

**APPLICATION FOR FEDERAL MINOR COAL
EXPLORATION LICENSE**

**Muddy Tract
Sanpete and Sevier Counties, Utah
Manti-La Sal National Forest**



**Exploration Plan
Jan. 2005**

**ARK LAND COMPANY
A Subsidiary of Arch Coal Inc.**

File in:

- Confidential
- Shelf
- Expandable

Refer to Record No. 0018 Date 02082005

In C 10410002 Incoming
For additional information

RECEIVED

FEB 10 2005

DIV. OF OIL, GAS & MINING

Introduction

Ark Land Company (a subsidiary of Arch Coal Inc.) is submitting this Application for Federal Minor Coal Exploration License on behalf of Canyon Fuel Company, LLC, Sufco Mine to the United States Bureau of Land Management (BLM) as required in 43 CFR 3482 in order to obtain approval to conduct coal exploration and reclamation activities during the summer of 2005. The type of exploration proposed is wireline core drilling. Four drill holes are proposed for drilling in coal managed by the BLM with surface management by the U.S. Department of Agriculture Forest Service. This plan is formatted to address the specific requirements of 43 CFR 3482.

43 CFR 3482 (3) (i)

Applicant

Ark Land Company
c/o Sufco Mine
397 S 800 W
Salina, Utah 84654
Attn: Mark Bunnell 435-448-2633

The applicant is the same as the operator of the proposed exploration license plan. Correspondence regarding this exploration license should be addressed to:

Mark Bunnell
Ark Land Company
c/o Skyline Mines
HC 35 Box 380
Helper, Utah 84526 435-448-2633

43 CFR 3482 (3) (ii)

Person Present During Exploration

Mark Bunnell
Ark Land Company
c/o Skyline Mines
HC 35 Box 380
Helper, Utah 84526
(work) 435-448-2633 (home) 435-637-6690

At times a consulting geologist may act as representative of the applicant. The BLM and USFS will be notified of the consulting geologist's name and address if one is used.

43 CFR 3482 (3) (iii)

Description

The exploration plan involves Federal surface and coal rights in the Muddy Canyon area approx. 10 mi. northwest of Emery, Utah. The requested license area encompasses 870 acres, more or less. The coal is managed by the U.S. Department of the Interior, Bureau of Land Management and the surface is managed by the U.S. Department of Agriculture Forest Service. Map 1 depicts the boundaries of the proposed exploration area. The area included within the license application is tabulated as follows:

T. 20 S., R. 5 E., Salt Lake Meridian, Sanpete County, Utah		
Section 30: S1/2 SE1/4		80 Acres
Section 30: SE1/4 SW1/4		40 Acres
Section 31: E1/2		320 Acres
Section 31: E1/2 W1/2		160 Acres
Section 32: NW1/4		160 Acres
Section 32: N1/2 SW1/4		80 Acres

Total 840 Acres

Geology and Topography

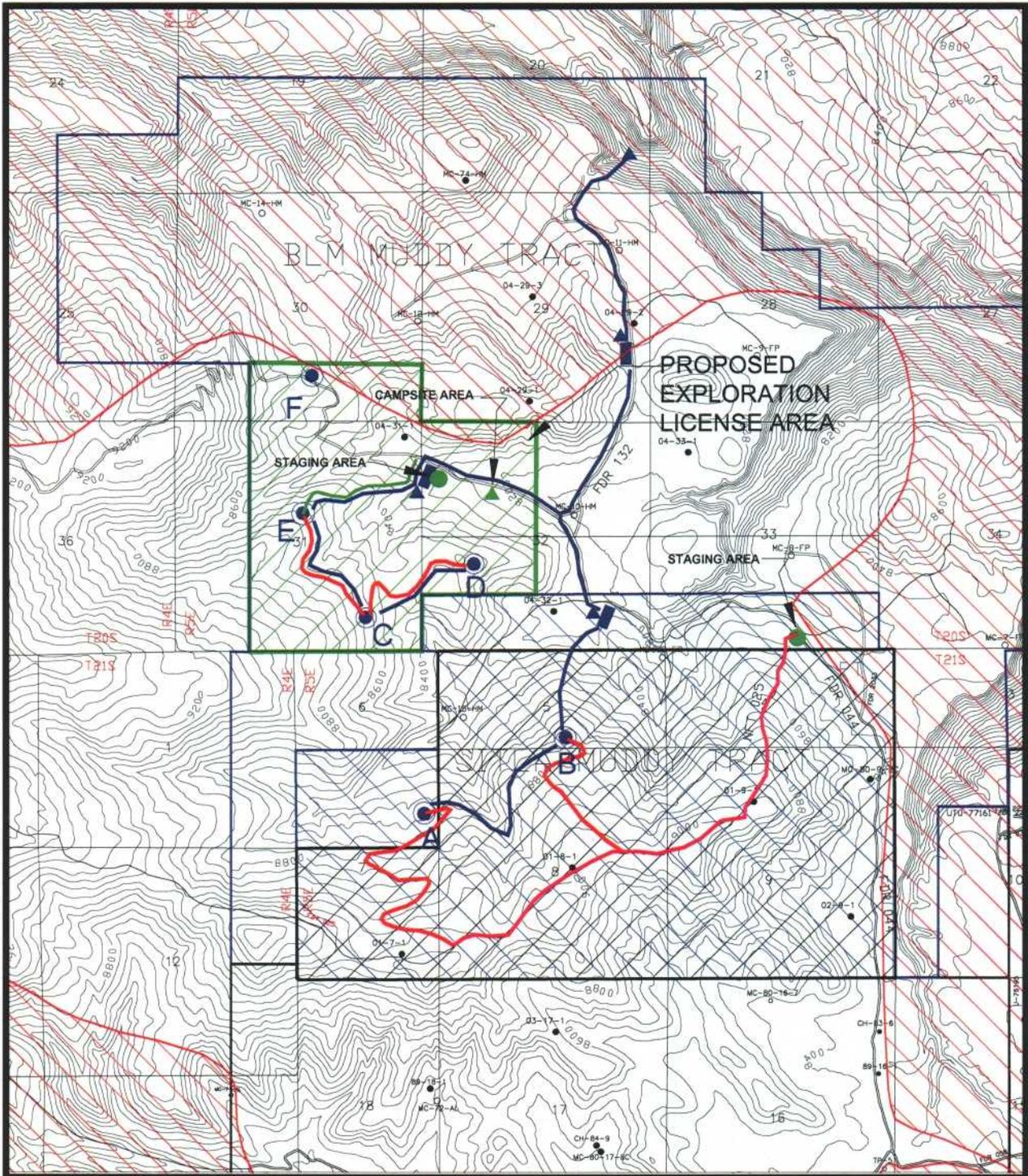
The proposed exploration license area is located on the south side of Muddy Canyon (Map 1). The area lies within the Wasatch Plateau physiographic province. Muddy Canyon drains southeastward into the south end of Castle Valley. Elevation ranges from approximately 7400 ft. to 8600 ft. in the proposed license area.

The exploration area is underlain by sedimentary rocks of late Cretaceous age. Three formations crop out in the area including the coal-bearing Blackhawk Formation as well as the overlying Price River and North Horn Formations. At least three potentially mineable coal zones occur in the area including the Muddy, Upper Hiawatha, and Lower Hiawatha coal zones.

Strata in the area dip uniformly from 2 to 3 degrees northwest. While mining in the Quitchumpah and Pines areas to the south has encountered minor faulting and fracturing, no major faulting is known in the Muddy area.

Ark Land plans to wireline core drill through all major coal seams including at least 10 feet of floor rock beneath the deepest seam. Two of the planned holes (D and F) will be completed as water monitor wells.

No valuable minerals other than coal are known to occur within the boundary of the proposed exploration license area.



Proposed 2005 Drillsite	Pump	Inventoried Roadless Area
Proposed License Area	Frac Tank	Note: Holes A and B are located on SITLA Lease
Temporary Road	HDPE Waterline	
Construction	Staging Area	
Improvement of Existing	Campsite	
Wheeltrack		
Widening of ATV Trail 025		

MAP 1

0' 3000' 6000'

SCALE

ARK LAND COMPANY

PROPOSED EXPLORATION LICENSE, 2005

DRILL HOLE LOCATION AND ROAD CONSTRUCTION LAYOUT

DATE: _____ BY: _____

REVISION: _____

DATE: _____ BY: _____

APPENDED DATE: _____

FILE NO. SHEET NO.

1" = 3000'

Surface Water

Muddy Canyon belongs to the San Rafael sub-basin of the Upper Colorado River Basin. The exploration area is drained by Muddy Canyon.

Ground Water

Previous drilling in the Muddy area has not encountered significant amounts of water.

Groundwater occurs in perched zones of limited areal extent in lenticular sandstones. None of the formations down through Blackhawk support a continuous aquifer. Mining in Sufco Mine to the south occasionally encounters minor inflows of groundwater which drip from fractures and minor fault zones in the mine roof.

Soils

Soils in the area are generally sandy loams. Surface horizons are commonly dark and organic rich. Subsoils are mainly loam with a high rock content. Care will be taken in locating the drill site to ensure soil conditions will not be a limiting factor for site reclamation potential. Topsoil will be removed and stockpiled adjacent to each drillsite. Subsoils that must be removed for site leveling will also be stockpiled separately or utilized in construction of 1 to 3 ft. berms around each site.

Erosion and Sedimentation

The proposed drill sites do not occur in slump areas and the proposed program will not adversely affect erosion and sedimentation in the area.

Biology

Vegetation in the exploration area is comprised mostly of conifer timber and sage communities. The streams are not capable of supporting game fish. The exploration area is an important habitat for raptors, elk, mule deer, cougar, bobcat, black bear, and small mammals. The area is habitat for a limited number of reptiles and amphibians.

Threatened and endangered species in the exploration area include sage grouse, bald eagle and peregrine falcon. Exploration and reclamation activities will not occur within one half mile of known breeding and nesting areas. Site specific raptor surveys will be conducted in the late spring/early summer to verify site locations meet this criterion. A Mexican Spotted Owl survey will also be conducted beginning in late spring.

Ark Land Company plans to contract any required site-specific biologic surveys such as raptor and/or threatened and endangered species prior to commencement of exploration activities. This work would be accomplished in late spring/early summer 2005 upon approval of the USFS.

Historic Places

There are no known districts, sites, buildings, structures, or objects listed on, or eligible for listing on, the National Register of Historic Places in the proposed exploration area.

Cultural or Archeological

There are known archeological resources located in the proposed exploration area but none are close to the proposed drill hole sites.

Archeological work preceding development of previous drill pads, mine expansion projects and access roads shows some cultural material. A good listing of cultural resource inventories conducted in the area is included in the Pines Tract Project, Final Environmental Impact Statement, section 3.8, pg. 3-152. Ark Land Company conducted site-specific archeological surveys relative to its 2004 Muddy drilling project (U-04-EP-0650f). The report is on file with the BLM, USFS, and DOGM. A site-specific cultural resources survey for this project will be conducted in late Spring/early Summer 2005, prior to commencement of any field operations. Results will be forwarded to the BLM upon completion.

Exploration

The drill site location and projected depth is tabulated as follows:

Site	Location	Projected TD
C	SE, SE, 31, 20S, 5E	1700 ft
D	NW, SW, 32, 20S, 5E	1600 ft
E	SW, NE, 31, 20S, 5E	1800 ft
F	SW, SE, 30, 20S, 5E	1830 ft

It should be noted that two additional holes (A and B) are being planned as part of the overall drilling project (Map 1). These holes are located within the SITLA Muddy Tract, a portion of which has been leased by Canyon Fuel Company. All six holes will be drilled as part of a joint drilling project.

Drilling

The planned drilling method is wireline core drilling. The entire borehole will be core drilled from surface through the lowest coal seam horizon. Exploration equipment for the drilling phase will include one or two truck-mounted core drilling rig(s) together with all necessary equipment such as drill rod trucks, mud tanks, water tanks, etc.

Core drilling will involve one or two truck-mounted 2000 ft rated core drills, two 4000 gallon water trucks, one 1500 gallon water truck, three or four 18,000 gallon frac tanks, one auxiliary air compressor, one supply trailer, 6 pick-up trucks, a geophysical logging

truck and two covered trailers. The drilling procedure for the exploration holes will be to continuously core to total depth. Casing will be set in each hole to below the Price River Formation. A water monitor well is planned for completion of hole F. The drilling procedure for the piezometer will be to drill into the upper portion of the Star Point Sandstone beneath the Lower Hiawatha seam and install the screened portion in the Star Point beneath the Lower Hiawatha seam (Fig. 2). Water will be hauled from the North Fork and/or South Forks of Quitchupah Creek or pumped from Muddy Creek to the drill sites or to a 18,000 gallon water (frac) storage tank (Map 1). Supply trailers will carry drill steels, coring equipment, drilling additives, cutting and welding equipment, a dog house and other supplies. Two pick-up trucks will be used for each drill rig by the drillers to carry personnel, fuel, and supplies and two pickup trucks will be used by the dirt contractor. The logging contractor will use a single axle 1 ton rated truck. The company representative and geological consultant will also use pick-up trucks for transportation.

Backup and auxiliary equipment to be located at the staging areas or on the constructed drillpads will include but not be limited to an 18,000 gal. frac (water) tank, two supply trailers, drilling fluid containers, pallets of cement and drilling mud, two 4000 gal. water trucks, a fuel truck or or double lined fuel tank, four pickup trucks, a covered tool supply trailer, and a geophysical logging truck.

Access to drillsites will be obtained by construction of temporary access roads. Proposed road locations are shown on Map 1. A portion of the road construction will include improvement of existing wheel tracks or ATV trails. Roads will be constructed utilizing a D-8 dozer or equivalent with planned temporary road width approx. 12 ft.

The general method to be followed during drill hole exploration, reclamation and abandonment is: 1) repair the Forest Development Roads where needed and prepare the access roads and drill sites, 2) drill, log and plug the exploration drill hole (hole F will be completed as a water monitor well), 3) reclaim the drill sites and access route. No blasting will be done for road building or repair. Repair of Forest Development Roads may include hauling gravel to fill rough areas on bedrock ledges and cover sandy areas on the road as well as grading rutted areas with a grader. Wheel track and drill site preparation and reclamation will be done with a D-8 Cat dozer (or equivalent) and a road grader. Equipment operators will use pick-up trucks for transportation.

Earth excavation will mostly be done for the drill sites using a D-8 Cat (or equivalent) and road grader. A track mounted backhoe and/or a rubber-tired backhoe may be used at times for construction of mud pits. Excavation will include grubbing, removal and separate storage of the soil A horizon and, if needed, removal and separate storage of material below the soil A horizon to make a level drill site. Two mud pits will be excavated in the material below the soil A horizon if there is sufficient soil depth. The only material disposed of at the drill sites will be cuttings, unneeded drill core, and any drilling foam and/or mud which will be placed or left in the mud pits after pits are dry or have been pumped out. Pit liners will be used in the mudpits. Liners will be removed and hauled away prior to reclamation.

Drillpads will be approx. 80 ft. X 100 ft. and will include a mudpit approx. 40 ft. long, 10 ft. wide, and 8 ft. deep. Topsoil will be removed and stockpiled for reclamation. A 1 to 3 ft. berm will be constructed around the perimeter of the pad to ensure no runoff from the pad. The pad will be constructed such that fluids will drain toward the mudpit. Figure 1 shows a typical drillpad construction and layout.

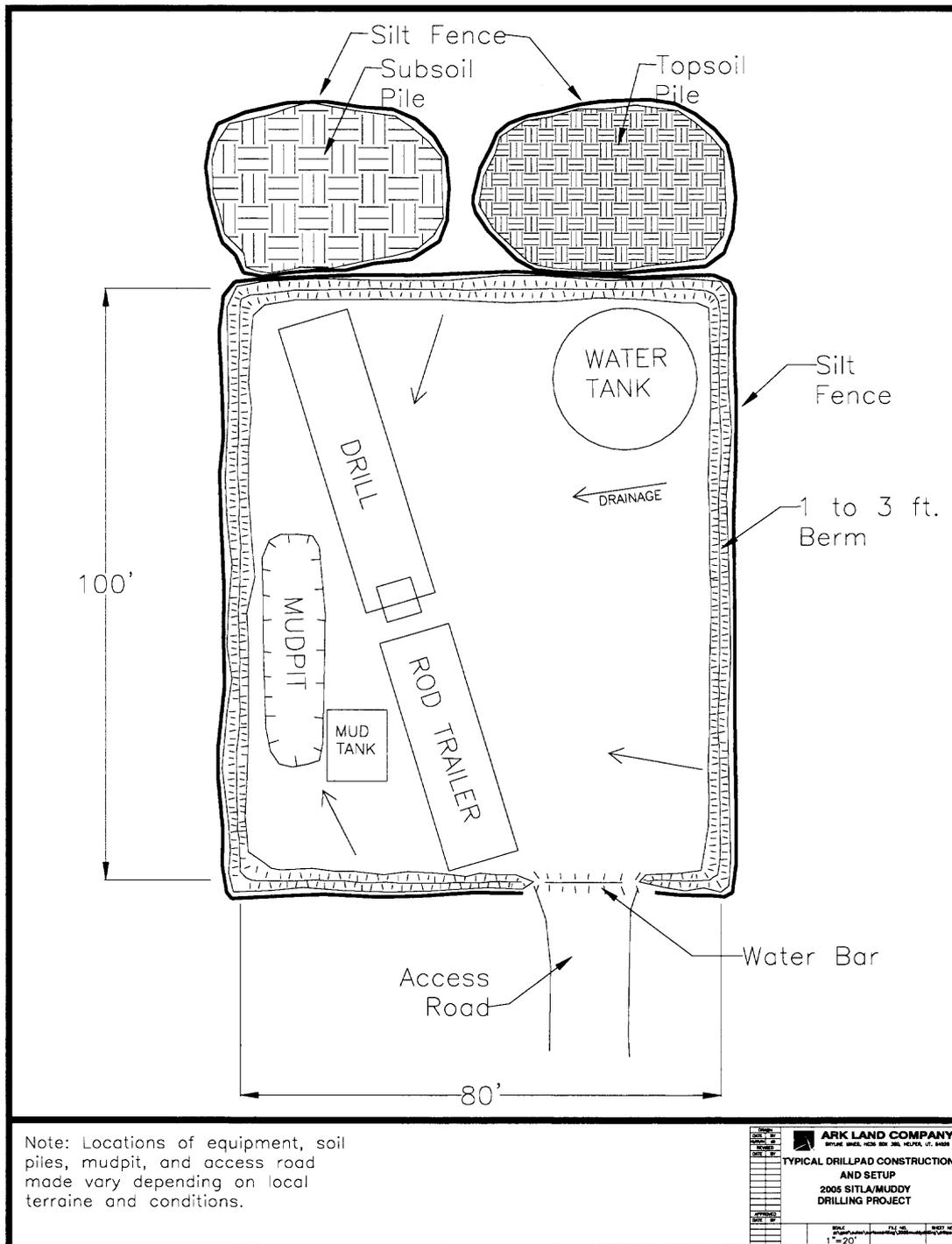


Fig. 1: Typical drillpad construction and layout.

The finished size of the drill hole will be nominally 3 5/8 inch diameter. Surface casing will be 4 1/2 inch diameter and will be inserted through the surface alluvium and certain other intervals depending on hole conditions. The suite of geophysical logs planned for this hole includes: natural gamma, gamma-gamma density and resistivity. Drill cuttings will remain in the mudpit.

The drill sites will be located as shown on Map 1. Existing U.S. Forest Service roads will be utilized for access. As mentioned, construction of new roads is planned. If existing roads are disturbed by exploration activities, they will be bladed and returned to a condition equal to or better than their condition prior to commencement of exploration. All necessary USFS road-use permits will be obtained.

Disturbed area is listed as follows:

<u>Site</u>	<u>Construction</u>	<u>Size</u>	<u>Estimated Disturbed Area</u>
C	Dozer & Trackhoe	80' X 100'	.18 ac.
D	Dozer & Trackhoe	80' X 100'	.18 ac.
E	Dozer & Trackhoe	80' X 100'	.18 ac.
F	Dozer & Trackhoe	80' X 100'	.18 ac.
Road Const	Dozer & Grader	12'X 24,700'	6.80 ac.
Total			7.52 ac

Reclamation of the drill sites will include removal of all trash and debris; and topsoil will be redistributed with the trackhoe and/or dozer. The disturbed areas will be pocked and reseeded utilizing the approved U.S. Forest Service seed mix. The planned method to prevent possible future soil erosion is pocking and re-establishment of vegetation on the reclaimed area after exploration activities are concluded. Temporary access roads will be reclaimed by excavated material back over the road and reestablishing original contour.

Drilling Equipment

Equipment expected to be utilized during various phases of the exploration program is tabulated as follows:

Exploration Phase	Equipment Type	Size or Capacity	Quantity
Drilling	Wireline Core Rig	LS 244 or similar	2
	Water Truck	4000 gal	2
	Pipe Truck/Transport	Semi, 40 ft flatbed	2
	Tool trailer	Dual Axle	2
	Pickups	4 W drive	4

Support and Construction	Jet fuel trailer/tank	Dual Axle	1
	Helicopter	Lama or similar	1
	Pickups	4 wheel drive	4
	Grader	D 14 Cat or similar	1
	Dozer	D 8 Cat or similar	1
	Trackhoe	Track mounted	1
	Backhoe	Rubber Tired	1
	Frac Tank	18,000 gal	5
	Fuel Truck	2000 gal	1
	Transport	Semi w/flatbed trlr	2
	Pickups	4 wheel drive	4
	Triplex Pump	Skid Mounted	3
	Poly pipe winder	Trailer mounted	1
	Boom Truck	Rear crane mount	1
	Geophy Log Truck	4 W Drive	1

Note: Some support equipment is only temporary on-site for equipment delivery and retrieval. Helicopter to be used for placement and retrieval of pump and waterline in Muddy Canyon.

Transportation and Equipment

Equipment to be transported over U.S. Forest Service roads will include:

Pickups: 6 ea. @ approx. 2 trips/day

Pickups with 5th-wheel trailers and horse trailers for hauling heli-portable drilling equipment, horses, and fuel: 3 ea. @ approx. 1 trip/week

Pickup with jet fuel trailer for helicopter support: 1 ea. @ approx. 1 trip/day

Transport (40,000 GVW) for hauling additional equipment for drilling support such as water tanks (20,000 gal frac tanks) and hole abandonment materials: 1 ea. @ approx. 1 trip/week

Geophysical logging truck (20,000 GVW): 1 ea. @ approx. 2 trips/week

Backhoe (rubber-tired): 1 ea. @ approx. 1 trip/week

Water Truck (40,000 GVW): 1 ea @ approx. 4 trips/day

All debris and trash will be disposed of properly. Accumulation of trash and debris over an extended period of time before removal will not be allowed. Location of disposal will be off-site in an approved sanitary landfill. Excess drill cuttings will be transported by helicopter to Canyon Fuel Company's approved waste rock site along the Sufco mine haul road.

Access and Road Construction

Access to the staging area/landing zone will be via US Forest Service roads 007, 044, and 132 (Map 1).

Drill Hole Plugging

The exploration drill holes will be plugged with a cement, cement/bentonite slurry, or abandonite to their full depth. The completion method includes pulling surface casing when possible; but when not possible, cutting it flush with the ground, then pumping the cement/bentonite slurry through the drill pipe starting at the bottom of the hole. Plugging will then be done in stages by tripping-out of the hole 3-4 joints (60-80 ft) and pumping again. This process will be repeated to the surface. A brass identification tag will be placed in the concrete at the top of the drill hole stating the operator's name, drill hole number and legal description. The plugged hole will be flush with the ground surface.

Hole D and F may be completed as a water monitor wells. The completion method includes cleaning the hole of drill cuttings by circulating with air or water, inserting a 1 to 2 inch diameter steel casing with a 30 ft section of 0.5 mm slot screen section with an end cap, filling the hole annulus in the screened section with washed sand or pea gravel, packing off the screened section or sealing it off with bentonite, then filling the remainder of the hole annulus to the surface with a cement or cement/bentonite slurry. A steel protective casing with locking cap will be placed 6 in. to 1 ft. above ground level. Figure 1 gives the design to be used in completing the piezometer.

WATER MONITOR WELL DESIGN

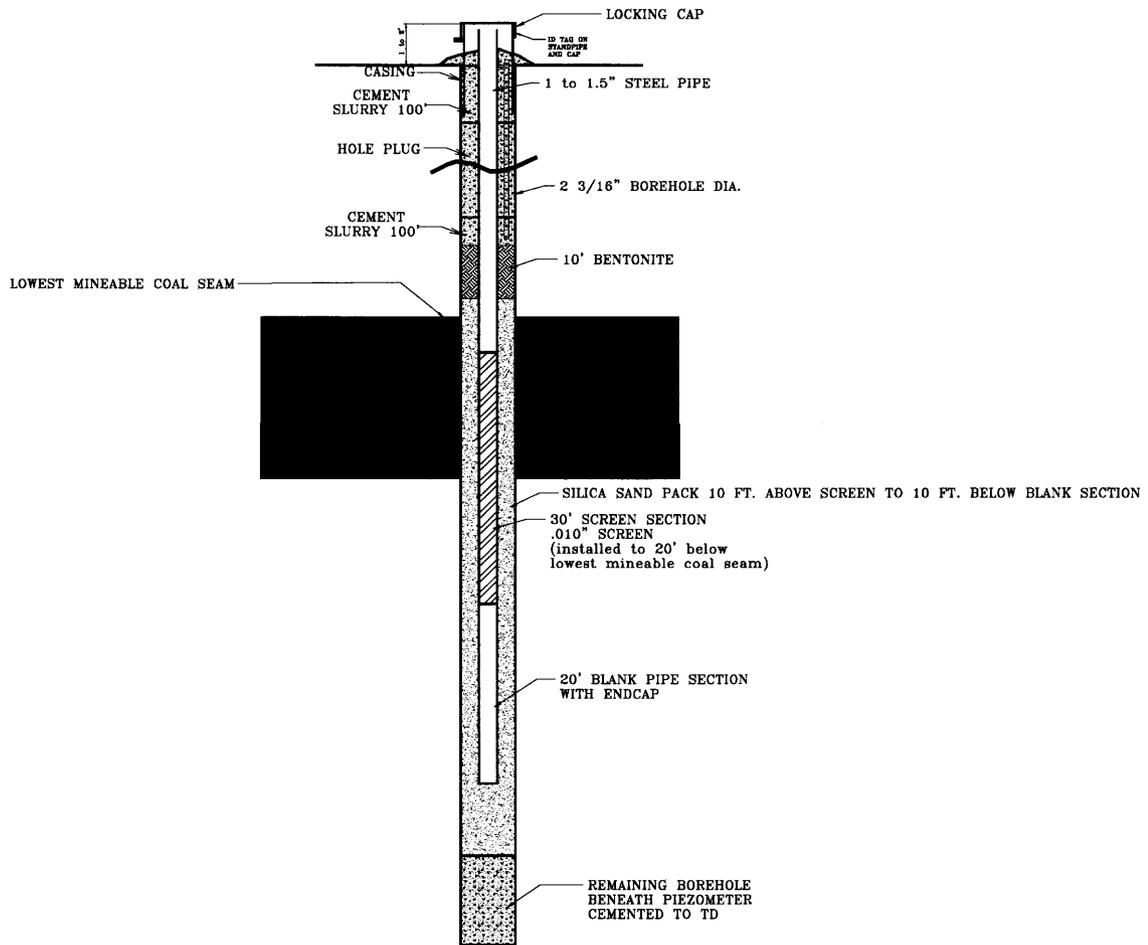


Fig. 2: Piezometer design.

Once the monitor well is no longer in use, it will be completely plugged with a cement or cement/bentonite slurry to the top. The wellhead will be removed at the surface.

Water Rights

Water for drilling and road maintenance will be obtained from Muddy Creek and/or Quitchumpah Creek. All necessary arrangements will be made with shareholders and the Utah Division of Water Rights. An approved Temporary Change permit will be obtained prior to withdrawing water.

Site Preparation

Drill pads will be constructed by removing the soil A horizon and storing it as a topsoil stockpile. The topsoil stockpile will be skirted about its base with silt fence to limit any erosion of the pile or movement of topsoil material onto surrounding soils. Any subsoil material excavated for pad leveling or mudpit construction will be used in berm construction or piled separately from the topsoil pile. The subsoil pile will also be skirted by silt fence. A 1 to 3 ft. high berm will be constructed around the perimeter of the disturbed area to ensure no drainage of fluids will leave the site. The pad will be constructed such that fluids flow toward the mudpit.

Mudpits will be excavated to approx. 40 ft. long X 10 ft. wide X 8 ft. deep. Mudpits not in use will be fenced so as to prevent access by wildlife and the public.

Logging

Geophysical logs will be run in accordance with 10 CFR part 39.

Surveying

The drill hole will be surveyed to a 0.01 foot horizontal location and a 0.1 ft. vertical elevation. Locations will be expressed in NAD 83 state plane coordinates adjusted to sea level datum.

43 CFR 3482.1 (3) (v) Estimated Timetable

The proposed drilling project is scheduled to begin in early- to mid-July. The following table shows the projected timetable for each phase of the program.

EVENT	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10
Set pumps, frac tanks and run water lines to sites										
Drilling and Monitor Well Installation										
Reclaim Drill Sites and remove water lines.										

The total plan, including reseeding, should be completed in 8 to 10 weeks depending on weather or other delays.

Reclamation

Reclamation work will begin as soon as possible after monitor well completion and pump testing. The site will be returned to approximate original contour, scarified, and reseeded with USFS approved seed mixture. Constructed temporary access roads will be pulled back to approximate original contour and topsoil replaced or in the case of ATV trail 025, will be pulled back to original width. It will then be scarified and reseeded.

The planned seed mix is tabulated as follows (same mix as approved during 2004 Muddy drilling project):

Seed Mix		Pounds/Ac PLS
Western Wheatgrass	Elymus smithii	2
Basin Wild Rye	Elymus cinereus	1
Intermediate Wheatgrass	Elymus hispidus	2
“Paiute” Orchardgrass	Dactylis glomeratus	1
Blue Ranch Wheatgrass	Agropyron Spicatum	2
Ladak Alfalfa	Medicago sativa var Ladak	1
Mountain Aster	Aster adscenens	0.75
Silvery Lupine	Lipinus argentis	0.75
Small Burnet	Sanguisorbia minor	1
	TOTAL	11.50 PLS

Prior to any seeding, the USFS will be consulted to ensure proper seed mixture.

Safety

Drilling and construction contractors as well as Ark Land/Canyon Fuel employees will be required to wear hard hats, steel toed boots, and safety glasses when working at drillsites or handling equipment at the staging area/landing zone.

Appropriate fire fighting equipment and adequate water supply will be maintained at

drillsites and the staging area as well as any water pumping locations. USFS fire stipulations will be followed.

Internal combustion engines will be equipped with appropriate mufflers and/or spark arrestors. All vehicles will carry a readily available and fully charged fire extinguisher and a first aid kit, as well as fire fighting tools.

Large equipment will not be moved when roads are excessively muddy. Personnel will not be allowed to drive onto the area when excessively muddy roads occur, but may leave the area at the end of the work day or drill period. Any rutting that occurs will be repaired by the dirt contractor when conditions permit.

43 CFR 3482.1 (3) (vi) Amount of Coal Removed

Ideally, 2.4 inch diameter (HQ) coal core will be removed from each coal seam. Total amount of coal removed will be less than 300 lbs.

Other Permits

Other permits such as road use and special use will be obtained from the USFS as required.

Reclamation Bonds

Bonding will be secured as required by both the USFS and BLM.

Data Use

Data will be transferred to the BLM within a reasonable time period after exploration. Ark Land Company requests that all data be kept confidential.