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OGMCOAL - Kinney No. 2: Long Canyon LBA NEPA 3 of 4

From: Steve Christensen
To: April Abate; OGMCOAL
Date: 4/12/2012 12:09 PM
Subject: Kinney No. 2: Long Canyon LBA NEPA 3 of 4
Attachments: 1980.01.18_Gordon_Creek_Tract_U-47975_-_EA_revised_20_Feb_1981.pdf

>>> Gregory Hunt <ghunt@wasatchnr.com> 4/12/2012 11:27 AM >>>
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Date Folder 04/12/2012 C0070047
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1791/3400
(U-601)
UT-060-PR-80-15

UINTA-SOUTHWESTERN UTAH COAL REGION

SITE SPECIFIC ANALYSIS

GORDON CREEK TRACT

U-47975

JANUARY 18, 1980

(Revised February 20, 1981)

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I. INTRODUCTION

A. Purpose and Need

Under the new coal leasing program, the Department of the Interior has combined all major Federal coal management responsibilities into one unified program in order to:

1. Give the nation a greater assurance of being able to meet its national energy objectives;

2. Provide a means to promote a more desirable pattern of coal development with ample environmental protection;

3. Assure that State governments and local communities participate in decisions about where and when Federal coal production will take place; and

4. Increase competition in the western coal industry.

The Secretary of the Interior's new coal program decision of June 1 and 2, 1979 has resulted in the setting of regional coal production goals and leasing targets for 1981. The tentative coal leasing target for the Uinta Southwest Utah Coal Region is 322 million tons of reserve base coal. In order to meet this goal, a proposal to lease individual coal tracts or combinations of coal tracts will be analyzed in a site specific analysis and Regional Coal EIS. This site specific analysis assesses the impacts of leasing 64.9 million tons of reserve base coal from the Gordon Creek Tract. Lease of this tract would account for 20 percent of the regional leasing target.

B. Authorized Actions

Leasing and development would be under the authority of the following laws: The Mineral Leasing Act of February 25, 1920, as amended; the Federal Land Policy and Management Act (FLPMA) of 1976; the Surface Mining Control and Reclamation Act (SMCRA) of 1977; the Multiple Minerals Development Act of August 13, 1954; the Department of Energy Organization Act of August 4, 1977; the National Environmental Policy Act (NEPA) of 1969; the Federal Coal Leasing Amendments Act of 1976, as amended; the Act of October 30, 1978 that further amended the Mineral Leasing Act of 1920, and regulations: Title 43 CFR Parts 3400, 3500, and 2800 and Title 30 Parts 211 and 700.

The Federal agency responsibilities for the leasing and management of Federal coal are listed on pages 1-18 through 1-36 in the Final Environmental Statement on the Federal Coal Management Program (April, 1979).

The State and county responsibilities are listed on pages I-9, III-8 and III-12 of Part 1 of the Final Environmental Statement on the Development of Coal Resources in Central Utah (1979).

II. PROPOSED ACTION AND ALTERNATIVES

A. Proposed Action

The proposed action would be to lease 4,283.93 acres of coal reserves within the Gordon Creek proposed coal lease tract. The tract is a logical mining unit, both if mined individually or if mined in conjunction with privately controlled adjacent coal land, as defined by 43 CFR 3400.0-5(cc).

1. Description of Tract

The Gordon Creek Tract lies approximately 12 air miles west of Helper, Utah in Carbon County. The legal description and acreages are shown in Table 1.1. The tract is comprised entirely of Federal coal, of which the overlying surface is entirely privately owned. The general location is shown in Figure 2.1 and tract configuration is shown by Figure 2.2.

TABLE 1.1

TRACT LOCATION AND ACREAGE

	Legal Description	Acreage
T13S - R07E SLB&M		
Section 1	SW¼NW¼, SW¼, NW¼SE¼, S½SE¼	320.00
Section 2	Lots 1-7, S½NE¼, SE¼NW¼, E½SW¼, SE¼	628.60
Section 3	Lots 1, 2, 5-8, SW¼NE¼, NW¼SE¼	319.33
Section 11	All	640.00
Section 12	W½W½	160.00
Section 13	S½S½NW¼NE¼, S½NE¼, W½, SE¼	570.00
Section 14	All	640.00
Section 23	All	640.00
Section 24	N½N½, SW¼NW¼, NW¼SW¼	240.00
T13S - R08E		
Section 19	W½NW¼, SE¼NW¼	126.00
TOTAL		4,283.93

The tract lies within the Wasatch Plateau Known Recoverable Coal Resource Area (KRCRA). Total in-place coal reserves within the tract are approximately 64,900,000 tons. The Bob Wright bed, the uppermost of four minable seams, is greater than 4 feet thick in the southwestern part of the tract. The Castlegate "A" bed, 75 to 160 feet below the Bob Wright, is minable in the southeast corner of the tract. The Hiawatha/Upper O'Connor bed, 80 to 200 feet below the Castlegate, is minable throughout the northern two-thirds of

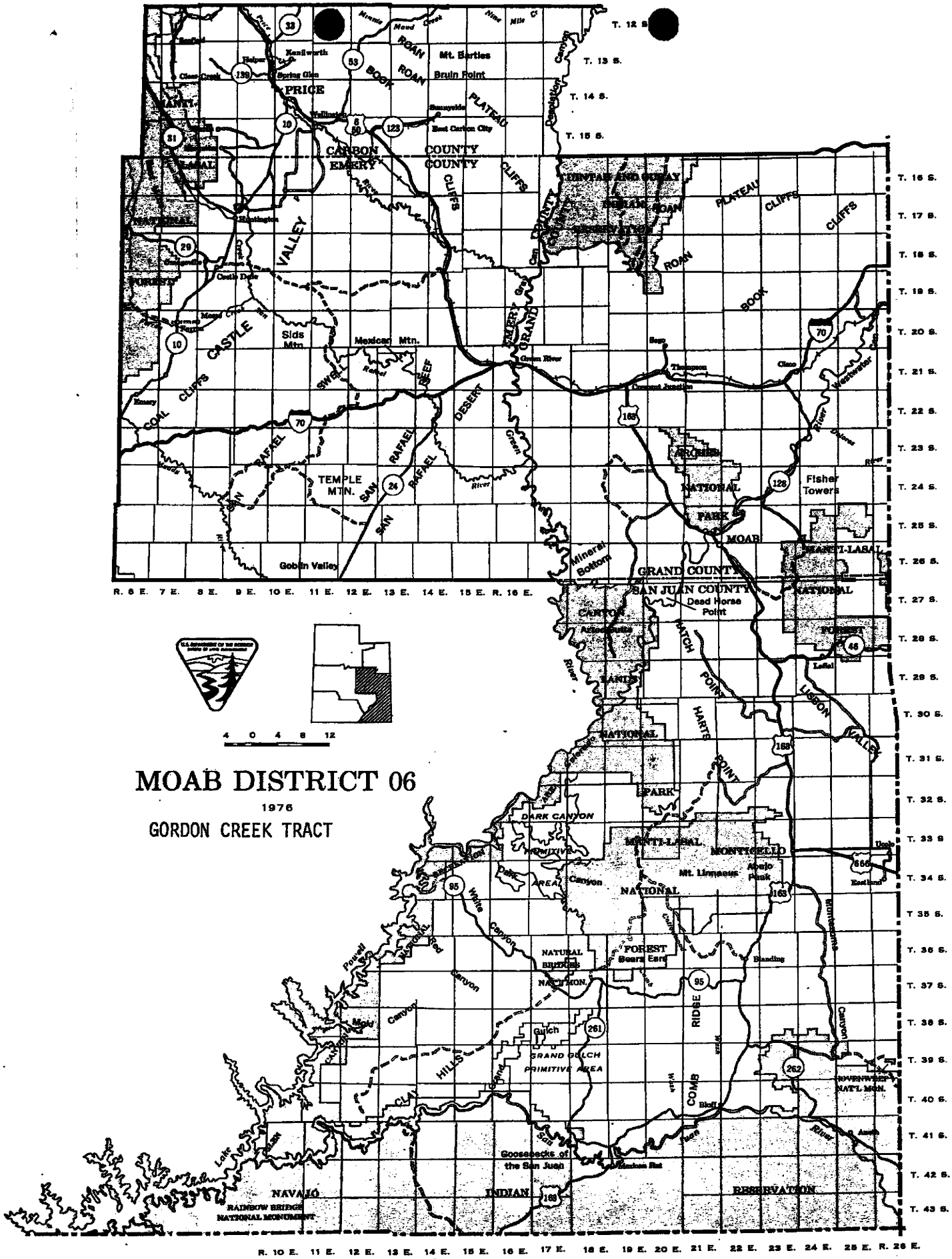

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Figure 2.1 General Tract Location

Figure 2.2 Tract Boundaries and Topography

Scale: 1" = 1 mi.

the tract. The Lower O'Connor, located in the western portion of the tract, is 100 to 150 feet below the Hiawatha/Upper O'Connor. If the tract was to be mined independently, recoverable reserves would be 24,300,000 tons (40 percent recovery); if mined in conjunction with adjacent coal operations on private lands they would be 26,000,000 tons. The difference in tonnage results from the need to leave property boundary barriers of about 100 feet to conform with State and Federal regulations.

Fault displacement of the coal seams is very common in the Gordon Creek area. A north-south trending fault zone having 75-foot displacement is known to occur in the east-central part of the tract and many small faults are expected (Figure 2.3).

The coal is ranked as high volatile B bituminous. Analyses within the tract are available for the Castlegate "A" and Hiawatha/Upper O'Connor seams only. However, samples from outside the tract indicate that the quality of the Bob Wright and Lower O'Connor coal is similar to that of the two other seams. A summary of the coal data is shown in Table 2.2.

2. Projected Scope of Development

In addition to the year needed by the lessee to obtain necessary permits (1981-1982), 2 years would probably be needed for exploration and mine planning (1982-1984). An additional 2 years (1984-1986) would be required for mine plan approval and general surface construction for mine start-up. Mining would begin in 1987. Development of the coal would be by underground room and pillar methods. Additional exploration by drilling (Figure 2.3) would be needed to determine the extent of minable seams. Drill hole spacing should be done on 0.50-mile centers, this would require six additional holes (3 acres) and about 3 miles (4 acres) of drill roads. The drill pads could be reclaimed as soon as drilling was completed.

The Bob Wright bed would be the first bed mined and would probably be developed through a portal in the coal outcrop located near the head of North Gordon Creek in Section 23: N½ (figure 2.2). A site suitable for mining the Hiawatha/Upper O'Connor and Castlegate "A" on fee land (belonging to Beaver Creek Coal Company) is located about 2 miles down the canyon and off the tract. If the coal developer was unable to obtain this land, this portal would have to be on the tract in the near area. The Lower O'Connor would be reached by rock inclines from the Hiawatha/Upper O'Connor seam. When mining from the Bob Wright portal is complete, most of the portal facilities would be moved to the lower location.

Crossing the faults occurring within the tract by rock slopes would result in waste rock. Most of the waste would have to be disposed of on the surface in the portal areas.

Annual coal production would average 650,000 tons per year with a mine life of 37 years for an independent operation, and 40 years if mined in conjunction with Beaver Creek Coal Company's Gordon Creek No. 2 mine. Approximately 20 to 30 construction employees would be needed to build surface portal

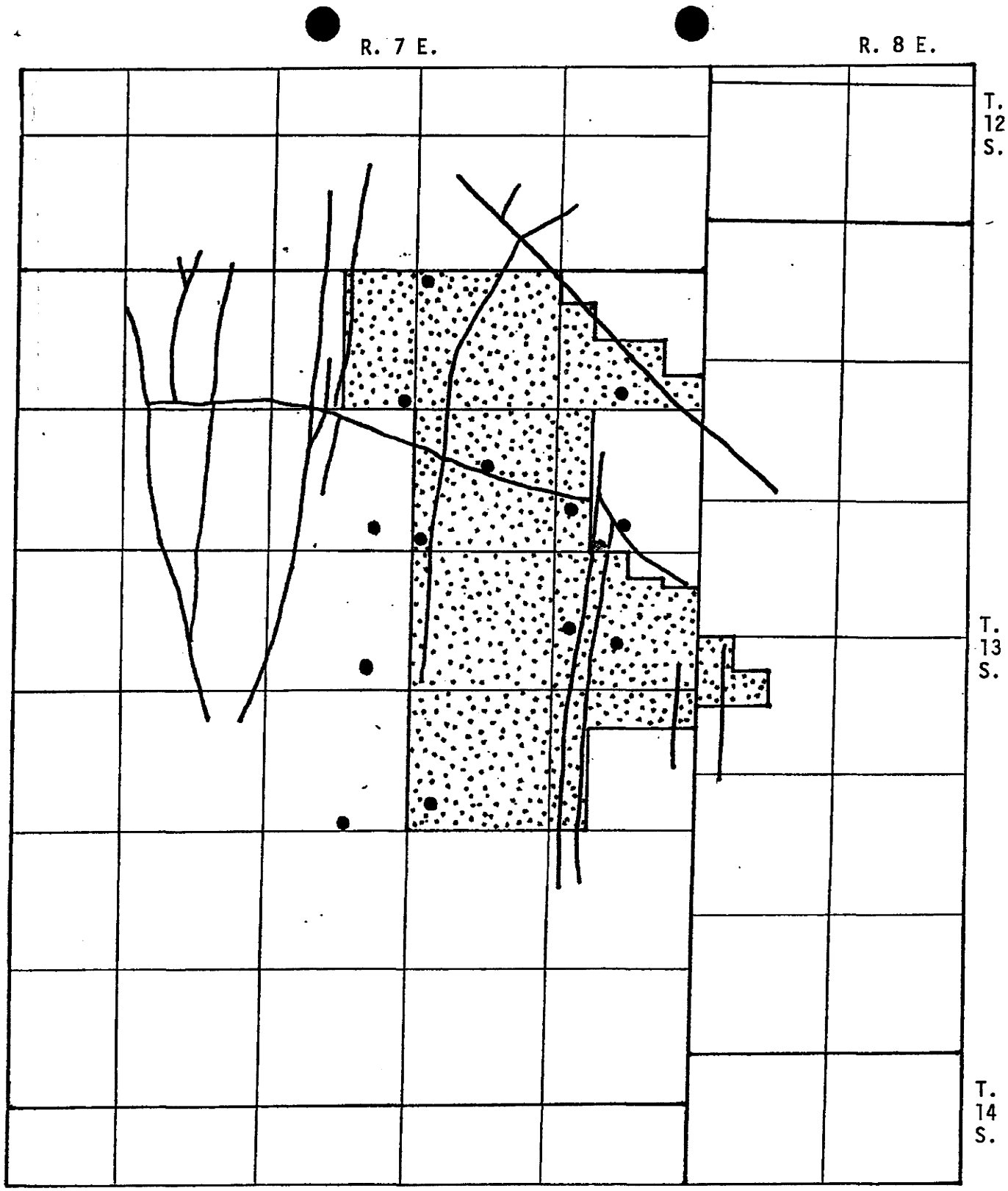

Figure 2.3 Fault Locations and Existing Drill Sites

Gordon Creek Tract

Existing Exploration Sites

Faults

facilities at the Bob Wright outcrop during a 1- or 2-year period. Total surface disturbance would be about 18 acres. About 1 year of mine development would be needed to reach full-scale production of the Bob Wright seam. Full production would require 180 permanent employees. Development of the lower seams would be scheduled to replace production from the Bob Wright seam after about 13 years. Construction of facilities and associated surface disturbances (12 acres) for the lower portal would be started about 1999 and would require about 20 employees for 1 or 2 years.

Onsite facilities for either portal area would include an office, change house, warehouse, maintenance shop, fuel storage tanks, septic tanks, sedimentation ponds, mine portals, waste dumps and topsoil storage piles. Belt conveyors would move the coal from the portals to coal storage facilities at the portal sites.

Facilities outside the mine portal area would include about 3.5 miles each of haulage road, powerlines, and telephone cable (65 acres). Once constructed, the haulage road (45 acres), would be used for access to the other portal, in addition to serving the Bob Wright portal. The haulage road would not be reclaimed following end of mine life. Existing shipping facilities would be used whether mined by Beaver Creek or an independent operator. Coal would be trucked 12 to 25 miles.

The projected acreages required by an independent operator for mining facilities and associated surface disturbances are shown in Table 1.2. Development by an independent operator who trucks the coal 25 miles is considered herein as the "worse case".

3. Relationship of Tract to Planning and Unsuitability Criteria

The lands located in the Gordon Creek Tract have been found to be suitable for further consideration for coal leasing through applying the unsuitability criteria in the Price River Resource Area Management Framework Plan (MFP) (1979). However, unsuitability criteria #14 (migratory birds) and #15 (state resident fish and wildlife) affect the Gordon Creek tract with the exceptions being applied. The #14 criteria exception requires BLM consultation with the U.S. Fish and Wildlife Service to determine the effects of coal mining on migratory bird habitat prior to leasing. The exception for unsuitability criteria #15 requires consultation between the state and BLM to determine if coal leasing of the tract will have a significant long term impact on the elk, moose or deer species which inhabit the area. The only additional land use controls that apply to this tract are the Carbon County zoning regulations which have categorized these lands as open to mining or grazing.

4. Relationship of Tract to Developments Near the Tract

The Beaver Creek Coal Company is currently mining Federal Lease No. U-8319 and fee land immediately east of the tract. Mining operations on

TABLE 1.2

PROJECTED ACREAGE OF SURFACE DISTURBANCE
(Independent Operator)

Development	Cumulative 1987*	Cumulative 1990	Cumulative 1995	Cumulative 2024**	2033
Mine Portals, Sedimentation Ponds, Waste Dumps, Topsoil Storage	9	9	9	16	
Exploration (Drill Roads and Pads)	7	7	7	7	
Facilities Onsite and Coal Storage	9	9	9	14	
Total	25	25	25	37	
Facilities Offsite (Acres)					
Haulage/Access Roads	45	45	45	45	
Powerline	15	15	15	15	
Telephone Lines	5	5	5	5	
Total	65	65	65	65	
Reclamation Schedule	--	7	7	25	57***

* First year of production
** Last year of production
*** 45-acre road not reclaimed

the Gordon Creek Tract by Beaver Creek Coal would utilize their facilities near the tract to the extent practical plus their preparation plant near Wellington. Beaver Creek coal is transported to Wellington by truck. A coal shipping facility exists on the Utah Railroad about 12 road miles from the track.

5. Legal and Regulatory Requirements as Part of the Proposed Plan

If leased, the successful lessee would comply with all Federal, State and local regulations, laws and policies as they affect the leasing and development of coal. Some of the laws providing basic authorities for the leasing of Federal coal are: Mineral Leasing Act of 1920 and amendments, Federal Coal Leasing Amendments Act of 1976, and the Surface Mining Control Land Reclamation Act of 1977.

In addition to to coal leasing laws, there are several laws providing the basis for resource management on public lands. The most important of these laws is the Federal Land Policy and Management Act of 1976 (90 Stat. 2743; 43 U.S.C. 1701-1771).

Coal leasing and resource management laws are implemented by the Bureau of Land Management (BLM) and the U. S. Geological Survey (GS) under the following regulations:

Title 43 CFR Part 3400 provides procedures for management of Federal coal deposits.

Title 43 CFR Part 2800 establishes procedures for issuing rights-of-way to individuals and companies on public lands.

Title 30 CFR Part 211 are the regulations used by GS. The regulations promote orderly and efficient operations and production practices; encourage maximum recovery and use of coal; promote operating practices which will avoid, minimize, or correct damage to the environment; avoid, minimize, or correct hazards to public health and safety; and maintain a record of coal production.

Title 30 CFR Part 700 regulates the surface effects of mining Federal, State and private coal, and is implemented by the Office of Surface Mining Control and Reclamation (OSM). The BLM and GS are consulted when the coal involved is on BLM managed land.

Pursuant to 30 CFR 715.13, coal mining operations will be required, as a minimum, to restore the lands affected to a condition at least capable of supporting the use which it was capable of supporting prior to mining. Mining and reclamation plans will not be approved unless the applicant has demonstrated that the proposed post mining land use can be accomplished.

For a more complete and detailed listing of laws affecting coal leasing and development, see the Final Environmental Statement on the Federal Coal Management Program (Department of the Interior, 1979, p. 1-15 through 1-23).

6. Site Specific Assumptions

a. Mine life is defined as exploration through end of production.

b. The initial construction phase would take 1 to 2 years to complete.

c. Exploration drilling on about 0.50 mile spacing would be needed to provide information for mine design. Six additional holes would be required.

d. New mine production facilities are estimated as follows:

An upper portal, coal storage area and other facilities at the head of North Gordon Creek to mine the Bob Wright seam.

A lower portal, coal storage area and other facilities to mine the Castlegate "A", Hiawatha/Upper O'Connor and Lower O'Connor seams. Its location would be about 2 miles lower in North Gordon Creek; its exact location would depend on who obtained the tract and if land off tract could be obtained for the plant.

An existing coal shipping facility would be used.

e. Preliminary reclamation on an area would be considered complete when disturbed lands have been backfilled, graded, contoured and seeded.

f. Complete reclamation of an area would occur on the following schedule:

(1) An estimated 1 year for contouring and seeding.

(2) Approximately 5 years would be required for establishment of vegetation cover of the seeded species which would support small animals and birds.

(3) Establishment of shrub cover would require 15 to 20 years.

g. Short term is defined as mine life plus 5 years. Long term is defined as that time beyond the short term in which impacts would continue to occur.

h. Approximately 100 acres would be used for housing and infrastructure per 1,000 population.

i. Portal access roads are not included in the final reclamation acreage because of the possibility of continued use.

j. Fifty percent control of dust was assumed from watering of unpaved haul roads on the tract.

k. The post mining land use would consist of restoring or enhancing the existing level of livestock grazing, and high quality elk, deer, and moose habitat. Existing levels of outdoor recreation activities such as hunting, sightseeing, and ORV travel would be included as objectives in a post mining land use plan.

B. Alternative(s)

1. No Action

Assessment of taking no action is required by Council on Environmental Quality contained in the Federal Register notice of November 29, 1979. Under the "No Action Alternative", the tract would not be leased. Coal development would not take place and ancillary facilities would not be constructed. Approximately 26,000,000 tons of Federal coal recoverable with underground methods would not be utilized. Use of the surface resources would continue in the present manner.

C. Further Environmental Assessment Points

The successful lessee must submit a plan for mining and reclamation to the Secretary of the Interior, Office of Surface Mining (OSM) for the review and approval within 3 years after leasing. Once a mining plan has been submitted, OSM, BLM and GS would review the developments proposed in the mining plan. If necessary, OSM would then prepare a site specific environmental assessment prior to the approval of the mine plan. Additional environmental assessments for rights-of-way or special land use permits associated with ancillary facilities may be required of the surface managing agency before development of Federal coal.

III. EXISTING ENVIRONMENT

A. Affected Environment

1. Climate

The climate is cool and relatively wet. Data recorded at Clear Creek (elevation 8,300 feet) from 1936 to 1952 about 4 miles southwest of the tract indicate an annual average precipitation of 25.0 inches. Precipitation is lowest in summer and highest in winter. September is the driest month, averaging only 1.4 inches of precipitation, while March is the wettest month, with an average of 3.0 inches. Snowfall averages 193 inches per year. January is the coldest month, with a mean daily maximum of 31 degrees F and a mean daily minimum of 6 degrees F. July is the warmest month, with a mean daily

maximum of 76 degrees F and a mean daily minimum of 40 degrees F. The frost-free season is estimated to be about 40 days.

2. Air Quality

Air quality in the vicinity of the tract is expected to be good, although no measurements have been made. The nearby Beaver Creek mine would be a source of particulates and exhaust from vehicles and equipment. Industrial sources in the region include three coal fired powerplants, Carbon (13 miles east), Huntington (24 miles south), and Emery (36 miles south). Nearby area sources of emissions include Helper (12 miles east) and Price (17 miles southeast).

The other pollutants for which NAAQS have been promulgated are carbon monoxide (CO), ozone (O_3), and lead (Pb). Carbon monoxide and lead are emitted primarily from automobiles. No CO or lead data are available for the region, but levels are expected to be low.

As shown in Table 2.1, SO_2 and NO_2 concentration were well below the NAAQS. Concentrations higher than the NAAQS for TSP were recorded at Price, but it is expected that a major portion of the particulate concentration was associated with suspended particles.

Visibility - BLM has been monitoring visibility by the photographic method at Cedar Mountain about 40 miles southeast of the tract. The average visibility recorded from November 1976 to March 1979 was 85 miles (National Oceanic and Atmospheric Administration draft report).

The tract and nearby areas are designated Class II areas under Prevention of Significant Deterioration of Air Quality (PSD). There are no Class I areas within 50 miles of the tract.

Trends in the Affected Environment

Energy related growth is expected to cause deterioration of air quality. One thousand megawatt coal-fired powerplants near Wellington and Green River, a coal gasification plant near Emery, and a nuclear generating facility near Green River are being considered. Whether these facilities will be constructed is unknown at this time. Increased coal production from existing leases is expected. Increased pollution levels in towns and cities is anticipated due to emissions associated with increased human activity. Some increase in haziness and decrease in visibility is expected from increased industrial activity and associated population growth.

3. Topography, Geology and Paleontology

Subject tract is located in the mountainous Wasatch Plateau of the High Plateaus of Utah. Elevations vary from about 8,200 to 9,640 feet. Slopes generally are between 20 and 40 degrees, with areas of lesser slope limited to narrow stretches along canyon floors and mountain ridge lines.

TABLE 2.1

COMPARISON OF MEASURED POLLUTANT CONCENTRATIONS

Pollutant	Location: Price		Huntington		Salt Wash		White River & 8 Hole Proj.		NAAQS
TSP	Concentration	% of NAAQS	Concentration	% of NAAQS	Concentration	% of NAAQS	Concentration	% of NAAQS	
Annual geometric mean	(ug/lm^3)		(ug/m^3)		(ug/m^3)				
maximum 24	[a]62	103	[b]33	55					60
low average	[a]303	202	[b]96	64					150
SO_2									
Annual average	[c]0-13	0-16	[c]0-13	0-16					80
maximum 24 low average	[c]53	15	[c]27	7					365
maximum 3 low average	[c]160	12	[c]80	6					1300
NO_2									
Annual average			[d]11	11					
OZONE									
maximum 1 low average					134	55	190	80	240

[a]August 1977-July 1978, [b]December 1977-November 1978, [c]1978, [d]October 1977-September 1978

Stream-carved canyons are characteristically V-shaped. Outcropping rocks are of the Cretaceous Blackhawk Formation.

The only attempt to compile available paleontological data for the general area has been undertaken by Robison (1977). He reports that clams and snails are fairly common in Blackhawk shale units, while trace fossils are relatively common in sandstone units. Some of the numerous plant remains in the Blackhawk are reported to be rare. Dinosaur footprints have been recovered from coal seams.

4. Minerals

Economic coal beds occur in the Blackhawk Formation. The coal is contained in four major beds named in descending order as Bob Wright, Castlegate "A" and Hiawatha/Upper O'Connor and Lower O'Connor. Coal analyses indicate that coals are low sulfur, high volatile bituminous B rank as indicated in Table 2.2.

The Bob Wright bed, or coal zone, occurs in minable thickness only in the southern half of subject tract with a maximum of about 15 feet total coal and averaging 6.6 feet over 879 acres. Minable Bob Wright coal is not present north of the center of Section 14, or east of a line drawn between the centers of Sections 14 and 24. The coal zone generally consists of three beds, with two noncoal intervals 3 to 25 feet thick separating them. The coal beds are located 75 to 160 feet above the Castlegate "A" bed. The upper bed is generally less thick than the two lower beds (AAA Engineering and Drafting, 1979).

The Castlegate "A" coal bed occurs 80 to 200 feet above the Hiawatha/Upper O'Connor bed. According to GS Open File Report 79-484 (AAA Engineering and Drafting, 1979), Castlegate "A" coal as thick as 5 feet does not occur on subject tract; however, the bed is currently being mined immediately east of subject tract where it averages 7.8 feet thick. The GS economic recovery potential report (1979) indicates that average thickness is 5.7 feet over 263 acres. Overburden increases to the west as determined by topographic relief.

The Hiawatha/Upper O'Connor bed lies above a finger of Starpoint sandstone in the Blackhawk Formation. The thickness of the bed within the tract ranges from about 8 feet to less than 5 feet and averages 6.3 feet over 3,513 acres. Overburden ranges from zero to a maximum of 1,600 feet. Average overburden is more than 1,000 feet, with greater thicknesses to the west. This and other coal beds are displaced by two north-south trending faults in the west half of Section 24 which extends into the southwest corner of Section 13 (AAA Engineering and Drafting, 1979).

The Lower O'Connor lies below the Starpoint sandstone finger within the Blackhawk. The seam averages 5 feet thick over 343 acres in the western portion of the tract without outcrops on the tract. The Lower O'Connor is 100 to 150 feet below the Hiawatha/Upper O'Connor.

TABLE 2.2

COAL DATA SUMMARY

Description of Beds	Average Coal Quality
Quality	
Bob Wright	(Analyses not available for tract)
Castlegate "A"	
Btu per pound	12,686.0 (as received)
Ash (percent)	5.9 " "
Moisture (percent)	5.4 " "
Sulfur (percent)	0.45 " "
Volatile (percent)	43.7 " "
Fixed Carbon (percent)	44.9 " "
Hiawatha/Upper O'Connor	
Btu per pound	12,114.0 (as received)
Ash (percent)	6.5 " "
Moisture (percent)	7.2 " "
Sulfur (percent)	0.56 " "
Volatile (percent)	41.3 " "
Fixed Carbon (percent)	44.6 " "
Lower O'Connor	(Analyses not available for tract)

Quantity	Bob Wright	Castlegate "A"	Hiawatha/Upper O'Connor	Lower O'Connor
Average Thickness (ft.)	6.6	5.7	7.7	5.0
Area (Acres)	879	263	3,513	343
Demonstrated Reserve Base	10,400,000	2,700,000	48,700,000	3,100,000

The greatest total coal thickness of the Bob Wright and Hiawatha/ Upper O'Connor coal beds is 15 feet. Considering an average of 6.3 feet for the Castlegate "A" bed and 5.7 for the Lower O'Connor, the greatest total coal thickness of the four beds is about 27 feet. Average total thickness is approximately 24 feet. The demonstrated reserve base of subject tract is shown in Table 2.2.

At least nine mines have operated in the Gordon Creek area within 3 miles of the eastern extent of subject tract. Mining began in 1925 and continued until the 1940's. In 1967 Swisher Coal Company reactivated the area. An estimated 6.0 to 6.5 million tons of coal have been produced from the area (AAA Engineering and Drafting, 1979).

As of January 25, 1981, mining claims recorded with BLM do not involve subject tract.

Trends in the Affected Environment

Coal mining began as early as 1878 in the Wasatch Plateau and has continued to the present. In 1978, 1.5 million tons of coal were produced within the 10-mile area. Proposed expansion or new mines would allow an additional 5.9 million tons to be produced annually.

5. Soils

Soil resources for the Gordon Creek Tract were inventoried during the 1979 field season. The technical material and final report have not yet been published. Thus, all predictions and estimates have been made with what information is currently available and are tentative and subject to change. The information provided by this third order survey is general and not meant to replace onsite investigations or more intensive soil surveys on impacted areas.

The portal and mine facility sites occupy steeply sloping (30 to 70 percent) canyon side slopes near drainages. The dominant soils have developed in colluvial material derived from sandstone and some shale. The majority of soils found in these complexes have dark colored surface horizons with a loam texture. The subsoil textures range from less than 20 inches to over 40 inches, depending on the position and location on the slope. Some areas have extremely stony and boulder surface modifers and, in some cases, over 35 percent coarse fragments in the soil profile.

Trends in the Affected Environment

Because of soil conditions, climate and coarse fragments, 30 percent of annual revegetation attempts on steep slopes are expected to be successful (James Hagihara et al., 1972). However, on less steep slopes, as in the drainage bottoms and mountain tops, an estimated 50 to 70 percent revegetation attempts are expected to be successful. Most soils will have a moderate water erodibility factor from 0.28 to 0.37. Natural erosion by water on similar landscapes where vegetation is present is estimated at about 0.2 cubic yards

per acre per year, but the erosion potential could approach 20 cubic yards per year when soils are exposed (GS, 1979). Wind erodibility potential is low. The soil wind erodibility index of annual soil loss could approach 79 tons per acre per year for most surface types present. Most soils lie on steep slopes which make them physically difficult to manage, and increase instability and high runoff potential.

6. Water

Surface Water: The Gordon Creek Coal Tract is located within the Price River Watershed of the Green River Basin. The proposed mining area is drained by two small perennial streams, Beaver Creek and Gordon Creek which drain into the Price River just above Price, Utah. The Price River flows south to where it joins the Green River just above Green River, Utah. Floodplains are not located within the tract.

Average annual runoff is 3.67 inches, as taken from the Price River near Helper (Jeppson, 1968). The groundwater bodies underlying the two drainages feed the perennial streams. Groundwater is perched in permeable sandstone and coal beds of the Blackhawk Formation. Direction of groundwater movement is little known, but probably parallels the geologic structure. The regional water table is probably several hundred feet below the altitude of the mine portals.

Water Supply: All water is committed to prior water rights, mainly for irrigation downstream in the Price River drainage. Water for mining would have to be acquired by assignment, purchase or trade. Stream flow records show that the average annual flow of Beaver Creek into the Price River below Colton is 2,810 acre-feet. Gordon Creek has no regular gaging stations. Indivdual measurements made in 1978 and 1979 range from 0.154 cfs to 2.29 cfs. Water around the area of the proposed mine is used for watering livestock and wildlife, mining coal, domestic use and recreation.

Data on groundwater supply is scant. Wells in the surrounding area presently supply from 5 to 50 gallons per minute (gpm) for mining and domestic use. Well yields are not expected to be more than 50 gpm from sandstone beds and fractured shale. However, wells penetrating 3,000 to 4,300 feet deep into the Ferron Sandstone Member of the Mancos Shale report 903 to 2,242 feet of water recovered during drill stem tests (GS Report, 1979).

Water Quality: Surface water in the Upper Price River Basin is fresh. Beaver Creek water is of the calcium bicarbonate type. The dissolved solids concentration at Site II was between about 200 and 270 milligrams per liter (mg/l). The water type for Gordon Creek was calcium sodium magnesium sulfate in August 1969, but was magnesium sodium calcium sulfate for four other observation periods (Mundorff, 1972). Gordon Creek water is fresh in its headwaters, as analyses have shown its total dissolved solids (TDS) range between 526 and 558 mg/l (Waddell, 1979).

Groundwater in the mountain headlands around the site contains concentrations of TDS ranging from 192 to 3,083 mg/l (GS Report, 1979). The water comes from the Blackhawk, Star Point Sandstone and Castlegate Sandstone. However, three samples of mine drainage, probably from the Blackhawk Formation, contained dissolved solids ranging from 374 to 794 mg/l. Dissolved solid concentrations increase eastward because of formational salt contents.

7. Vegetation

Conifers, aspens, mountain shrub and grass make up the major vegetation types on the tract. A narrow riparian zone occurs along Beaver Creek and the North Fork of Gordon Creek. Vegetation productivity is high due to adequate moisture, well developed soil, and a high organic component in the soil. Reclamation potential would be expected to be high.

Threatened or endangered plants have not been found on the lease tract (Foster, 1979).

Trends in the Affected Environment

The surface area of the tract is privately owned and receives summer sheep and cattle use. The vegetation resource on the tract are expected to remain the same.

8. Wildlife

The proposed lease tract is located within high quality habitat for mule deer, elk and moose. The area has been classified as high priority summer deer range by Utah Division of Wildlife (UDWR, 1979). Deer use the tract and surrounding area from May through October (UDWR, 1979). The carrying capacity of the herd unit (Unit 32) in which this tract is located has been estimated at 18.8 deer per section. The proposed lease tract and surrounding area is used by deer during the fawning season (Central Coal ES, 1979).

The tract provides both summer and winter range for elk. Over 80 percent of the tract is high priority summer range (May 16 to October 31) for elk. The tract and surrounding area is used by elk during the calving season. Approximately 240 acres within the tract have been classified as elk crucial-critical winter range (November to May 15) by the UDWR. There are no carrying capacity figures available for elk. However, it has been estimated by UDWR that the Manti elk herd is nearing range capacity.

Approximately 39 moose were introduced into the area during the winters of 1972 and 1973. In 1978, an additional six moose were added to the existing herd. The entire tract is classified as having substantial value as moose habitat by UDWR. The riparian areas (stream bottoms) within the tract are classified by UDWR as being crucial-critical winter moose habitat. The tract and surrounding area are also used by moose during the calving season.

There are two perennial streams on the proposed tract. UDWR has classified Gordon Creek as a nongame fish, Class 5 stream. It is of limited value as a fisheries. Beaver Creek is a self-sustaining cutthroat trout fisheries. (Class I streams have the highest rating values, while Class 6 streams have the lowest rating values.)

The bald eagle and peregrine falcon are Federally listed (Threatened and Endangered Species List) species which could occur on the tract. Other birds of high Federal interest under Unsuitability Criteria No. 14 that could occur on the tract include the golden eagle, prairie falcon, Ferruginous hawk, merlin, spotted owl, flammulated owl, Cooper's hawk, Western blue bird, Scott's oriole and band-tailed pigeon (F&WS, 1979).

The endangered bald eagle is a winter resident of the region between mid-November and late March each year. Golden eagles may be found in the area year round. To date, no concentrations of bald or golden eagles are known on or near the proposed lease tract (UDWR, 1979).

Peregrine and prairie falcons may occasionally be seen on or near the proposed lease tract. They visit this area while hunting for prey species. Both of these falcons are yearlong residents, and sighting of both species are fairly common in the Carbon-Emery County areas. There are no known peregrine falcon, prairie falcon, or golden eagle aeries (nests) occurring on or near the proposed tract. Nest sites for the Cooper's hawk, flammulated owl, Western bluebird, spotted owl, or band-tailed pigeon are not known. The tract does not meet the criteria for classifications as high priority habitat (F&WS, 1979).

Wild horses and burros are not found on or near the tract.

Trends in the Affected Environment

Trends in wildlife populations and habitat quantity and quality are summarized in Table 2.3.

TABLE 2.3

WILDLIFE TRENDS

Species	Population Trend	Habitat Trend	
		Quantity	Quality
Mule deer	Increasing	Decreasing	Good
Moose	Increasing	Decreasing	Good
Elk	Increasing	Decreasing	Good
Coyote	Cyclic	Stable	Good
Fox	Cyclic	Stable	Good
Rabbits	Cyclic	Stable	Good
Raptors	Increasing	Stable	Good

Source: (UDWR, 1979)

9. Cultural Resources

The best represented prehistoric culture in the area is the Fremont culture. However, remains of the Paleo-Indian, Desert Archaic, and Ute-Southern Paiute phases are also known from the region and may exist in the area. A 10-percent Class II regional reconnaissance has been done with one 160-acre sample quad located on the tract and six others within 0.50 mile yielding no sites. Based on that study and other known work to date, no recorded cultural sites, including National Register sites, exist on the proposed tract (Weed, 1979; New World Research, 1979; Moab District Cultural File, 1979). However, local informants know of a few unrecorded camp sites and projectile point finds in the area (Local Cultural Data Informants, 1979).

The region was settled by Anglo-Europeans in the late 1870s, and a few historic remains of early ranching and mining efforts exist to the east of the tract. None are known to occur on the proposed lease tract.

Trends in the Affected Environment

Because of increased population, access and availability of four-wheel drive recreation vehicles, cultural sites have suffered increasing vandalism in recent years. On the other hand, recent industrial actions have had to mitigate cultural damage which may have resulted in loss of resources in the past.

10. Visual Resources

Two visual resource management classes (Roy Mann Associates, 1977) exist within the proposed lease tract. Approximately 390 acres are Class III and the rest of the area (3,894 acres) is considered Class IV. Other than miners, there would be approximately 350 individuals in pursuit of recreation activities who would view this tract. The area is steeply dissected, with sparse vegetation on the south and east-facing slopes and pockets of fir, spruce, and aspen on the northern slopes. Many of the drier slopes contain mountain shrubs and grasses.

Trends in the Affected Environment

The visual resource classes would remain as they are unless some unforeseen management action dictates to have the classification reviewed and subsequently changed.

11. Recreation

All recreation areas within and immediately surrounding the tract is by private access. Approximately 150 visitors traverse the tract in pursuit of off-road vehicle activities, sightseeing and picnicking. The main recreational use is in the form of hunting for mule deer. This accounts for nearly 200 visits to the tract each year. There are no public or private recreation developments on or adjacent to the proposed lease area.

The initial BLM inventory did not identify any areas of 5,000 acres or more of contiguous public land within or surrounding the Gordon Creek tract that would qualify under the Wilderness Act of 1964. All of the subject tract lands are in private ownership.

Trends in the Affected Environment

Dispersed recreation is expected to increase as the population continues to grow. However, the high increasing cost of gasoline may inhibit some of the expected recreational growth which could affect the subject tract. Urban recreational demands will increase.

12. Land Uses

Surface estates of the entire tract are privately owned, with the subsurface minerals being owned by the State, individuals or the Federal Government. Coal is entirely Federally owned.

There are no existing rights-of-way on this tract. Four Federal oil and gas leases exist on the tract (Table 2.4).

TABLE 2.4

OIL AND GAS LEASES

T13S R07E	Lease No.	Acres
Section 10	U-41458	280
Section 11	U-20117	360
Section 11	U-30437	160
Section 12	U-20117	40
Section 12	U-30437	40
Section 13	U-20117	370
Section 14	U-20117	120
Section 14	U-30437	80
Section 15	U-30437	120
Section 22	U-15576	280

The zoning ordinances for Carbon County permit coal mining within the tract. There are no prime or unique farmlands within the tract. The area is used as summer range for sheep and cattle. At the present time, there are no timber operations anywhere on the tract.

13. Transportation and Noise

About 11.2 miles of gravel road and 1.2 miles of paved road connect the present Gordon Creek Mine in Section 18 with U. S. 6 near Helper. At present, the mine is shipping 75 to 87 truckloads of coal per day along this road. In addition, commuter traffic amounts to about 75 round trips per day, and service truck traffic about 12 round trips per day. In the near future,

Beaver Creek Coal Company estimates coal truck traffic to approach 100 round trips per day. At this rate, total traffic on the road would amount to 187 round trips per day. This amount of traffic is approaching the economic limit for maintained gravel roads so that additional traffic probably would require paving.

In the Helper area, U. S. 6, a four-lane highway, is already carrying 11,000 to 15,000 vehicles per day, a significant portion of which are coal trucks. It also carries local and interstate traffic, being a major route from I-70 at Green River into Salt Lake City and the Wasatch Front communities. A bypass around Price is presently under construction which will alleviate urban congestion through the town. At present, traffic congestion on two-lane streets in downtown Price is severe in at 9,500 vehicles per day in 1978.

Sound intensity along coal access and haulage roads due to diesel trucks is presently 95 dba.

Trends in the Affected Environment

Traffic along U. S. 6 in the vicinity of Helper has reflected the energy growth in the area, having increased about three times between 1975 and 1978. Continued energy growth would continue to increase traffic through this area, partly because Price is a population center and a service center for much of the mining in Carbon and Emery Counties. However, traffic is not expected to continue to increase at the rate of the last 3 years. Traffic forecasts for 1990 are not available.

14. Social Economics

The area to be affected by the Proposed Action includes the communities of Price, Helper, and Wellington in Carbon County. From 1970 to 1978 the population of this area increased from 12,934 people to 18,400 (43 percent), an average annual growth rate of 5.4 percent.

Growth and decline in Carbon County has historically been linked with the coal industry. When the coal industry expanded so did the surrounding communities. The history of the Utah coal industry has been one of rapid expansion and decline. The most recent decline (1950 through 1970) was caused by poor market conditions for coal. Today the industry is in the midst of rapid expansion. This has resulted from the increased utilization of coal for electricity generation as well as the national trend towards greater coal utilization.

Of the 6,258 people employed in the area 785 (13 percent) are employed in the mining sector. Trade, government and the service sectors are the largest employers in the area, employing 1,538 (25 percent) and 925 (15 percent), respectively.

Trends in the Affected Environment

As the coal industry declined from 1950 through 1970 the population of Carbon County decreased from 24,901 to 15,261 a decrease of 39 percent (U.S. Bureau of Census, 1970). Since 1970 the coal industry has been expanding which has reversed the downward trend in population. From 1970 to 1978 the population of Carbon County has increased from 15,261 to 20,200 (32.4 percent), an average annual growth rate of 4 percent. The population of the Price-Helper-Wellington area has shown similar trends. From 1970 to 1978 the population increased from 12,934 to 18,400 (42 percent), an average annual growth rate of 5.2 percent. For the forseeable future the coal industry in Utah is expected to expand and prosper. Whether this expansion will lead to decline depends on the future energy technology and the extent to which it might replace coal.

The population in the Price-Helper-Wellington area is projected to increase to 23,355 people in 1987, 24,529 in 1990, 25,993 in 1995, and 26,453 in 2000, an annual average growth rate of 2 percent.

IV. ENVIRONMENTAL CONSEQUENCES

A. Proposed Action

1. Impacts

a. Air Quality

Particulates would be the main pollutants emitted as a result of the proposed action. Increased emission of other pollutants, such as nitrogen oxides, sulfur oxides, carbon monoxide, and photochemical oxidants would occur from vehicular traffic and sources associated with population growth, but the impact from the proposed action alone would be expected to be small.

Particulate emissions from various mining activities were estimated using available emission factors. It is estimated that approximately 2,145 tons per year of particulates would be emitted (2,130 tons from unpaved haul and access roads and 15 tons from coal storage and transfer). Emissions from the unpaved road could be considerably lower as a result of stabilization from snow cover or frozen ground which would occur frequently in winter months. Sources which would emit at least 250 tons per year of any pollutant are presently subject to Prevention of Significant Deterioration (PSD) permit review by EPA, although the newly proposed EPA rulemaking (Federal Register, September 5, 1979) does not include regulation of coal mines.

No modeling was performed to estimate increases in pollutant concentrations. Because of the large size of the particulates that would be emitted from the mine and unpaved roads, most would settle out within 1 mile downwind.

It is expected that the annual average increased TSP concentration would be below the 10 ug/m^3 Class II increment; however, the 24-hour maximum concentration could exceed the Class II increment along the road if it was not paved.

Some visibility reduction and atmospheric discoloration would occur in the immediate vicinity of the mine and unpaved road as a result of particulate emissions, but this impact would be confined to the canyon. No impacts to any Class I areas are espected.

b. Topography, Geology and Paleontology

Drill holes required prior to the mine development would most likely be located in areas of lesser slope, such as along mountain tops. In such case, cutting and filling would not be required, and effects on topography, geology and paleontology would be nil.

Construction of an all weather road to portal areas and of portal facilities would require cutting and filling along the North Fork of Gordon Creek, resulting in elevated roadbeds and cuts along the canyon wall.

Surface subsidence could be an effect of mining. Maximum surface lowering potentially could range from 50 to 90 percent of total mined height (Dunrud, 1976). Accurate prediction of subsidence cannot be made, as a model has not been developed for the Wasatch Plateau coal field. Historically, subsidence in geologically similar areas of the coal field has generally not been visually noticeable.

Mining induced tremors are not expected to be greater than the maximum 4.9 recorded for naturally occurring earthquakes in the region. Mine stress releases as great as 4.5 magnitude could occur and would be hazardous to mine workings and could cause landslides or rockfalls. The stress releases are unpredictable and the potential impact cannot be quantified. Damage would not be expected to be significant to structures beyond mine areas (GS, 1979).

Impacts to paleontological resources would consist of destruction or disturbance of fossil material. Mining activity could expose fossil remains which would otherwise not be available to research and other uses.

c. Minerals

Conflicts between coal mining and other mineral development on the tract, such as oil and gas production, may occasionally occur. An estimated 39 million tons of coal resources (60 percent) that are not mined would become inaccessible due to collapse of mineways.

d. Soils

An estimated 102 acres of land would be disturbed as a result of mining activities. This disturbance would be concentrated along the drainages and sideslopes of the North Fork of Gordon Creek and Beaver Creek. Soils disturbed by exploration (7 of the initial 25 acres) would be reclaimed in 1 year. An additional 12 acres of disturbed land would be added by 2001 for development of the lower seams along Gordon Creek. An additional 45 acres for offsite facilities would be estimated to be taken out of production permanently because of access roads. Minimal impacts of the soil resources would take place on the additional 20 acres for power and telephone lines. Secondary impacts would be soil acreage lost to new housing and related development.

Soil impacts would initially be quite severe at the mine sites because of cutting and filling for leveling on the steep slopes. Onsite erosion rates could increase by 20 cubic yards per acre per year on exposed soils (GS, 1979). With erosion control structures, however, the rate should be one-third of the original estimate. Wind erosion estimates could reach as high as or exceed 79 tons per acre per year. Acres of stockpiled topsoil would be susceptible to wind and water erosional forces.

Compaction of soil due to the heavy traffic on haul roads would be another potential problem. Revegetation of those "compressed" soils may be difficult.

Soils on the tract have a good potential for revegetation. Productivity on reclaimed land would not be significantly reduced. Productivity of disturbed lands would be lost during the life of the project (37 years) and until final reclamation takes place. As a result of mining, ground subsidence may occur which could have a direct effect on soil development and productivity.

e. Water

It is not known whether mining-induced subsidence would cause perched water zones to rupture and infiltration to increase. Probable significance is presently impossible to ascertain because too little is now known about perched water in the area and the effects of underground mining.

Water Supply - Obtaining the 117 acre-feet per year (107 for municipal use and 10 for mining) needed to implement the proposed action may cause as much as a 53 to 101 acre-feet per year reduction in the water available to immediate downstream users (see table 3.1). A loss of 101 acre-feet could remove approximately 25 acres from irrigation within the Price River drainage.

Water Quality - The chemical quality of the water in the area could be deteriorated. Subsidence and subsequent fracturing of the overburden would tend to cause more groundwater movement and increase the potential for leaching of chemical constituents. This might, in turn, lead to increased concentrations of dissolved solids in local surface and groundwaters. However,

TABLE 3.1

PROJECTED WATER USE DATA FOR SELECTED YEARS*

Activity	1987 First Year of Production	1990	1995	2024
Mining Water Use	10	10	10	10
Population Increase	424	629	733	803
Required Increase in Domestic Water Supply**	107	159	185	202
Consumptive Use of Water by Increased Population***	53	79	92	101

* All water data in acre feet per year
** Assumes an average water use of 225 gallons per day per person.
*** Assumes an average culinary water use of 112 gallons per day per person.

chemical changes in water quality in the Price River would probably be insignificant.

f. Vegetation

Approximately 90 acres in the conifer-aspen, mountain brush, and sage-grass vegetation types would be lost to vegetation use for the life of the mine. Some loss of vegetation could occur in the riparian zone; however, without a mining plan this cannot be determined at this time. This includes 65 acres for access roads and power and telephone lines for support of the mine operations and 25 acres for mining operations. An additional 7 acres would be disturbed by drill roads and pads during exploration. No impact is foreseen on the vegetation overlaying the proposed mine operations and no threatened or endangered plant species would be impacted by the proposal.

g. Wildlife

The proposed action would have an influence on 4,284 acres of onsite wildlife habitat during some period of the 37-year mine life. Deer, elk, and moose would be forced from their fawning and calving areas as a result of these activities. Seven acres of habitat would be destroyed through the construction of access roads and drill pads. The loss of this habitat would reduce the carrying capacity of the range by less than one deer (0.2). If the 7 acres could be revegetated with adequate forage species within 3 years, the carrying capacity of the deer range would have had a temporary reduction for the 3-year period.

As a result of human activities and noises emitted from vehicles and drilling machinery during the exploration phase, deer and moose would temporarily be displaced from a 40-acre area of influence surrounding each drill site while drilling activities are in operation. Elk would be displaced for a 0.50-mile radius of each drill site while drilling activities are occurring (Ward, 1976).

The construction of possibly two new portals, access and haulage roads, powerlines and telephone cables, coal storage and load out facilities, warehouse, maintenance shop, change house and an office in the North Fork of Gordon Creek would have a negative impact on deer, elk and moose. The onsite facilities (those near the portal) and the 3.5 miles of haulage road, powerlines and telephone cables terminating at the site would occupy approximately 90 acres. The loss of this habitat would reduce the carrying capacity of the range by four deer.

The construction and operation of a ventilation shaft in Beaver Creek Canyon would also have a negative impact. Deer and moose would be temporarily displaced from a 40-acre area of influence while the vent shaft is under construction. Elk could be displaced for an area of 1-mile radius of the vent shaft. These species would also be displaced from the area surrounding the vent shaft after construction has been completed because of noise caused by the large ventilation fans.

The increase in human activity in the North Fork of Gordon Creek would disrupt the present patterns of use by deer, elk, and moose. These species would be displaced from the area adjacent to 3.5 miles of haulage road and facilities. The quality of North Gordon Creek would be greatly reduced as habitat, and the deer, elk, and moose would occupy the canyon in fewer numbers and frequency. The loss of this habitat (1,280 acres - 0.25 mile area adjacent to roads and facilities) would reduce the carrying capacity of the range by 37 deer. Over the life of the mine, 1,120 deer would be lost. The loss of range carrying capacity for elk or moose cannot be quantified. Elk would be displaced from their range for a 0.50-mile radius of human activity related to the mining operation (Ward, 1978). The riparian areas in North Gordon Creek and Beaver Creek, which are crucial-critical areas for moose, would no longer be available for use by moose. Human activities and traffic would keep moose from occupying these riparian areas. This loss cannot be quantified at present.

Deer losses and possibly bald and golden eagle and other raptor losses would increase as a result of the increased truck and vehicle traffic from the coal load out facilities to either the railroad siding or Utah Highway 50-6. These losses cannot be quantified. Impacts to Gordon Creek's limited value fisheries would also be minimum if the present stream channel and riparian zone would not be disturbed during construction of the roads and mine facilities.

The impacts which could occur to birds of high Federal interest under Unsuitability Criteria No. 14 are not known. The possibility of any of the species listed being affected is unlikely because their occurrence and use of this area is considered as incidental (F&WS, 1979).

h. Cultural Resources

Since the number of cultural sites on the tract is presently unknown, impacts cannot be quantified. However, based on current data from nearby studies, the probability of impacting cultural resources, except near springs and in drainage bottoms, is considered low. The underground mining required would confine impacts to portals, facilities, drilling pads, and access roads, if any. Construction of these facilities could damage or destroy these sites resulting in irreparable loss of scientific and educational information. Any sites requiring salvage would lose the context of the artifacts and any data currently unrecoverable with existing techniques.

i. Visual Resources

Development in the form of roads, powerlines, portals and surface facilities would be allowed in with Class III and IV areas if visual resource management guidelines are followed. Visual impacts would not be apparent to the general population of the area. Mine workers, visitors to the mine, and approximately 350 visitors in pursuit of recreational activities would view the disturbed area each year. See Table 3.2 for a general analysis of the visual impacts caused by mining activities.

TABLE 3.2

TIME POINT ANALYSIS FOR VISUAL RESOURCE IMPACTS

Activity	1987	1990	1995	End of Mine Life 2024	Final Reclamation 2033
VRM					
Mining Operations	Moderate	Moderate	Moderate	Moderate	None
Exploration	Severe	Minimal	None	None	None
Facilities Onsite and Coal Storage	Moderate	Moderate	Moderate	Minimal	None
Facilities Offsite	Severe	Severe	Severe	Severe	Minimal
RECREATION					
Mining Operations	Minimal	Minimal	Minimal	Minimal	None
Exploration	Moderate	Minimal	None	None	None
Facilities Onsite and Coal Storage	Minimal	Minimal	Minimal	Minimal	None
Facilities Offsite	Minimal	Minimal	Minimal	None	None

j. Recreation

All of the subject lands are privately owned. Access for recreation may or may not allow for recreation purposes if mining operations develop. Additional access may be made available to recreation sites by upgrading existing roads and the construction of new roads to various locations throughout the tract for mining operation. Displacement of recreation visitors would be minimal, as the surrounding country offers comparable values and experiences.

Increased recreational demand as a result of the proposed action would not result in a significant change to the dispersed nature of recreation in Carbon County. Urban areas may feel an increased demand on their recreation facilities, i.e., city parks, swimming pool, tennis courts and ball parks, due to population increases.

k. Land Uses

Mining of the tract could impact the oil and gas lessees. The vegetation destroyed by surface facilities and rights-of-way would reduce livestock grazing capacity by approximately 18 AUMs, assuming 5 acres per AUM.

l. Transportation and Noise

About 120 trips per day by 15-ton trucks would be necessary to transport the daily production to a shipping facility (25 miles). Service trucks would add about 25 vehicles per day and commuting miners about 280 vehicles per day. Coal would be transported by rail from the shipping facilities. Production of 260,000 tons of coal per year would require 98 unit train trips per year assuming that each unit train has 67 cars with a capacity of 85 tons.

Sound intensity along haul roads from diesel trucks would increase 40 percent to 98 dba.

m. Social Economics

The total population increase resulting from the Proposed Action would be 424 people in 1987, 629 in 1990, 733 in 1995 and 803 in 2000. These impacts would occur in the Price-Helper-Wellington area, in Carbon County. The baseline projections for the same years in the area are 23,173, 24,529, 25,993, and 26,453, respectively. The projected impacts represent a 1.8 percent increase over the baseline in 1987, 2.6 percent in 1990, 2.8 percent in 1995, and 3 percent in 2000. The projected impacts combined with the baseline represents a 48 percent increase in population over 1978 levels in 2000. This would increase the average annual growth rate from 2.0 percent to 2.2 percent.

2. Mitigating Measures

a. Air Quality

The Central Utah Coal ES (USGS, 1979) stated "...each mining plan and the Department's approval thereof shall use at a minimum, an appropriate combination of the following fugitive dust controls: OK

- Pavement or equivalent stabilization of all haul roads used or in place for more than 1 year;
- Treatment with semipermanent dust suppressant of all haul roads used or in place for less than 1 year or for more than 2 months;
- Watering of all other roads in advance of and during use whenever sufficient unstabilized material is present to cause excessive fugitive dust;
- Reduction of fugitive dust at all coal dumps and truck to crusher locations through use of negative-pressure bag house or equivalent methods. Inclusion of conveyor and transfer point covering and spraying and the use of coal loadout silos.

In the application of mitigating measures, the term haul road should be interpreted to include roads used for haulage of coal and major mine access roads. Busing of employees to and from work would result in less impact to air quality and visibility than would allowing workers to drive their own vehicles.

b. Topography, Geology and Paleontology

SMACRA NO

Set up subsidence monitoring stations on surface areas associated with the underground mining locations. The lesee would be required to notify BLM or OSM when they encounter any recognizable paleontological evidence during the underground mining operation.

c. Minerals

None.

d. Soils

Topsoil removed during the construction of surface facilities, drill pads, access roads and haulage roads would be stockpiled for use in final reclamation of these areas. NO SMACRA

e. Water

Water quality monitoring of Gordon Creek, Beaver Creek, and identified springs on the lease tract would be required.

f. Vegetation

Rehabilitation of disturbed areas would take place as soon as possible following disturbance or removal of surface facilities.

Rehabilitation of exploration roads, drill pads, access roads, and areas disturbed by surface facilities would be initiated no later than the first growing season after use has been discontinued.

A seed mix that would produce a species composition of one-third grass, one-third forbs, and one-third shrub would be used. A species composition of this nature would ensure food and cover for most wildlife species occurring in the area during all seasons of the year.

g. Wildlife

The loss of habitat for deer, elk, moose and other small and medium-sized wildlife species on the tract could be mitigated by requiring the company to revegetate the six drill pads and 3 miles of new access roads (approximately 7 acres) that would result from exploration activities.

Attempts at revegetation would be required until a successful vegetation composition has become established on the disturbed areas.

Exploration and road building activities should be restricted from the proposed lease tract during deer, elk, and moose fawning and calving seasons (May 1 to July 15).

Prior to leasing of the tract there should be an on-the-ground investigation of the tract to ensure that important habitat for birds of high Federal interest (Criteria No. 14) would not be destroyed.

To minimize negative impacts to crucial-critical moose habitat and fisheries habitat, the stream channels and adjacent riparian vegetation along Gordon Creek and Beaver Creek should not be disturbed. The roads and surface facilities must be surveyed, designed and located to protect the riparian areas. Where the road must cross the stream channel, culverts must be properly installed.

h. Cultural Resources

Many potential impacts to cultural sites could be avoided by moving or adjusting the location of surface facilities. This would preserve the sites and data in place and would be the most preferable and economical alternative. Where impacts are unavoidable, salvage of significant sites would

be necessary. In order to determine the appropriate course of action, the lessee would be required to provide a qualified archaeologist approved by BLM's authorized officer to intensively survey impact areas prior to any surface disturbance. Based on the archaeologist's evaluation, BLM would develop a mitigation plan after consultation with the State Historic Preservation Office and the Advisory Council on Historic Preservation. The lessee would then be required to comply with that plan before construction could proceed.

i. Visual Resources

The tract must be returned to the existing landscape quality which is currently classified as Class III and IV Visual Resources.

j. Recreation

None.

k. Land Uses

Disturbed areas on the tract would be restored to support the current level of livestock grazing, wildlife habitat and dispersed recreation use. OK

Some coal exploration roads may be left for use by recreation users or oil and gas exploration. NO

l. Transportation and Noise

The Gordon Creek road would be graded, watered and/or paved to provide an all weather surface. Coal trucks would be required to have mufflers to meet the EPA noise standards in effect at the time of coal mining. OK

3. Residual Unavoidable Adverse Impacts

a. Air Quality

Pavement of the haul and access road would nearly eliminate particulate emissions because an estimated 99 percent of TSP emissions would result from traffic on the unpaved road. Residual TSP emissions would be an estimated 20 tons per year. Emissions resulting from population growth would not be altered by the mitigating measures.

b. Topography, Geology and Paleontology

Changes in topography due to subsidence over mined areas can be expected.

c. Minerals

An estimated 60 percent of the coal in place would not be recovered. Exploration for oil and gas on subject tract following mining would be impaired or prevented. Potential loss of oil and gas cannot be determined.

d. Soils

None

e. Water

Subsidence could occur over the area mined. Some water resources such as springs probably would be adversely affected by dewatering. Mining would divert 117 acre-feet of water per year from current use to mine or municipal use.

f. Vegetation

Approximately 102 acres of previously undisturbed land would have vegetation removed and soils disturbed. Portions of this acreage would be reclaimed throughout the mining operations and rehabilitation would extend 5 to 10 years beyond the end of mine life. The access road (45 acres) would not be reclaimed.

g. Wildlife

There would be a temporary loss of deer, elk, and moose habitat as a result of coal exploration. Habitat carrying capacity would be reduced for deer by less than one deer, and an undetermined number of elk and moose. Exploration activities would last for approximately 3 years.

Forty-five acres of road access would not be revegetated, resulting in a permanent loss of wildlife habitat. This encroachment onto wildlife habitat would reduce the carrying capacity of the range by two deer, and an undetermined number of elk and moose.

Deer, elk and moose would be permanently displaced from areas adjacent to the mine facilities and the 3.5 miles of haulage road as a result of noise from machinery and human activities. Deer and moose occurrence would be reduced within 0.25-mile of all roads and facilities. Elk occurrence would be reduced within 1 mile of all roads and facilities. The carrying capacity of the range would be decreased by 37 deer annually and 1,120 deer for the life of the mine. The loss of range carrying capacity for elk and moose cannot be quantified.

The moose population on the entire Manti National Forest and adjacent public and private land is small, probably less than 50. The riparian areas along the North Gordon and Beaver Creeks, which are cruicial-critical areas for moose, would be lost. These riparian areas would no longer

be available for occupancy by moose because of human activities and vehicle traffic.

h. Cultural Resources

Some unknown (i.e., buried) cultural resources could be damaged by construction of various facilities. Context of artifacts and data currently unrecoverable using existing techniques would be lost.

i. Visual Resources

Evidence of man's activities on the landscape would remain for an unknown time beyond the end of mine life. This modification of the existing landscape would not be noticeable to the point of changing the original VRM classes.

j. Recreation

None.

k. Land Uses

There would be a loss of approximately 18 AUMs for sheep and cattle grazing until the disturbed areas are reclaimed, in some cases, until the year 2024.

l. Transportation and Noise

Coal truck traffic from the mine to Price would make an already bad situation worse.

4. Short-Term Use and Long-Term Productivity

Subsidence would not be expected to affect productivity of surface resources. Production of coal resources in the short term would decrease reserves available for long term production.

Short-term soil and vegetation productivity would be lost on approximately 130 acres from mine site development due to the proposed action. Revegetation of the disturbed areas would be required, and productivity would be regained over time following successful reclamation.

Productivity of natural vegetation disturbed would not be permanently lost if successful revegetation was achieved. Once again, revegetation may be difficult due to excessive slopes, instability and slumping, increased erodibility and stoniness.

Long-term productivity would also be lost on soils due to housing and related development.

Subsidence impacts would divert surface waters into the ground as a result of surface fractures, but would increase recharge to groundwater reservoirs and speed the spring flow restoration.

Approximately 90 acres of previously undisturbed land would be affected for the life of the mine. In some cases, the disturbance would remain 5 to 10 years beyond mine life or until rehabilitation was completed. Long term vegetative productivity would be restored.

There would be a temporary (2 to 3 years) reduction in habitat carrying capacity for deer, elk, and moose and small and medium-sized wildlife species during the coal exploration.

The quality of North Gordon Creek, as well as other areas both on and off the tract, would be greatly reduced as habitat for deer, elk, moose, and small and medium-sized wildlife species. The loss of habitat (1,280 acres) to roads, mine facilities, and human influence and occupancy would reduce the capability of the range to support 1,120 deer over the life of the mine. The crucial-critical riparian areas along Gordon and Beaver Creeks would no longer be capable of supporting moose in the short term. The capability of 5,120 acres (both on and off the tract) to support elk would be reduced by an undetermined number of elk in the short term.

The long-term productivity of the habitat to support all wildlife species would probably never be equal to its present capabilities. Mining facilities and human occupancy would disrupt the present use patterns of deer, elk, moose and other wildlife for a 40-year period. After this period of time, these species would have established new use patterns and areas. In the long term, the habitat quality and productivity (carrying capacity capabilities) would be reduced. The number of deer, elk, moose and other wildlife species which this area would be capable of supporting after the mine cannot be determined. The habitat potential for attaining population levels which could be present would never be reached as a result of mine developments in this area.

Any prehistoric sites salvaged in the short term could not be excavated later with better data recovery and analysis techniques and improved research orientations. However, materials collected and analyzed now would contribute to improved understanding of the area's cultural resources and thus contribute to future research.

The visual resources would be disturbed on approximately 90 acres in the short term but would then be rehabilitated to the previous Class III and IV Visual Resource Management classes. Dispersed recreation would be reduced in the short term and return to existing or higher levels over the long term.

Short term loss of 18 AUMs for sheep and cattle grazing would occur until disturbed areas can be reclaimed. Long term productivity for livestock would not be reduced.

5. Irreversible and/or Irretrievable Commitment of Resources

Termination of coal mining would lead to a termination of pollutant emissions. Thus, the air resource would not be irreversibly committed as a result of mining. Emissions from secondary growth and related activities such as traffic, urban fuel consumption, etc., induced by the proposed action would be more permanent and result in a long-term commitment of the air resource to some deterioration.

Any existing unknown paleontological values in areas of disturbance would be destroyed or damaged.

Approximately 39 million tons of coal resources that are not mined would become inaccessible due to collapse of mineways. The mined coal (26 million tons) would have been used in energy and would not be available for future production.

Water would be consumptively used at the rate of 53 to 101 acre-feet per year. Changes in the surface water and groundwater systems, because of subsidence, could be permanent.

The proposed development would result in permanent loss of habitat quality and productivity (carrying capacity capabilities) for deer, elk, moose, and other wildlife species. Permanent productivity losses could not be determined for all species. The loss of 1,120 deer during the mine life would be irretrievable. Assuming that an average 12.2 hunter days (3.3 or 30 percent success x 3.7) would have been required to harvest one buck, 1,610 hunter days would be required to harvest 132 bucks and $67,410 ($41.87 per hunter day) of revenue attributed to deer hunting would be lost.

The loss of moose habitat (crucial-critical) along Gordon and Beaver Creeks as calving areas during the mine life would result in the loss of an undetermined number of moose. These losses would be irretrievable. The number of elk losses cannot be determined, but any losses that would occur during the mine life would be irretrievable. All losses of deer, elk, moose, and raptors resulting from truck and vehicle traffic during the mine life would be irretrievable.

Any cultural site information damaged or lost during salvage excavations due to current methodological inadequacies would be irreversibly and irretrievably destroyed.

6. Net Energy Balance

The new CEQ regulations (November 1979) require that a net energy analysis be discussed indicating the energy requirements of an action compared to the anticipated energy yields. The accompanying Net Energy Summary Sheet (Table 4.1) estimates the amount of energy in the coal produced, the energy expended in its production, and the energy left in the ground as not being economically recoverable.

TABLE 4.1

NET ENERGY SUMMARY SHEET

SITE: Gordon Creek (as a new mine)
BLM: Utah

	Annual		Life-of-Mine (40)
1. Energy Output, Btu's	16,100.0		644,000.0
2. Energy Input (direct & indirect), Btu's*			
2.1 Production/Transpportation			
Petroleum	59.3		2,372.0
Natural Gas	---		---
Coal	123.4		4,936.0
Hydro Power	---		---
Nuclear	---		---
Other	---		---
Total	182.7		7,308.0
Ratio Output/Input		88.1	
Equipment, Facilities and Supplies			
Petroleum	10.4		416.0
Natural Gas	37.3		1,492.0
Coal	16.8		672.0
Hydro Power	4.9		196.0
Nuclear	4.6		184.0
Other	---		---
Total	74.0		2,960.0
Ratio Output/Input		217.6	
Total Production/Transportation	256.7		10,268.0
Ratio Output/Input		62.7	
2.2 Infrastructure			
Production Area			
Petroleum	74.8		2,992.0
Natural Gas	84.3		3,372.0
Coal	61.3		2,452.0
Hydro Power	---		---
Nuclear	---		---
Other	---		---
Total	220.4		8,816.0
Ratio Output/Input		73.0	

		Annual		Life-of-Mine (40)
	Equipment and Supplies			
	Petroleum	45.1		1,804.0
	Natural Gas	39.5		1,580.0
	Coal	12.8		512.0
	Hydro Power	3.8		152.0
	Nuclear	3.5		140.0
	Other	---		---
	Total	104.7		4,188.0
	Ratio Output/Input		153.8	
	Total Infrastructure	325.1		13,004.0
	Ratio Output/Input		49.5	
2.3	Total 2.1 + 2.2			
	Petroleum	189.6		7,584.0
	Natural Gas	161.1		6,444.0
	Coal	214.3		8,572.0
	Hydro Power	8.7		348.0
	Nuclear	8.1		324.0
	Other	---		---
	Total	581.8		23,272.0
	Ratio Output/Input		27.7	
	Unrecovered Resource, Btu	24,140.0		965,600.0

* All Numbers: Billion Btu's

The energy input shown, as needed for "Production and Transportation" includes all energy required to produce the coal and transport it to a rail shipping point (25 miles). This comprises fuel used directly or as electricity for mine production, truck transportation of coal and transportation of personnel and supplies -- the energy used for manufacturing the mining and transportation equipment and for constructing facilities -- the energy used for manufacturing supplies -- the petroleum used in hydraulic fluids, lubricants, and explosives -- and hydrocarbon in feedstocks used in supply manufacture.

The energy input shown as required for "infrastructure" includes the energy consumed as electricity, natural gas, heating oil, and gasoline by mine employees and families, by the similar number of service employees who support, and by a proportionate number of commercial establishments.

Rail shipment of coal requires about 600 btu's per ton/mile in the form of direct energy. A similar amount is consumed indirectly and by associated infrastructure. About one-half percent of the energy in coal is required to transport it 100 miles by rail.

Energy consumption is considered as beginning for electricity with coal deliveries to the generating station -- for petroleum products with deliveries to area supplies -- and for natural gas with deliveries to consumers.

Net energy analyses made for tracts in the Hams Fork-Green River Region included full allowances for unrecovered resources in the deposits from which energy minerals would be supplied to the proposed sale tracts. These allowances were not included in this analysis. This item appears useful only in the tract being considered for lease sale. In any case the item is meaningless without the lease sale. Allowances for unrecovered coal in the mines (which are all underground), that would supply electricity to the tract would be equal to the coal burned. Allowances for unrecovered oil and natural gas is considered to be about 2.2 times that recovered (verbal communication from Albert G. Melcher, Project Manager, Energy Division, Colorado School of Mines Research Institute).

V. CONSULTATION AND COORDINATION

Local informants on cultural sites are:

Ross Fausett, Price, Utah (rancher)
Keith Hansen, Price, Utah (deputy sheriff; local collector)
Pete Stamatakis, Price, Utah (rancher)
Calvin Jacob, Orem, Utah (rancher)

A draft of the EAR will be sent to the USHPO for review and comment.

Personal Communications; 1979, Frederick K. Allgaier, Bureau of Mines, Denver, Colorado.

The United States Fish and Wildlife Service (Clark Johnson) was contacted for information pertaining to threatened and endangered species and migratory birds (Criteria No. 14).

The Utah Division of Wildlife Resources (Larry Dalton), Southeastern Regional Office was contacted for input into the wildlife section of the environmental analysis.

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Waddell, K. M., 1979, (personal communication), U. S. Geological Survey, Resource Division, Salt Lake City.

Carol Weed, Project Supervisor, 1981 Coal Leasing Cultural Inventory, New World Research, Pollack, Louisiana, personal communication.

VI. PARTICIPATING STAFF (BLM)

Boyd Christensen, Hydrologist, Hydrology, Utah State Office
Gary Davis, Environmental Coordinator, Team Leader/Proposed Action, Moab District Office
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Lee Larsen, Outdoor Recreation Planner, Recreation/VRM, Price Area Office
Bruce Louthan, Archaeologist, Cultural Resources, Moab District Office
Lyman Moore, Mining Engineer, Net Energy/Proposed Action, Utah State Office
Mike Sieg, Regional Economist, Social Economics, Utah State Office
Wayne Svejnoha, Soil Scientist, Soils, Moab District Office
Daryl Trotter, Planning Coordinator, Vegetation/Land Uses, Moab District Office
Sid Vogelpohl, Geologist, Geology/Minerals 1981 Rewrite, Price Area Office
Bill Wagner, Natural Resource Specialist, Climate/Air Quality, Utah State Office

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Utah Division of Oil, Gas and Mining, 1979, Office Files.

SITE SPECIFIC SUMMARY MATRIX

Tract name or number: Gordon Creek

I. COAL DATA
(From Tract Delineation Report)

State: Utah

Legal description (T and R or metes and bounds):

Element	Present Situation	Anticipated Effect of Leasing/Development	Significance of Anticipated Impact	Data Reliability	Comments
Production rate (tons/yr)		425,000 ~~4.2 million~~ tons/year			
Estimated mine life (yrs)		37 if operated independently 40 if operated with adjacent mine			
Total Reserves (tons in place)		42.2 million tons/year			
Recoverable reserves (tons)		15,822,500 if operated independently 16,880,000 if operated with adjacent mine			
Recovery rate (%)		37 if operated independently 40 if operated with adjacent mine			
Type of coal (steam/metallurgical)		Steam HI-VOV Bituminous "B"			
Sulfur content/ton		0.52% (average)			
Projected work force (construction)		20-30			
Projected work force (mining)		90-100			
Surface ownership (Federal, State, private, etc.)		All Private			
Status of surface owner consent and/or consultation		Not required (underground)			

Element	Present Situation	Anticipated Effect of Leasing/Development	Significance of Anticipated Impact	Data Reliability	Comments
Type of mine (surface/underground)					
Coal transportation needs	S E E B E L O W				
Coal access needs	Paved secondary road into area No access to one seam	3½ mi new road needed	None Large, local		
Coal markets					
Other as determined by Regional Coal Team					
Transportation:					
Employee Transportation	Paved local road	154 vpd into Price-Helper	Moderate	Poor, traffic counts are not available. Other coal-related traffic uses road.	
Coal Transportation	Paved local road US-6 (10,800 vpd) U-10 (6,090 vpd)	129 vpd into Price	Moderate	Poor on local road Good on highways	
Service Truck useage	Paved access road, US-6, U-10	17 vpd from Price	Moderate, adds to trucks above.	Good on highways	

SITE SPECIFIC SUMMARY MATRIX

Tract name or number: Gordon Creek

II. RESOURCE AND ENVIRONMENTAL CONSIDERATIONS

State: Utah

Legal description (T and R or metes and bounds):

Element	Present Situation	Anticipated Effect of Leasing/Development	Significance of Anticipated Impact	Data Reliability	Comments
AIR QUALITY					
a. Total Suspended Particulates (TSP)	Annual geometric mean of 62 ug/m^3 at Price and 33 ug/m^3 at Huntington, probably consisting largely of suspended soil particles	Annual emissions estimated at 20 tons/year.	Not significant	Acceptable	
b. SO_2	Levels are well below standards.	Slight	Not significant, would be within standards.	Good	
c. NO_x (NO + NO_2)	Low concentrations expected.	Slight	Not significant, would be within standards	Acceptable	
f. Ozone (O_3)	Levels expected to be within standards	Slight	Not significant, would be within standards.	Acceptable, no monitoring nearby.	
g. CO	Low concentrations expected.	Slight	Not significant, would be within standards.	Acceptable, no monitoring nearby.	
h. Lead (Pb)	Low concentrations expected.	Slight	Not significant, would be within standards.	Acceptable, no monitoring nearby.	

Gordon Creek

Element	Present Situation	Anticipated Effect of Leasing/Development	Significance of Anticipated Impact	Data Reliability	Comments
Air Quality cont:					
7. PSD Class I areas.	No Class I areas within 50 miles.	None	---	---	
8. Non-attainment areas.	None nearby.	None	---	---	
9. Visibility	Averages about 85 miles	Very localized decrease in visibility near storage piles loading/unloading sites and unpaved roads.	low	Excellent for back ground visibility, marginal for impact because no modeling was performed.	
10. Major pollution Sources.	Three coal powerplants, Carbon (13 mi. east), Huntington (13 miles south), Emery (36 mi. south).	None	---	---	
11. Precipitation	Average 25.0 miles	None	---	Very good.	
12. Growing season 32° F	Averages about 40 days	None	---	Acceptable	
13. Potential emissions when burned	---	0.89 lbs. SO_2 and 4.2 lbs. TSP per million BTUs	Compare with other tracts.	Used weight average coal quality data for the Castlegate "A" and Hiawatha beds. No analysis was available for the Bob Wright bed.	

Gordon Creek

Element	Present Situation	Anticipated Effect of Leasing/Development	Significance of Anticipated Impact	Data Reliability	Comments
TOPOGRAPHY, GEOLOGY, AND PALEONTOLOGY					
	Low hazards along cliffs and steep slopes due to rock falls and landslides.	Subisdence could cause cliffs and steep slopes to become unstable.	Historically, effects have been nil to low so that simialr impacts are anticipated.	Good	
	Tract is located in area of greater seismicity. Recorded quakes have not exceeded 4.9 on Richeter scale	Unpredictable mining-induced tremors or naturally occuring quakes could occur.	Quakes may be hazardous to mine workings and could cause landslides and rock falls.	Good	
	None	Subsidence potential would exist following mining..	Historically, effects have been nil to low; however, potentially could range 50-90% or 8-14 feet.	Unsatisfactory	
	Fossils are known to occur in rocks of Wasatch Plateau. Some fossils are of significant paleontological value	Destruction of fossils in areas of construction and mining.	Destruction of fossils may be significant on a site-specific basis	Acceptable	
Minerals	Large gas field located 1.5 miles west of tract. No other known mineral potential.	Could prevent or discourage O/G drilling.	Unknown impact to O/G production. No impact on other minerals.	Good	

Gordon Creek

Element	Present Situation	Anticipated Effect of Leasing/Development	Significance of Anticipated Impact	Data Reliability	Comments
SOILS Soil Erosion Potential	Most soils disturbed will have a moderate soil erodibility potential estimated soil loss is presently .2 cubic feet per acre per year. Wind erodibility is low.	Accelerated soil loss of approximately 10 times the estimated for vegetated undisturbed sites. 20 cubic feet peracre per year losses. This estimated can be cut by two thirds if erosion control structures are utilized. Wind erosion rates could reach in excess of 79 tons per acre per year.	Low	Fair	These figures are estimates taken from existing information and reports with similar soil and vegetative cover.
WATER Ground water Type of occurance	Confined in bedrock fins, unconfined in shallow and perched water tables. Springs in area.	Possibility of perched water zones to rupture and infiltration to increase.	Loss of some surface water flows.	Low	
Quantity	Discharge from wells range from 5 to 50 gal/min.	Probably sufficient water for mining.	Required water for mine 45 acre ft/yr could come from wells.	Moderate	

Element	Present Situation	Anticipated Effect of Leasing/Development	Significance of Anticipated Impact	Data Reliability	Comments
Quality	Fair; some formation contain culinary type water.	Leaking of spoil piles would still produce same quality water.	Minor	Inferred from leaking of other mine spoils in area.	
portance to livestock	No stock water wells on site, springs pro. some	None	---	Field observation	
portance to agriculture	Some individual farmers using wells for sprinkler irrigation.	Little or none	---	Field and well data	
portance to Municipal pplies	Individual and other mining operations use wells.	Little or none	Minor	Moderate	
(Surface Water) pes of Occurance	Beaver and Gordon Creek are perennial springs are scattered throughout tract. Some stream channels are intermittent and others ephemeral.	Subsidence could dewater streams or springs by diverting it to other ground water sources.	Moderate based on inferred subsidence may change wildlife and stock use of area.	Field Observation	
uantity	Estimated runoff is 3.67" Beaver Creek produces 2,810 ac/ft.	Some surface runoff could be diverted to ground water sources.	Moderate	Mod. - Lots of faulting in the area. Beaver Creek as low producer when should produce much as others.	
uality	Good, probably contains less than 1000 my/l dissolved solids.	Little or none	Minor	Low to Mod. based on quality of waters in general area.	

Element	Present Situation	Anticipated Effect of Leasing/Development	Significance of Anticipated Impact	Data Reliability	Comments
alinity of receiving aters (Green River)	Severe salinity problems when should be less than 681 my/l.	Little or no impact from Mining. Municipal uses would consume 43 to 83 acre feet per year.	Would decrease dilution effect in Price River about a 0.1% 83/70,930 = .001170	Moderate based on inferred population increases.	Any decrease in flow results in increased salinity of Colo. River. It is significant impact.
mportance to livestock and wildlife	Animals water directly from stream and spring	Subsidence could dewater springs and streams	Moderate livestock may need to herd water	Field observations	
mpor ce to agriculture	Runoff from tract to agri. areas by Price furnishes 2% of surface water supply.	Little or none	Minor	Low effects of development largely inferred.	
mportance to people individual & Municipal upplies)	Runoff from tract not used for culinary	None on tract. Consumptive use of 43-83 ac/ft by	Low, would reduce flow by corresponding	Moderate based on inferred population increase	
Vegetation	Conifers, aspen, mountain shrub, and grass make up the major vegetative types on the tract. No T/E plants have been found on the tract.	Approximately 130 acres in in the conifer-aspen, mountain brush and sage-grass vegetative type would be lost from production for the life of the mine.	Impact would be of little significance since these vegetative types are prominent throughout this area.	Acceptable	
Reclamation Potential	Elevation above 8,500 feet, precipitation 15 to 20 inches. Frost free season 65 days (June 10-Aug. 15)	Disturb a total of 139 acres for the life of the mine.	Vegetation should be easy to reestablish due to abundant moisture and good soils. Timing of rehabilitation is important due to short growing season.	Acceptable	

Element	Present Situation	Anticipated Effect of Leasing/Development	Significance of Anticipated Impact	Data Reliability	Comments
WILDLIFE					
Habitat	Acres % Total	Acres Dist. (includ. people)			
Spruce-fir	Unavailable data				
Mountain Brush	" "				
Grass	" "				
Riparian	" "	High human occupancy and truck traffic - 5120 ac on&off tract	Loss - Low negative	Good	Mitigating measures will be only partly successful.
Total Habitat	Level of Use	Residual Impacts			
Populations					
Deer	Moderate - High	High	Loss - High negative	Good	People pressure-part. mitiga
Elk	Moderate - High	Moderate - High	Loss - High negative	Good	People press.-part. mitigat
Moose	Mod. - High (potential)	High	Loss - High negative	Good	Because of sm. pop. all losses are significant.
Coyote	Moderate	None - Low	None - Low loss	Good	Displacement
Bear	Moderate	Mod. - High	Loss - Moderate	Good	Displacement-people pres.
Mt. Lion	Moderate	Mod. - High	Loss - Moderate	Good	Displacement-people pres.
Grouse, ruffed, blue	Moderate	Low	Loss - Low	Good	Possible Displacement
Rabbits	High	Low	Loss - Low	Good	Possible Displacement
Migratory Birds Criteria No. 14					
Golden Eagle	Low	Low	Loss - Low	Good	Poss. shooting & road Kills
Bald Eagle	Low - Moderate	Low	None - Low loss	Good	" " "
Prairie falcon	Low - None	Low	None - Low loss	Good	Rec. onsite inv. bef. lease.
Peregrine falcon	Low - None	Low	None - Low Loss	Good	" " "
Flammulated Owl	Unknown	Unknown	Unknown	Poor	" " "
Cooper's Hawk	"	"	"	Poor	" " "
Western Bluebird	"	"	"	Poor	" " "
Band tailed pigeon	"	"	"	Poor	" " "
Burrowing Owl	None occur	None	None	Good	No prairie dog colonies pres
Other Raptors					
Red Tailed Hawk	Mod. - High	Low	Low - Negative.	Good	Some road kills will occur
Am. Rough-legged Hawk	Mod. - High	Low	Low - Negative	Good	" " "
Fisheries	Gordon Cr.-Low Beaver Cr. High	Slight or low	Loss - Low negative	Good	Little or no impact of miti. measures are followed.
Wild horses & Burros	None occur				

Element	Present Situation	Anticipated Effect of Leasing/Development	Significance of Anticipated Impact	Data Reliability	Comments
CULTURAL RESOURCES Cultural/Historical values	No historic sites known except shepherd monuments Ten percent reconnaissance class II of region completed. No prehistoric sites located on 7 quarter section sample quads within ½ mile of tract. Local collectors report lithic site near springs.	Estimated 50 percent probability of additional prehistoric sites/isolated finds near springs in tract. 70-80 percent of historic sites will be in drainage bottoms or the ends of ridges (sheperd/hunter lookouts).	Estimated less than 10 percent probability of locating sites eligible to the National Register of Historic Places.	Good	Final Class II report due after the document written conclusions may alter exact figures.
Visual Resources	Class III 400 acres Class IV 3,570 acres Approximately 350 visitors, mine workers and visitors to the mine view this area each year.	Possibly 75 acres will be disturbed on the tract. The existing landscape will be modified but not to the point of changing VRM classes. Class III negatively impacted moderately. Class IV negatively impacted minimally.	Moderate during the life of the mine and minimal to noe after rehabilitation of the site.	Good	Ratings made by the contractors were generally acceptable. Close observation could possibly lead to a change in VRM classifications. The area is also all private lands.

Element	Present Situation	Anticipated Effect of Leasing/Development	Significance of Anticipated Impact	Data Reliability	Comments
Recreation	Use is by 150-200 hunter days (Big Game) and another 150 visits by ORV users, sightseeing, and possibly picnicers. Recreation is minimal due to the large amount of private lands in and surrounding the subject tract. Locked gates and steep terrain limit recreation use.	Unless access routes are blocked through the use of locked gates impact will be minimal. If access is denied then the 350 visitors will be displaced to the surrounding country which offers comparable values. This would still remain a minimal impact. With new roads and access use would increase.	Minimal impact on a short-term basis and probably no impact on a long term basis.	Fair	Formal inventories for the tract have not been conducted. Figures are based on field observations and DWR data which covers a much larger region than just the subject tract.
	The subject areas have been considered in the wilderness inventory process and have been dropped from further inventory due to the lact of the area meeting wilderness criteria.	None	None	Excellent State and District documentation	The subject areas have been inventoried for wilderness and were not recommended for further study.
Land Uses	Four oil and gas leases exist on the tract. Entire surface is privately owned. Summer grazing by cattle and sheep. No existing rights-of-way.	May conflict with oil and gas leases. Loss of 26 AUM's due to surface facilities and surface disturbance.	Coordination could alleviate this problem. Loss of 26 AUM's would be very minimal considering the total acreage on the tract.	Outstanding Acceptable	
Noise	Rural background at mine say 30 dBA High in Price High along present highways	1982 noise levels may actually be less than at present, due to EPA new truck standards.	Moderate	Poor, no background measurements available.	

SITE SPECIFIC SUMMARY MATRIX

Tract name or number: Gordon Creek

State: Utah

III. SOCIAL AND ECONOMIC CONSIDERATIONS

Legal description (T and R or metes and bounds): _____

Element	Present Situation		Anticipated Effect of Leasing/Development			Significance of Anticipated Impact	Data Reliability	Comments
Population						From to		
Price-Helper Wellington	18,400	277	411	479	525	1.9% -- 2.1%	Outstanding (UPED)	The communities should have no problem adjusting to the increased growth rate.

SITE SPECIFIC SUMMARY MATRIX

Tract name or number: Gordon Creek

IV. UNSUITABILITY CRITERIA RESULTS

State: Utah

Legal description (T and R or metes and bounds):

Criterion	Applicable to tract	Exception used (if applicable)	Additional data needed	Comments
1. Federal land systems	No			
2. Rights-of-way and easements	No			
3. Buffer zones	No			
4. Wilderness study areas	No			
5. Scenic areas	No			
6. Land used for scientific studies	No			
7. Historic lands and sites	No	Not applicable at this time.	Class III survey and evaluation of sites found	no site eligible for National Register found to date.
8. Natural areas	No			
9. Federally listed endangered species	No			
10. State listed endangered species	No			
11. Eagle nests	No			

SITE SPECIFIC SUMMARY MATRIX

Tract name or number: Gordon Creek IV. UNSUITABILITY CRITERIA RESULTS (continued)

State: Utah

Legal description (T and R or metes and bounds): Carbon County

Criterion	Applicable to tract	Exception used (if applicable)	Additional data needed	Comments
12. Eagle roosts and concentration areas	No			
13. Falcon cliff-nesting sites	No			
14. Migratory birds	Yes	Yes	Entire tract should be investigated during the breeding-nesting season	Several species could occur on the tract & in general area - See narrative
15. State resident fish and wildlife	Yes	No	Potential carrying capacity data for moose is needed.	Riparian areas, along Gordon & Beaver Cr. have been iden. as crucial/critical winter winter moose habitat.
16. Flood plains	No			
17. Municipal watersheds	No			
18. [illegible]ional resource waters	No			
19. Alluvial valley floors	No			
20. State proposed criteria	No			