



United States Department of the Interior



BUREAU OF LAND MANAGEMENT
Royal Gorge Field Office
3028 East Main Street
Cañon City, Colorado 81212

In Reply Refer To:
3600 (LLCOF02000, SSC)
COC-079195

DEC 31 2019

Mr. Richard Vidmar
City of Aurora Water Department
15151 E Alameda Parkway, # 3600
Aurora, CO 80012

Dear Mr. Vidmar,

On July 6, 2018, this office received a request from the City of Aurora (via RJH Consultants, Inc.) to conduct a site investigation in Park County, involving pits/trenches and borings that will assist to refine the understanding of site geology and mineral material properties in preparation for proposed construction of the Wild Horse Reservoir.

The BLM Royal Gorge Field Office has completed a review of the proposed site investigation and authorizes you to sample and test the mineral materials under the provisions of 43 CFR Section 3601.30. This authorization does not give you a preference right to a sales contract or free use permit. The authorization will terminate on December 31, 2022. You may conduct operations as outlined in the April 5, 2019 proposal, subject to the following stipulations:

1. The Royal Gorge Field Office will be notified at least 48 hours prior to the beginning of the field work of the mineral materials testing and sampling efforts.
2. It is recommended that a paleontological specialist conducts a pre-work survey and/or a monitor be present during the work to ensure that the resources are protected during exploration activities. BLM staff therefore conducted a survey in October 2019 and promptly received permission from Aurora to be present during implementation of the exploration work.
3. Archaeological monitors will be present during the work to ensure that the exploration activities will not disturb any sites.
4. It is recommended that mineral testing be avoided from May 15 to July 15 to eliminate disturbance and possible destruction of mountain plover nests. If actions must occur during this time, a clearance survey for nesting mountain plover may be conducted following the U.S. Fish and Wildlife Service survey protocol prior to surface disturbing activities that may occur May 15–July 15. The survey area will encompass a 300-foot buffer around all surface disturbing activities.
5. It is recommended that no disturbance activities be permitted within a 300-foot radius buffer of active plover nests until the nest has fledged.

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6. Since the project involves oil or fuel usage, transfer, or storage, an adequate spill kit and shovels are required to be on site during project implementation.
7. The project proponent will be responsible for adhering to all applicable local, state and federal regulations in the event of a spill, which includes following the proper notification procedures in BLM's Spill Contingency Plan.
8. If cement mixtures are used as part of the project, all washout water needs to be contained and properly disposed of at a permitted offsite disposal facility.
9. The project proponent will be responsible for adhering to the State of Colorado regulations that govern stormwater management for these types of activities.
10. The responsible party should identify and protect evidence of the Public Land Survey System (PLSS) and related Federal property boundaries prior to commencement of any ground-disturbing activity. Evidence of the PLSS include, but are not limited to, General Land Office and Bureau of Land Management Cadastral Survey corners, reference corners, witness points, U.S. Coastal and Geodetic benchmarks and triangulation stations, military control monuments, and recognizable civil (both public and private) survey monuments. In the event of obliteration or disturbance of any of the above, the responsible party should immediately report the incident, in writing, to the authorized officer. BLM Cadastral Survey will determine how the marker is to be restored. In rehabilitating or replacing the evidence, the responsible party will reimburse the BLM for costs or, if instructed to sue the services of a Certified Federal Surveyor, procurement shall be per qualification-based selection. All surveying activities will conform to the Manual of Surveying Instructions and appropriate State laws and regulations. Cadastral Survey will review local surveys before being finalized or filed in the appropriate State or county office. The responsible party will pay for all survey, investigation, penalties and administrative costs.
11. A report of the results of any testing from the site investigation, including a map showing the location of the test pits/trenches, borings and their access routes, will be submitted within 30 days of completion of the test program to the Royal Gorge Field Office.

If you have any questions, please contact Stephanie Carter at (719) 269-8551.

Sincerely,



Keith E. Berger
Field Manager
Royal Gorge Field Office

Enclosures:

- 1 – Wild Horse Reservoir Project Site Investigation Project, dated 4/5/19 (stamped 12/31/19)
- 2 – NEPA Document: DOI-BLM-CO-F020-2018-007 CX

cc: Robert J. Huzjak, P.E., RJH Consultants, Inc. (via email)
Elliott Russell, CDRMS (via email)

**U.S. Department of the Interior
Bureau of Land Management
Royal Gorge Field Office
3028 E. Main Street
Cañon City, CO 81212**

CATEGORICAL EXCLUSION

NUMBER: DOI-BLM-CO-F020-2018-0077 CX

CASEFILE/PROJECT NUMBER: COC-079195

PROJECT NAME: Exploration and Testing of Mineral Materials for Wild Horse Reservoir

PLANNING UNIT: South Park Subregion #4

LEGAL DESCRIPTION: 6th PM, T12S, R75W, sections 31, 33; 6th PM, T13S, R75W, sections 4-8, 17, 18

APPLICANT: City of Aurora

DESCRIPTION OF PROPOSED ACTION:

In July 2018, BLM received an application for a free-use permit and exploration activities from the City of Aurora (Aurora) to better understand conditions for potential reservoir construction in the future. Follow-up discussions between BLM and Aurora resulted in refinement of the exploration and testing footprint and approach. In April 2019, Aurora submitted a revised application to BLM. This CX addresses the exploration and testing proposal, which is proposed for locations involving split-estate interests only.

Site investigations are anticipated to occur for a number of months following authorization from BLM and other agencies, as required. The applicant has stated that it is critical for this work to be completed soon to make decisions on project viability, support development of the design concepts, and avoid adverse delays to the overall project schedule. Work will generally be limited to daylight hours, seven days a week, with proposed exploration sites being accessed from existing County roads and dispersed overland travel. The specific investigation techniques that will be employed are test pits/trenches and borings. Information about each investigation technique is provided in the following sections.

The specific objectives of the site investigations are as follows:

1. Refine the understanding of site geology by identifying contacts between various geologic units and locations of faults. Subsurface information is needed to improve the reliability of geologic mapping, identify geologic contacts and faults that are hidden by

surficial materials, and to evaluate key geologic features that could impact project feasibility and component configuration.

2. Define the stratigraphy and properties of in-place materials at the locations of the dams and ancillary facilities to support configuration of the dams and other facilities.
3. Identify the extent and properties of the various mineral materials within the project footprint that could be used for borrow and earthen construction materials for the dams and ancillary facilities. This is needed to support development of a feasible configuration for the dams.

In accordance with 43 CFR 3600, a letter of authorization needs to be issued by BLM prior to initiating actions under #3 above.

The Applicant's Required Data Collection:

1. **Test Pits/Trenches** – Test pits/trenches would be used to achieve all three objectives defined above. The specific purposes of test pits are to expose and sample subsurface materials at a larger scale than what can be accomplished by drilling borings. Test pits/trenches would be used to observe geologic structure that will affect performance of the dam and reservoir, including orientation of bedrock bedding, degree of bedrock fracturing, and locations and conditions of faults. Test pits/trenches would also be used to evaluate the types and quantities of various mineral resources that could be used for construction materials during dam construction.

Select soil and bedrock samples would be collected from test pits/trenches for further evaluation and laboratory testing. It is estimated that up to about 3 cubic feet of material will be collected for testing from each test pit and 1 to 2 cubic feet of material from each test trench. It is estimated that about 20 test pits and 12 test trenches would be excavated on properties with a federal mineral estate.

Test pits/trenches would be excavated using either a rubber-tired backhoe or a track-mounted excavator. Test pits are anticipated to be up to about 20 feet deep, about 3 feet wide, and about 20 to 50 feet long. Test trenches are anticipated to be up to about 20 feet deep, about 3 feet wide, and about 100 to 2,500 feet long. Spoils piles would be temporarily placed to one side of the pit/trench.

Trench boxes would not be used for this work. Site personnel will not enter trenches or test pits greater than 4 to 5 feet deep unless they are sloped or benched to OSHA standards. Soils would be logged from cuttings, and photographs of the sides of pits/trenches will be obtained from the ground surface for non-benched pits/trenches greater than 4 to 5 feet deep. Personnel will stand at the end of a pit/trench instead of the side and will maintain a safe distance from pit/trench edges. Our field crew will watch for signs of instability of pit/trench walls and will not lean over the edge of an open pit/trench. Pits/trenches left open overnight will be sloped at one end at a minimum 2

Horizontal to 1 Vertical (2H: 1V) slope to allow for egress if someone or an animal were to fall into the pit/trench. Orange fencing will be placed around the perimeter of the excavation until the pit/trench is backfilled.

Test pits/trenches may be left open for several weeks before being backfilled. The majority of the property where the work would be performed is owned by Aurora. The remaining property that would be impacted by the work is owned by Hartsel Springs Ranch or Elk Mountain Cattle Company (EMCC). Aurora has existing agreements to allow access and testing. EMCC grazes livestock in the area where the work would be performed. RJH Consultants, Inc. (RJH) has and will coordinate directly with EMCC to avoid livestock incident. RJH has contracted with EMCC Excavating to excavate the pits/trenches.

Upon completion, the test pits will be backfilled with the excavated materials, and the ground surface would be graded to match the surrounding grade and reseeded with a native, weed-free seed mix that reflects species in the surrounding vegetation.

2. **Borings** – Borings would be used to achieve the three previously defined objectives of the field exploration program. The specific purposes of the borings are to investigate and collect samples from deeper depths that cannot be explored using test pits, allow for in-situ hydraulic conductivity testing and downhole geophysical investigation of dam foundation materials, and provide data for calibration of surface geophysical results.

Soil and bedrock samples would be collected from borings for further evaluation and laboratory testing. Soil will be sampled intermittently, and it is expected that between 1 and 3 cubic feet of soil would be removed from the site for borings that extend 10 to 30 feet through soil. The remaining soil that is brought to the surface by the augers would be spread out around the boring location. Rock would be recovered continuously and it is expected that about 0.02 cubic feet of rock would be recovered per foot of borehole and removed from the site. It is estimated that about 25 boreholes would be drilled on property with a federal mineral estate.

The borings are anticipated to extend up to about 200 feet below the ground surface; however, select borings may need to extend deeper to investigate subsurface conditions identified by surface geophysical investigations. The total length of drilling will likely be less than 6,000 feet. The borings would be conducted using either augers, ODEX, or rock coring techniques. Borings will create an approximately 3- to 8-inch-diameter hole in the ground. Drilling will involve circulation of water or pressurized air through the boring to remove cuttings. Circulating water and cuttings will be collected in a mud tank (approximately 200-gallon steel or plastic tank) at the ground surface. The cuttings settle out of the water in the tank and the drill rig recirculates the water from the mud tank.

In-situ water pressure testing (Packer testing) would be performed within the bedrock portion of the borings. This involves inflating a rubber seal near the bottom of the boring

to isolate the bottom section of the boring. Water is then injected into the isolated section of the boring under pressure, and the rate of injection is used to calculate the hydraulic conductivity of the bedrock.

Downhole geophysical testing, including televIEWing or sonic logging, would be performed in borings. TelevIEWing involves deploying a camera down the borehole to view the borehole walls in order to observe the conditions and orientations of fractures. Sonic logging would involve measuring the velocity characteristics of subsurface materials to assist with calibration of seismic data collected from surface geophysical investigations.

Upon completion, drill cuttings that accumulate at the ground surface or in the mud tank would be disposed of at each boring location by spreading them out on the adjacent ground surface. The borehole would be filled from the bottom to within about 2 feet below the ground surface with cement-bentonite and the remaining 2 feet backfilled with native earth material from the boring.

RJH will permit monitoring wells (including abandonment) with the State of Colorado in accordance with Colorado State Engineer Office Rules and Regulations. According to Aurora, Colorado Division of Reclamation, Mining, and Safety (CDRMS) permits are not currently needed for this work, based on unofficial discussions between Aurora and CDRMS.

Working platforms may need to be constructed if borings will be located in areas of steep topography. Working platforms would be about 20 by 40 feet. Grading for working platforms would be performed using a bulldozer, excavator, or similar construction equipment. No material would be removed from the site or sampled during these grading operations. Excavated materials would be used for fill or stockpiled as appropriate to accommodate the platforms. Disturbed areas and areas completely covered with backfill (if any) would be reseeded with a native, weed-free seed mix that reflects species in the surrounding vegetation.

It is estimated that a total of about 20 acres of land will be disturbed during exploration, and up to about 10 cubic yards of soil materials and 5 cubic yards of rock will be removed from the site from the lands included in the federal mineral estate.

The Applicant's Cultural and Natural Resources Avoidance Program:

In order to seek approval to proceed, Aurora proposes to implement a rigorous program to ensure that the site investigation avoids cultural resources and sensitive or regulated natural resources.

The program includes four steps:

1. Initial Planning to Avoid Impacts:

- a. ERO Resources Corporation (ERO) has completed cultural and natural resource assessments for most of the project footprint and all of the site investigation areas. To date, ERO has evaluated cultural and natural resources on private surface (1,580 acres), split estate (2,540 acres), BLM surface (240 acres), and Park County (3 acres) lands for a total of 4,363 acres. Cultural resource reports have been previously submitted to the BLM Royal Gorge Field Office (RGFO) for the federal surface lands and the proposed geotechnical work that will occur on federal mineral estates.
 - b. The identified areas for borings, test pits, and test trenches are at least 100, 160, and 200 feet, respectively, from identified cultural sites.
2. Pre-Investigation Site Access Surveys:
 - a. The site would be accessed from existing county roads. Access to boring, test pit, and test trench locations will be over rangeland. RJH will not need to grade or develop any access roads on site for this work.
 - b. Routes for equipment would be identified in the field by RJH, and ERO will provide an on-site monitor who will ensure that no cultural or sensitive natural resource sites are along the access routes to the investigation locations. Stakes would be placed in the field to mark the approved access routes, and all equipment will traverse within the marked corridors.
3. Pre-Investigation Surveys of Exploration Locations:
 - a. The surface area that will be disturbed by the exploration work would be identified in the field by RJH. Before exploration begins, ERO will visually confirm that there are no cultural sites and ensure the setbacks identified above are maintained.
 - b. For test pits or trenches, where the area of disturbance will exceed about 80 square feet, ERO will monitor excavation to confirm that there are no significant buried resources.
4. Work Stoppage and Documentation:
 - a. If a potential cultural resource is encountered during monitoring, the work will immediately stop, ERO will document and evaluate the finding on standard forms and notify the BLM, the excavation will be backfilled, and the exploration location will be relocated.

BLM's Design Features/SOPs/BMPs Are Summarized Below:

1. It is recommended that a paleontological specialist conducts a pre-work survey and/or a monitor be present during the work to ensure that the resources are protected during exploration activities. BLM staff therefore conducted a survey in October 2019 and

promptly received permission from Aurora to be present during implementation of the exploration work.

2. Archaeological monitors will be present during the work to ensure that the exploration activities will not disturb any sites.
3. It is recommended that mineral testing be avoided from May 15 to July 15 to eliminate disturbance and possible destruction of mountain plover nests. If actions must occur during this time, a clearance survey for nesting mountain plover may be conducted following the U.S. Fish and Wildlife Service survey protocol prior to surface disturbing activities that may occur May 15–July 15. The survey area will encompass a 300-foot buffer around all surface disturbing activities.
4. It is recommended that no disturbance activities be permitted within a 300-foot radius buffer of active plover nests until the nest has fledged.
5. Since the project involves oil or fuel usage, transfer, or storage, an adequate spill kit and shovels are required to be on site during project implementation.
6. The project proponent will be responsible for adhering to all applicable local, state and federal regulations in the event of a spill, which includes following the proper notification procedures in BLM's Spill Contingency Plan.
7. If cement mixtures are used as part of the project, all washout water needs to be contained and properly disposed of at a permitted offsite disposal facility.
8. The project proponent will be responsible for adhering to the State of Colorado regulations that govern stormwater management for these types of activities.
9. The responsible party should identify and protect evidence of the Public Land Survey System (PLSS) and related Federal property boundaries prior to commencement of any ground-disturbing activity. Evidence of the PLSS include, but are not limited to, General Land Office and Bureau of Land Management Cadastral Survey corners, reference corners, witness points, U.S. Coastal and Geodetic benchmarks and triangulation stations, military control monuments, and recognizable civil (both public and private) survey monuments. In the event of obliteration or disturbance of any of the above, the responsible party should immediately report the incident, in writing, to the authorized officer. BLM Cadastral Survey will determine how the marker is to be restored. In rehabilitating or replacing the evidence, the responsible party will reimburse the BLM for costs or, if instructed to sue the services of a Certified Federal Surveyor, procurement shall be per qualification-based selection. All surveying activities will conform to the Manual of Surveying Instructions and appropriate State laws and regulations. Cadastral Survey will review local surveys before being finalized or filed in the appropriate State or county office. The responsible party will pay for all survey, investigation, penalties and administrative costs.

Figure 1. BLM Overview Map

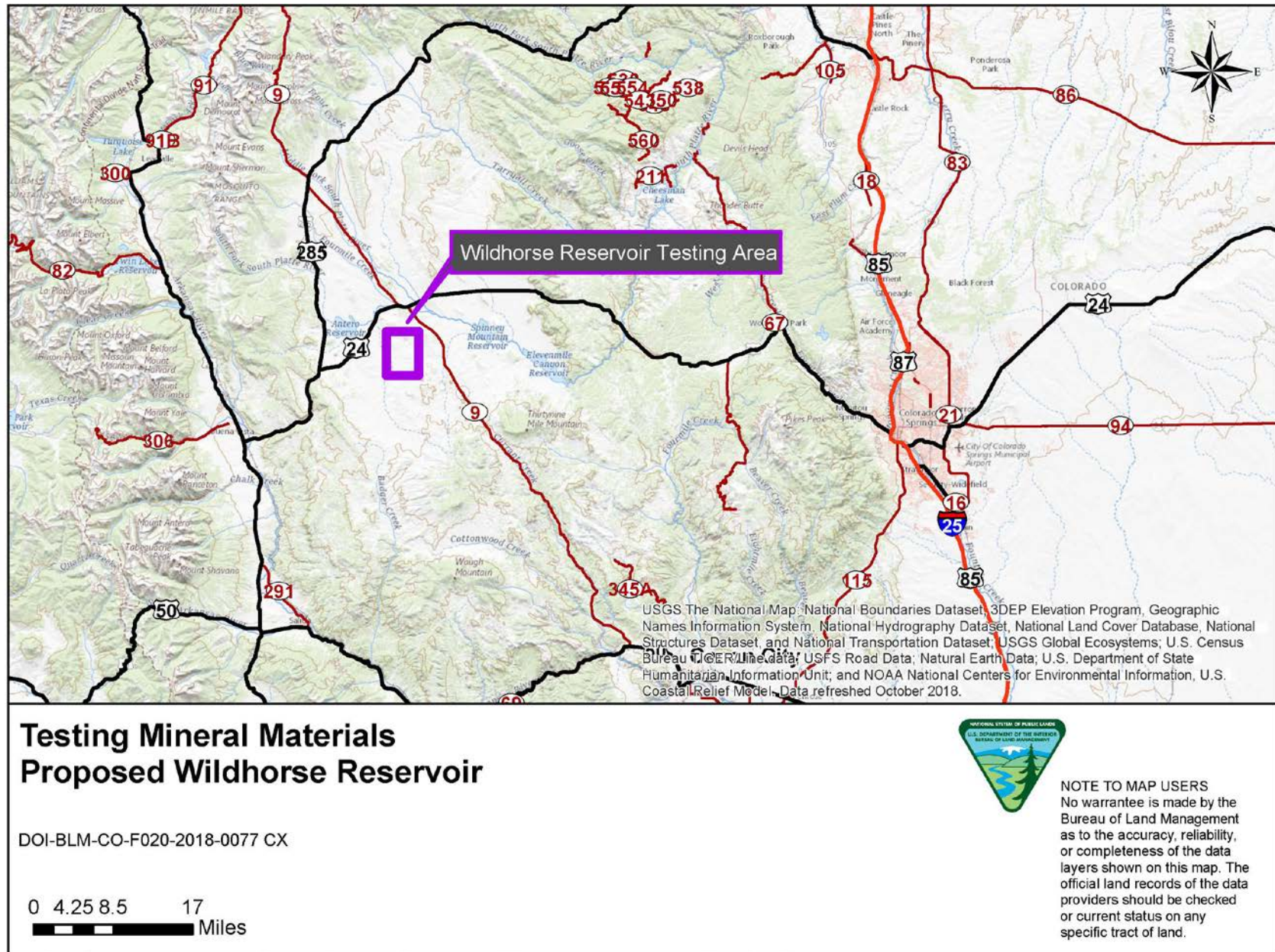
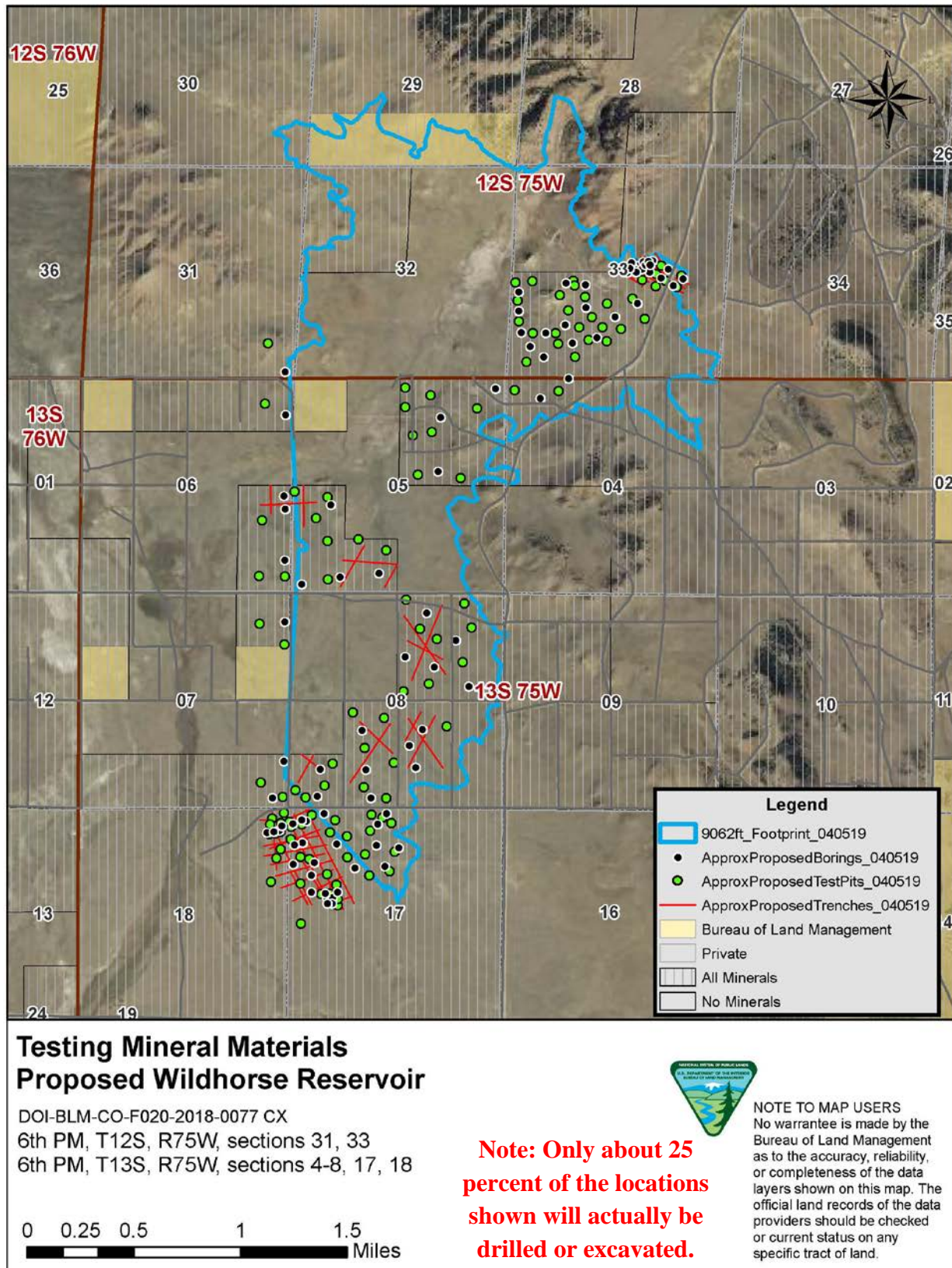


Figure 2. BLM Project Map



PLAN CONFORMANCE REVIEW:

Name of Plan: Royal Gorge Resource Area Resource Management Plan

Date Approved: May 1996

Decision Number: 4-33

Decision Language: “Areas will be open to mineral entry and available for mineral materials development: - administered under existing regulations; - limited by closure if necessary; - special mitigation will be developed to protect values on a case-by-case basis.”

CATEGORICAL EXCLUSION REVIEW:

This proposed action is listed as a categorical exclusion in DOI Departmental Manual Part 516 Chapter 11.9 (F.9): “Digging of exploratory trenches for mineral materials, except in riparian areas.” None of the following exceptions in 516 DM 2, Appendix 2, applies.

EXCLUSION CRITERIA	YES	NO
Have significant impacts on public health or safety.		X
Have significant impacts on such natural resources and unique geographic characteristics as historic or cultural resources; park, recreation, or refuge lands; wilderness areas; wild or scenic rivers; national natural landmarks; sole or principal drinking water aquifers; prime farmlands; wetlands; floodplains; national monuments; migratory birds; and other ecologically significant or critical areas.		X
Have highly controversial environmental effects or involve unresolved conflicts concerning alternative uses of available resources.		X
Have highly uncertain and potentially significant environmental effects or involve unique or unknown environmental risks.		X
Establish a precedent for future action or represent a decision in principle about future actions with potentially significant environmental effects.		X
Have a direct relationship to other actions with individually insignificant but cumulatively significant environmental effects.		X
Have significant impacts on properties listed, or eligible for listing, on the National Register of Historic Places as determined by either the bureau or office.		X
Have significant impacts on species listed, or proposed to be listed, on the List of Endangered or Threatened Species, or have significant impacts on designated Critical Habitat for these species.		X
Violate a Federal law, or a State, local or tribal law or requirement imposed for the protection of the environment.		X
Have a disproportionately high and adverse effect on low income or minority populations.		X
Limit access to and ceremonial use of Indian sacred sites on Federal lands by Indian religious practitioners or significantly adversely affect the physical integrity of such sacred sites.		X

EXCLUSION CRITERIA	YES	NO
Contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area or actions that may promote the introduction, growth, or expansion of the range of such species.		X

INTERDISCIPLINARY TEAM REVIEW:

NAME	TITLE	AREA OF RESPONSIBILITY	INITIALS/DATE
Matt Rustand	Wildlife Biologist	Terrestrial Wildlife, T&E, Migratory Birds	MR, 10/17/18
Aaron Richter	Natural Resource Specialist	Weeds	AR, 10/17/18
Chris Cloninger	Range Management Spec.	Range, Vegetation, Farmland	CC, 10/22/18
Dave Gilbert	Fisheries Biologist	Aquatic Wildlife, Riparian/Wetlands	DG, 10/18/18
Stephanie Carter	Geologist	Minerals, Paleontology, Waste Hazardous or Solid	SSC, 08/29/19
Melissa Smeins	Geologist	Minerals, Paleontology	MJS, 11/01/2019
John Smeins	Hydrologist	Hydrology, Water Quality/Rights, Soils	JS, 10/18/18
Ty Webb	Fire Management Officer	Air Quality	TW, 10/18/18
Rebecca Bruno	Cadastral Surveyor	Cadastral Survey	RMB, 12/18/2018
Jeremiah Moore	Forester	Forestry	JLM, 10/18/2018
Monica Weimer	Archaeologist	Cultural, Native American	MMW, 8/29/19
Veronica Vogan	Realty Specialist	Realty	VJV, 10/17/2018
Linda Skinner	Outdoor Recreation Planner	Recreation, Wilderness, WSA, ACEC, LWC, Visual Resources	LS 10/18/2018

REMARKS:

Cultural Resources: Twenty historic properties (sites determined to be eligible for the NRHP) were found in the area of potential effects (APE) (see report CR-RG-19-046 P). The undertaking will not impact any historic properties, as the project design was changed in order to avoid them. In addition, **archaeological monitors will be present during the work to ensure that the exploration activities will not disturb the sites.** Therefore, the proposed undertaking will have no adverse effect on any historic properties.

Native American Religious Concerns: BLM consulted the following tribes for the undertaking: Apache Tribe of Oklahoma, Cheyenne and Arapaho Tribes of Oklahoma, Cheyenne River Sioux Tribe, Comanche Tribe of Oklahoma, Crow Creek Sioux, Eastern Shoshone, Jicarilla Apache Nation, Kiowa Tribe of Oklahoma, Northern Arapaho Tribe, Northern Cheyenne Tribe, the Northern Ute Tribe, Oglala Sioux Tribe, Rosebud Sioux Tribe, Southern Ute Tribe, Standing Rock Lakota Tribe, and the Ute Mountain Ute Tribe.

Two tribes affirmed that they did not have sites of concern in the area. Three tribes visited the APE, and indicated that the great majority of sites present are sensitive and should be avoided. The three tribes that visited indicated that **as long as the sites were avoided and archaeological monitors present while the work was being undertaken, they have no objection to the undertaking.** BLM began discussions about the potential future reservoir with the tribes that visited, and all indicated that they felt that consultation during the reservoir process was essential, and they would like to be involved.

Threatened and Endangered Species: The proposed project is within plover habitat, and there are known occurrences nearby. In Colorado, typical mountain plover nesting occurs from April 10 to June 10. However, in South Park, plovers nest later in the season due to the higher elevation than that found on the eastern plains. Mineral testing may result in a measurable effect to plover nesting activity if the actions were to occur between May 15 and July 15. It is recommended that mineral testing be avoided from May 15 to July 15 to eliminate disturbance and possible destruction of mountain plover nests. If actions must occur during this time, a clearance survey for nesting mountain plover may be conducted following the U.S. Fish and Wildlife Service survey protocol prior to surface disturbing activities that may occur May 15 – July 15. The survey area will encompass a 300-foot buffer around all surface disturbing activities. It is recommended that no disturbance activities be permitted within a 300-foot radius buffer of active plover nests until the nest has fledged.

Paleontological Resources: Portions of the project are within areas of very high potential for fossils (Potential Fossil Yield Classification of 5). A paleontological survey was conducted in the project area on October 22, 2019, and paleontological resources were found. Paleontological monitoring during ground-disturbing activities is recommended to minimize the potential for damage to paleontological resources and impacts to paleontological resources. This proposal is on split-estate lands, where the BLM is obligated to make these recommendations through the NEPA process; however, the BLM cannot require that the proponent protect paleontological resources on split-estate lands where the surface is privately owned.

Cadastral Resources: Portions of the project are near survey monuments that delineate surface and subsurface property boundaries. As directed by 43 CFR 3809.420 all survey monuments, witness corners, reference monuments, bearing trees and line trees should be protected from unnecessary or undue destruction, obliteration, or damage.

NAME OF PREPARER: Stephanie Carter

SUPERVISORY REVIEW: Mark Ames, 11/13/2019

NAME OF ENVIRONMENTAL COORDINATOR: /s/ Marie E. Lawrence

DATE: 12/20/2019

DECISION AND RATIONALE: I have reviewed this categorical exclusion and have decided to implement the proposed action.

This action is listed in the Department Manual as an action that may be categorically excluded. I have evaluated the action relative to the 12 criteria listed above and have determined that it does not represent an exception and is therefore categorically excluded from further environmental analysis.

SIGNATURE OF THE RESPONSIBLE OFFICIAL: /s/ Mark Ames, AFM, for

Keith E. Berger, Field Manager

DATE: 12/23/2019

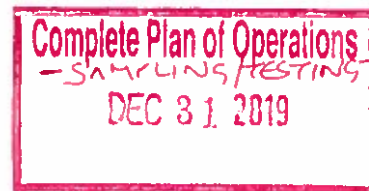
RECEIVED

APR 08 2019



April 5, 2019
Sent via email and U.S. mail
Project 17110

Bureau of Land Management
Attn. Stephanie Carter, P.G.
Royal Gorge Field Office
3028 East Main Street
Cañon City, CO 81212



**Re: Wild Horse Reservoir Project Site Investigation Project
Request for Authorization for Explorations on BLM Federally-Owned
Mineral Estates**

Dear Ms. Carter:

Thank you for your time and attention to this project. As you know, RJH Consultants, Inc. (RJH) has been retained by the City of Aurora (Aurora) to provide engineering services to support the planning and evaluation of constructing a new dam and reservoir in Park County, CO. This project is known as the Wild Horse Reservoir (Project). The Project site is located south of Hartsel, Colorado in Townships 12 South and 13 South, Range 75 West of the 6th Principal Meridian.

The purpose for requesting this Letter of Authorization is to obtain geotechnical and geological data that is needed to confirm whether the proposed Project is technically viable and to provide the data needed to enable the engineering team to configure Project components for the purpose of Federal, State, and local permitting.

On July 3, 2018, RJH submitted a request for a Letter of Authorization for exploration of land within the reservoir footprint located on split estate lands. In September 2018, your office expressed concerns regarding the amount of area included in the request. This letter supersedes the July 3, 2018 request for a Letter of Authorization and associated supplemental information and includes the proposed exploration plan procedures that will be implemented to avoid cultural and environmental resources on split estate lands.

After subsequent conversations with your office and Aurora's natural and cultural resources consultant, ERO Resources (ERO), we have refined the request to specific potential exploration locations. These locations are shown on Figure 1. While initially it appears that we are proposing a large exploration program, only about 25 percent of the locations shown will actually be drilled or excavated. The site selection process to determine the exploration locations will be adapted as field data is collected and in accordance with avoidance requirements for identified sensitive cultural and natural resources. The total program would only include approximately 30 test pits, 13 trenches, and 25 borings. The total area of disturbance will not exceed 20 acres.

Our understanding of the geology should improve with each boring and test pit/trench that is excavated and will inform RJH where future explorations should be located. RJH identified possible locations where explorations may be located and worked with ERO to modify the locations using Step 1 in our four-step process (further defined below) to avoid known cultural sites and sensitive or regulated natural resources.

Cultural and Natural Resources Avoidance Program

In order to seek approval to proceed, Aurora proposes to implement a rigorous program to ensure that the site investigation avoids cultural resources and sensitive or regulated natural resources. The program includes four steps.

1. Initial Planning to Avoid Impacts:

- a. ERO has completed cultural and natural resource assessments for most of the Project footprint and all of the site investigation areas. To date, ERO has evaluated cultural and natural resources on private surface (1,580 acres), split estate (2,540 acres), BLM surface (240 acres), and Park County (3 acres) lands for a total of 4,363 acres. Cultural resource reports have been previously submitted to the BLM Royal Gorge Field Office (RGFO) for the Federal surface lands and the proposed geotechnical work that will occur on Federal mineral estates.
- b. The identified areas for borings, test pits, and test trenches are at least 100, 160, and 200 feet, respectively from identified cultural sites.

2. Pre-Investigation Site Access Surveys:

- a. The site will be accessed from existing county roads. Access to boring, test pit, and test trench locations will be over rangeland. RJH will not need to grade or develop any access roads on site for this work.
- b. Routes for equipment will be identified in the field by RJH and ERO will provide an on-site monitor who will ensure that no cultural or sensitive natural resources sites are along the access routes to the investigation locations. Stakes will be placed in the field to mark the approved access routes and all equipment will traverse within the marked corridors.

3. Pre-Investigation Surveys of Exploration Locations:

- a. The surface area that will be disturbed by the exploration work will be identified in the field by RJH. Before exploration begins, ERO will visually confirm that there are no cultural sites and ensure the setbacks identified above are maintained.
- b. For test pits or trenches, where the area of disturbance will exceed about 80 square feet, ERO will monitor excavation to confirm that there are no significant buried resources.

4. Work Stoppage and Documentation:

- a. If a potential cultural resource is encountered during monitoring, the work will immediately stop, ERO will document and evaluate the finding on standard forms and notify the BLM, the excavation will be backfilled, and the exploration location will be relocated.

Required Data Collection

The field exploration program needs to achieve the following objectives to provide the data needed to confirm whether the proposed Project is technically viable and to configure the Project components for the purpose of permitting:

1. Refine the understanding of site geology by identifying contacts between various geologic units and locations of faults. Subsurface information is needed to improve the reliability of geologic mapping, identify geologic contacts and faults that are hidden by surficial materials, and to evaluate key geologic features that could impact Project feasibility and component configuration.
2. Define the stratigraphy and properties of in-place materials at the locations of the dams and ancillary facilities to support configuration of the dams and other facilities.
3. Identify the extent and properties of the various mineral materials within the Project footprint that could be used for borrow and earthen construction materials for the dams and ancillary facilities. This is needed to support development of a feasible configuration for the dams.

All proposed work will be on privately-owned surface properties. No explorations will be performed on BLM-owned surface properties. It is critical for this work to be completed in late spring to early summer to make decisions on Project viability, support development of the design concepts and avoid adverse delays to the overall Project schedule.

The methods and procedures for the exploration program are described in the following sections.

Test Pits/Trenches

Test pits/trenches will be used to achieve the three previously defined objectives of the field exploration program. The specific purposes of test pits are to expose and sample subsurface materials at a larger scale than what can be accomplished by drilling borings. Test pits/trenches will be used to observe geologic structure that will affect performance of the dam and reservoir, including orientation of bedrock bedding, degree of bedrock fracturing, and locations and conditions of faults. Test pits/trenches will also be used to evaluate the types and quantities of various mineral resources that could be used for construction materials during dam construction.

Select soil and bedrock samples will be collected from test pits/trenches for further evaluation and laboratory testing. We estimate that up to about 3 cubic feet of material will be collected for testing from each test pit and 1 to 2 cubic feet of material from each test trench. We estimate that about 20 test pits and 12 test trenches will be excavated on properties with a Federal mineral estate.

Test pits/trenches will be excavated using either a rubber-tired backhoe or a track-mounted excavator. Test pits are anticipated to be up to about 20 feet deep, about 3 feet wide, and about 20 to 50 feet long. Test trenches are anticipated to be up to about 20 feet deep, about 3 feet wide, and about 100 to 2,500 feet long. Spoils piles will be temporarily placed to one side of the pit/trench.

Trench boxes will not be used for this work. Site personnel will not enter trenches or test pits greater than 4 to 5 feet deep unless they are sloped or benched to OSHA standards. Soils will be logged from cuttings and photographs of the sides of pits/trenches will be obtained from the ground surface for non-benched pits/trenches greater than 4 to 5 feet deep. Personnel will stand at the end of a pit/trench instead of the side and will maintain a safe distance from pit/trench edges. Our field crew will watch for signs of instability of pit/trench walls and will not lean over the edge of an open pit/trench. Pits/trenches left open overnight will be sloped at one end at a minimum 2 Horizontal to 1 Vertical (2H:1V) slope to allow for egress if someone or an animal were to fall into the pit/trench; orange fencing will be placed around the perimeter of the excavation until the pit/trench is backfilled.

Test pits/trenches may be left open for several weeks before being backfilled. The majority of the property where the work will be performed is owned by Aurora. The remaining property impacted by the work is owned by Hartsel Springs Ranch or Elk Mountain Cattle Company (EMCC). Aurora has existing agreements to allow access and testing. EMCC grazes livestock in the area where the work will be performed. RJH has and will coordinate directly with EMCC to avoid livestock incident. RJH has contracted with EMCC Excavating to excavate the pits/trenches.

Upon completion, the test pits will be backfilled with the excavated materials and the ground surface will be graded to match the surrounding grade and be reseeded with a native, weed-free seed mix that reflects species in the surrounding vegetation.

Borings

Borings will be used to achieve the three previously defined objectives of the field exploration program. The specific purposes of the borings are to investigate and collect samples from deeper depths that cannot be explored using test pits, allow for in-situ hydraulic conductivity testing and downhole geophysical investigation of dam foundation materials, and provide data for calibration of surface geophysical results.

Soil and bedrock samples will be collected from borings for further evaluation and laboratory testing. Soil will be sampled intermittently, and we expect that between 1 and 3 cubic feet of soil would be removed from the site for borings that extend 10 to 30 feet through soil. The remaining soil that is brought to the surface by the augers would be spread out around the boring location. Rock would be recovered continuously and we expect that about 0.02 cubic feet of rock would be recovered per foot of borehole and removed from the site. We estimate that about 25 boreholes will be drilled on property with a Federal mineral estate.

The borings are anticipated to extend up to about 200 feet below the ground surface; however, select borings may need to extend deeper to investigate subsurface conditions identified by surface geophysical investigations. The total length of drilling will likely be less than 6,000 feet. The borings would be conducted using either augers, ODEX, or rock coring techniques. Borings will create an approximately 3- to 8-inch-diameter hole in the ground. Drilling will involve circulation of water or pressurized air through the boring to remove cuttings. Circulating water and cuttings are collected in a mud tank (approximately 200-gallon steel or plastic tank) at the ground surface. The cuttings settle out of the water in the tank and the drill rig recirculates the water from the mud tank.

In-situ water pressure testing (Packer testing) would be performed within the bedrock portion of the borings. This involves inflating a rubber seal near the bottom of the boring to isolate the bottom section of the boring. Water is then injected into the isolated section of the boring under pressure and the rate of injection is used to calculate the hydraulic conductivity of the bedrock.

Downhole geophysical testing, including televueing or sonic logging, would be performed in borings. Televueing involves deploying a camera down the borehole to view the borehole walls in order to observe the conditions and orientations of fractures. Sonic logging would involve measuring the velocity characteristics of subsurface materials to assist with calibration of seismic data collected from surface geophysical investigations.

Upon completion, drill cuttings that accumulate at the ground surface or in the mud tank would be disposed of at each boring location by spreading them out on the adjacent ground surface. The borehole would be filled from the bottom to within about 2 feet below the ground surface with cement-bentonite and the remaining 2 feet backfilled with native earth material from the boring.

RJH will permit monitoring wells (including abandonment) with the State of Colorado in accordance with Colorado State Engineer Office Rules and Regulations. Colorado Division of Reclamation, Mining, and Safety (DRMS) permits are not currently needed for this work.

Working platforms may need to be constructed if borings will be located in areas of steep topography. Working platforms would be about 20 by 40 feet. Grading for working platforms would be performed using a bulldozer, excavator, or similar construction equipment. No material will be removed from the site or sampled during these grading operations. Excavated materials would be used for fill or stockpiled as appropriate to accommodate the platforms. Disturbed areas and areas completely covered with backfill (if any) will be reseeded with a native, weed-free seed mix that reflects species in the surrounding vegetation.

Summary

We estimate that a total of about 20 acres of land will be disturbed during exploration, and up to about 10 cubic yards of soil materials and 5 cubic yards of rock will be removed from the site from the lands included in the Federal mineral estate. Based on our understanding of the requirements, it is our opinion that this work would be covered under BLM's categorical exclusions for NEPA compliance.

Please contact me if you have any questions or require further information.

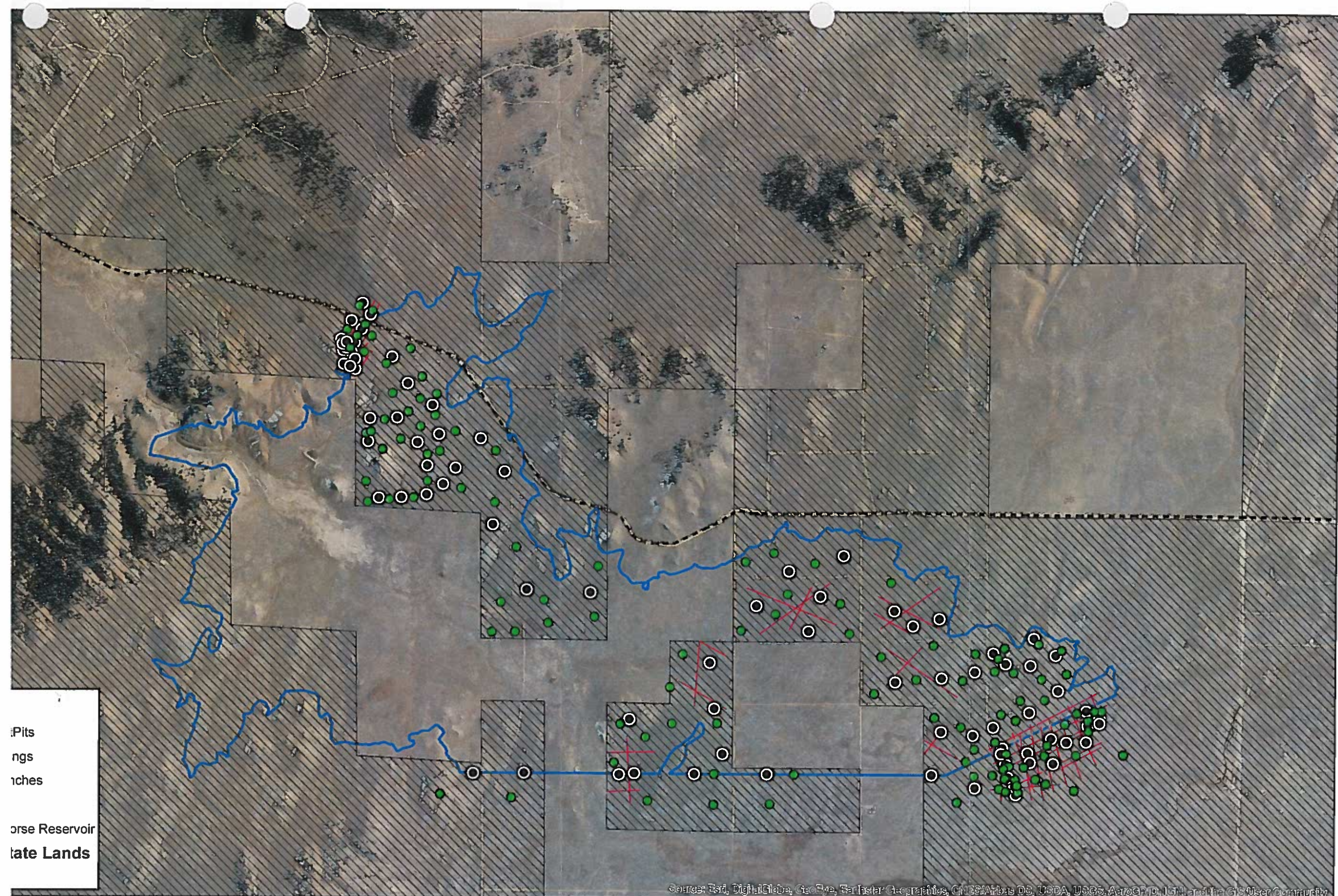
Sincerely,

RJH CONSULTANTS, INC.



Robert J. Huzjak, P.E.
President

Attachment: Figure 1



NOTE: ONLY ABOUT 25 PERCENT OF THE LOCATIONS SHOWN



WILD HORSE

GEOTECHNICAL
EXPLORATION



BLM Authorization for sampling/testing at Wild Horse Reservoir site

Carter, Stephanie <sscarter@blm.gov>

Tue, Dec 31, 2019 at 12:08 PM

To: "Vidmar, Richard" <rvidmar@auroragov.org>

Cc: Robert Huzjak <rhuzjak@rjh-consultants.com>, Elliott Russell - DNR <elliott.russell@state.co.us>, Mark Ames <mames@blm.gov>

Good afternoon,

Please see attached for BLM's authorization letter addressing the City of Aurora's proposal for test pits/trenches and borings at the proposed Wild Horse Reservoir site in Park County. A hard copy has also been mailed to you.

Please let me know if you have any questions.

Happy New Year!

Stephanie Carter, P.G.

Geologist

Field Office Program Lead, Mining Law & Mineral Materials

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U.S. Dep't of the Interior Region 7 - Upper Colorado Basin

BLM, Royal Gorge Field Office

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### 3 attachments



**123119 BLM to Aurora\_sampling authorization.pdf**

57K



**12312019 Aurora Complete Proposal.pdf**

607K



**DOI-BLM-CO-F020-2018-0077 CX.pdf**

541K