CCNS and EVEMG Comments Regarding
Water Issues in the draft LANL SWEIS

Past, present and future LANL activities jeopardize both water quality and quantity for surface and ground water on the Pajarito Plateau as well as for the downstream users along the Río Grande watershed. New Mexicans and others downstream rely on surface and groundwater for many uses, including drinking, farming, ranching, recreating and for cultural practices. Water is essential for a healthy ecosystem that supports life in its many diverse forms.

In the past few years, contaminants, such as tritium, PCBs, perchlorate, hexavalent chromium and 1, 4-dioxane, have been found in surface water and the regional aquifer on the Pajarito Plateau. For many of these contaminants, the source is known to be from LANL activities. These activities include discharges to surface water and the continuing practice of burying toxic, hazardous and radioactive waste in unlined pits, trenches and shafts, which provides direct pathways for contaminants to travel to groundwater. Further, DOE/NNSA is not monitoring 1,405 sites that have the potential to release contaminants during storms and when the snow melts.

For these reasons, in May 2006, a diverse network of non-governmental organizations sent a 60-Day Notice of Intent to Sue DOE/NNSA for violations of the Clean Water Act at LANL ("60-Day Notice"). The 60-Day Notice details the Clean Water Act violations at LANL, including failure to conduct adequate monitoring, failure to report violations, failure to have pollution controls in place and unauthorized discharges. The 60–Day Notice is available at www.nuclearactive.org. We request that the detailed 60-Day Notice be included as part of our comments to the draft LANL SWEIS.

Further, Amigos Bravos and CCNS recently released a report about LANL water issues. The report is entitled, "Historic and Current Discharges From Los Alamos National Laboratory: Analysis and Recommendations" ("Discharge Report"). This report concludes that the movement of pollutants in stormwater at LANL is an issue of grave concern. Specifically, stormwater samples taken by the New Mexico Environment Department (NMED(in Los Alamos, Pueblo, Sandia, Mortandad, and Water Canyons show contaminant levels that are well above water quality standards that protect human health and wildlife habitat. In Los Alamos Canyon, PCB levels in stormwater have been detected at 25,000 times above the standard that is protective of human health. In addition, the Discharge Report identifies numerous problems with non-stormwater related discharges, such as toxic impacts to aquatic life and inadequate monitoring. The Discharge Report is available at www.nuclearactive.org. We request that the Discharge Report be included as part of our comments to the draft LANL SWEIS.

We refer to both the 60-Day Notice and Discharge Report as references which support and enhance our comments.

In order to ensure that water quality and quantity is protected now and in the future, DOE/NNSA must adopt the Removal Option for all clean up activities at LANL. All cleanup must be done to a pregnant subsistence farmer standard.

Surface Water

DOE/NNSA discharges approximately 163,000,000 gallons per year, which is more than 500 acre-feet a year, of treated industrial waste and sanitary effluent into the canyon systems at LANL. DOE/NNSA proposes to increase that amount to 822 acre-feet per year, an increase of 61%. Please note that the proposed increase of discharge of 322 acre-feet of water per year could sustain a small rural community in Northern New Mexico for 20 years.

Unfortunately, DOE/NNSA did not use the most current state water quality standards when assessing impacts in this draft SWEIS, nor did DOE/NNSA use the most current data about the number of streams that are impaired on the Pajarito Plateau from LANL activities. DOE/NNSA must withdraw the draft LANL SWEIS and conduct a re-analysis of LANL's impacts to surface and ground water based on the latest state water quality standards and the current impaired stream information and then submit a new draft LANL SWEIS.

Our comments are limited in this area because DOE/NNSA did not use the most current water quality standards in the analysis. As a result, many of the tables and figures presented in the draft LANL SWEIS are incorrect, including information presented in Tables 4-4 and 4-6. There are a number of glaring errors and omissions in Chapter 4.3.1, including the statement "Most surface water on the Pajarito Plateau is designated for use as wildlife habitat and livestock water." p. 4-34. In fact *all* surface water on the Pajarito Plateau is designated for use as wildlife habitat, livestock watering, some form of human contact (either secondary or primacy) and some form of aquatic life. Given the amount of federal tax dollars that were spent in preparing this document, please provide an explanation why these substantial errors were allowed. Please describe the quality assurance standards applied to preparing the draft LANL SWEIS.

Surface Water Quality – Impacts from Storm Water and Construction Sources.

DOE/NNSA states that it "still requires Storm Water Pollution Prevention Plans and best management practices to protect surface waters from pollutants from industrial storm water sources and construction projects." S-28. Please see the 60-Day Notice and Discharge Report for our comments about the lack of

adequate monitoring and Storm Water Pollution Prevent Plans at LANL. The draft LANL SWEIS does not mention or address the increase of impacts to water resources due to the substantial increase in construction activities at LANL in 2005 and 2006. In early 2006, the number of construction activities permitted was more than 50, which is a substantial increase from the last cited level of 34 projects in 2004. p. 4-47. Given LANL's poor track record of controlling stormwater on their property, this increase of potential discharge poses a threat to water quality on and downstream from LANL. In addition, DOE/NNSA states "impacts from storm flows and construction or excavation projects were within 1999 SWEIS projections." S-28. However, information presented in the 60-day Notice and Discharge Report show that these flows represent numerous violations of the Clean Water Act.

Further, DOE/NNSA states "the number of industrial facilities requiring individual Storm Water Pollution Prevention Plans has ranged from 15 to 22. Storm Water Pollution Prevention Plans and best management practices are now required for all projects disturbing greater than 1 acre (0.4 hectares) of land." S-28. Please see the 60-Day Notice and Discharge Report for our comments about the impacts from the lack of adequate Storm Water Pollution Prevent Plans at LANL.

Surface Water Quality – Contaminant Transport.

DOE/NNSA states, "Several actions and best management practices were implemented to manage, control, and minimize storm water and sediment transport." S-28. The draft LANL SWEIS does not provide detailed information about these actions. However, the evidence indicates otherwise. Please describe in detail "several actions and best management practices."

Further, "As a direct result of the Cerro Grande Fire, storm water runoff increased (2 to 4 times for average flow, and 10 to 100 times for peak flows), increasing the potential for contaminant transport. Storm events in 2001 and 2002 were found to accelerate the transport of legacy contamination (radionuclides) from Pueblo Canon into lower watersheds and canyons." S-29. Please refer again to the New Mexico Environment Department DOE Oversight Bureau report about the increased transport of plutonium through the Pueblo Canyon system since the Cerro Grande fire. Draft LANL SWEIS reference section.

More plutonium and other contaminants have been transported through the canyon systems toward the Rio Grande since the fire, than before. This fact is alarming given the congressional response to the Cerro Grande fire - an additional $345 million to address remediation and restoration on the Pajarito Plateau. Please describe in detail the actions implemented for the $345 million

with line-by-line accounting.

Nevertheless, the high priority sites with the most contaminant load, including Pueblo Canyon, were not adequately and promptly addressed with best management practices. As a result, plutonium, and other contaminants, mobilized in the Pueblo Canyon environment is traveling through surface water toward the Río Grande and discharging above the intake for the proposed drinking water diversion projects for Santa Fe and Albuquerque, two of the largest cities in New Mexico. Additionally, plutonium discharge from LANL is a very real threat to international waters, flowing to our southern neighbor, Mexico, via the Río Grande.

"On average, outflows to individual watersheds have been within projections, and trends show that outfall flows per watershed have been declining, thereby reducing the potential for contaminant transport. The number of watersheds receiving outfall flow has been reduced from 8 to 6**.** The annual flow discharged to the individual watershed exceeded 1999 SWEIS projections 10 times from 1998 to 2000 and 0 times since 2000." S-28. DOE/NNSA must further reduce the discharges to the watersheds.

"While radionuclides at or above background levels have been detected in sediments on- and offsite, the overall pattern of radioactivity in sediments has not greatly changed since the 1999 SWEIS. Concentrations of metals, radionuclides, polychlorinated biphenyls, and high explosives residue above water quality standards have been detected during storm flows, however, these events are infrequent and short-lived." S. 28-29. Please review the data. These infrequent and short-lived storm events are the events which carry legacy contamination towards the Río Grande and existing and future drinking water supplies.

Groundwater

"Monitoring of the quality and quantity of the regional aquifer would be needed to evaluate the rate and direction of contaminant movements, as well as to track the amount of water available for use." S-69. What is the status of the effort to determine the amount of water in the regional aquifer? The Hydrogeologic Workplan effort has been an on-going, very expensive, project of LANL for almost a decade. Please explain why a determination of the amount of water in the regional aquifer has not been made through the Hydrogeologic Workplan, an effort expending more than $100 million.

CCNS and EVEMG submit detailed technical groundwater comments in Exhibits 1 through 4.

Summery of Exhibits: The past and present operations at LANL have caused great contamination to the groundwater resources that are not addressed in the Draft LANL SWEIS. The data tables in the Draft LANL SWEIS reveal the emerging presence of the radionuclide contaminants Neptunium-237, Plutonium-239, Plutonium-240, and Strontium-90 in the groundwater resource. The data tables document the presence of Neptunium-237 in the drinking water of Los Alamos County at levels above the Environmental Protection Agency (EPA) Drinking Water Standard (DWS). The water quality data in the Draft LANL SWEIS show that groundwater produced from "other springs" is contaminated with Strontium-90 at a level more than 13 times greater than the EPA DWS. In addition, Hexavalent Chromium contamination is present in the regional aquifer at concentrations greater than 4 times the EPA DWS. What is the scientific basis for determining that there is no disproportionate adverse effect from contamination that is above the EPA standards? DOE/NNSA must issue a new draft LANL SWEIS following a thorough review of the data included in the June 2006 draft LANL SWEIS.

The above mentioned contamination in our drinking water is evidence that there is higher contamination away from the wells, at the source, beneath LANL. Unfortunately, we do not know the extent of this contamination because DOE/NNSA, LANL and New Mexico Environment Department (NMED) have constructed all of the monitoring wells over the past ten years with methods that mask the contaminants of concern. DOE/NNSA, LANL and NMED stated that the difficult geologic setting below LANL requires the drilling of monitoring wells with fluid assisted methods. The organic and clay based drilling fluids that were used for all LANL wells for the past ten years have well known properties that will mask the contaminants generated during the production of plutonium pits. The regulations of National Environmental Protection Agency (NEPA), Resource Conservation and Recovery Act (RCRA), DOE orders and the NMED consent order require accurate monitoring of laboratory operations. Therefore expanded activities to produce plutonium pits is prohibited.

A LANL report referenced in the Draft LANL SWEIS describes the great uncertainty in the knowledge of the travel pathways of contaminants from LANL past, present, and future nuclear weapons research and plutonium pit production to the regional aquifer and the travel of contamination in the regional aquifer to the drinking water wells, the property of the San Ildefonso Pueblo, and the Rio Grande. Below are excerpts from the recent LANL report by Keating, Elizabeth, B.A. Robinson, and V.V. Vesselinov, 2005, "Development and Application of Numerical Models to Estimate Fluxes through the Regional Aquifer beneath the Pajarito Plateau," Vadose Zone Journal, Volume 4, August, 2005:

"Data concerning the spatial distribution of anthropogenic [LANL] contaminants in the regional aquifer has been inconclusive because of the exceptionally thick and complex vadose zone which makes it impossible to define the location and timing of contaminant entry to the regional aquifer" [page 658, Keating et al., 2005].

"Finally, local recharge does occur along canyons that cross the LANL property – this recharge has important water quality implication in locations where contaminant effluent discharges have been released" [page 668, Keating et al., 2005].

"Travel times through the regional aquifer are poorly understood because of the lack of tracer tests and *in situ* measurements of effective porosity" [page 658, Keating et al., 2005].

"The implication of this work for contaminant transport issues is that because of parameter uncertainty, predicted fluxes and velocities are quite uncertain. Uncertainties in permeability and porosity values lead to additional model uncertainty. These uncertainties can be reduced meaningfully with more data collection, including multiwell pumping and tracer tests" [page 668, Keating et al., 2005].

Exhibits 1 through 5 present a detailed discussion of the deficiencies in the Draft LANL SWEIS to address the requirements of the National Environment Protection Act (NEPA) to assess environmental impact of past, present and future LANL operations on contamination of groundwater resources. Because of the deficiencies with the assessment in the June 2006 draft LANL SWEIS, DOE/NNSA must withdraw it and perform a reanalysis for the new draft LANL SWEIS. In the alternative, the information in the **five** exhibits prove that DOE/NNSA must institute the ***"Reduced Operations Alternative"*** that was described in the draft LANL SWEIS.

The exhibits demonstrate that the DOE/NNSA, LANL and the NMED have not installed a network of monitoring wells that produce reliable and representative groundwater samples for the detection of groundwater contamination from past, present, and future operations for nuclear weapons research and pit production at the Laboratory facility. In order to lower costs, DOE/NNSA, LANL, and NMED decided to construct the network of LANL characterization wells with drilling methods that invaded the strata that are monitored with drilling additives that have well known properties to mask the detection of many LANL contaminants.

Exhibit 1. Exhibit 1 includes excerpts from reports by the DOE IG Inspector General, the EPA National Risk Management Research Laboratory, articles in the technical literature, and even LANL reports as irrefutable evidence that the LANL characterization wells impacted by the organic and bentonite clay drilling fluids do not produce representative water samples for many LANL contaminants of concern. This issue is especially problematic with the strongly sorbing radionuclide contaminants that would be produced by the *Expanded Operations Alternative*.

Exhibit 2. The information in Exhibit 2 identify the deficiencies with the water quality data presented in the Draft LANL SWEIS for water quality in perched zones of saturation and in the regional aquifer. LANL does not have the required monitoring well network for compliance with RCRA, DOE Orders, or the NMED LANL Consent Order. A fundamental requirement of NEPA is compliance with the Federal and State Regulations.

Exhibit 3 Exhibit 3 describes the deficiencies of the existing network of monitoring wells to protect the drinking water wells of Los Alamos County and Santa Fe City and County from contamination by the Hexavalent Chromium plume. The Draft LANL SWEIS did not address the large but poorly characterized plume of Hexavalent Chromium that is present in the regional aquifer in a region of many of the Los Alamos County drinking water supply wells. The chromium plume is in aquifer strata with high permeability that are a fast pathway for travel of the contaminated groundwater over great horizontal distance.

Exhibit 4. Exhibit 4 describes the failure of DOE/NNSA, LANL and NMED to install a RCRA compliant groundwater monitoring program for the RCRA regulated waste disposal units at Technical Area 54 (TA-54) that contain DOE "Legacy Hazardous and Mixed Wastes" disposed of in unlined pits, trenches, and shafts. The Draft LANL SWEIS did not address the documented contamination of the regional aquifer by the "Legacy Wastes" in the improperly monitored disposal sites at TA-54.

Exhibit 5: George Rice, independent Ground Water Hydrologist and author of *New Mexico's Right to Know: The Potential for Groundwater Contaminants from LANL to Reach the Rio Grande*, reviewed the draft LANL SWEIS. Rice wrote comments about the Remediation of MDAs, Lateral flow into Wastes, Tritium in White Rock Canyon, Definition of background groundwater chemistry and Contaminants in Regional Aquifer, along with providing references. His comments are attached as Exhibit 5 and are incorporated by reference.

Groundwater Use

"The drop in the DOE well field has continued to be 1 to 2 feet (0.3 to 0.6 meters) per year, per the Water Supply at Los Alamos 1998 to 2001 report." S-29. As a result of this drop, at what point will the contamination increase to levels where people will no longer be allowed to drink the water?

"Impacts of LANL water use on the regional aquifer continue to be bounded by the impacts analyzed in the 1999 SWEIS." S-29. However, under the Infrastructure Section, DOE/NNSA states "demand for water could exceed the conservation limit of approximately 542 million gallons (2 billion liters [or 1,662 acre feet]) per year under the agreement with Los Alamos County." S-34.

The Expanded Operations Alternative will increase water usage by LANL above the amount allotted to it from the regional aquifer of "1,816 million gallons total (522 million gallons for LANL [1,601 acre feet]); 101 percent of system capacity." S-63. In water municipalities throughout the state there are fines and penalties associated with exceeding allotments. How will DOE/NNSA comply with the applicable laws governing water usage in the State of New Mexico given this scenario at LANL? Will DOE/NNSA work within the same legal boundaries as every other citizen of the State of New Mexico regarding water usage at LANL?

"Additional groundwater depletion projected as a result of potential new residential development within Los Alamos County could be somewhat offset by reduced depletion of the regional aquifer following implementation of the City of Santa Fe's water diversion project and reduced pumping of the Buckman Well Field." S-69. Please cite the draft Environmental Impact Statement for the Buckman Wellfield in the list of references for the new draft LANL SWEIS.

Groundwater Quantity

"LANL discharges have had little effect on groundwater quantities in the last 5 years." S-29. DOE/NNSA must back up this statement given references made in the draft LANL SWEIS to recent articles in *Vadose Zone Journal* about the uncertainties associated with LANL's groundwater modeling effort. These articles were authored by Elizabeth Keating and Bruce Robinson, among others, and are referenced in Exhibits 1 through 4.

"Impacts of LANL water use on groundwater quantities continue to be bounded by the impacts analyzed in the 1999 SWEIS." S-29. We disagree with this statement given the number of problems associated with the groundwater well drilling program as discussed in Exhibit 1 through 4 of our comments.