

SITE HEALTH AND SAFETY PLAN

Carbon Ore, Rare Earth, and Critical Minerals (CORE-CM) Assessment of San Juan River-Raton Coal Basin, New Mexico

**Bernalillo, Catron, Cibola, Colfax, McKinley, Rio Arriba, San Juan, Sandoval,
Santa Fe, Socorro, and Valencia Counties, New Mexico**

Cooperative agreement number is #DE-FE0032051

**Modified for use
October 2021**

SITE HEALTH AND SAFETY PLAN

San Juan Basin & Raton Basin REE Study

POLICY

The policy of the project is to provide a safe and healthful workplace for all employees, subcontractors, and clients. Safety shall take precedence over expediency or short cuts. It is a condition of employment that all employees and subcontractors work safely and follow established safety rules and procedures. Each individual is responsible for performing tasks using safe procedures, assuring that team members perform tasks using safe procedures, assuring that tasks are performed in as safe and healthful environment as practical, and reporting questionable procedures and potential hazardous work environments to the team Safety Officer so that corrections can occur before injuries or property damage occurs.

This HASP complies with applicable Occupational Safety and Health Administration (OSHA), and Environmental Protection Agency (EPA) policies and procedures.

SCOPE

DOE project entitled Carbon Ore, Rare Earth, and Critical Minerals (CORE-CM) Assessment of San Juan River-Raton Coal Basin, New Mexico to sample coal and associated deposits for REE and other critical minerals.

This Site Safety Plan is for use in Bernalillo, Catron, Cibola, Colfax, McKinley, Rio Arriba, San Juan, Sandoval, Santa Fe, Socorro, and Valencia Counties, New Mexico. Any departures or deviations from the protocols outlined here will be written, attached to this Site Safety Plan as an addendum, and will be approved by project management prior to implementation.

This plan is based on the regulations and recommendations of Mine Safety and Health Administration (MSHA), Occupational Safety and Health Administration (OSHA), National Institute of Occupational safety and Health (NIOSH), Environmental Protection Agency (EPA), and Department of Transportation (DOT), and NM Health Department for COVID-19 safe procedures. Every site employee, contractor or subcontractor must comply with all provisions of this plan and focus constant attention on preventing loss or damage to any persons, property, process, or the environment.

SITE ACCESS

Access to the field areas shall be coordinated through Virginia McLemore. Maps of the field area are in Appendix A.

JOB DUTIES

The team project manager (Virginia McLemore) supervises all field activities. Other team members will participate in fieldwork as well. In addition, graduate students and undergraduate

students will be active in fieldwork. It is not necessary for all team members to be present during the fieldwork.

All personnel and team members must adhere to these health and safety procedures during the performance of their work. Each person is responsible for completing tasks safely, and reporting any unsafe acts or conditions to his or her immediate supervisor. No person may work in a manner that conflicts with the letter or the intent of, or the safety and environmental precautions expressed in these procedures. **SEE APPENDIX D FOR SPECIFIC SAFETY PROCEDURES FOR COVID-19.**

PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment (PPE) is required to safeguard site personnel from various hazards. Varying levels of protection may be required depending on the level of and the degree of physical hazard.

- Proper work clothing appropriate for the weather condition (cold, direct sun, etc) and proper footwear is required (close toed boots or shoes). **Masks are required if more than one non family member is present. Avoid contact with the public (Appendix D).**
- Hard hats and proper lighting are required to enter any underground structure. To enter an underground opening, a gas detector may be available to check for oxygen and presence of other hazardous gasses such as CO and CO₂ in areas of poor ventilation. **STUDENTS ARE NOT ALLOWED UNDERGROUND ALONE AND MUST BE AUTHORIZED BY V.T. McLEMORE.**
- There will be no work activities around any machinery or anything with moving parts.
- Areas of potential fall hazards are excluded from fieldwork. Therefore, no fall protection harnesses are required. **DO NOT APPROACH SHAFTS OR THE TOPS OF HIGWALLS, THIS IS WHERE FALLS COULD OCCUR.**

VISIT CHECKLIST

A Checklist for initial mine feature inventory is given in Table 1 below.

Table 1 - Visit Checklist

- Inform Virginia McLemore of the visit in advance. Discuss objectives of visit. Students will conduct field investigations in teams of two and one will be assigned supervisor duties. Safety procedures and issues will be reviewed prior to the start of the work on a regular basis. NMT Travel forms must be completed and signed.
- Everyone must provide insurance carriers to Virginia McLemore and Connie Apache (example State Risk Management for New Mexico Tech employees) and contact information in case of emergency. All students and New Mexico Tech faculty and staff are insured for injuries under state workman's compensation.
- Vehicles must have a fire extinguisher, first aid kit, and blocks/chocks for tires.
- If there is an incident, a report and an investigation are completed (Appendix B).

- If you are sick, stay home.
- No students are allowed to enter any underground workings, unless accompanied by or authorized by V.T. McLemore (who has many hours of underground experience and training). Shafts, declines, and winzes will not be entered. Hard hats, lights, closed toed shoes and long pants must be worn when investigating underground workings. Visual analysis of the back (ceiling) of the adit will be conducted to determine its condition. Other requirements include:
 - Never scream or yell inside a mine.
 - Check floors for winzes, or weak construction.
 - Never depart or stray from the group.
 - Check for fresh fallen rocks on the floor, rocks that are on the floor indicate a weak roof.
 - Check the ribs or sides of the mine for rock bursts.
 - Observe pillars for robbing or cracks.
 - No repelling.
 - Observe and respect all living creatures in a mine.
 - Take only pictures, leave only footprints.
 - Do not litter.
 - Never touch wood beams, rock walls or ceilings.
 - Once inside, do not damage, don't take anything but samples.
 - Check batteries before trip.
 - Students do not work in the field alone.
 - Do not enter workings greater than 30 degrees.
 - If there is an incident, a report and an investigation are completed.
 - No smoking in the field. No smoking allowed in NMT vehicles!
 - NO BOULDER ROLLING DOWN ROCK PILES OR ANY SLOPES!
 - NO HORSE-PLAY OR ANY ROUGH ACTIVITIES
- Telephone contacts are in Appendix C.

SITE DESCRIPTIONS

Location

The project area is located within Bernalillo, Catron, Cibola, Colfax, McKinley, Rio Arriba, San Juan, Sandoval, Santa Fe, Socorro, and Valencia Counties. (Appendix A).

Hazards

- Terrain is steep, loose, rough or uneven. Slips and falls are the main hazard. Use of walking sticks is recommended. Watch footing. Some areas are heavily forested. Look for trails through the forest.
- Strains/sprains if material handling procedures and lifting techniques are not properly conducted. Proper handling procedures (see MSHA and OSHA web sites) will be reviewed at the beginning of each shift.
- Be aware of heat or cold stress, personnel are encouraged to drink copious amounts of water and gator-aide to avoid heat stress. On-site personnel will monitor each other, via

the buddy system, for signs of heat stress such as faintness, elevated heart rate, flushed dry skin, and nausea. When the air temperature is below 35 °F, employees must wear clothing for warmth.

- **Heat Cramps:** heavy sweating and inadequate electrolyte replacement cause heat cramps. Signs and symptoms include muscle spasms and pain in the hands, feet, and abdomen.
- **Heat Exhaustion:** Heat exhaustion occurs from increased stress on various body organs. Signs and symptoms include pale, cool, moist skin; heavy sweating; dizziness; nausea; and fainting.
- **Heat Stroke:** Heat stroke is the most serious form of heat stress and should always be treated as a medical emergency. The body's temperature regulation system fails, and the body temperature rapidly rises to critical levels. Immediate action must be taken to cool the body before serious injury or death occurs. Signs and symptoms of heat stroke include red, hot, usually dry skin; lack of, or reduced perspiration; nausea; dizziness and confusion; strong, rapid pulse and confusion; and coma.
- **Lightning hazards.** There is little you can do to substantially reduce your risk if you are outside in a thunderstorm. The only completely safe action is to get inside a safe building or vehicle. Avoid open fields, the top of a hill or a ridge top.
- Stay away from tall, isolated trees or other tall objects. If you are in a forest, stay near a lower stand of trees.
- If you are in a group, spread out to avoid the current traveling between group members.
- If you are camping in an open area, set up camp in a valley, ravine or other low area. Remember, a tent offers NO protection from lightning.
- Stay away from water, wet items, such as ropes, and metal objects, such as fences and poles. Water and metal do not attract lightning but they are excellent conductors of electricity. The current from a lightning flash will easily travel for long distances.
- Fire hazard. Leave the area immediately and report to 911. Do not try to put out wildfires.
- Slips, falls, hypothermia.
- Biological or wildlife hazards may include venomous arthropods (i.e., insects, spiders, ticks, scorpions, and centipedes), snakes and other pests such as ants, fleas, mosquitoes, and wasps; pathogens such as bubonic plague and Hantavirus and rabies from bats that may frequent abandoned mines. Leave critters alone!

Topography

The San Juan Basin is a large structural basin located in northwestern New Mexico. The Basin is an asymmetrical depression on the Colorado Plateau province. It is cut by the San Juan River. Elevation is approximately 7290 feet above sea level.

The Raton basin is a structural basin, located in northern New Mexico. The basin is a topographic high that is dissected by flowing streams such as the Purgatoire River. It is located at the foothills of the Rocky Mountains. Elevation is approximately 7834 feet above sea level.

Weather Conditions

Daily weather conditions consisting of sky, temperature, dew point, relative humidity, barometric pressure, wind direction and velocity, ridge top winds, chance of precipitation, LAL, and Haines Index are listed on the National Weather Service Forecast for the area.

ENVIRONMENTAL CONCERNS

There are mine features within the area and potential threatened and endangered species. There are no other expected environmental concerns.

ARCHEOLOGICAL CONCERNS

Archeological sites, such as foundations and buildings can be hazardous, i.e. some structures are unstable and wildlife can inhabit them. Do not enter or climb on archeological sites. Only survey these sites if it can be done safely and without disturbance to the features.

HAZARD EVALUATION Use common sense. If it is unsafe, do not do it!

Primary Hazard		Physical Concern
Steep, winding, narrow roadways		Vehicle accident
Steep, uneven, unconsolidated footing		Slips and falls
Steep, unconsolidated slopes		Possible soil/rock falls
Elevation		Altitude sickness
Unstable adit/pit surfaces or ceilings		Slips, falls, cave-ins
	Chemical	
None present		n/a
	Environmental	
Ambient temperature/ humidity		Heat stress/ dehydration /hypothermia
	Biological	
None present		n/a
	Wildlife	
Avoid disturbing any wildlife encountered in the area.		Report any unusual behavior displayed by any form of wildlife to Safety Officer
Maintain a safe distance. Most animals will leave the area when humans appear.		

COMMUNICATIONS

Parties entering the project area shall have at least one cell phone. Do not rely on cell phone coverage as it is spotty. In some areas even though cell phone calls cannot be transmitted, text messages and emails can often go through. **Cell phone coverage is available at most places in the San Juan and Raton Basins, except in steep valleys and cell phone service is spotty on most Native American Reservations.**

POTABLE WATER

Work parties assigned to the field area should carry potable water.

AIR MONITORING

Air monitoring is not required at this time.

EMERGENCY PROCEDURES

Injury/Illness in the area

Any injury or illness occurring in the project area shall be immediately communicated to Virginia McLemore in order that it may be responded to in the degree necessary. This includes everything from minor first aid treatment to the more serious injuries involving the 911 EMS systems.

Any medical emergency shall receive immediate attention and appropriate response.

New Mexico Tech Contacts

Insurance carrier: State Risk Management (good only for New Mexico Tech employees)

Contacts at New Mexico Tech (good only for New Mexico Tech employees)

Human Resources	Angie Gonzales	575-835-5643
New Mexico Bureau of Geology	Connie Apache	575-835-5302
Team Project Manager	Virginia T. McLemore	
Office	575-825-5521	
Home	575-835-3823	
Cell phone	575-517-0525	

Before leaving Socorro exchange contact information for everyone on the team.

Local Contacts

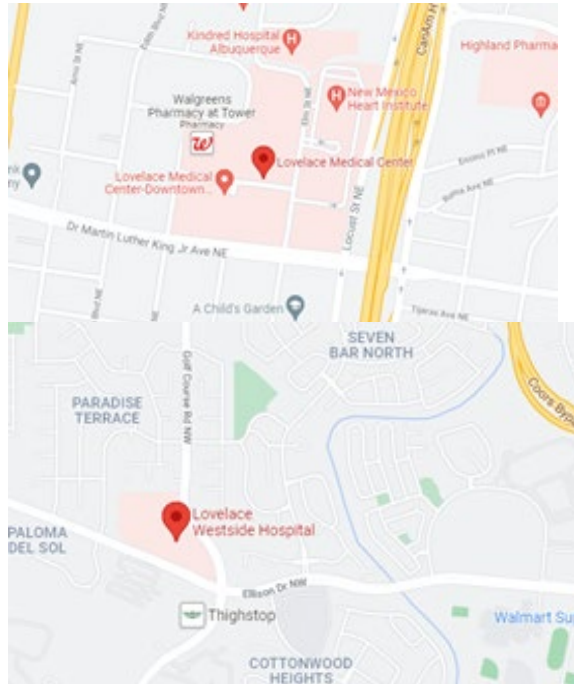
State Police Department EMERGENCY 911
EMS EMERGENCY 911

Lovelace Medical Center

601 Dr. Martin Luther King Jr Ave NE
Albuquerque, NM 87102
(505) 727-8000

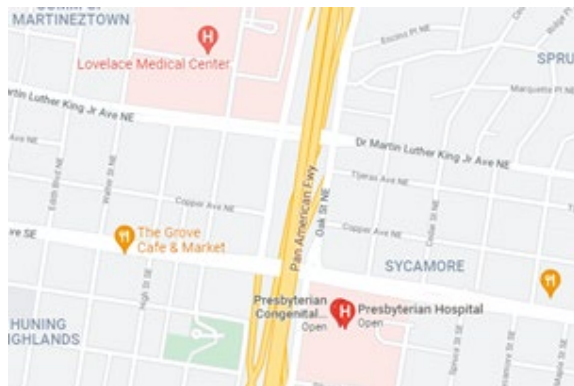
Lovelace Westside Hospital

10501 Golf Course Rd NW
Albuquerque, NM 87114
(505) 727-2000

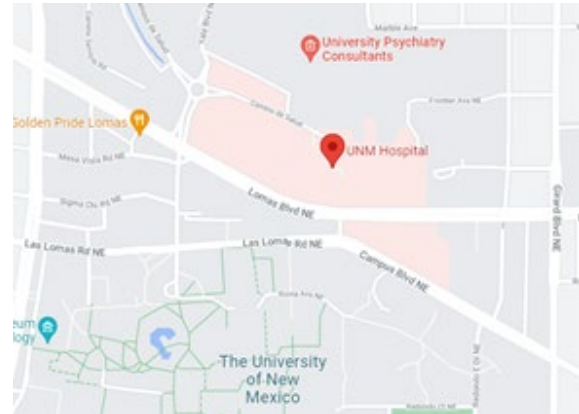


Presbyterian Hospital

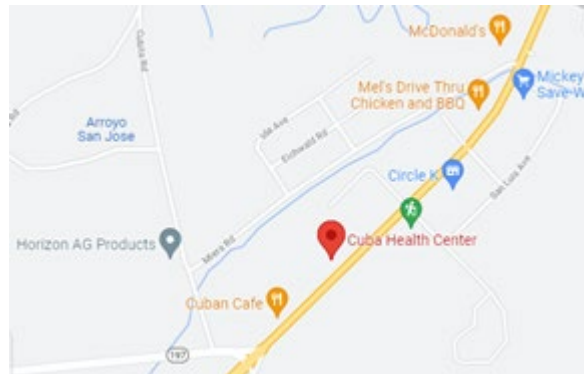
1100 Central Ave, SE
Albuquerque, NM 87106
(505) 841-1234



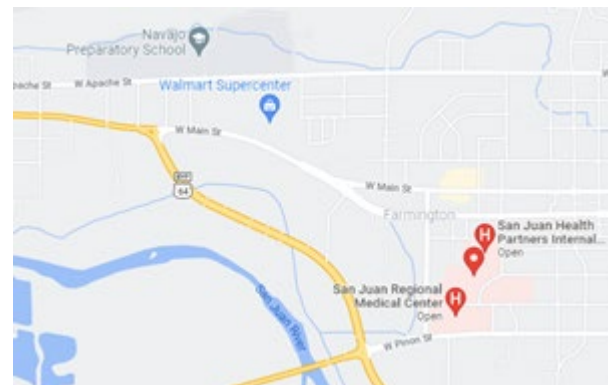
University of New Mexico Hospital
2211 Lomas Blvd NE
Albuquerque, NM 87106
(505) 272-2111



Cuba Health Center
6349 U.S. Highway 550
Cuba, NM 87013
(575) 289-3291



San Juan Regional Medical Center
801 W Maple St
Farmington, NM 87401
(505) 609-2000



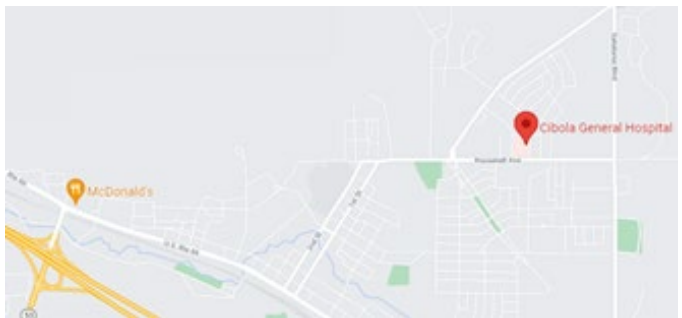
Rehoboth McKinley Christian Health Care

1901 Redrock Dr.
Gallup, NM 87301
(505) 863-7000



Cibola General Hospital

1016 E. Roosevelt
Grants, NM 87020
(505) 287-5300



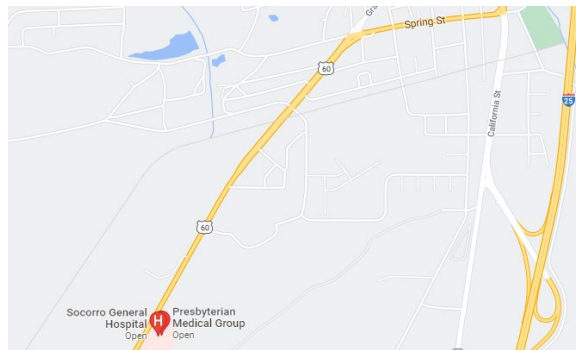
Miners Colfax Hospital

200 Hospital Drive
Raton NM 87740
(575) 445-7700



Socorro General Hospital

1202 Highway 60 West
Socorro, New Mexico 87801
575-835-1140



Incident Reports

If an injury occurs, administer first aid, call 911 if needed, and report the incident to Virginia McLemore as soon as practical. All injuries, vehicle accidents, and incidents with potential for injury or loss will be investigated, including near misses, including any incidents that may occur off the property while traveling to the field area. Appropriate corrective measures will be taken to prevent recurrence, and to continually improve the safety of the workplace. The field team leader must fill out an Incident Report Form for any incident that occurs during field activities. In case of injury or property damage, all work ceases until the incident is investigated, the causes of the incident are determined, an action plan is in place, and safety and health hazards are corrected. The Incident report form in Appendix B of this Site Safety Plan shall be used to document safety incidents. All incidents will be followed by an action plan and follow-up activities as needed. The form will be copied in triplicate and will be sent as soon as possible, but in no case more than 24 hours, to:

Virginia McLemore, Project Field Manager and Project Safety Officer
Nelia Dunbar, Director, NMBGMR

If an incident involves a vehicle, a copy must be submitted to Brian Wheeler.

APPENDIX A

AREA MAPS

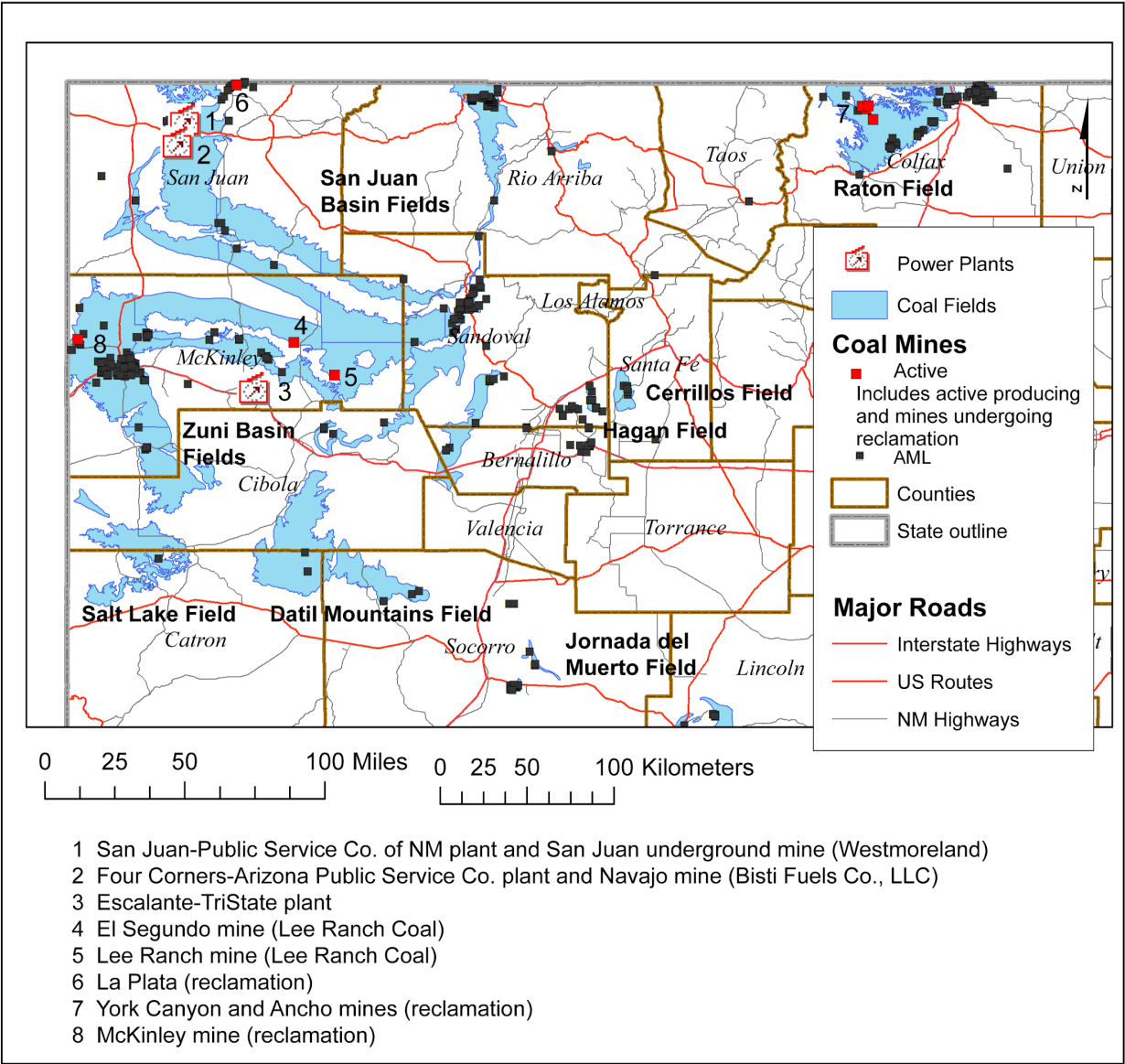


FIGURE 1. Topography of the DOE of the San Juan and Raton Basin area with coal fields of interest (light blue polygons).

APPENDIX B

Incident Report Form

Incident Investigation Report

<u>Location</u>					
Gallinas Mountains Operations <input checked="" type="checkbox"/>					
<u>Incident Type</u>					
Injury / Illness	<input type="checkbox"/>	Property Damage	<input type="checkbox"/>	Fire	<input type="checkbox"/>
Environmental	<input type="checkbox"/>	Process Loss	<input type="checkbox"/>	Contractor	<input type="checkbox"/>
Near Miss <input type="checkbox"/>					
Other _____					
<u>Incident Severity</u>					
Actual Loss Severity	Minor	<input type="checkbox"/>	Serious	<input type="checkbox"/>	Major
Potential Loss Severity	Minor	<input type="checkbox"/>	Serious	<input type="checkbox"/>	Major
Probability of reoccurrence	Minor	<input type="checkbox"/>	Serious	<input type="checkbox"/>	Major

Identifying Information

Department	Location of Incident		Reported to:	
Employee involved	Date of incident	Date Reported	Time of Incident	Time reported
Employee Id#	Title		Supervisor	
Sent to Doctor / Where?	Type of Property /Environmental Damage		Witness Name	
Nature of Injury or Illness	Nature of Loss		Amount of Spill / Release	
Part of body affected	Equipment involved			
Safety Notified Date _____ Time _____	Person in control of activity at time of occurrence			
Time in present position		Estimated cost		
Describe how the event occurred (Include Place, Work Being Performed, Physical Surroundings, PPE, Process, Extent of Harm) (Attach sketch if necessary)				

<u>Cause analysis</u>
Immediate Causes (These include acts (personal actions) and / or conditions, job site circumstances).
Basic Causes (These include the personal and /or job factors which allow the immediate causes to occur)
Additional Observations (List additional observations related to the incident.)
Corrective actions (List suggested actions to address immediate and basic causes and additional observations.)

Investigating Committee	Date
Attachments	
Supervisor’s Signature	Department Head’s Signature
Print Name	Print Name
Date	Date

APPENDIX C

TELEPHONE CONTACTS

Characterization Team Leader Dr. Virginia T. McLemore 575-835-5521 (office)
575-835-3823 (home)
575-517-0525 (cell)

Brian Wheeler (mechanic) 575-418-8730 (cell)

Connie Apache 575-835-5302 (office)

Plan Approved by:

Position	Printed Name	Signature	Date
Project Safety Officer	Virginia McLemore		1/26/2020
Project Safety Officer	Virginia McLemore		5/15/2020

APPENDIX D

New Mexico Bureau of Geology & Mineral Resources



A DIVISION OF
NEW MEXICO INSTITUTE OF MINING & TECHNOLOGY
801 Leroy Place
Socorro, NM 87801-4796
575-835-5302 Office/575-835-6333 Fax

May 15, 2020

New Mexico Bureau of Geology and Mineral Resources General Field Protocols

In response to the ongoing COVID-19 pandemic, the New Mexico Bureau of Geology and Mineral Resources (NMBG) has established protocols to safely carry out field work, which is a fundamental part of our mission. These field work protocols are designed to offer protection for our staff and members of the public who we may encounter during the course of our duties, and would be built on top of our usual field safety protocols. These guidelines will remain in place and will be periodically reviewed and revised as conditions change and new guidance is provided by state or New Mexico Tech leadership.

Governor's Phase 1A – Reopening of New Mexico- Overview

- Field work is permitted upon approval from your supervisor or Program Manager.
- Overnight travel will be permitted if staff can camp and maintain a 6-foot social distance from other staff or campers.
- Social distance or masking will apply during vehicular travel.
- Access private land only if land owners can be notified in advance and provide permission for access.
- Evaluate field data collection needs and focus on highest priority field work during “Phase 1A” conditions.
- Usual travel documentation procedures must be followed.

Working independently and maintain social distance:

- Wherever possible, staff will carry out field work independently, or with a household member. If this is not possible, limit contact and maintain a minimum of a 6-foot social distance.
- If camping overnight, observe social-distancing protocols, and wear masks whenever possible.
- During field activities that require 2 or more people to work in close proximity, masks will be worn.
- Interactions with the public should be avoided whenever possible. In field work which requires interaction with the public, masks also must be worn for the safety of all involved.

Transportation:

- Field personnel will take separate vehicles to the project site, unless field work can be done in a vehicle large enough to maintain a 6 foot spacing between personnel. In the

latter case, masks will be required in the vehicle. (Members of the same household may share a field vehicle without masks or social distancing.)

- Wipe down the vehicle with disinfectant prior to and after use. Disinfectant spray consists of a 2% bleach solution (as recommended by the Center for Disease Control and Prevention (CDC) <<https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/cleaning-disinfection.html>>. For Bureau staff, bottles of disinfectant can be borrowed from, and returned to, Brian Wheeler.
- If possible, have all refueling done on the NMT campus. If field personnel must refuel vehicles during field work, wear appropriate PPE when at a gas station and disinfect hands and vehicles as needed. If possible, avoid gas station convenience stores and bathrooms.

Overnight stays and food:

- Overnight stays are not permitted during the period of “Phase 1A” conditions unless camping is possible.
- Where possible, bring food and drink from home to avoid having to visit grocery stores during field operations.

Field equipment:

- Avoid sharing field equipment. If equipment is shared, disinfect between uses and when finished using a disinfectant spray consisting of a 2% bleach solution.

Sample Collection:

- Samples collected should be stored in staff offices, not in common rock lab areas. Only move samples to common use laboratory spaces when they are ready for processing.

Deviating from the above protocol

- Deviating from the above protocol requires approval from your supervisor and NMBG Director. Submit in writing any alternative plans for field work.

Personnel health:

- Per CDC guidelines, NMBG personnel with any symptoms associated with COVID-19 must not come to work nor come into contact with fellow NMBG personnel or the public. Anyone who has traveled internationally should self-quarantine for 14 days. Follow CDC guidelines for self-quarantine and/or self-monitoring if you have been exposed to an individual with coronavirus < <https://www.cdc.gov/coronavirus/2019-ncov/php/publichealth-recommendations.html> >
- All NMBG personnel are instructed to follow the advice from the CDC and guidance of their healthcare provider if they are feeling ill.

Current Geographic Restrictions:

See: <https://cv.nmhealth.org/2020/05/13/stay-at-home-order-extended/>