

Midwestern State University Dalquest Desert Research Station Operations and Safety Manual

The Dalquest Desert Research Station (DDRS) was donated to Midwestern State University for the sole purpose of undergraduate, graduate and faculty research aimed at understanding and describing the operation of a desert ecosystem. It offers a valuable opportunity to study the geological and biological features of a relatively undisturbed portion of the Chihuahuan desert. This is a fragile ecosystem that is susceptible to degradation due to excessive use. In an effort to maintain the undisturbed character of the DDRS Midwestern State University has established guidelines for its use. This manual sets forth those guidelines along with instructions for proper operation of buildings and infrastructure associated with the DDRS. The welfare of visitors to the site is of primary importance and policies promoting the safe use of the site are included as well.

The DDRS is an extension of Midwestern State University in Wichita Falls, TX. All faculty, students, and visitors must conduct themselves in accord with policies and procedures of the University and those outlined in this manual.

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Spring 2016
Revised March 2021

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I. Mission and History of DDRS

1.1 Mission Statement

The Dalquest Desert Research Station (DDRS) is a living laboratory for the advancement of knowledge through ecological research, education and stewardship of this pristine region of the northern Chihuahuan Desert. Midwestern State University (MSU) manages it as a natural area and a year-round research station available to scientists and graduate students from MSU and elsewhere. The mission of the DDRS is to use field research to increase understanding of the Chihuahuan Desert ecosystem and to foster ecosystem stewardship through training, education, and outreach.

1.2 History of the Site

In 1968, Dr. Walter Dalquest, a longtime professor of biology at MSU, purchased two sections of land from the Bandera Ranch. His major intent for purchasing the land was to hunt desert mule deer. This was rugged canyon land that had been cut by erosion of ash that was deposited 50 million years ago. It wasn't long after his purchase that he realized the scientific value of the site because of the Eocene fossil deposits and rare flora and fauna that are unique to the Chihuahuan Desert. In 1996, Dr. Dalquest and his wife donated these two sections of land to MSU. In 2004 Dr. Dalquest's widow, Rose Carpenter Dalquest, donated the funds for MSU to purchase an additional two and two-thirds sections of adjoining land from the State of Texas. The deed restrictions state that the land is to be used for scientific research for undergraduate- and graduate-level college students, and faculty members.

1.3 Field Station Construction

Under the leadership of Dr. Jesse Rogers, President of MSU from 2001 – 2015, the University was able to secure private funds from Mr. Joe B. Hood, Mr. and Mrs. Robert D. Gunn, the Ruth Ann Kimbell Foundation and Mrs. Robert L. Bolin to construct the field station. It was completed with the assistance of the architect, Mr. Dick Bundy of Bundy, Young, Simms and Potter, Inc. from Wichita Falls, TX and the contractor, Mr. Glen Perkins of Perkins Construction Services of Alpine, TX. The construction started in mid-summer of 2014 and was completed in a period of one year.

II. Location, facilities and contact information

2.1 Location

The site is located in the northern Chihuahuan Desert and consists of approximately 1200 ha (3000 ac) of property owned by MSU. The emergency address is 2039 Bandera Mesa Rd, Alamito, Texas, 79843 (not a mail delivery address). The Coordinates for the station are 29° 33' 47.7" N, 103° 48' 20.5" W; elevation is 1273.45 m (4178 ft.). The location is approximately 52 miles SSW of Marfa and the property is bisected by the Presidio and Brewster County line. The southern boundary of the site shares a border with the northeast corner of the Big Bend Ranch State Park (see Appendices 1a and 1b). Because road conditions may be poor, a 4-wheel drive vehicle is recommended for travel to and from the site.

2.2 Building complex

The facility includes an 800 sq. ft. utility building that provides vehicle storage, battery storage for the photovoltaic collection system, and a full restroom. An anaerobic septic system, water well, water storage tank, and two liquid propane gas tanks serve the utility building and the main building of the field station. The main building is a 2000 sq. ft. structure designed as a building within a building. The exterior shell is corrugated galvanized metal on a concrete slab with a solid back blocking extreme afternoon heat from the southwest. The front and both sides of the building feature covered porches for shade and shelter from precipitation. A screened porch on one side provides protection from pests for relaxation or outdoor sleeping. The building has no air conditioning, but does have ceiling fans. Windows are opened at night to draw in cool air with an exhaust fan. Windows are closed in the mornings, leaving the living space comfortable with the use of ceiling fans until the evening. In the winter this process is reversed so that sun-warmed air maintains comfortable temperatures in the building during daylight hours.

The main building facilities include two restrooms with showers, a dorm room, a conference/computer room, a laboratory, and a kitchen/dining area. The building is equipped with LP gas for cooking and hot water. Big Bend Telephone provides reliable internet access.

2.3 Management

DDRS is managed by the faculty and staff of the MSU Department of Biology.

2.3.1 Mailing address and phone

DDRS Field Station
Midwestern State University
Department of Biology
3410 Taft Boulevard
Wichita Falls, TX 76308-2099
940 397-4163

2.3.2 Responsible personnel

| Title | Name | Email address | Phone |
|----------------------|--------------------|--|------------------|
| DDRS Director | Dr. William Cook | William.cook@msutexas.edu | 940 397-4192 (o) |
| Chair Biology | Dr. Mike Shipley | Michael.shipley@msutexas.edu | 940 397-4517 (o) |
| Secretary Biology | Ms. Kathy Everett | Kathy.everett@msutexas.edu | 940 397-4163 (o) |
| Chair Geosciences | Dr. Jonathan Price | Jonathan.price@msutexas.edu | 940 397-4288 (o) |
| Faculty Biology | Dr. Charles Watson | Charles.watson@msutexas.edu | 940 397-4255 (o) |
| Faculty Biology | Dr. Raymond Willis | Raymond.willis@msutexas.edu | 940 397-4408 (o) |

Maintenance questions and questions about day-to-day operations should be submitted to the director of the station.

Questions regarding use of the site, including visit scheduling and permission to collect should be submitted to the director who will coordinate visits.

Questions about shipping items to the site or ordering of materials should be directed to the Department of Biology chair and the secretary of the Department of Biology.

Questions about the natural history of DDRS or ongoing research should be submitted to the DDRS director or to the relevant faculty researcher(s).

III. Administrative procedures

3.1 Extended Campus of Midwestern State University

The DDRS is essentially a remote campus. The station is governed by the administrative policies of the main campus. These policies may be found the [human resources policy manual](#).

3.2 Access to DDRS

Access to the site for an unapproved purpose or by unauthorized individuals is not permitted. Deed restrictions specify that the site may only be used research and educational purposes only. Visitors under 18 years are not encouraged and exceptions must be approved by the DDRS Director.

3.3 Agreement to Assume Risk and Release from Liability

Access to the DDRS by individuals or groups will be allowed only after each individual signs an “Agreement to Assume Risk and Release from Liability” form. It is the responsibility of the group leader to collect these forms and submit them to the Department of Biology at MSU prior to accessing the site. A copy of this form is available in Appendix 2.

3.4 Vehicle Use

Vehicles are permitted only on existing roads and parking must be in designated areas. No off road motorized vehicles of any type are allowed. No pack animals (burros, mules or horses) are allowed on the property. Travel must be by foot on established trails whenever possible.

3.5 Financial Responsibility

Expenses for travel to and from the site and accommodations for time spent at the site will be borne by visitors and must be for approved or appropriate purposes only. Personal medical and vehicle insurance are the responsibility of visitors to the site. MSU strongly encourages all visitors to DDRS to have medical insurance to cover possible accident or illness. Damage to the facility, either the main structures, operating systems, or personal property present in the facility, are the responsibility of the party/parties causing the damage.

3.6 Removal of resources

Removal of resources from the site is permitted only for the purpose of scientific sampling or the preservation of voucher specimens as part of an approved research project. **Collecting of Indian artifacts, rocks, minerals, animals or plants for a personal collection is prohibited.**

Guidelines for scientific collecting are described in Section VI of this manual.

3.7 Preservation of ongoing activities at DDRS

Every effort must be made to avoid disturbing existing research projects. When using the site (including looking for animals under rocks, dead cactus parts, decaying wood, etc.), all habitat must be restored as near as possible to its original condition.

3.8 Personal supplies and storage

All supplies, including food, drinking water, firewood and any other consumables must be brought to the site. Water is available in the field station for normal operation, but it has not been certified as potable.

All items transported to the site must be removed upon departure unless the DDRS Director has given prior permission for them to remain. If equipment or supplies are left at the site they must be labeled with the name of the owner and safely stored for future use in a pre-approved location. Equipment or supplies so stored should not be disturbed by parties other than those who stored them unless they represent a hindrance to reasonable use of the facility. Stored items must be removed promptly from the site at the end of an approved research project.

3.9 Fires

Fires are to be built in designated fire containers or fire pits only and extinguished before departing the fire site. No gathering of fire fuels is allowed, including dead vegetation such as yuccas, sotols, mesquite, oak, etc.

Fires should be extinguished following these steps:

- Allow the wood to burn completely to ash, if possible.
- Pour water on the fire and drown all embers until hissing ceases.
- Stir the embers with a shovel to ensure everything is wet and cold to the touch.
- If water is not available use dirt. Mix dirt or sand with the embers and continue adding and stirring until all material is cool.

3.10 Waste management

All refuse created while at the site must be stored in a closed and waterproof container and removed upon departure.

The septic system is limited in capacity and care should be taken not to overload the system with water or paper. Water-saving practices should be used in dishwashing, cleaning and bathing. Do not dispose of strong chemicals down the drains. Instead collect these chemicals in a waste container for disposal off-site. Solid wastes such as coffee grounds, food waste, paper towels, tampons, and grease should not be disposed of in the sinks or toilets, but should be removed and disposed of off-site.

When away from the station all waste, including paper, packaging and food waste should be packed out and collected back at the station for removal from DDRS.

Away from the station, proper disposal of human waste is necessary to avoid pollution of water sources, inadvertent contact, and to maximize the rate of decomposition. Visitors to DDRS are required to bury any human feces in a cathole 6-8 inches deep and 200 feet (70 paces) from water, trails and camp. Waste should be buried and disguised with natural materials when finished.

3.11 Alcohol, tobacco and drug use

DDRS is an extension of the main MSU campus, and its policies on alcoholic beverages are applicable at the site per [Policy 4.112 Alcoholic Beverages](#). In consideration of the remoteness of the site and in the interest of researcher safety, individuals using the research station will observe the following guidelines:

1. The use of tobacco products, including smoke and smokeless tobacco, is prohibited at DDRS.
2. Only individuals 21 years of age or older are allowed to consume alcoholic beverages.
3. Dr. Dalquest's express wish was for the site to be used for learning and research. The purpose of the station is to facilitate that goal. It should not be treated as a venue merely for relaxation, for excessive alcohol consumption, or for partying.
 - a. Consumption of alcoholic beverages to the point of visible physical or mental impairment is prohibited.
 - b. Overconsumption of alcohol and any other activity that can interfere with the sanctioned research or comfort of other occupants of the station is not allowed. Individuals who consume alcohol to the point of impairment may be permanently barred from DDRS.
 - c. Under no circumstances will illegal drugs be allowed at DDRS. Any individual observed using drugs will be permanently barred from the station.

3.12 Damage to the facility, or personal property

Each instance of damage to the facility, associated infrastructure, stored equipment or personal effects of visitors should be recorded on incident report forms provided for that purpose. The director or the Department of Biology chair must be informed of damage requiring immediate or urgent attention.

IV. Safety

The research site is located in a natural environment and participants are subject to natural dangers from plants and animals. Many plants have spines, thorns or needles that can pierce or cut the skin and several species of rattlesnakes are present. Interaction with a mountain lion or other large animal is possible. Many of the trails are steep and treacherous from loose gravel and rocks; there is always a realistic risk of falling. Use of a walking stick is a reasonable precaution when ascending or descending steep slopes. It is highly recommended that participants wear hiking boots with soles for rugged terrain, not hiking or running shoes.

Participants need to be aware of various risks to health and safety at different times of the year, including dehydration, sunburn, heat exhaustion/heat stroke, flashfloods, lightning, rock falls, animal bites, and hypothermia. For suggested treatment of a condition resulting from one of these dangers, see the DDRS First Aid and Safety Handbook (Bowles, Jansen, and Gibson 2016) located with the First Aid kit.

Because of the many potential sources of injury, any visitor venturing away from the main building must report travel plans in advance to a responsible party and be accompanied by another adult. At least two adults must accompany any minor(s).

For each health or safety incident that occurs at the DDRS, an incident report must be completed indicating the nature of the incident, the steps that were taken to address it, and the outcome.

V. Building maintenance

5.1 Water Supply

While staying at the DDRS, visitors should check the water well to verify that the control panel in front of the solar panels is getting power. If the pump is not running, the red light will be on, but stationary. If the pump is running, the panel will indicate the number of watts being used, the level of water in the tank, and whether the pump is currently on and pumping water. The system is automatic and should not need attention. However, if attention is needed, get the small step-ladder from the utility building and look in the storage tank. The well will not turn the pump on unless the water level is low enough that the float is out of the water. If the pump does not turn on automatically, lift the float and lower it back down. When turned on, the pump will pump air for a few seconds then start pumping water. While the pump is on, the light on the panel will be travelling from the bottom of the well diagram to the top. After the tank fills, the well pump will shut off and the stationary light near the top of the control panel will indicate a full tank.

5.2 Cleaning

Before departing from the station, it is the responsibility of the users to clean the kitchen, including sink, stove, tables, and stainless steel counter tops. Do not use abrasive cleaners on the stainless steel. A spray can of stainless steel cleaner is available in the kitchen. Bathrooms, dorm, sleeping porch, laboratory, and conference/computer room should be cleaned, swept and mopped.

5.3 Shutdown and security

When preparing to depart DDRS, follow these steps:

1. Close and lock all windows.
2. Check all appliances. If you turned them on, turn them off.
3. Accessory refrigerators and freezers should be turned off using the internal dial, but not unplugged. Prop their doors partially open to prevent fungal growth. The kitchen refrigerator is to be left on at all times.
4. Remove all perishable materials, as refrigeration cannot be guaranteed between visits.
5. Remove trash from all cans and discard off site. Place new plastic liners in trashcans.
6. Change the hot water heater to vacation mode (hot water closet is the northeastern closet in the screened porch).
7. Lock the screened door to the screened porch from the inside. Lock the building door to the screened porch.
8. Lock all outside doors in both buildings.
9. As you exit the DDRS lock the fence gate.

5.4 Reporting problems

Upon departure any problems identified during the stay at DDRS should be reported to the DDRS Director or the Department of Biology Chair as soon as possible

VI. Research guidelines

Permission to conduct research at the DDRS is a privilege for faculty and students of MSU and researchers from other institutions and organizations. Researchers are representatives of their Institutions, their Departments, and their direct supervisors.

6.1 Requests for permission to conduct research at DDRS

Understanding the natural operations and changes of the Chihuahuan Desert is an important role of ecological studies. Field stations such as DDRS are designed to facilitate the application of basic scientific tools and methods to develop a coherent picture of the desert ecosystem. However, the presence of humans in this delicate environment amounts to the introduction of an alien species. Therefore, design of all experimental projects should impose minimal disturbance on the native habitat. All participants in projects must be conscious of potential damage to the environment and employ practices that result in the least possible impact. Any potential project that proposes irreversible alteration of the environment must be approved by the director and, if approved, developed in close consultation with the director or a designated representative of MSU.

Permission to visit the site to evaluate its suitability for a research project may be obtained by submitting a brief e-mail or printed request to the director stating the purpose of the research.

Prior to conducting a research project at the site, a research plan of 1-2 pages must be submitted to the director and should include the following information:

1. Sponsoring institution, primary investigator, and primary field workers.
2. Research objective
 - a. Purpose of Research
 - b. Justification for the use of DDRS for this purpose
3. Materials/Methods
 - a. Description and justification of sampling and analytical techniques including
 - b. Description of proposed resource removal and where voucher specimens or collections will be permanently held.
4. Intended use of results
5. Proposed number, frequency and duration of visits.
6. Source and amount of funding.

6.2 Use of DDRS computer and other electronic resources

Access to station computers, information databases and networks is for research and background information. Computers are for official business and not for personal use. The installation of additional software on station computers without permission is prohibited. Individuals should bring laptops with necessary software preinstalled. Main campus rules apply and it is illegal to violate copyrights of software by copying software on other machines. Reliable Wi-Fi internet access is available throughout the main building.

The DDRS encourages the backing up and archiving of research data. Ideally, data should be backed up frequently and at least one copy stored for offsite use.

Visiting researchers who will be at the site for more than a week may be charged a fee of \$20.00 for access to e-mail and/or the internet.

VII. Technical Support

7.1 Reference publications

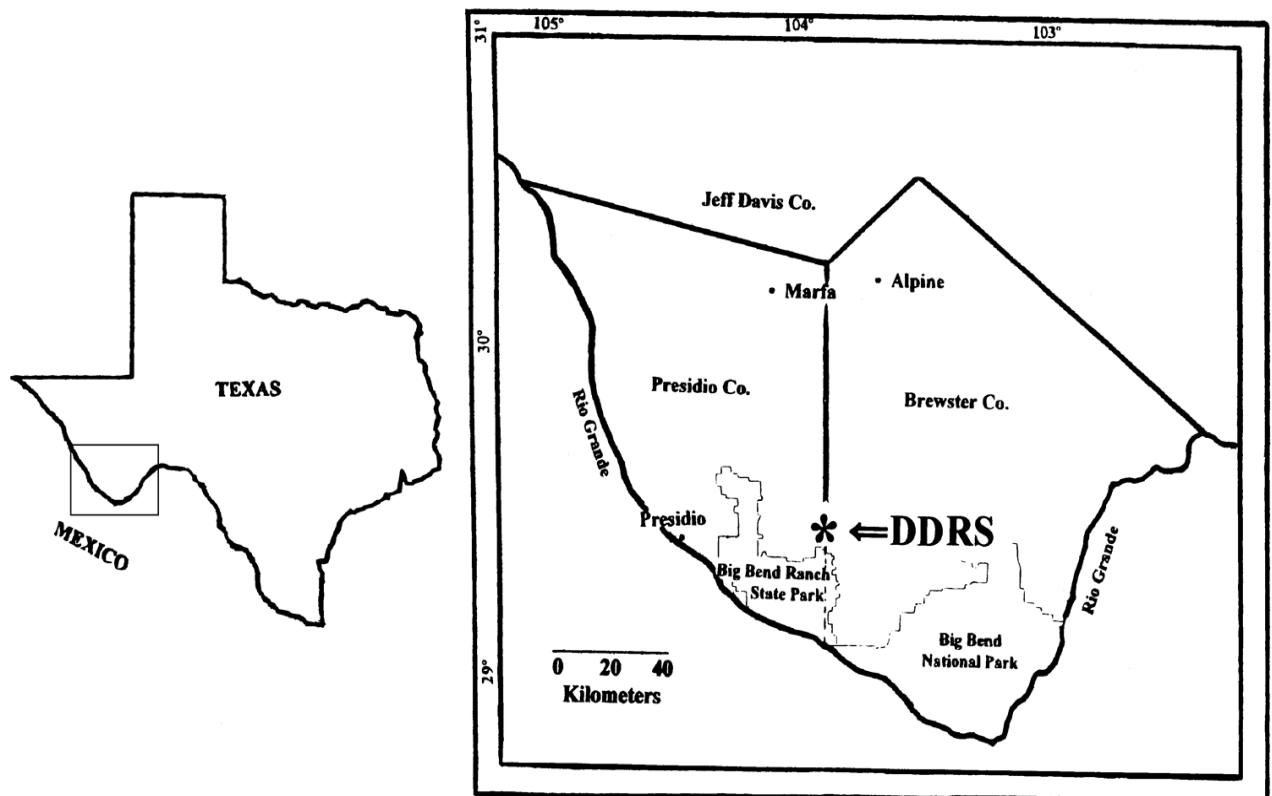
Since the DDRS is being developed as a research station, it does not offer a staff librarian. A limited permanent library of reference works is maintained at DDRS, but each visitor will be responsible to obtain (via the internet) or bring necessary information such as reference works, identification keys, etc. Works (such as photo archives, journals, books, monographs, or maps) that are available electronically are readily accessible via the station's Wi-Fi accessible internet connection.

7.2 Citation policy for data use

Midwestern State University must be acknowledged in any publication resulting from research at the DDRS. Formats for acknowledgement may include:

- a. Mention within the materials and methods section, e.g., "The fossils described herein were collected between 2005 and 2014 at Midwestern State University's Dalquest Desert Research Site."
- b. Mention in a designated "acknowledgements section" at the end of a report, e.g., "The authors gratefully acknowledge Midwestern State University for allowing us access to the Dalquest Desert Research Site and granting permission to collect specimens."

Appendix 1a: Location and Directions to the Dalquest Desert Research Site

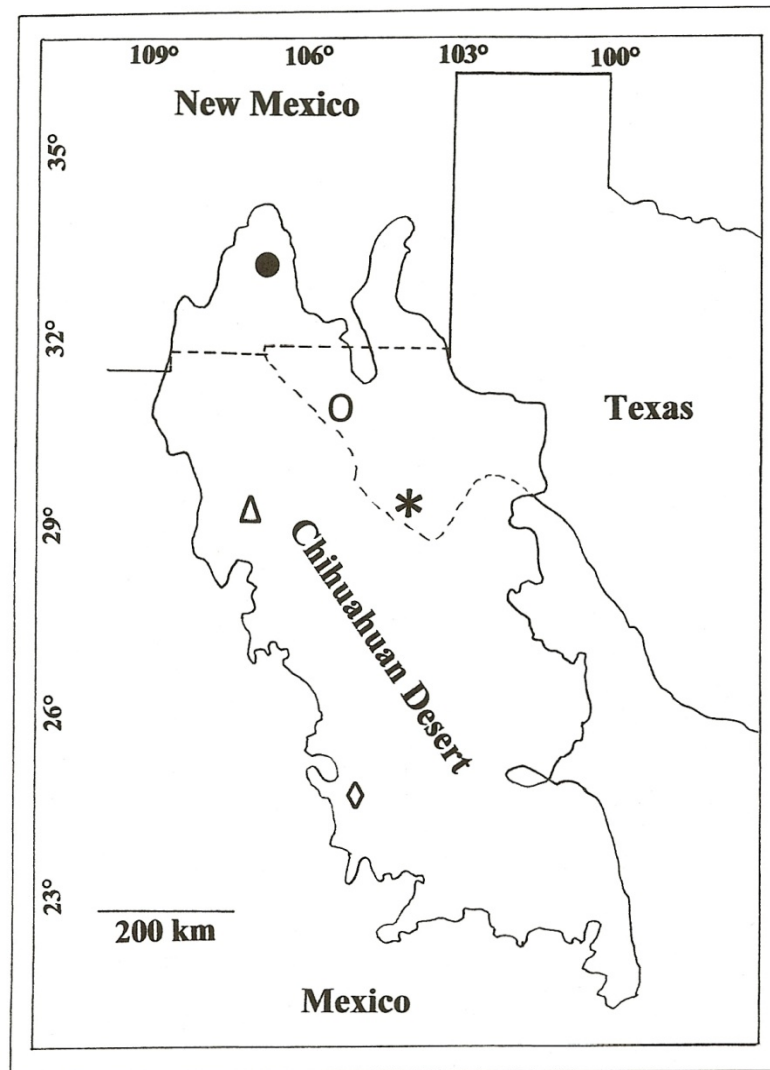


Driving Directions from Marfa, TX to DDRS

1. Take Hwy 67 South to Ranch Road 169 and turn left (approx. 8 mi. S of Marfa)
2. Continue SE to Plata (old steam engine water station) Approximately 25 miles and the pavement will end.
3. Continue straight ahead on the dirt road in a SSE direction for approximately 30 miles.
4. San Jacinto Peak will be on the left.
5. Continue following the signs to the Alazan and Bandera (Bennett) Ranches.
6. The Headquarters of the Bandera (Bennett) Ranch will be on the left.
7. After you cross the next cattle guard past the Bandera Ranch headquarters, (there is a green ranch sign) in less than ½ mile, turn left through an open gate with wagon wheels on each side ($29^{\circ} 35' 03.7''$ N, $103^{\circ} 50' 11.39''$ W) onto the Auler Ranch access road.
8. Turn right immediately before the Auler ranch house and continue on the road in front of the ranch house for 2 miles and you will see the station.
9. Road conditions may require 4-wheel drive vehicles.

Appendix 1b Map of Chihuahuan Desert Research Stations

- Jornada,
- Indio Mt.
- * Dalquest Desert
- △ La Campana
- ◊ Mapimi



Appendix 2: Agreement to Assume Risk and Release from Liability

**Midwestern State University
Dalquest Desert Research Site
Agreement to Assume Risk and Release from Liability**

In consideration of my wish to make use of Midwestern State University's Dalquest Research Site to carry out an approved research project, I, the undersigned, do hereby release and agree to hold harmless Midwestern State University, its Board of Regents, and all the University's officers, sponsors, agents and employees from any and all liability due to injuries, damage, sickness, loss, delay, or death arising from any act or omission, negligent or otherwise, of said officers, agents, sponsors or employees, or any other person or other participant in any activity associated with said use of the Dalquest Research Site. I hereby indemnify Midwestern State University, its Board of Regents, and all the University's officers, sponsors, agents and employees and any other person or participant from any claims brought as a result of any act or omission on my part, negligent or otherwise.

I am aware of potential dangers or hazards associated with research in rugged terrain and under the hot, dry conditions that may prevail at the Dalquest Research Site at any time of year. I understand that my choice to pursue research at the Dalquest Research Site is voluntary and I accept any risks or hazards encountered anywhere within the research site or in transit to or from the site.

Damage to the facility, either the main structures, operating systems, or personal property contained in the facility, are the responsibility of the party/parties causing the damage.

Jurisdiction and venue of any claims arising from this statement or from the use of the Dalquest Research Site shall lie in Wichita Falls, Wichita County, Texas. The laws of the State of Texas shall apply.

Signature of Participant

Name of Participant

Institutional Affiliation

Date