

**Appendix G**  
**On-Site Inspection Notes**

**Fram Whitewater Unit Master Development Plan**

**On-Site Inspection Notes**

**December 11 and 12, 2012**

On-site inspections for 10 of the 12 proposed well pads and associated access roads were conducted on December 11 and 12, 2012. Representatives from the Bureau of Land Management (BLM), Fram Operating, LLC (Fram), Colorado Parks and Wildlife (CPW), the City of Grand Junction and Edge Environmental, Inc. (Edge) were present.

Proposed well pads Federal 12-97-30-1, Federal 12-98-24-2, Federal 12-97-7-1, Federal 2-2-2-1, Federal 13-97-8-2, Federal 1-2-15-1, Federal 1-2-22-1, Federal 1-2-16-1, Federal 1-2-26-2 and Federal 1-2-25-2 and associated access roads were inspected. Proposed well pads Federal 13-98-12-2 and Federal 1-2-33-1 and associated access roads were not inspected due to time and access constraints. Minor adjustments were made to proposed well pad and access locations during the on-site inspections and will be reflected at the time of the APD submissions for respective locations, roads, etc. Proposed well pad Federal 12-98-24-2 was moved across the road and the new location will require another survey, on-site inspection and site-specific consideration before disturbance is approved.

Resource issues noted during the on-site inspections are described below as measures that were agreed to at the on-sites and would be required by the BLM in respective APDs should the Project be approved. Resource issues noted which are common to all locations are as follows:

- Pre-construction on-sites are required for all pads and construction activities. Site-specific details regarding implementation may be determined at the required pre-construction on-site inspection.
- Updated survey plats, maps, drawings, known mitigation measures, changes required at the on-sites and Surface Use Plans that match such requirements as well as the approved proposal should be required as part of submitted APDs before they will be considered complete by the BLM.
- Disturbance limits depicted on survey plats for each well pad location (used to calculate proposed amounts of disturbance and interim reclamation) should include all disturbance including storm water management BMPs. Such plats should be included in APDs and applications for other project components, as applicable.
- CPW suggested that where multiple roads go to the same location, duplicate roads should be reclaimed as wildlife mitigation.
- Fram should coordinate with the BLM and the City of Grand Junction to determine how road improvements and storm water management BMPs would be implemented within the Project Area.
- Roads within the Project Area should generally be upgraded/improved for all-weather year-round access, if wells prove productive. Fram proposes to use primitive roads where possible, per the BLM Gold Book, until well productivity can be determined. Major roads serving the Project Area should be considered for upgrade based on road conditions and maintenance needs as the Project moves forward. When applicable, roads should be graveled using native materials to minimize visual impacts within the Project Area. Specifically, river gravels and cobble should not be used; angular native materials should be required.
- In accordance with BLM GJFO Standard COAs, Fram would be required to certify to BLM that a Surface Use Agreement has been reached with the private surface owners

prior to commencing construction and that the owner has been provided a copy of the Surface Use Plan of Operations required as part of a federal APD.

### **Federal 12-97-30-1**

The on-site inspection for well pad Federal 12-97-30-1 was conducted on December 11, 2012. This proposed well pad location is about 0.7 mile northeast of and above Juniata Reservoir, a municipal water source for the City of Grand Junction. The pad would be located on the steep sideslope of a bowl that drains naturally into the reservoir. The City of Grand Junction staff present at the on-site expressed concern about protecting water quality, especially in the watershed area between the well pad and Juniata Reservoir as well as water in the reservoir itself. Fram agreed at the inspection to drill a monitoring well between the proposed location and Juniata Reservoir. The well would be drilled as deep as Juniata Reservoir; State approval would be required. The City specified that they expected the monitoring well construction to include features such as slotted Schedule 80 PVC screen and steel casing, with a regulation wellhead and pad and locking cap.

Lease stipulations include No Surface Occupancy (NSO) to protect the Grand Junction Watershed, Scenic and Natural Values (Grand Mesa Slopes), Deer and Elk Winter Range. The NSO stipulation does not apply at the proposed well pad location. The proposed well pad and road would be located within sensitive big game winter habitats protected by the lease stipulation prohibiting activities such as construction and drilling from December 1 to April 30.

The proposed disturbance limits (excepting temporarily installed storm water controls) of well pad Federal 12-97-30-1 include approximately 3.82 acres, of which about 2.46 acres would be reclaimed after well completion. Approximately 3,110 feet (0.6 mile) of new road would be constructed to access the well pad, and another 0.5 mile of an existing two-track road would be upgraded. About 900 feet from where it leaves the existing dirt road, the proposed new access road would cross a north-south running drainage that flows toward Juniata Reservoir. A culvert would be needed here. The road would have an east-facing aspect - good for snow and mud.

Four-wing saltbush and sagebrush are present within the proposed resource road and well pad location. Piñon-juniper is scattered across and adjacent to the proposed disturbance. Sage, cheatgrass, filaree, Russian thistle, and snakeweed were noted along the proposed access road. Grazing damage and some wildlife browsing were also evident along the proposed road. Closer to the pad, more up on the slopes and between wooded areas, plants included shadscale, 4-wing, galleta, other perennial grasses, and Indian ricegrass. Areas between woody patches appeared to be quite damaged by livestock grazing, as is the access route. The large woody piñon-juniper trees provide for a fuel-rich fire environment. The site is rocky; soils at the pad location are fine, shallow and covered with light duff.

The BLM would require the following measures to be included in the APD for proposed pad Federal 12-97-30-1, and implemented on location, should the APD be approved. Site-specific details regarding implementation may be determined at the required pre-construction on-site inspection.

- The edges of areas where trees are removed should be curved and blended to look natural rather than cut in straight lines. See BLM GJFO Standard COAs.
- An armored 24-inch culvert should be installed at the drainage crossing just off the rocky slope.
- Rocks and slash should be salvaged and stored at the beginning of construction, then used as storm water BMPs and/or scattered across reclaimed areas following texturing and seeding.
- Along on the eastern edge of the proposed well pad disturbance where the cut slope is proposed to be 1:1 from Corner 6 to Corner 7, the cut slope should be laid back to 1½:1 or 2:1, to better blend the part of the cut slope that would remain in place during the long-term production stage of well. APD plats should reflect this change. Revegetation of such a laid-back slope would be expected to suffer less erosion and be more successful, especially if the soil is textured correctly and seeded.
- The proposed excess material pile, if not used for contour berming, should be stored across the access road to the west, to keep materials off the piñon-juniper slope.
- Slash and topsoil should be placed on the fill slope on the west side to support storm water control. Placing rocks on the fill slope may also help stabilize soils and mitigate visual impacts.
- If needed, a binding agent, mat or other method should be used to stabilize fine soils.
- Aboveground facilities should be painted BLM color “Yuma.”
- Heat producing equipment should be located at a distance of no less than 3 times the height of the fuels of concern. For example, if trees were 20 feet tall, the separator would need to be at least 60 feet away from them.
- The cut slope from Corner 7 to 8 should be back-filled and fully reclaimed at the time of Interim Reclamation.



Federal 12-97-30-1  
New Access Road Start. Weeds, Grazing Damage.



Walking east from proposed new access start toward drainage requiring armored culvert. Typical view of shrub, piñon-juniper, over-grazed ground and basalt surface rock. Bowl rim in middle ground. Note irregular openings in forested areas – mimic at construction.



Looking east toward bowl rim near where access road culvert would be required for drainage.. Sparse shrubs, overgrazed understory.



Looking north toward bowl rim from access road location just past drainage crossing.



Typical rocky piñon-juniper country where road and pad are proposed.



Looking southwest and downstream from proposed #12-97-30-1 pad location toward City of Grand Junction municipal reservoirs Juniata and Hellenbeck.

**Federal 12-98-24-2**

The on-site inspection for Federal 12-98-24-2 was conducted on December 11, 2012. (Note that proposed location described in the notes was moved across the road from where the on-site inspection took place. The new location would require a new APD application, another on-site inspection and site-specific consideration before disturbance was approved.)

Lease stipulations include Scenic and Natural Values (Grand Mesa Slopes) and Deer and Elk Winter Range. It is located outside of big game severe winter ranges, but the access road to the well pad crosses through big game restricted winter ranges.

The proposed disturbance area for Federal 12-98-24-2 (without inclusion of storm water controls) includes approximately 2.97 acres, of which 2.16 acres would be reclaimed after drilling/completion. Deer/elk scat was noted.

The proposed well pad is located next to the main road through the area. Due to relatively heavy use by recreationists, visual impacts to road users would need to be considered for mitigation. The road has chronic storm water and maintenance issues, including too few water dips to adequately manage storm water, which has resulted in sediment transport and deposition in the side ditches. Maintenance is currently needed and will be needed routinely.

The BLM would require the following measures to be included in an APD for proposed pad Federal 12-98-24-2 and implemented on location, should the APD be approved. However, site-specific details and requirements would likely change following submission of a revised proposal and a new on-site inspection of the location across the road.

- The originally proposed well pad (inspected on December 11, 2012) was moved to the south/southeast across the existing drainage to minimize impacts to sensitive plants. The relocation is analyzed in the EA as part of the Proposed Action, but a new on-site inspection should be required.
- Vegetation should be shredded and may be salvaged with topsoil or bermed as slash below stored topsoil to stabilize soils and act as storm water BMPs.
- The topsoil berm should be moved to the fill slope side (originally proposed location).
- The edges of areas where trees are removed should be feathered and naturalized per BLM Standard COAs.
- Saw cuts to tree trunks should be slanted to face away from the road, to minimize visual effects.
- Rock armor/check dams should be installed in existing drainage and adjacent developing rills, to the drainage throughout well disturbance and production, to minimize erosion and sediment transport (originally proposed location).
- Un-reclaimed disturbance and facilities on the production well pad should be kept close to existing access road to minimize weed concerns in reclaimed vegetation strips.
- The fill slope should be roughly textured and immediately to stabilize soils and prevent weed infestation.
- Corner 8 of the proposed well pad location should be rounded as much as possible to avoid tree removal (originally proposed location).
- Aboveground facilities should be painted BLM color “Yuma” or “Shale Green.”



Typical setting, veg, surface for well pad location 12-98-24-2



Small ephemeral drainage starts uphill from Corner 8, then running below and along pad edge.



Ephemeral drainage visible past snowy area in foreground. The flag marks Corner 8.



Sage area is closest to road. Looking north, the road is on the right, the rocky areas in photo above are to the left.

### **Federal 12-97-7-1**

The on-site inspection for Federal 12-97-7-1 was conducted on December 11, 2012. As proposed (excepting temporarily installed storm water controls) pad disturbance would include approximately 3.81 acres, of which 2.53 acres would be reclaimed after drilling.

Lease stipulations include Scenic and Natural Values (Grand Mesa Slopes), Deer and Elk Winter Range, and Threatened and Endangered Species Habitat (spineless hedgehog cactus). The proposed well pad and access are located in sensitive big game winter habitat, where the lease includes a stipulated Timing Limitation to protect BLM deer/elk winter range from December 1 to April 30, annually.

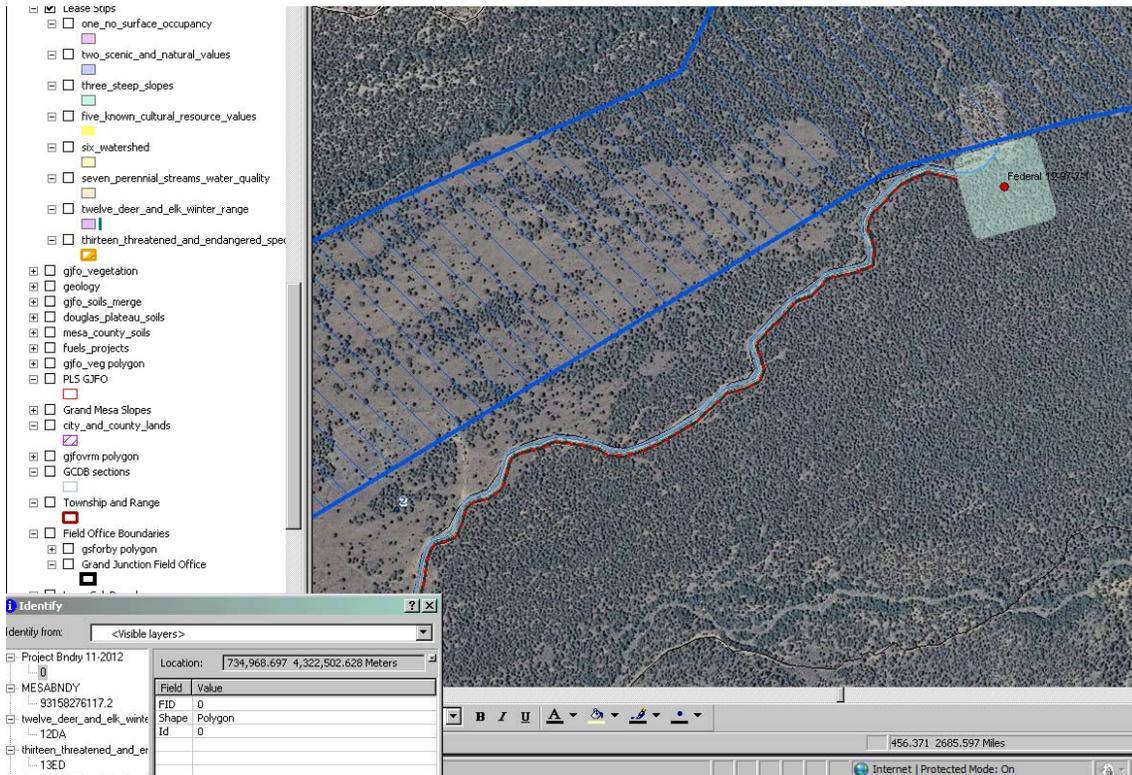
The proposed well pad location is just south of an abandoned well pad with a plugged well. The old access road is proposed for re-use, but will need to be re-built and surveyed for cultural resources. The area has revegetated with piñon-juniper, and is densely covered with large boulders and rocks. Vegetation notes from September, 2007 documented snakeweed, cheat, decadent and young juniper, crested wheat and maybe some rye grasses, pepperweed, bluegrass, prickly pear, aster, galleta, lots of trees, and thistle. Non-native crested wheatgrass in understory is likely from previous reclamation and would not be included in future seed mixes.

Federal 12-97-7-1 is currently proposed to overlap the City of Grand Junction watershed boundary, where the City prefers No Surface Occupancy, which is not required by the BLM. At the on-site, the City asked and Fram agreed to shift the proposed pad further south to just outside the watershed boundary, to a location where storm water or potential spills would not be directed by topography toward the Brandon Ditch, which carries municipal water to Grand Junction. The municipal watershed boundary in this area lies along a ridge; to the north of it lies the watershed within which all flows run toward City intakes. South of the City watershed boundary, water naturally flows away from municipal gathering areas as topography directs natural flows generally toward the south and west, in the direction of the Whitewater Creek drainage. Shifting pad 12-97-7-1's location was discussed and agreed to at the on-site inspection; survey plats will be revised as such for submission with the APD. Also, shifting the pad to the south would get it out of BLM's required 100-foot buffers to protect perennial streams.

The BLM would require the following measures to be included in the APD for proposed pad Federal 12-97-7-1, and implemented on location should the APD be approved. Other site-specific details regarding implementation may be determined at the required pre-construction onsite inspection.

- Rock storage possibilities should be considered and decided at the pre-construction inspection. Rocks could be dozed to access end of pad and then stored or bermed. Topsoil will likely include rocks. The previously disturbed pad might be a place to store rocks. If native materials are needed for naturalizing or mitigating visual impacts, or for armor or road surfacing, these rocks could be used.
- A BLM firewood cutting permit should be purchased before vegetation removal begins.

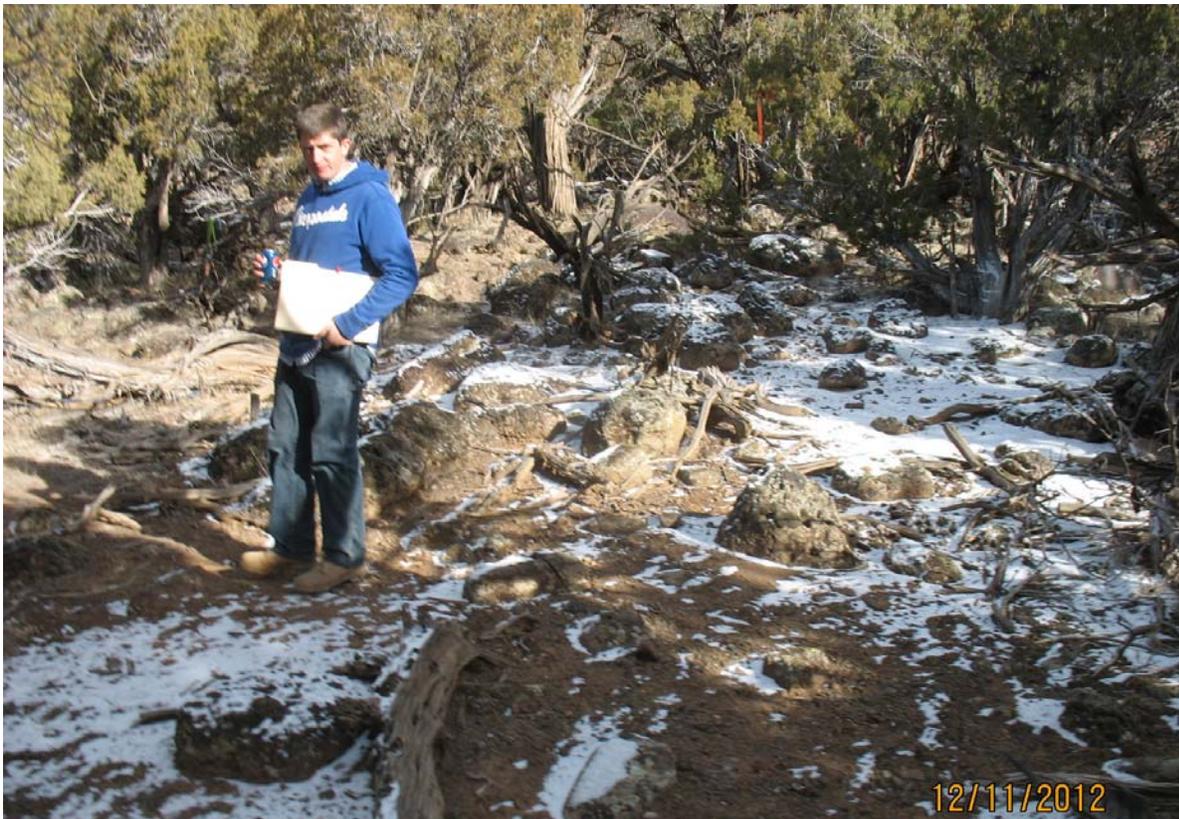
- The proposed well pad (inspected on December 11, 2012) was moved south (approximately 200 feet) and rotated so that natural (storm water) drainage from the location would flow toward Whitewater Creek rather than Brandon Ditch.
- Aboveground facilities should be painted BLM color “Yuma.”



GIS view showing aerial photo of existing road, old pad. GIS features in light blue and red show road proposed for reuse proposed new well and pad. Blue line is GJ watershed boundary.



Typical of undisturbed area around proposed pad 12-97-7-1.



Typical ephemeral drainage pattern, common across area.



Areas on the left show previous disturbance of closed road to plugged well/reclaimed pad



Reclaimed well pad – pad 12-97-7-1 to be moved to undisturbed area about 200 feet to south



Plugged and abandoned well/pad. Note black basaltic rocks typically coated with white calcifications. Younger trees than in undisturbed areas have come in.



View looking east along access road (September 2007)



View looking west from reclaimed plugged and abandoned well (September, 2007).

### **Federal 2-2-2-1**

The on-site inspection for Federal 2-2-2-1 was conducted on December 11, 2012. The proposed location is on top of and along the edge of Long Mesa, a long and narrow mesa that lies between Hall's Basin to the north and Lockhart Draw to the south. It is the only flat ground in the area and the well pad location is positioned to be on BLM land between two private parcels (City of Grand Junction to the east).

Lease stipulations include Scenic and Natural Values (Grand Mesa Slopes) and Known Cultural Resources. Proposed access crosses through big game sensitive winter habitats and would be closed off annually from December 1 to April 30 by the locked BLM winter gate about 1 mile to the east in Lot 3, NENW, Sec 1, T2S R2E1, although the pad location itself is not in winter range. No lease stipulation for big game winter range applies to the lease/location. No information regarding cultural resources was available at the time of the inspection.

The parcel immediately to the west (pad edge is designed to abut it) is on private land and would be have more room for the pad, which as proposed, barely fits between the existing road and the precipitous drop into Hall's Basin. Moving the pad to the west was not discussed at the on-site, but would be a good option for managing surface impacts. The pad might be able to be moved to the south, on BLM land, which would give it more room and get it away from the edge of the Basin. This was not discussed. Although the pad had been staked at the time of the on-site inspection, no drawings of pad or access were available. As currently staked, the northern pad edge would be positioned at the edge of a sheer drop into Hall's Basin.

Access to the well pad would be via an existing road, which would need upgrading. The route crosses on and off of BLM and City of Grand Junction-owned lands in Sections 1 and 2. The existing road is rough and eroding away down into the Basin, especially where a range fence crosses it in the NESE ¼ of Section 2, possibly on City land. It is bad enough to be considered hazardous until appropriately rebuilt.

Cattle were loose across the area, having walked through several open gates along the access roads in the area. It appeared that keeping gates closed and cattle on or off appropriate areas was an ongoing problem. Cattle guards with bypass gates might work better to keep cattle where they belong. Possibly as a result, this ground appeared to be severely degraded by previous grazing. One result is that storm water sheet flow is causing erosion across the site; soil pedestals are developing under vegetation since soils are washing out from under plants.

Vegetation included halogeton, snakeweed, sage, occasional shadscale, 4-wing, galleta, Russian thistle, bunch grasses and appears to have suffered grazing damage over time.

The BLM would require a complete application and another on-site inspection before this location could be further analyzed or approved, but if a well pad here were to be proposed and approved, the BLM would require at least the following measures to be included in an APD for proposed pad Federal 2-2-2-1, and implemented on location should the APD be approved. Other site-specific requirements could also be determined at the required pre-construction on-site inspection.

- Complete applications, including surveyed drawings of pad, road and pipelines, should be required before an on-site inspection could take place. Further site-specific analysis of revised proposal could be required.
- Before pad construction and regular traffic began using the road and traveling to the location, an engineered plan for road repair and reconstruction should be required, especially in the area where the road is eroding into the basin in NWNESE ¼ Section 2, at the point where the road intersects a livestock fence.
- Cattle guards with bypass gates should be installed, to exclude cattle when appropriate.
- In areas severely degraded by grazing and where storm water sheet flow causes erosion across the site, specific construction techniques, erosion control measures and storm water BMPs, etc., should be designed and implemented.
- Disturbance limits should be at least 30 feet from the edge of the mesa above Hall's Basin. As initially proposed, this would be expected to require reducing pad size, shaping the pad irregularly to conform to the site, or moving the pad to the west.
- To minimize visual impacts, topsoil berms should be lower and wider near Basin edge, textured and seeded immediately following construction, so pile profile would be less visible. Other site-specific visual mitigation BMPs could be required.
- If the well pad is located on the mesa in a way that it is be easily visible from Hall's Basin, low-profile tanks and equipment no taller than 15 feet should be required.
- Facilities should be painted BLM color "Shale Green," in a non-reflective finish.



Looking north across Halls Basin from edge of proposed pad 2-2-2-1.  
Require minimum 30-foot setback from edge to Limit of Disturbance (GMS VRM stip).



Looking west-northwest from pad edge. Hall's Basin to right.



Looking east across proposed pad on Long Mesa. Hall's Basin is out of sight to left. Road from east is both in view in the distance and then out of sight to right.



View to east toward City land from proposed pad location on Long Mesa. Existing road to right.

### **Federal 13-97-8-2**

The on-site inspection for Federal 13-97-8-2 was conducted on December 11, 2012. The proposed location is within a previously “chained” area (woody vegetation removal technique) on a mesa east of the Kannah Creek drainage. Current area vegetation is sparse and overgrazed. Although the pad had been staked at the time of the on-site inspection, no surveys or drawings of pad or access were available. Four corners of the pad, the well location, and resource road have been staked; however, design of the pad has not been drawn.

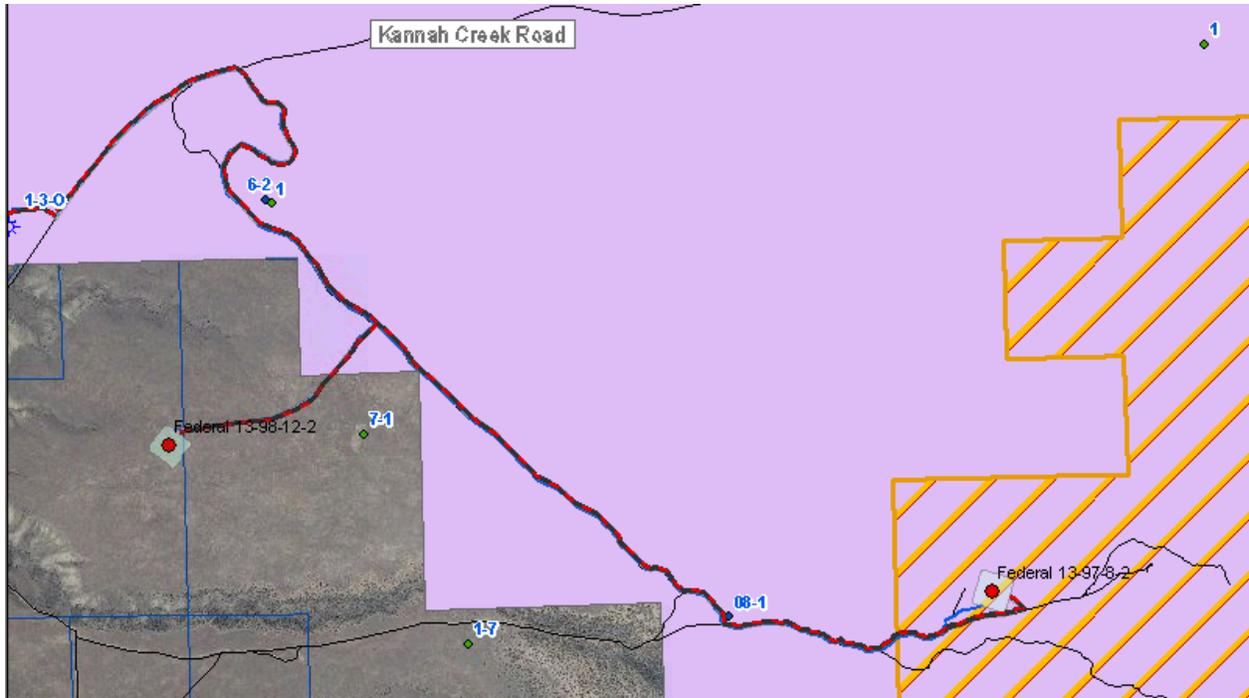
The road used for the on-site is not the preferred/analyzed access route. The preferred/proposed road leaves Kannah Creek Road in Section 6 (13S 97W). The more western areas of road cross grass and shrublands with cheatgrass. More trees and shrubs occur to the east toward the location.

Lease stipulations include Scenic and Natural Values (Grand Mesa Slopes), Deer and Elk Winter Range, and Threatened and Endangered Habitat (spineless hedgehog cactus).

A large herd of pronghorn was observed from the unnamed BLM road used to access the location. Although the proposed well pad location is outside of big game severe winter ranges, the proposed/analyzed access to the well pad cross big game restricted winter ranges. The road used to cross from Kannah Creek Road (not currently proposed for use) to BLM lands, is steep and in disrepair, with big drop-offs to one side. As it is, it is unfit for safe oil and gas use. This road, or the other supposedly preferred private access road, would need to be detailed in a site-specific application to the BLM. Areas of slumping soils have been delineated on the proposed access road and would need to be specifically considered in any site-specific proposal.

If a well pad here were to be proposed and approved, the BLM would require at least the following measures to be included in the APD for proposed pad Federal 13-97-8-2, then implemented on location should the APD be approved. Site-specific details regarding implementation may be determined at the required pre-construction on-site inspection.

- The proposed access across private lands shall be determined and depicted in applications for road and pipelines. Certification that a Surface Use Agreement is in place, signed by the operator and the landowner, would be provided to the BLM.
- Steep rough roads and slumping soils shall be site-specifically considered for access, including road design/improvements, possible engineering and storm water controls.
- If the well pad is located on the ridge in a way that it is easily visible from the road, low-profile equipment no taller than 15 feet shall be required.
- Aboveground facilities shall be painted BLM color “Yuma.”
- Surveys and/or protections for Threatened and Endangered Species could be required.



Proposed pad 13-97-8-2, showing Winter Range (purple), T&E (orange hatch) lease stip areas. Note two possible access roads off Kannah Creek Road. Both are on private, different owners.

### **Federal 1-2-15-1**

The on-site inspection for Federal 1-2-15-1 was conducted on December 12, 2012. The proposed well pad location is on the western slope of Horse Mountain overlooking the communities of East Orchard Mesa and Palisade. Aspen, the previous operator to propose this pad, dropped it with advice from the BLM at time of on-site.

Lease stipulations include Scenic and Natural Values (Grand Mesa Slopes), Known Cultural Resources. Winter range timing limitations apply to some of the access routes south of the location, but not to the location or lease.

As proposed, the well pad disturbance limits (without inclusion of storm water controls) include approximately 3.83 acres, of which 2.61 acres would be reclaimed after drilling. The proposed well pad location is outside of big game severe winter range for deer and elk. Traffic during winter months would be required to avoid delineated sensitive winter ranges by using a proposed northern access route.

The fill slope, the pad and about 2,700 feet of steep access road (needing upgrade) could be readily visible from the settled areas of East Orchard Mesa and Palisade as well as Interstate 70, at distances of 1 to 4 miles. Vehicular access is proposed to approach mainly from BLM lands to the south, on a route that would mostly be screened from settled areas by topography.

The day of the on-site inspection, existing paved roads across East Orchard Mesa (that are not proposed for Fram operational use) were used to get to existing roads on BLM that are

proposed for Fram use. Beginning at I-70's Clifton exit, we took the I 70 Business Loop/Hwy 141 (32 Rd) to turn east on C ½ Rd, to north on 34 ½ Rd, to east on D Rd, to north on 35 Rd, to east on E Rd, to north on 32 ½ road, to east on E ½ Rd, to south on 36 5/8 Rd, to east on E 4/10 Rd, to south on 36 3/4 , to east on E until it becomes an unnamed BLM road in the SWSW¼ of Sec 10, T1S R2E, Ute PM. 7,000 feet SSE on this road, then left turn to northwest on existing two track proposed for upgrade as access, then 2,700 feet to proposed pad.

The existing access road, which Fram proposes to upgrade without rerouting, is steep and rocky. It is also in full view as it goes up the side of Horse Mtn. Safety and road stability are concerns, as well as visibility of the road disturbance from populated areas. The steepness will also call for management of erosion. An engineered plan for road upgrade should be required, for road stability, safety, and to manage surface impacts. VRM mitigations should also be required, like rocks facing down and possibly a steel surface line rather than burying pipelines beside the road, which would create a big scar.

The unnamed BLM road crosses a big drainage tributary to the nearby Colorado River just before the proposed 1-2-15-1 access road starts up the hill. This road section should be included in the plan, to provide road stability and protect water quality.

Any required plan would need to be provided to the BLM for approval before use and/or upgrade

Native grasses occurring in the proposed disturbance area include galleta and Indian rice grass. Much winterfat and cactus (hedgehog and prickly pear) were visible across location and the general area. Cheatgrass and plenty of surface rock are also present within the proposed disturbance area. The proposed access road (about 2,700') to the well pad location has a steep grade and is very rough. At this time, Fram does not propose to reroute the road.

Topsoil Soils at pad include Leebench, warm Avalon-Blackston complex (1-12% slope), stony. Range site Loamy Salt desert. Soils downslope (2/3 of proposed access road upgrade) include Uvalde sodic-Uffens complex (12-25% slope), very stony. Range site: Semidesert Loam.

If the well pad here were approved, the BLM would require at least the following measures to be included in the APD for proposed pad Federal 1-2-15-1, and implemented on location should the APD be approved. Site-specific details regarding implementation may be determined at the required pre-construction on-site inspection.

- Visual impacts are likely to be noticeable to more people than at most of the other well pad locations; therefore, the following should be implemented:
  - Contoured berms should be placed to reduce the visual impact. Soils should be textured and seeded at the time of construction.
  - Colorant may be required to be applied to berms or pad fill and on road cuts and fills.
  - Low-profile equipment (no taller than 12 feet) should be used.

- Down-turned lighting should be used during drilling (when light impacts are greatest) to minimize visual impacts at night. If necessary, visual barriers such as temporary walls could be required.
- Angular native rock that does not create textural or color contrasts should be used to gravel the access road to minimize sediment, increase road traction, and minimize visual impact of road improvements.
- Use of construction materials such as river cobbles or pit-run that do not match the site should be prohibited. Native basalt should be used to surface the road.
- Steel surface pipelines should be considered along the access road rather than burying pipeline, to reduce disturbance as well as visual and other soils and vegetative impacts.
- Noise mitigation (such as mufflers, sound baffling barriers, berms) should be implemented, as needed.
- Relatively major drainages occur below the well pad location and access road that are tributary to the Colorado River. At the time of APD submission or at the pre-construction inspection, the BLM shall specify site-specific BMPs required.



View west from pad center (wellhead flags) 1-2-15-1. Community of East Orchard Mesa in middle ground. See photo below for closer view.



View to the west from pad center (wellhead). I-70 at the base of Mt Garfield at about 3.7 miles



Looking southwest from pad center toward access and existing power lines. Uncompahgre Plateau in background.



Looking mostly east from proposed pad center. Palisade and East Orchard Mesa residents look from this direction at distances of 1-4 miles.



Access road leaving pad, dropping to southwest toward a drainage tributary to the Colorado. Typical slope, soils, road condition.



A view of Mt Garfield from the back window, looking up access toward proposed pad 1-2-15-1.



View to south into drainage below access road. Typical soils, veg, rocks, slope.



As above, view from access road near pad, looking south southeast toward Hall's Basin.



Downhill from pad about 2,000 feet, on access road. Typical slope, road conditions. Looking SSW toward intersection w/ BLM road and drainage.



View of proposed Fram 1-2-15-1, September 2007. Looking NE from access toward pad.



View to east across pad toward top of Horse Mtn, 2007

### **Federal 1-2-22-1**

The on-site inspection for Federal 1-2-22-1 was conducted on December 12, 2012. As proposed (excepting temporarily installed storm water controls), the well pad disturbance would include about 3.83 acres, of which 2.80 acres would be reclaimed after drilling. It is proposed in an area of relatively flat ground along an existing two-track road.

Lease stipulations include protections for Scenic and Natural Values (Grand Mesa Slopes), known cultural resources and threatened and endangered habitat. The proposed well pad location is outside of big game severe winter ranges. During winter months, traffic would avoid areas closed to protect wintering wildlife by using a proposed northern access route.

Indian ricegrass, galleta, winterfat and prickly pear cactus are present on site, as well as invasive species like cheatgrass, halogeton and Russian thistle. Prairie dog activity is evident on site, but surveys did not locate active prairie dog towns at this location. The area appears degraded by livestock grazing.

Topsoil is expected to be about 6-8 inches. Soils are fine and have been mapped as Leebench, warm Avalon-Blackston complex (1-12% slope), stony. Range site is Loamy Saltdesert.

Surveys have shown Colorado hookless cactus to be present within 100 meters of proposed well pad disturbance, but none as close as 20 meters to proposed disturbance.

This location, proposed on a fairly flat mesa top overlooking East Orchard Mesa, could be visible from populated areas that are no closer than 2 miles; such distance would blunt some impacts. Night drilling would be most noticeable due to lights. Access is proposed to come from south and would be screened by topography from Grand Valley viewers.

Other mesa top well pads proposed in the area are Federal 1-2-16-1, at a distance of 0.6 miles (3,500') to the northwest, and Federal 1-2-15-1, at about 0.7 miles (3,700') to the northeast.

If the well pad here were approved, the BLM would require at least the following measures to be included in the APD for proposed pad Federal 1-2-22-1, and implemented on location should the APD be approved. Site-specific details regarding implementation may be determined at the required pre-construction on-site inspection.

- Visual impacts are likely to be noticeable to more people than at most of the other well pad locations; therefore, the following should be implemented:
  - Contoured berms should be placed to reduce the visual impact. Soils should be textured and seeded at the time of construction.
  - Colorant may be required to be applied to berms or pad fill and on road cuts and fills.
  - Low-profile equipment (no taller than 12 feet) should be used.
  - Down-turned lighting should be used during drilling (when light impacts are greatest) to minimize visual impacts at night. If necessary, visual barriers such as temporary walls could be required.

- Angular native rock that does not create textural or color contrasts should be used to gravel the access road to minimize sediment, increase road traction, and minimize visual impact of road improvements.
- Use of construction materials such as river cobbles or pit-run that do not match the site should be prohibited. Native basalt should be used to surface the road.
- Steel surface pipelines should be considered along the access road rather than burying pipeline, to reduce disturbance as well as visual and other soils and vegetative impacts.
- Colorado hookless cactus plants are located within 100 meters of the proposed pad. Install fence and/or post signs on the southern edges of proposed disturbance.
- Pad disturbance beyond limits as proposed is prohibited, particularly to south and west, to avoid impacts to special status plants.
- Construction and reclamation should be monitored (by BLM-approved biologist) to ensure that no disturbance occurs beyond the permitted areas.
- Aboveground facilities should be painted BLM standard environmental color “Carlsbad.”
- At the time of construction, cut slopes should be laid back, especially from corner 7 to 8 (which will remain after interim reclamation), to minimize visual impacts to town and allow better site reclamation. Slope and lay-back of cut shall be determined at the preconstruction onsite.
- Noise mitigation (such as mufflers, sound baffling barriers, berms) should be implemented, as needed.
- The well pad edge along the existing road may need to be moved away from the road to allow for installation of BMPs between the road and the pad. Maybe build storm water basin in triangle formed by access road/pad edge (corner 5-6) and existing road. See on-site notes on plats.
- Vehicles should be parked only in designated areas, away from vegetated places that are likely to contain cured (dried-out) fuels like cheatgrass or other vegetation. Signs, temporary fencing, etc. may be installed by operator to accomplish this.
- Site-specific adaptive measures such as bare mineral soil buffers could be needed in certain areas, and should be determined at pre-construction or routine inspections.
- Internal combustion engines should be equipped with approved spark arrestors.



From mesa top pad 1-2-22-1, looking WSW toward Grand Valley residents, about 2 miles away



View of pad 1-2-22-1 from the southwest. East Orchard Mesa would be 2 miles behind viewer.



Existing road to pads 1-2-22-1, 1-2-16-1. Dust plume at 10 mph. Note degraded land health.

### **Federal 1-2-16-1**

The on-site inspection for Federal 1-2-16-1 was conducted on December 12, 2012. As proposed (excepting temporarily installed storm water controls), the well pad disturbance would be about 3.23 acres, of which 2.53 acres would be reclaimed after drilling. The proposed well pad location is on a bench/mesa top visible to surrounding communities as close as one mile. An old well pad location with a plugged well on it is being proposed for re-use for Federal 1-2-16-1.

Native grasses and cheatgrass occur within the proposed disturbance limits. Colorado hookless cactus is present within 100 meters of proposed well pad disturbance limits, but none is within 20 meters of proposed disturbance.

Approximately 160 feet of resource road would need to be constructed for access. The proposed well pad location is outside of big game severe winter ranges. Traffic to this site during winter closures would avoid delineated sensitive winter ranges by utilizing the proposed more northern access route.

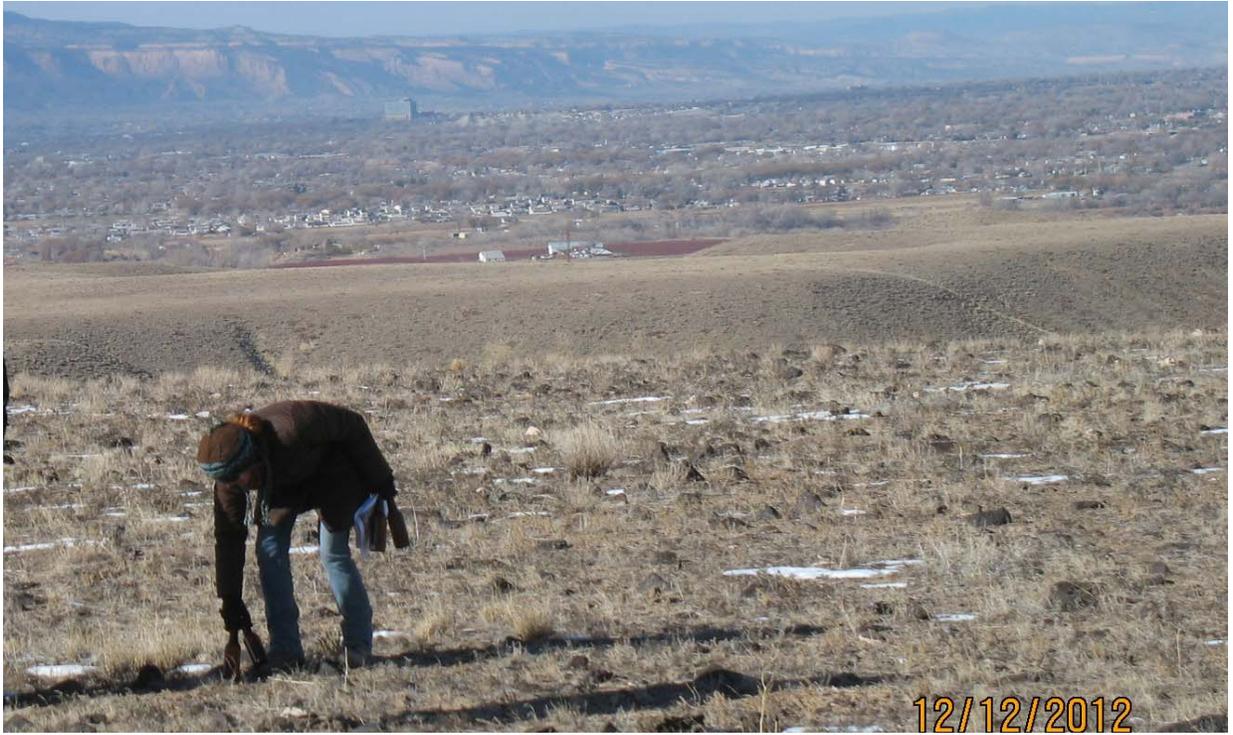
If the well pad here were approved, the BLM would require at least the following measures to be included in the APD for proposed pad Federal 1-2-16-1, and implemented on location should the APD be approved. Site-specific details regarding implementation may be determined at the required pre-construction on-site inspection.

- Visual impacts are likely to be noticeable to more people than at most of the other well pad locations; therefore, the following should be implemented:
  - Contoured berms should be placed to reduce the visual impact. Soils should be textured and seeded at the time of construction.
  - Colorant may be required to be applied to berms or pad fill and on road cuts and fills.
  - Low-profile equipment (no taller than 12 feet) should be used.

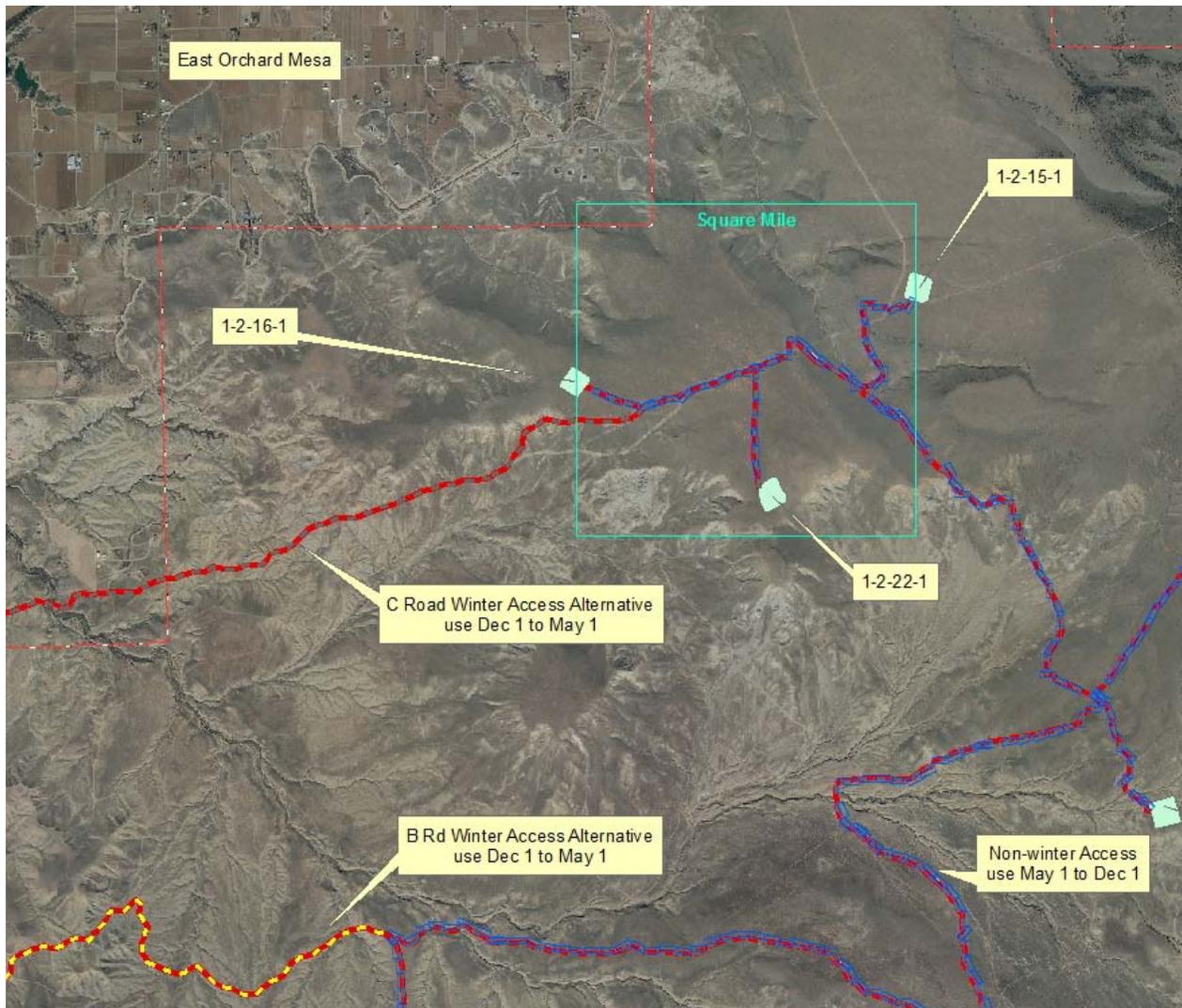
- Down-turned lighting should be used during drilling (when light impacts are greatest) to minimize visual impacts at night. If necessary, visual barriers such as temporary walls could be required.
  - Angular native rock that does not create textural or color contrasts should be used to gravel the access road to minimize sediment, increase road traction, and minimize visual impact of road improvements.
  - Use of construction materials such as river cobbles or pit-run that do not match the site should be prohibited. Native basalt should be used to surface the road.
  - Steel surface pipelines should be considered along the access road rather than burying pipeline, to reduce disturbance as well as visual and other soils and vegetative impacts.
- 
- Colorado hookless cactus plants are located within 100 meters of the proposed pad disturbance limits. Install fence and / or post signs on the southern edges of proposed disturbance.
  - If the proposed pad needs to be adjusted, make sure the pad does not get closer to the cactus plants than it is currently designed.
  - On-site construction and reclamation should be monitored to ensure that no disturbance occurs beyond the project disturbance limits.
  - Measures to minimize visual impacts should be considered on the fill side of the pad.
  - Noise mitigation (such as mufflers, sound baffling barriers, berms) should be implemented, as needed.



Looking NE along existing access. Typical landscape.



Views of East Orchard Mesa, as close as 0.8 mile.



Map showing pads 1-2-15-1 (Horse Mtn), 1-2-16-1, 1-2-22-1 relative to one another (note square mile graphic) settled areas and proposed routes. Visual resource protection stip applies.

**Federal 1-2-26-2**

The on-site inspection for Federal 1-2-26-2 was conducted on December 12, 2012. Lease stipulations include Scenic and Natural Values (Grand Mesa Slopes) and Known Cultural Resource Values.

The proposed location is located on a west-facing slope of the Grand Mesa within a basin that collects water from the Mesa above. Multiple ephemeral drainages come in from the north, NE and east before flowing on to the SW, toward the Colorado River. Native and non-native grasses are present on-site. Colorado hookless cactus is present within 100 meters of proposed well pad disturbance limits, but not within 20 meters of proposed disturbance.

Four corners of the pad and the well location had been staked, but no surveyed pad drawings were available. Existing access road from the north crosses a large, incised gully/drainage, which would have to have an appropriate crossing structure designed for it and then installed.

The proposed well pad is located outside of big game severe winter ranges, but main access routes coming from the south pass thru winter range areas that are closed from Dec 1 to May 1, annually. Traffic to the location during the winter closure would have to use a proposed northern access route to avoid travel through protected wildlife winter ranges.

This location could be problematic over the long haul in terms of mitigating surface issues like multiple existing water drainages across the area, as well as erosion that could develop relative to storm water flow in the drainages following veg removal. An existing location 1.3 miles to the SE was suggested as a replacement (well pad 36-3, PM31/T1S/R2E/Sec36/NWNE), but Fram was not interested in considering it at the time of the on-site.

If the well pad is moved, the new location would require a new APD application, another on-site inspection and site-specific consideration before disturbance was approved. The following measures would be required in the APD for proposed pad Federal 1-2-26-2, and implemented on location should an APD be approved. Site-specific details regarding implementation could be determined at an on-site inspection for a revised pad or at the required pre-construction onsite inspection.

- The well pad location should be moved, possibly to other side of drainage north of pad, because of the current location's likelihood to have problems with draining storm water.
- Cactus is located within 100 meters of the well pad and should be considered when relocating the well pad across the drainage.
- The well pad should not be moved closer than 330 feet to the active burrowing owl community within the vicinity of the well pad.
- A large concrete culvert should be installed to cross the severely incised drainage. A square design should be considered to allow flow during large water events.



Proposed pad 1-2-26-2. Looking toward the Grand Mesa. Many drainages converge here. Well-vegetated stable soils, but erosion could be a concern where veg was removed.



Pad 1-2-26-2 center (wellhead) stake.

### **Federal 1-2-25-2**

The on-site inspection for Federal 1-2-25-2 was conducted on December 12, 2012. The proposed location is within and adjacent to a 2005 wildfire in an area known as The Blowout. Lease stipulations include NSO (scenic Book Cliffs), Scenic and Natural Values (Grand Mesa Slopes), Known Cultural Resource Values, and Deer and Elk Winter Range.

This area was aerially seeded after the fire; vegetation diversity is high. High animal use (elk, mule deer, rabbits) is also apparent (scat and evidence of browsing). Outside of the burn area, vegetation community is pinyon-juniper, with notably more pinyon pine trees than in other places across the project area. The existing access to the proposed well pad is rocky, narrow, and steep (in places).

The disturbance limits for the originally proposed location of Federal 1-2-25-2, which lies within the boundaries of the visually protected NSO area, includes (excepting storm water controls) about 4.15 acres, of which 2.87 acres would be reclaimed after drilling and completions. An alternate pad location placed outside of the visual NSO stipulation area was staked north of the originally planned and designed well pad location. Both sites were visited; BLM indicated that the original pad location in the visual NSO area was preferable to the alternate location. Visual impacts were expected to be minor at this location. Distance to viewers as well as screening by trees and topography would mitigate visual impacts. Approximately 2,285 feet (0.4 mile) of new road would be constructed to the original well pad location in the NSO (the distance would be slightly longer to access the alternate well pad location outside of the visual NSO area). The proposed new road to the original pad location is preferable to the proposed new road to the alternate location because the road to the alternate location would cross a 100'-wide drainage

swale flowing down from the Mesa. Both proposed well pad locations and most of the access route are located in lease-stipulated big game severe winter range.

The BLM would require the following measures to be included in the APD for proposed pad Federal 1-2-25-2, and implemented on location should the APD be approved. Site-specific details regarding implementation may be determined at the required pre-construction onsite inspection.

- A visual analysis should be conducted to determine possible visual impacts of proposed resource road and well pad where they could be seen from the Mesa and Book Cliffs.
- The location proposed in the visual NSO lease stipulation area is to be used. It is less visible than the alternative and would be less disturbing to soils and local hydrology.
- The seed mix used during reclamation/aerial reseeding of The Blowout fire should be used to reclaim/reseed disturbance.
- Vegetation removal should be feathered along the road to minimize visual effects.
- Remove vegetation by shredding. Keep roots intact to stabilize shallow rocky topsoil.
- Lighting during drilling should be angled down to minimize visual impacts at night.
- Low-profile equipment (no taller than 12 feet) should be used.
- Aboveground facilities should be painted BLM color “Yuma.”



Typical of steep, rocky access to pad 1-2-25-2. Needs upgrading. Grand Mesa in distance.



View from pad 1-2-25-2, Mt Garfield and Book Cliffs in background.



View above, zoomed in. Mt Garfield and Book Cliffs in background; I-70 at base of Book Cliffs.



View to west (Grand Valley) from pad 1-2-25-2.



View to Grand Mesa from pad 1-2-25-2.

**Federal 13-98-12-2**

This well pad was not visited during the on-site inspection. Fram and BLM would conduct an on-site inspection at a later date. The location is proposed southeast of Kannah Creek outside of the Grand Mesa Slopes Special Management Area, on BLM surface. The location would require a new APD application, an on-site inspection and site-specific consideration before disturbance was approved.

Slumping soils have been mapped at the currently proposed well pad location.

**Federal 1-2-33-1**

This well pad was not visited during the on-site inspection. Fram and BLM would conduct an on-site inspection at a later date. The location would require a new APD application, an on-site inspection and site-specific consideration before disturbance was approved. The location is proposed to overlook the east end of Hall's Basin.

Lease stipulations include Scenic and Natural Values (Grand Mesa Slopes), Threatened and Endangered Species (Black-footed ferret). Special status plant species Colorado hookless cactus have been identified along the proposed access route.