

**To:** Gunn, Leslie[lgunn@blm.gov]; Tyler Ashcroft[tashcrof@blm.gov]  
**From:** McDonald, Hugh (Greg)  
**Sent:** 2017-02-15T14:06:47-05:00  
**Importance:** Normal  
**Subject:** SOW for Paleontological Survey at Bears Ears  
**Received:** 2017-02-15T14:06:58-05:00  
Bears Ears Paleontology Survey SOW FINAL.docx

Hi Leslie and Tyler,  
Attached please find a copy of the SOW for a paleontological survey for Bears Ears. Rebecca Hunt Foster aided me with putting it together. As this is my first one for the BLM if I have overlooked anything please let me know and I would be happy to modify it as needed.

Greg

--

Greg McDonald  
Regional Paleontologist  
Bureau of Land Management  
Utah State Office  
440 West 200 South, Suite 600  
Salt Lake City, Utah 84101-1345  
(801) 539-4032

**SPECIFICATIONS FOR A  
PALEONTOLOGICAL RESOURCE INVENTORY  
ON BLM LANDS IN MHRMP, SAN JUAN COUNTY, UTAH**

**I. Scope of Contract**

The Contractor shall supply the necessary qualified personnel, materials, equipment, and facilities to conduct a general inventory of paleontological resources on selected portions of BLM land in San Juan County. The survey will be conducted in areas in which there has been no or little previous paleontological field work or surveys conducted. The contractor must attend a pre-work meeting with the Contracting Officer (CO) and/or COR to identify the areas to be surveyed and estimated amount of time to conduct a survey in each area selected. The contract period shall be one (1) year starting from the day in which the contract is awarded. The field inventory shall be completed within **200** calendar days starting from the day in which the contract is awarded. A draft report will be submitted to the Contracting Officer's Representative (COR) at least **30** days prior to the end of the contracting period. The Contractor shall prepare and submit a report on the findings resulting from the surveys and inventories that document the types of fossil resources encountered in each of the geological formations of the area surveyed.

The Principal Investigator shall be required to obtain a valid Utah BLM paleontological survey permit and designate an appropriate repository since this permit will allow them to collect voucher specimens of fossils should the need arise. In addition, the Contractor shall provide qualified personnel who have knowledge and experience in identifying and evaluating fossil resources (vertebrate, invertebrate, plant or trace) found in Southern Utah and the Colorado Plateau area and knowledge of the geology of this part of Utah.

**II. Objectives**

This project will address the following objectives. 1) Provide the BLM with a general overview of the types, concentrations and distribution of fossil resources within selected areas on BLM land in San Juan County. 2) Provide information on the distribution and character of paleontological resources in this area to better assess their significance and requirements for proper management. 3) Provide baseline information on the Potential Fossil Yield Classification (PFYC) of geological formations within the study area. 4) Identify fossil resources that are readily accessible to the public and might be developed for interpretation.

**III. Description and Location**

The BLM land of interest is in San Juan County, Utah. It is located to the east of Canyonlands National Park and Glen Canyon National Recreation Area, north of the Navajo Nation, west of the towns of Monticello, Blanding and Bluff and south of the Grand and San Juan County line.

Previous inventories and research conducted within and adjacent to the project area indicate the presence of multiple paleontological sites within the project area. Overall

site density is expected to be high in some but not all geological formations in the areas to be surveyed (see attached PFYC map).

Within the general area described the proposed surveys should focus on the following areas:

Jurassic/Cretaceous:

Black Mesa Butte Quadrangle  
 Hotel Rock Quadrangle  
 No Mans Island Quadrangle  
 Recapture Pocket Quadrangles  
 Bluff Quadrangle

Triassic:

Moss Back Butte Quadrangle  
 Fry Springs (NE only) Quadrangle  
 The Cheesebox Quadrangle  
 Woodens Hoe Buttes Quadrangle  
 Jacombs Chair Quadrangle  
 Copper Point Quadrangle  
 Cathedral Butte Quadrangle  
 North and South Shooter Peak Quadrangles  
 Harts Point South and North Quadrangles  
 Shafer Basin Quadrangle  
 Lockhart Basin Quadrangle  
 Mikes Mesa Quadrangle  
 Clay Hills Quadrangle  
 Hotel Rock Quadrangle  
 Bluff Northwest and Southwest Quadrangles

Permian:

Cedar Mesa South Quadrangle

The paleontological resources on BLM land in San Juan County are among the richest and most significant in the United States, and the collection of baseline documentation on these resources will provide the framework for further paleontological research, interpretation and their proper management and preservation. Known sites have been documented but many areas remain to be examined. The general area includes late Paleozoic fossils, including giant amphibians, synapsid reptiles, and important plant fossils as well as numerous types of ray-finned fish fossils from the Permian Cutler Group. Fossilized trackways of early tetrapods are known from the Valley of the Gods. Aquatic taxa such as clams, crayfish, fish, and aquatic reptiles have been found in the Triassic Chinle Formation in the Indian Creek area and exceptional examples of fossilized ferns, horsetails, and cycads. Phytosaur and dinosaur fossils from the same period have been found along Comb Ridge and in Indian Creek. Paleontologists have identified new species of plant-eating crocodile-like reptiles and mass graves of

lumbering sauropods, and other dinosaur fossils along with metoposaurus and crocodiles. The Chinle, Wingate, Kayenta, and Navajo Formations provide one of the best continuous rock records of the Triassic-Jurassic transition in the world, and are crucial to understanding how dinosaurs came to dominate terrestrial ecosystems and the type of environment in which the earliest mammals evolved. The area also includes Pleistocene sediments which preserve the remains of a variety of taxa including mammoths, short-faced bears, ground sloths, and camels.

*The above is provided as information only and should not necessarily be used as the basis for formulating a bid or serve in place of the offeror's due diligence. It is the offeror's responsibility prior to submitting a price quotation to inspect the project area and literature to resolve any concern over the nature and extent of potential difficulties regarding terrain, site density, site size, vegetation density, ground cover, boundaries, access and/or any other factors which may affect the offeror's price quotation. If the offeror is unfamiliar with the project location, it is strongly recommended that the area be visited by the potential contractor.*

#### **IV. Government Furnished Property**

The Government will make available the materials, supplies, property, or services listed below. The Contractor shall be liable for the loss or damage to such property until returned to the Government in good condition. Government furnished property will be provided to Contractor at the pre-work meeting.

- BLM Utah Paleontological Survey Permit
- 1:24,000 quadrangle maps and/or GIS shape files showing the project boundary
- Documentation on currently known fossil localities and associated geological information
- Available geological maps that are in digital format

#### **V. Contractor Furnished Property**

The Contractor shall furnish all other equipment and materials necessary to complete this project.

#### **VI. Administration, Supervision and Personnel**

The Contractor is responsible for all phases of the work and for the quality of deliverables. The Contractor must be able to demonstrate competence in project administration. Such demonstration may include the following: 1) a record of successful completion of similar projects or the types of projects with comparable scope and complexity; or 2) a record of responsibility at the Principal Investigator (PI) level in the successful completion of similar projects.

The Contractor shall submit a list of key personnel who will be involved with the project, verifying their qualifications and past experience with paleontological resources within southeastern Utah. Past experience may include survey and/or excavation with recognized universities or museums or with companies that have done paleontological

mitigation in the area. A list and resume of all personnel involved with the project will be supplied to the CO and the COR must approve the credentials of all personnel prior to commencement of field work. Key personnel are defined as Principal Investigator, Project Director, Field Director and Crew Chief. All key personnel must be professional paleontologists and meet the basic minimum qualifications described below.

- a. Key personnel must have completed a minimum of one academic year of graduate level education in either geology or biology with an emphasis on paleontology (emphasis may be on vertebrates, invertebrates, plants or trace fossils), or an equivalent of training and experience.
- b. Key personnel must have a minimum of 24 months professional experience and/or specialized training in paleontological field work. This experience shall have included at least twelve months of work in southeastern Utah. Knowledge of use of GPS and GIS critical.

## **VII. Statement of Work and Technical Specifications**

### *Paleontological Resource Definitions*

A paleontological resource "site" or locality is generally defined as a location where fossils (vertebrate, invertebrate, plant or trace) are found and may or may not still be in situ. A site may be a single specimen or may contain multiple specimens and taxa. It should be determined if a fossil is in its original context or has moved or transported by either natural or human activity. Documenting eroded and transported fragments may be critical to determining their source.

Locality boundaries will vary and may be a point for a single specimen or may encompass a larger area such as fossiliferous strata of invertebrates. Keep in mind that although there may be a break in a fossiliferous sedimentary layer, if concentrations of fossils to a specific sedimentary unit seem related even if not continuous, making one large site in a specific area is preferable to making many small sites.

Isolates: In general, isolates lack the density and/or diversity of fossils necessary to be defined as a site, especially if they are:

- Broken so as to be nondiagnostic and cannot be identified to anatomical part
- Cannot be identified to a reasonable taxonomic level
- Are not in situ
- It is not possible to determine the original geological context, or the fragments cannot be traced to parts still in situ from which it was derived.

Isolates may be recorded to indicate the potential for other fossils in the area even if they meet the above criteria although they should not be recorded as a locality. A GPS reading may be desirable if other better preserved fossils are not found in the immediate area. Isolates may be recorded and presented in the report as a table or appendix to indicate the potential that other better preserved fossils may be found in the area.

### *Survey Techniques*

A pedestrian survey via walking will be required and the transects that are selected will depend on the area's ground cover and topography of the area to be covered. Each survey should be documented using GPS and recorded as a distinct data layer in GIS in order to provide an overview of the areas covered and document where these surveys occurred in order to plan for future surveys. Segments of the project area in areas of low topography should be surveyed by the number of people necessary to provide the required coverage.

Contractor should expect to conduct in-field analysis of fossil resources and record basic information. Basic information to be recorded will include, at a minimum, whether the fossils are vertebrate, invertebrate, plant, or trace fossils, best possible taxonomic identification based on their condition of preservation and completeness, whether the fossils are in situ or eroded out, GIS location and all pertinent geographical and geological information recorded on the standard BLM locality forms.

Photodocumentation of localities and specimens should be included as appropriate to provide baseline information on their condition at the time of discovery. While most fossils will be left in place, the contractor may at their discretion collect voucher specimens to document a locality, or if the fossils represent rare or unique taxa. All ground disturbing activity related to the collection of any voucher specimens should be less than one square meter. No major excavations will occur but sites with fossils that have the potential to be excavated because they contain significant fossils should be identified in the final report.

Prior to the inventory, the Contractor will be required to gather information on all previously conducted projects in the project area. This data may come from published sources in scientific journals or any previous mitigation studies in order to provide the Contractor with a good understanding of the density and types of fossils and known localities that may be found. More specifically the goal of this project is to identify areas which have not been previously surveyed or where little or no previous paleontological work has been conducted. Previous project information is available from the Utah Geological Survey Paleontology Program which maintains a Paleontology locality database including localities on BLM land in Utah and the Natural History Museum of Utah.

### *GPS Standards*

Please refer to the attached **BLM Data Standards** for information on GPS and GIS Standards.

### *Project Documentation and Reporting*

The final report, at a minimum, shall include the following information.

1. Title and authors
2. Abstract
3. Introduction

- a. Location (Township, Range, Sections) and general description of project area
  - b. Physical setting – vegetation, topography, elevation, geology
  - c. Project staff, titles and dates of field work
4. Survey methods and identification of specific areas covered by this project.
5. Summary of previous publications on the area and previously recorded sites. A bibliography of all pertinent publications related to the paleontology of the area will be included as an appendix to the report. This information may be presented in a tabular format and must include general overview of fossils found, formation, age, types of sediments in which the fossils occur, and institutions where they are housed, and pertinent publications.
6. Project findings shall include discussions of all paleontological resources found within the project area, with separate sections for sites and isolated specimens. All inventoried sites shall be discussed individually and in terms of type, taxonomic identification, estimated age, fossil assemblage if multiple taxa are present, formation, age, and any other pertinent information. In addition, an appendix that includes locality forms for all new localities found should be included. Pertinent photographs and illustrations of sites, significant fossils in place such as trackways or other types of trace fossils should be included in these discussion sections.
7. Management information will be presented in a separate section and will include the following:
  - a. Recommendations of sites accessible to the public that have interpretation potential, sites of scientific value that should be excavated, sites with fossils that are vulnerable to theft or vandalism or loss through erosion with justification. This information may be presented in a tabular format.
  - b. Potential impacts to sites by either natural or human activities
  - c. And recommendations for mitigation of potential impacts
8. References. Citations in the body of the report shall conform to the Journal of Vertebrate Paleontology style.
9. Maps required include the following:
  - a. General location of the project area. Contractor's choice for scale on this map.
  - b. Survey area and site location map; shall be USGS 1:24,000 scale
  - c. Isolate location map; shall be USGS 1:24,000 scale.

Reports, site forms and all associated documentation will be submitted both in hard copy and digital format. For further information on digital data submissions, please see the attached BLM-Utah Digital Data Standards. Reports that do not meet BLM-Utah's Digital Data Standards will be rejected by the CO and COR.

## **VIII. Deliverables and Scheduling**

In addition to hard copies, an identical digital version of all documentation is required. For more information on digital data submission, please see the attached BLM Data Standards. Draft versions of the report and site forms may be submitted electronically for review via electronic media or email.

BLM Paleontology Locality forms and associated documentation such as photographs should not be bound as part of the report but should be stapled with photographs and included separate from the report. Reports and site forms printed double sided is acceptable. Reports smaller than 1-cm should not be bound. Please either secure with a binder clip or a heavy (but removable) staple. Reports larger than 1cm thick should be bound.

Quality of all report photographs, illustrations, maps and other figures shall be equivalent to the original. Contractor will prepare and organize ALL project materials for curation and collections, including originals of field documentation (field site forms and maps, project field maps). Contractor will submit the following items at project completion as per the schedule outlined below: collected fossils, and all reporting documentation (hard copy and digital) including completed locality forms and site maps, photographs, negatives and photo logs, and the final report. Field note books will be submitted with the final report. A receipt for deposition of all collected fossils in the approved repository should be provided.

**The contract period shall be one year starting from the day in which the contract is awarded.** The field inventory of the selected areas shall be completed within **200** calendar days starting from the day in which the contract is awarded. A draft report will be submitted to the Contracting Officer's Representative (COR) at least **30** days prior to the end of the contracting period. The draft report will be returned to the Contractor within **15** calendar days. The Contractor will have the remaining contracting time to submit the final report and all project materials as defined above. If the final report is found to be deficient in form or content, the government may return it for revision. Any additional costs incurred in producing an acceptable report shall be borne by the Contractor.

#### **IX. Payment Schedule**

The Contractor shall be paid a firm-fixed price for the services performed under the contract.

- 35% payment upon completion of field work
- 35% payment upon delivery of draft final report including complete site forms and associated documentation
- 30% payment upon acceptance of final, revised report and all deliverables

#### **X. Future Use of Project Data**

Contractor may use the paleontological and geological data resulting from this inventory for future research purposes only under the following circumstances. Contractor agrees to provide two copies of any manuscripts, reports, and publications pertaining to the survey to the Utah BLM Regional Paleontologist. Any manuscript prepared for possible publication will be submitted for review by the Utah BLM Regional Paleontologist prior



to publication. **Specific Site locations may not be disclosed.** Any data pertaining to the nature and location of paleontological resources on BLM lands is protected data may not be made publically available under any circumstance without the written consent of the appropriate BLM official.

#### **XI. Accidental Discoveries**

Although unlikely, if human remains or Native American Graves Protection and Repatriation Act (NAGPRA) objects are discovered during field work, the contractor shall notify the BLM's COR or the District Archaeologist immediately, cease work in the immediate area surrounding the human remains, objects or associated site and comply with applicable provisions of NAGPRA. Work may continue in sites/areas not associated with the location of the human remains, objects or associated site.

## PFYC Map for Bears Ears National Monument



