico Environment Department, which would promote both independent review and public trust in the process.

"I think nationally the states should play a larger role in the cleanup program," he said.

Which brings us to the Oversight Bureau.

"Everybody agrees that the markup in the president's

Lab cuts water use and pipe pollution

By JEFF TOLLEFSON
The New Mexican

Only nine years ago, 141 different pipes dumped different liquids into the canyons that make up Los Alamos National Laboratory. Today, the lab has discharge permits for 21 such pipes, and it hopes to be down to 15 in a couple of years.

Photo labs that once discharged water on a regular basis now run on circular systems that recycle water continuously. Certain cooling systems for lasers and other facilities do the same thing, as do steam-cleaning and heating systems.

At Technical Area 16, where explosives such as TNT are machined for proper combustion, the lab has reduced its water use from 12 million gallons annually to 130,000 gallons — a 99 percent reduction, according to Mike Saladen, who handles discharge permits for the laboratory.

At one of the most notorious of Technical Area

16's pipe outfalls, the lab was discharging untreated water, pink with explosives, through 1996. But the good news is, with a little push by the state Environment Department, the lab has eliminated that outfall as well as 20 others in the area. The water now runs through a treatment facility and then exits through one of only two pipes.

"We've significantly reduced the volume of water being discharged," Saladen said. "The quality of the water has greatly improved, and so has our compliance record."

This is one accomplishment that receives kudos from often-critical officials with the Environment Department. Of course, the state lobbied heavily to eliminate these discharge sites, noted Steve Yanicak, who heads the department's Oversight Bureau in White Rock. Nonetheless, he said, the lab has made progress.

"They get a big star on their forehead for that," Yanicak said.

budget was inadequate," said John Parker, who heads the bureau. Parker is still worried about the general decline in cleanup money, but his once-stinging criticism has softened with the arrival of more money for this year, at least.

"We feel that bodes well for the future," he said.

This is the bureau that found hot spots of plutonium contamination in the publicly accessible Acid Canyon. Lab officials say they would have been caught in future investi-

gations and note the plutonium has since been cleaned up beyond the required risk-assessment levels.

But everyone acknowledges that this kind of independent evaluation is what gives the bureau its value.

"We use them to hopefully show the public we are not lying about our information," said Joe Vozella, who heads the Environmental Management program for DOE in Los Alamos. "They give the public an independent view

Toxin-containment wall scheduled at Mortandad Canyon

By JEFF TOLLEFSON
The New Mexican

Los Alamos National Laboratory plans to install an experimental barrier made of pecan shells and fish bones, sandwiched between layers of limestone and gravel, to contain contaminants in Mortandad Canyon.

The lab's pilot project rings in at nearly \$1 million and could be in place later this summer, years before the planned investigation and any formal cleanup.

But not everybody is happy. One local critic says the lab should take that money and begin a full-scale cleanup.

Roughly 10 yards thick, the underground barrier will sit in a trench that traverses the width of Mortandad Canyon, where the lab's liquid radioactive-waste-treatment plant has discharged waste-

water since 1963.

Sediments in the canyon contain industrial chemicals such as perchlorate, nitrates and radioactive materials such as uranium, plutonium, tritium and strontium-90. The latter two are byproducts of nuclear-weapons work. The canyon remains one of the most challenging cleanup projects at the laboratory.

The barrier wall features four layers: a gravel mixture; a fish-bone mixture designed to remove strontium 90; a pecan-shell mixture for nitrates and perchlorate; and a final section of limestone to control acidity. Together, they are designed to remove contaminants from shallow groundwater as it moves down the canyon.

"Most of the top contaminants of concern would be captured," said Mat Johansen, a DOE official who oversees groundwater issues at the lab.

It would not contain tritium, however, nor plutonium, but Johansen notes that plutonium tends to stick to soils rather than move with groundwater.

Lab critic Greg Mello of the Los Alamos Study Group sees this as an expensive way of sidestepping the real solution, which is cleaning up the sediments and possibly treating the water.

"It's research as ritual. As long as it can be sold as cutting-edge science, then it must be good," Mello said.

According to the current schedule, which moves canyon by canyon across the laboratory, the lab will not conduct a formal characterization study of contaminants in Mortandad for at least a couple of years. A follow-up study of possible cleanup alternatives would follow. Last comes cleanup.

If the lab knows Mortan-

dad is a highly contaminated canyon, why wait? That is Mello's question. He says the lab should spend its money to address the most immediate problems first. An underground barrier wall does not remove contamination, address possible runoff flows across the surface or protect deep groundwater.

The lab already has detected low levels of tritium and nitrates — and possibly perchlorate — in the deep groundwater, according to Johansen. These concentrations are below federal drinking-water standards.

He stresses the barrier is just one interim step that can be put in place immediately until the contamination itself can be addressed. Later this month, the lab also plans to install a new system at the treatment plant to reduce perchlorate contamination to about four parts per billion.

Current perchlorate levels often top 250 parts per billion. That far exceeds a proposed health standard of one part per billion recommended in a recent toxicological assessment by the U.S. Environmental Protection Agency. The document indicates the chemical can impair the thyroid gland and cause cancer at higher levels of exposure.

Since there is no official standard for perchlorate, however, the lab hasn't broken any laws with these discharges. From a regulatory standpoint, the lab is getting ahead of the game.

The good news, from the lab's perspective, is the canyon generally does not feature flowing water. It's not an accident the treatment plant at Technical Area 50 was placed here.

Located roughly in the middle of the laboratory, Mortan-