ENTERED

MEMORANDUM OF UNDERSTANDING BETWEEN THE U.S. DEPARTMENT OF ENERGY AND THE BUCKMAN DIRECT DIVERSION BOARD REGARDING WATER QUALITY MONITORING

A. PURPOSE

To establish roles and responsibilities with regard to coordination of monitoring activities by Los Alamos National Laboratory ('LANL') and the Department of Energy ('DOE) in Los Alamos Canyon, Pueblo Canyon, and the Rio Grande in relation to operation of the Buckman Direct Diversion Project ('BDD Project').

B. PARTIES

The parties to this Memorandum are the Buckman Direct Diversion Board ('BDD Board') and the U.S. Department of Energy ('DOE').

C. AUTHORITIES

1. Both parties represent that they have the authority to enter into this Memorandum and are able to meet the respective commitments herein to the extent permitted by law.

2. Department of Energy. The U.S. Department of Energy is authorized to enter into this Memorandum pursuant to the Atomic Energy Act, as amended (Title 42 U.S.C. 2011, et seq.).

3. BDD Board. The BDD Board is authorized to enter into this Memorandum pursuant to the March 7, 2005, Joint Powers Agreement between Santa Fe County and the City of Santa Fe and associated state, county and municipal laws related thereto.

D. BACKGROUND

1. The BDD Project is designed to divert water from the Rio Grande for use by the City and County of Santa Fe water utilities in the Santa Fe area and will provide a source for the water supply systems of Santa Fe County, the City of Santa Fe and Las Campanas, LLP ('BDD Project partners'). The water to be diverted is comprised of San Juan-Chama Project water (a U.S. Bureau of Reclamation interbasin water transfer project) and native New Mexico state waters regulated by the State of New Mexico.

2. The planned point of diversion for the BDD Project is located on the east bank of the Rio Grande in northern New Mexico, near the historic Buckman townsite. The point of diversion is approximately 15 miles northwest of the City of Santa Fe and is located about three miles downstream from the confluence of the Rio Grande and Los Alamos Canyon (where Route 502 crosses the Rio Grande at the Otowi Bridge).

3. LANL is located on the Pajarito Plateau above the Los Alamos/Pueblo Canyon (LA/P Canyon) system. The LA/P Canyon system intermittently and infrequently flows to the Rio Grande just below the Otowi Bridge and upstream of the BDD Project planned point of diversion. The LA/P

35262

watershed contains sediments with LANL-origin contamination from historic releases from LANL. These sediments could transport to the Rio Grande during infrequent intermittent flows. The LA/P Canyon watershed has been investigated under the Compliance Order on Consent with the New Mexico Environment Department, and measures (including infrastructure) to reduce the transport of contaminated sediments have been implemented.

4. The New Mexico legislature encouraged the BDD Board and DOE to memorialize their agreement to certain activities relating to the mitigation and monitoring of LANL origin water quality contaminants. The New Mexico legislature passed resolutions in 2009 and 2010, and this Memorandum will address the issues contained in those memorials.

5. In 2007, the BDD Board requested a written agreement with LANL and DOE, and this Memorandum represents a resolution of the surface water issues requested by the BDD Board. This Memorandum represents an agreement between the parties that water quality management and monitoring are mutual priorities and the activities described in this Memorandum are consistent with, and will be carried out subject to, the policies, regulations, and applicable laws that pertain to the parties.

6. This Memorandum describes sampling and reporting activities relating to LANL-origin water quality contaminants that will be performed in support of the BDD Project and the diversion of drinking water from the Rio Grande.

7. The Agreement Principles outlined in this Memorandum will be utilized by the public and the BDD Board to inform the operation of the BDD Project, and will provide information that will guide the future water quality policies and priorities of the parties.

E. AGREEMENT PRINCIPLES

1. LA/P Canyon Early Notification Gaging System

Purpose: The purpose of the early notification system is to provide real time streamflow data to the BDD Project at the following locations:

- Station E060 in Pueblo Canyon above the Los Alamos Canyon confluence,
- Station E050 in Los Alamos Canyon above the Pueblo Canyon confluence, and
- Station E110 in lower Los Alamos Canyon above its confluence with the Rio Grande.

Real-time stream flow data from these stations will enable the BDD Project to make decisions regarding facility operations, including temporarily ceasing diversion of water from the Rio Grande.

Description: The components of the early notification system include three stations each equipped with gaging (flow measurement) capabilities, real-time conveyance of stream-flow data, and automated stormwater samplers. Station E110 will also be equipped with camera capabilities or some other means of confirming real-time flow events, as permitted by the Pueblo of San Ildefonso. The early notification system also includes DOE transmittal to the BDD Project any rain gage data that DOE and/or LANL have available for DOE property in the Los Alamos Canyon watershed, as

soon as practical. The BDD Project will provide DOE a list of recipients to receive this notification electronically.

System Design/Performance Standards: Flow measurements at the gaging stations shall be measured within a trapezoidal supercritical-flow flume design as reported in "Techniques of Water-resources Investigations of the United States Geological Survey, Chapter A14, Use of Flumes in Measuring Discharge" (F.A. Kilpatrick and V.R. Snyder, 1983). This flume is designed to accurately measure stream flows between approximately 1 and 350 cubic feet per second (cfs). The system shall be capable of a low flow trigger stage of 5 cfs (and will be capable of being programmed later to a different trigger level, as agreed to by BDD and DOE in the Biannual Review Process described below). The amount of time from when a station triggers to when the notification is available to the BDD Project will be as quickly as is practical (see Appendix A for specifications).

Telemetry Performance Standard: See Appendix A.

Maintenance, Inspection, Repair and Replacement: DOE shall maintain the early notification system as necessary to support the purpose and performance standards described above. The gaging stations shall be inspected once per month and after each flow event throughout the year. Maintenance activities will be performed in accordance with LANL standard operating procedures listed in Appendix A, and includes: ensuring data logger is powered up and operational, manual data retrieval is functioning, load testing of battery and replacement of battery if needed, removing snow from solar panel in winter months if needed, removing debris from stream channel if needed, performing discharge measurement direct or indirect or ice measurement if required, checking datum and reference point levels when required. In the event that any station is not functioning, DOE shall immediately notify the BDD Project and repair the station so the time period of inoperability shall be as short as possible. The inspections and repair schedule will be contingent on safe working conditions. If the period of inoperability has exceeded or is expected to exceed 72 hours for flow measurement equipment, or exceeded or will exceed 48 hours for telemetry equipment, DOE will communicate as quickly as practical via e-mail a written description of the station's inoperability to the BDD Project, including a description of the activities and the schedule necessary to restore operability based on best estimate of availability of equipment and personnel. DOE is responsible for all equipment necessary to measure and transmit the flow information, and the BDD Board is responsible for all equipment necessary to receive the flow information.

2. LA/P Canyon Storm Water Quality Sampling System

Purpose: To provide water-quality contaminant sampling data from flow events at the stations described above in order to characterize contaminants in LA/P Canyon flows.

Description: The components of the event sampling system include three stations each equipped with automated samplers that will be triggered by the occurrence of runoff at these stations as described below. DOE will fund all sampling activities for this water quality system.

System Design/Performance Standards: The samplers shall be capable of collecting samples from flows greater than 5 cfs. The analyte list for the samplers is contained in Appendix A of this Memorandum and is generally consistent with, but contains negotiated changes to, the NMED-approved Los Alamos and Pueblo Canyons Sediment Transport Monitoring Plan for storm-water

monitoring in LA/P Canyon. Consistent with the NMED approved workplan, sampling will be conducted from June to October of each year at each of the three gages. The parties will review the available data, the analyte list and the sampling protocols (e.g. trigger stage, sample collection process, etc.) during the Biannual Review process and can consider changes in accordance with the Memorandum amendment provision and Biannual Review process described below. DOE will notify BDD of any changes to the NMED-approved workplan. The collection and processing of samples will be conducted in accordance with LANL standard operating procedures (SOPs) listed in Appendix A.. The analytical methods are established by contract with DOE's analytical service providers and will follow EPA guidelines and methods.

Maintenance, Inspection, Repair and Replacement: DOE shall maintain the event sampling system as necessary to support the purpose and performance standards described above. The samplers shall be inspected no less than weekly from June to October of each year, and after each flow event and/or 72 hours between flow events to collect samples. General maintenance will be performed in accordance with LANL SOPs listed in Appendix A, and will include ensuring sampler is powered up and operational, load testing of battery and replacement of battery, inspection of sampler pump tubing, line, and intake to ensure no air leaks, cracks or plugs, and test sample collection cycle to ensure correct programming, tripping and volumes are correct. In the event that any station is not functioning, DOE shall immediately notify the BDD project and repair the station so the time period of inoperability shall be as short as possible. The inspections and repair schedule will be contingent on safe working conditions. If the period of sampler inoperability has exceeded or is expect to exceed 48 hours, DOE will communicate as quickly as practical via email a written description of the station's inoperability to the BDD Project, including a description of the activities and the schedule necessary to restore operability based on a best estimate of availability of equipment and personnel.

3. Rio Grande at BDD Project location Sampling Program

Purpose: To provide event-based sampling of change in stage in the Rio Grande or when triggered by notification of flows in Los Alamos Canyon at the E110 Gaging Station.

Description: The components of the sampling system include a dedicated sampling station equipped with an automated sampler that can be triggered on a regular schedule, and that can also be triggered by notification of Los Alamos Canyon flows at the E110 Gaging Station. DOE will fund the installation of a sampler as described in Appendix A which will be capable of sampling E110 gage triggered events, stage actuated events and other sampling schedules. Irrespective of the procurement process used to acquire and install the sampler (see Appendix A), the BDD Board shall take title to the sampling system at no cost, and shall thereby own and operate the sampling system. DOE will fund up to 30 sampling events in the 5 year term of this Memorandum, as determined by the BDD Board, and for those analytes described in Appendix A.

System Design/Performance Standards: The analyte list for this location is contained in Appendix A of this Memorandum. The parties will review the analyte list and sampling protocol during the Biannual Review process and will make changes in accordance with the Memorandum amendment provision and Biannual Review process described below. The parties will exchange information and seek to keep the Appendix A analyte list generally consistent with, but containing negotiated changes to, the NMED sampling programs on the Rio Grande, however such changes will require

the consent of both parties. The BDD Board will be responsible for the collection of samples in accordance with standard operating procedures to be developed with DOE and NMED.

Maintenance, Inspection, Repair and Replacement: DOE will fund the maintenance, inspection, repair and replacement of the sampler as described in Appendix A. The BDD Board shall own and operate the sampling system, and thereby be responsible for the maintenance, inspection, repair and replacement of the system and its components.

4. Rio Grande Contaminant Fate Analysis

DOE will fund for a one year period the analytes listed in Appendix A for: 1. the raw Rio Grande water at the BDD Project location, 2. the sediment return line of the BDD Project and, 3. the finished water produced by the BDD Project Water Treatment Plant. These samples will be monthly composites of flow weighted daily sampling. The BDD Board will be responsible for the collection of samples in accordance with standard operating procedures to be developed with DOE and NMED.

5. Data Sharing

DOE shall be responsible for all costs associated with sampling analyses described in this Memorandum.

Analytical results of E050 and E060 sampling will be made available to the BDD Project via the RACER database (the Risk Analysis, Communication, Evaluation, and Reduction project is managed by the NM Community Foundation) within 30-60 calendar days after DOE receives sampling results from the analytical laboratory. Analytical results for E110 sampling will be made available as soon as practicable within the constraints of the agreement between DOE and Pueblo de San Ildefonso governing the collection and reporting of such data. Paper copies of the data will also be transmitted to the BDD Project within 90 days after DOE receives sampling results and validation from the analytical laboratory.

Analytical results of Rio Grande at BDD Project location and Rio Grande Contaminant Fate sampling programs will be provided directly to the BDD Project and DOE as soon as they are available.

6. Coordination

DOE and the BDD Project Manager will coordinate with Pueblo de San Ildefonso and the New Mexico Environment Department on any issues related to the implementation of this Memorandum, and will engage in any consultation required to accomplish the purposes of this Memorandum.

7. BDD Project Rio Grande Diversion Records

The BDD Project will make records available to the DOE when diversions have ceased, and this information shall be used in the Biannual Review process to identify changes to Appendix A, however such changes will require the consent of both parties.

8. Biannual Review

The BDD Project Manager and DOE staff shall meet twice annually to review the functioning of the early notification system and sampling programs, in March and September of each year. During this Biannual Review process, changes can be made only to Appendix A (with a presumption that such changes will be consistent with changes to the NMED approved sampling plan for LA/P Canyons), provided however that such changes will require the consent of both parties. The parties shall endeavor to keep the sampling conducted pursuant to this Memorandum consistent with changes to NMED sampling programs, subject to the provisions that govern changes to Appendix of this Memorandum. The Los Alamos Site Office Environmental Program Manager and BDD Project Manager are authorized to make such changes, provided a written Appendix A amendment is approved and executed by the authorized representatives of the parties. Any changes to this Memorandum outside of the scope of Appendix A must be made through an amendment to this Memorandum as described below and executed in the same manner as this Memorandum.

F. Contacts

All notices, correspondence and communication arising under this Memorandum shall be provided to the representatives listed below, and any notice, demand, request, or information authorized or related to this Memorandum shall be deemed to have been given if mailed (return receipt requested), hand delivered or faxed (with confirmation of transmittal) as follows:

DOE
Los Alamos Site Office
George Rael
Manager
Environmental Projects Office
Los Alamos Site Office/NNSA/DOE
phone: 505-606-0397
cell: 505-690-0734
grael@doeal.gov

with a copy to:
DOE Counsel
Silas DeRoma
phone: 505-667-4668
email: sderoma@doeal.gov

BDD Board
BDD Project Manager
Rick Carpenter
Sangre de Cristo Water Division, City of Santa Fe
801 San Mateo Road
Santa Fe, NM 87505
cell: 505-660-5696
email: rrcarpenter@santafenm.gov

with a copy to:
BDD Board Counsel
Nancy Long
Long, Pound and Komer
2200 Brothers Road
PO Box 5098
Santa Fe NM 87502
cell: 505-470-2158
email: nlong@nm.net

G. Period of Agreement, Modification, or Termination

1. This memorandum is effective upon the signature of the BDD Board and DOE as shown below. This agreement shall expire five years from the date of the last signature, or may be terminated earlier as described below.

2. The BDD Board and DOE may modify this Memorandum by written amendment and in the same manner as this Memorandum was executed. This Memorandum may not be amended or superceded by other formal agreements without the consent of the parties.

3. The BDD Board and DOE may terminate this Memorandum by mutual written consent, and a party's intent to seek termination shall be provided to the representatives listed with 90 days notice.

4. If this Memorandum has not been terminated before the date of expiration and the parties agree, this Memorandum shall continue without interruption in full force and effect until amended, superceded or terminated by the parties.

H. Other Provisions

1. Nothing in this Memorandum is intended to conflict with current requirements of the parties or applicable laws. Any such conflicting term shall be invalid, but the remainder of the Memorandum shall remain in effect. If a term is deemed invalid, the parties shall immediately review the Memorandum and take appropriate action, including amendment or termination of the Memorandum. The activities described in this Memorandum are consistent with, and will be carried out subject to, all known policies, regulations, and applicable laws that pertain to the parties.

2. If the parties disagree over how to interpret this Memorandum, representatives of the parties shall notify and present their differences to each other in writing in order to reconcile the dispute. If the parties fail to resolve their differences within 30 days, the BDD Project Manager and Los Alamos Site Office Environmental Projects Office Manager shall prepare a written description of the dispute and the BDD Board Chair and DOE Environmental Programs Manager shall meet to reconcile the dispute. These representatives shall use efforts such as negotiation, facilitation and mediation to resolve the dispute.

3. This Memorandum in no way restricts the parties from participating in any activity with other public or private agencies, organizations, or individuals.

4. Activities described in this Memorandum are subject to the availability of appropriated funds. The BDD Board and Los Alamos Site Environmental Projects Office Manager shall make the appropriation of funds for the activities described in this Memorandum a priority when seeking regular or project specific funding requests.

5. This Memorandum describes the basis on which the parties will cooperate on the topics described herein. This Memorandum is not a financial obligation that serves as a basis for expenditures, and any financial obligations necessary to carry out the activities described herein shall be addressed in other documents internal to each party. Expenditures of funds, human resources, equipment, supplies, facilities, training, public information, and technical expertise will be provided by each party as necessary to fulfill its obligation under this Memorandum.

6. This Memorandum is neither a fiscal nor a funds obligation document. Nothing in this Memorandum authorizes or is intended to obligate the parties to expend, exchange, or reimburse funds, services, or supplies, or transfer or receive anything of value. Any requirement for the payment or obligation of funds by DOE established by the terms of this Memorandum shall be subject to the availability of funds and Secretarial discretion, and no provision herein shall be interpreted to require obligation or payment of funds in violation of the Antideficiency Act, 31 U.S.C. §1341.

7. This Memorandum is not legally enforceable and shall not be construed to create any legal obligation on the part of either party. This Memorandum shall not be construed to provide a private right, or cause of action, for or by any person or entity.

NOW, in witness whereof, each of the BDD Board and DOE has caused this Memorandum to be executed and delivered by its duly authorized representatives as of the last date shown below,

BDD Board

_____

Rebecca Wurzburger, BDD Board Chair, DATE

DOE

_____

Dr. Ines Triay, Assistant Secretary for Environmental Management, Department of Energy, DATE