
**Draft Environmental Assessment
for Clark Canyon Reservoir and Barretts Diversion Dam**

***Chapter 3
Affected Environment and Environmental
Consequences***

3.0 Affected Environment and Environmental Consequences

This chapter presents the analyses conducted to determine potential impacts of the RMP alternatives under consideration. Each resource section first identified the affected environment specific to the particular resource by describing existing conditions in the project area. Environmental consequences, or impacts, are then discussed for each alternative and, when necessary and relevant, mitigation measures are identified that would serve or avoid or minimize the identified impacts. The environmental consequences sections address short-term and long-term effects, as well as direct and indirect effects of the RMP alternatives under consideration. While the timing of short-term effects is not known at this time, the impact mechanisms and consequences can be anticipated, and the discussions of potential short-term impacts focus on temporary impacts that would be associated with activities associated with construction of new or modified facilities.

3.1 Geology and Soils

Geologic and soil resources within the project area can be affected by weather, natural erosion, wind, and physical alterations. This section discusses the geologic resources and soil conditions within the project area.

3.1.1 Affected Environment

3.1.1.1 Geology

The Clark Canyon Reservoir site is in an area with complex geology. As a result the east boundary of the reservoir gently sloping Tertiary conglomerate sandstone and Quaternary gravels. The northwest portions of Clark Canyon Reservoir have formations ranging from Pre-Cambrian gneiss and Paleozoic rocks, limestone, granite gneiss, and quartzite. The southwest boundary is composed of Quaternary sediments. This area was mapped as primarily Quaternary terrace gravels and alluvial fans, but includes limestone and quartzite formations. Drill logs of the area show gravels in thicknesses of up to more than 175 feet in areas at the reservoir site.

There are visible geologic resources of interest to people driving on I-15 from Monida Pass north through Montana. East of the reservoir is an expanse of Beaverhead conglomerate, a formation that is very limited in the region. In the area of the dam, there are softly rounded hills covered with short grass with large, stream-rounded pebbles and cobbles.

The second example is found at the Tendoy Range, west of the reservoir. The edge of the Tendoy Range is defined by the Red Rock Fault. This fault creates a straight face to the range that is visible from the reservoir (Alt and Hyndman 1986).

Further north, close to Barretts Diversion Dam, are volcanic rocks (white rhyolite ash and red brown andesite) that are thought to be from two generations of volcanism, 50 and 70 million years ago. The reddish brown hill, located about 10 miles north of Dillon, is possibly the one that Clark identified in his journal as Beaverhead Rock (Alt and Hyndman 1986). It is volcanic andesite and could have been the landmark that helped Sacajawea guide the expedition. The Rattlesnake Cliffs, at the north end of Barretts Diversion Dam, form the entrance to the Beaverhead River Canyon. The

cliffs were named by Lewis in 1805 and are composed of andesite up thrown on the Blacktail fault (Garsjo 2002).

Montana has a history of large and damaging earthquakes. Several active earthquake zones are located in southwest Montana. The nearest fault zone to Clark Canyon Reservoir is the Red Rock valley, a NW-trending graben, which extends from Lima to the Clark Canyon Reservoir (Stickney, M.C. 1995). A graben is a down-dropped block of the earth's crust resulting from extension, or pulling, of the crust. The east-dipping Red Rock fault bounds the southwest valley margin but extends only half the distance northwest to Clark Canyon Reservoir.

Two earthquakes occurred at opposite ends of the Red Rock valley graben in April 1991 and March 1994. Despite the lack of a detailed mapping of the graben separation, the March 1994 earthquake indicated that the northern part of the Red Rock graben experienced NE-SW faulting. This extension direction suggests continuing graben development that exposes the nearby Clark Canyon earth fill dam to significant seismic hazard (Stickney, M.C. 1995).

The Dillon region, to the north, experiences more diffuse seismicity at a lower frequency than the Red Rock valley. Seismicity is generally limited to the area southwest of the Blacktail fault, which is south of I15 about half way between Dillon and the reservoir (Stickney 1995).

3.1.1.2 Mineral Resources

Many energy and mineral resources occur on both private and government-managed lands within Beaverhead County (BCRUC 2003). However, there are no known mineral deposits located in the project area except for sand and gravel. Historically, there had been sand and gravel mining in the reservoir area for local use (Holt 1956). Sand and gravel deposits will be used by Reclamation on as needed basis for project related purposes, such as construction and maintenance of dams, facilities, and recreation areas. The Bureau of Land Management manages all the subsurface resources on the land owned by Reclamation around Clark Canyon Reservoir. A portion of the Montana Copper Mining Company Complex is on Reclamation Land. Valid mining claims may extend onto Reclamation land. Records at the BLM need to be checked for that information. Location, NW ¼ of Section 1, Township 10 South, Range 11 West, MPM, Beaverhead County, Montana.

3.1.1.3 Soils

The area surrounding Clark Canyon Reservoir is generally characterized by a series of intermountain valleys characteristic of the topography of southwestern Montana. The valley is bounded by the Blacktail Range to the east and northeast, by the Pioneer range to the northwest, and the Tendoy Range to the southwest. Alluvial deposits have developed along all three streams, Red Rock River, Beaverhead River, and Horse Prairie Creek.

The soils at Barretts Diversion Dam, at the mouth of the Beaverhead River Canyon and about 11 miles downstream from Clark Canyon Dam, are in the process of being mapped by the Natural Resources Conservation Service (NRCS). The soils are dominated by Rivra, Cool-Beavrock Complex (USDA NRCS 2002). The complex is approximately 45 percent Rivra and similar soils and 40 percent Beavrock and similar soils. Rivra soils are characterized as gravelly sandy loam and

well drained with frequent flooding. The Beavrock soils are silt loam and poorly drained with occasional flooding.

The Clark Canyon Reservoir has not been mapped by NRCS but can be generally described from a few sources. The 1956 assessment of fish and wildlife for the construction of the dam describes the soils as brown or grayish-brown, granular, gravelly loam over gravelly subsoils (USBR, 1956). The valleys are filled with lacustrine and fluvial deposits. The mountain slopes in the area around Clark Canyon Reservoir are mostly covered by alluvial fans and alluvial deposits derived from the underlying rocks. Limited exposure of bedrock found in cliffs and canyons reveal igneous, sedimentary, and metamorphic rocks.



Core sampling done in 2001 to investigate the Clark Canyon landslide located approximately 4 miles north of the dam described the upper feet of the core sample to be generally silty, sandy, and gravelly (McDonald 2001).

Limiting factors, such as slopes, soils, wetlands, critical habitat, compaction, and erosion can constrain future development. New facilities should not be located on unstable soils, extreme slopes, on or near wetlands and critical habitat areas or within land area that do not have sufficient land base to accommodate such development.

3.1.2 Environmental Consequences

Project impacts were determined by evaluating the extent of proposed physical alterations compared to existing conditions at the reservoir. The considerations used in determining impacts includes the following:

- Risk potential of harmful erosion and sedimentation
- Risk of catastrophic slope failures
- The potential in management actions to degrade soil productivity; and
- Increased risk for seismic activity

Since there are no mineral resource production or oil and gas production within the study area, no further consideration of these resources is necessary. Soil erosion and soil productivity are the two areas of concerns when comparing the effects of alternatives on soil. Erosion is the detachment and movement of soil particles via water, wind, ice or gravity. Erosion is a natural process but is of concern when it accelerates. Increases in erosion can decrease the soil depth or particles may become suspended in water forming sediments that affect stream or reservoir water quality. Nutrient cycling is important to soil health and productivity. It is important that nutrients contained in organic matter be recycled in the soil and that a healthy community of soil organisms is maintained

to cycle nutrients. The proposed alternatives could have localized effects on soil erosion and soil productivity.

3.1.2.1 No Action Alternative

Under the No Action Alternative, routine maintenance would continue with only small projects that lead to minor ground disturbance. There is no grazing planned in this alternative. Areas currently subject to minor erosion would likely remain unchanged or could increase through a decrease in native plants numbers because of an increase in weeds. No impacts to soils or geology would occur under this scenario.

3.1.2.2 Alternative A – Impacts and Mitigation

The improvements proposed under Alternative A would result in disturbance of soils and potential geologic resources and result in an increased risk of slope failure or erosion and sedimentation. The improvements are not expected to result in any impacts to sand and gravel resources.

Geology and Soils Impacts – Under Alternative A, only minor ground disturbing activities would take place and these primarily consist of paving existing parking areas, landscaping, and installation of new signs or restrooms. These modifications are expected to result in minor and very localized soil alteration and ground disturbance. The proposed modification/improvements would not result in any steep slopes or increase the risk of slope failure or increased risk of seismic activity, if properly designed. However, because of the proximity of the ground disturbance to the reservoir, erosion may result depending on when the work is conducted and the measures taken to minimize it. Closing the roads at the Sacajawea Day Use and Cameahwait Campground should reduce soil erosion in those areas because vehicular traffic will no longer be allowed.

The amount of increased visitor use is not expected to result in any adverse impact on geologic or soil resources. The planned improvements include hardscaping (i.e., paving) additional areas within some of the existing public use areas, which would help reduce erosion of soils. If the areas to be paved are located up-gradient of bare soil areas, the hardscaping could increase runoff and result in increased erosion during storm events. However, this is not expected to result in impacts to geologic or soil resources.

Geology and Soils Mitigation Measures – The work anticipated to be performed in Alternative A would consist of a series of small independent projects that individually may not exceed one-acre in size. However, contracts issued for the project and any work performed must incorporate re-vegetation measures to prevent and control erosion. Such measures may include: scheduling (i.e., scheduling work during the non-rainy season and limiting the amount of disturbed soil area at any given time); structural measures (i.e., fiber matt, fiber rolls, silt fencing); and non-structural measures including watering disturbed soil areas to prevent wind erosion, hydroseeding disturbed soil areas following construction, and installing permanent landscaping to stabilize slopes or areas subject to erosion.

3.1.2.3 Alternative B – Impacts and Mitigation

Geology and Soils Impacts – The impacts to geologic and soil resources associated with Alternative B would be similar to those described in Alternative A; however, under Alternative B, the impacts would be on a slightly larger scale, because of a larger project size. Areas of soil disturbance required to implement the proposed improvements, including creation of new campsites in Beaverhead Campground, Horse Prairie Campground and Lone Tree Campground will generally be limited to the existing campground footprints. The required soil disturbance for improvements and creating new campsites could cause temporary increased erosion.

Geology and Soils Mitigation –

Prior to implementing the proposed Alternative B improvements, a comprehensive plan would be developed to identify measures to prevent and control erosion. Such measures may include scheduling (i.e., scheduling work during the non-rainy season and limiting the amount of disturbed soil area at any given time); structural measures (i.e., fiber matt, fiber rolls, silt fence); and non-structural measures including watering disturbed soil areas to prevent wind erosion, hydroseeding disturbed soil areas following construction, and installing permanent landscaping to stabilize slopes or areas subject to erosion. Of particular importance is identifying the type and placement of permanent landscaping to stabilize key areas. The plan would also take into consideration the timing and phasing of the improvements' implementation.

3.2 Air Quality

Air quality within the project area can be affected by weather patterns, natural airborne pollutant emission sources such as dust or smoke, and emissions from both stationary and mobile manmade sources. This section discusses the existing climatic conditions, air quality, and sources of emissions within the project area. This section also describes laws and regulations that may be applicable to the RMP, and potential air quality impacts of the RMP alternatives.

3.2.1 Affected Environment

The climate affects the recreational use and visitor days at Clark Canyon Reservoir. For example when precipitation is low for an extended period of time like what happened from (1999 to 2003), it resulted in the reservoir being low and considerably less boaters used it for recreation.

3.2.1.1 Climate

Clark Canyon Reservoir's climate can be broadly described as continental and is typical of the high elevation arid lands in the region, with wide variability between summer and winter. Occasionally, cold arid arctic air moves down over the area, which creates winter temperatures below zero.

The average annual precipitation measured in Dillon, Montana has been approximately 11.6 inches in the last thirty years (1971 – 2000). Looking at historical data, there were periods with more precipitation. Between 1900 and 1925, the average rainfall was 18.3 inches with every year experiencing more rainfall than the recent average of 11.6 inches. For a longer historical period

(1901-1940), the average annual precipitation at Dillon was 16.67 inches. The wettest months are generally May or June with approximately 75 percent of the precipitation falling in the six-month period from, April to September. There is a wide range in the annual rainfall with 6.9 inches in 1974 and 19.2 inches in 1995 (WRCC 2002).

The average annual temperature varies widely by season and within each month. The hottest months are July and August, with average maximum temperatures of 84° and 82° F and average minimums of 47° and 46° F, respectively. The coldest months are normally December and January, with average maximum temperatures of 34° F and average minimum of 14° F (WRCC 2002).

The closest national weather station is located in Dillon, Montana, which is 19 miles north of Clark Canyon Reservoir. At the reservoir, it is not only colder but also has fewer frost-free days than at Dillon. There are approximately 70 to 90 frost-free days at the reservoir compared to 103 frost-free days in Dillon (USDA 2002, and personal conversation, Gary Berger, Natural Resources Conservation Service, Dillon, MT, 10/4/2002). The reservoir also experiences high winds, which limits boat launching at times.

3.2.1.2 Regional and Local Air Quality

According to the U.S. Environmental Protection Agency's (USEPA) air database and the State of Montana's Department of Environmental Quality, there are 13 areas in the state of Montana that are classified as "nonattainment". A portion of the Montana Copper Mining Company Complex is on Reclamation Land. Valid mining claims may extend onto Reclamation lands. Particulate matter is the most common cause of nonattainment in Montana; however, Billings is considered a nonattainment area for sulfur dioxide (MDEQ, 2003). The nonattainment areas are centered primarily on high population areas, including the Missoula area in the northwest portion of the state. USEPAS's Monitor Trends Report (2003) indicates that the number of days when air quality within monitored counties throughout the state was "good" or "moderate" far exceeded the number of days when air quality was classified as "unhealthy".

Air quality at various locations within the state of Montana is monitored and data is collected by the State of Montana Department of Environmental Quality (DEQ). According to the DEQ, the principal air quality concern in Beaverhead County is PM₁₀ (particulate matter less than ten microns in diameter), which may have harmful effects on the human respiratory system. Montana DEQ also has noted that many federal, tribal, and state forestry managers increase the use of prescribed burns to create resource benefits on public lands. Although this practice can benefit habitat, the natural by-product of the burning is smoke, which is primarily made up of particulate matter (MDEQ, 2003).

The primary contributor to PM₁₀ in the Dillon area appears to be associated with industrial activity 6 miles south of Dillon around the Barretts Minerals, Inc., talc plant (which is approximately 0.5 miles north of Barretts Diversion Dam). In September 1984, a monitoring site for Total Suspended Particulates (TSP) was established at the Beaverhead County Courthouse (Monitoring Site #30-001-0001). This site, the nearest air quality monitoring station to the project area, operated for two years until June 1986. The monitoring data showed relatively low readings and it was determined that continued monitoring was not warranted. As such, only limited air quality data specific to the project area is available.

The most likely contributors to air pollutants within the project area are motor vehicle emissions (including automobile and truck traffic on I-15 and other area roadways, as well as boat and PWC operation on Clark Canyon Reservoir), diesel-engine trains that use the railway, which passes east of Clark Canyon Reservoir and west of Barretts Diversion Dam, dust emissions (primarily from motor vehicle operation on unpaved roads and agricultural activities/farming), smoke from wood burning stoves, fireplaces, and campground fires, and controlled burning of open space lands for vegetation management and natural or accidental open land wild fires.

3.2.1.3 Air Quality Regulations

Under the Clean Air Act of 1970, the U.S. EPA developed primary and secondary National Ambient Air Quality Standards (NAAQS) for each of the seven criteria pollutants: carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, fine particulate matter, and sulfur dioxide. These standards establish pollution levels in the United States that cannot legally be exceeded during a specified time period. The State of Montana has adopted additional state air quality standards. These Montana Ambient Air Quality Standards (MAAQS) establish statewide targets for acceptable amounts of ambient air pollutants to protect human health. In addition, Congress also classified select regions of the country as areas designated as Prevention of Significant Deterioration (PSD). The classification differs in the amount of development allowable within the area. In Montana, the only areas designated as Class I areas (the most restrictive limits on development) are two National Parks, several National Wilderness areas, and several Native American Reservations. The nearest Class I area is Red Rocks Lakes, located approximately 100 miles southeast of Clark Canyon Reservoir near the southeast border of Beaverhead County and Madison County.

3.2.2 Environmental Consequences

Project impacts were determined by evaluating each alternative compared to the no action alternative at the project currently. The area meets existing State and Federal air quality standards. The lack of nearby air quality monitoring stations precludes comparison of anticipated increases or decreases in air quality against numerical standards; however, impacts reflect a qualitative determination of whether the alternatives may result in increases in air emissions that could potentially exceed State and Federal air quality standards.

3.2.2.1 No Action Alternative

Under the No Action Alternative, no comprehensive or other major improvements to the project's recreation facilities or changes in natural and cultural resource management would occur beyond those typically authorized under the current maintenance practices. Therefore, no impacts to air quality would be expected to result from continuing current practices. A continuation of the current maintenance practices would also not by itself lead to any significant increase in recreation users; however, increased visitation associated with the Lewis and Clark celebrations will result in a slight increase in air emissions from recreational vehicles or automobile emissions.

3.2.2.2 Alternative A – Impacts and Mitigation

The improvements proposed under Alternative A could result in slight increases in two primary categories of air emissions: particulate matter and engine emissions (carbon monoxide and ozone precursors).

Air Quality Impacts – Under Alternative A, only minor ground disturbing improvements are proposed and primarily consist of paving existing parking areas, landscaping, and installation of new signs or restrooms. As a result, construction-generated particulate emissions (in the form of wind-borne dust) would increase, depending on the timing of the construction (high visitor use times versus low visitor use times). Likewise, air emissions from paving and construction equipment are expected. However, construction air impacts would be short-term and temporary, occurring only periodically during the construction period.

Under Alternative A, improvements to the recreation facilities and environmental resources near the reservoir and at Barretts Diversion Dam is expected to attract additional users under normal operating conditions (i.e., favorable economy for recreational trips and favorable reservoir levels).

An increase in visitor use is not expected to result in adverse impacts of vehicle emissions and related pollutants. Many of the planned improvements proposed under Alternative A include paving areas that would otherwise be subject to wind-blown dust near visitor use areas.

Air Quality Mitigation Measures – The anticipated short-term and temporary increase in air emissions, primarily dust and engine emissions, can be reduced through prudent construction practices and scheduling. To the extent practicable, ground disturbing activities should not be conducted on windy days and areas disturbed during dry periods should be periodically watered during construction to reduce the amount of generated dust. In addition, any large-scale earth disturbance and construction vehicle movement should be confined to periods of low visitor attendance. Any construction equipment used needs to meet current emissions standards for that type of equipment.

3.2.2.3 Alternative B – Impacts and Mitigation

The impacts on air quality expected to result from Alternative B would be similar to those described in Alternative A; however, because of the greater level of construction and operational improvements proposed in Alternative B, the impacts would be greater than previously described. In particular, larger scale ground disturbing activities are proposed at the marina, Beaverhead Campground, Horse Prairie Campground, Cameahwait Campground and Lone Tree Campground in order to reconstruct the areas and provide additional public facilities. However, implementation of construction air quality mitigation identified for Alternative A, would also serve to reduce Alternative B construction-related impacts. Operation impacts of Alternative B would be expected to be the same or similar to those identified for Alternative A, and mitigation identified for Alternative A would also serve to reduce Alternative B impacts.

3.3 Water Quantity and Water Quality

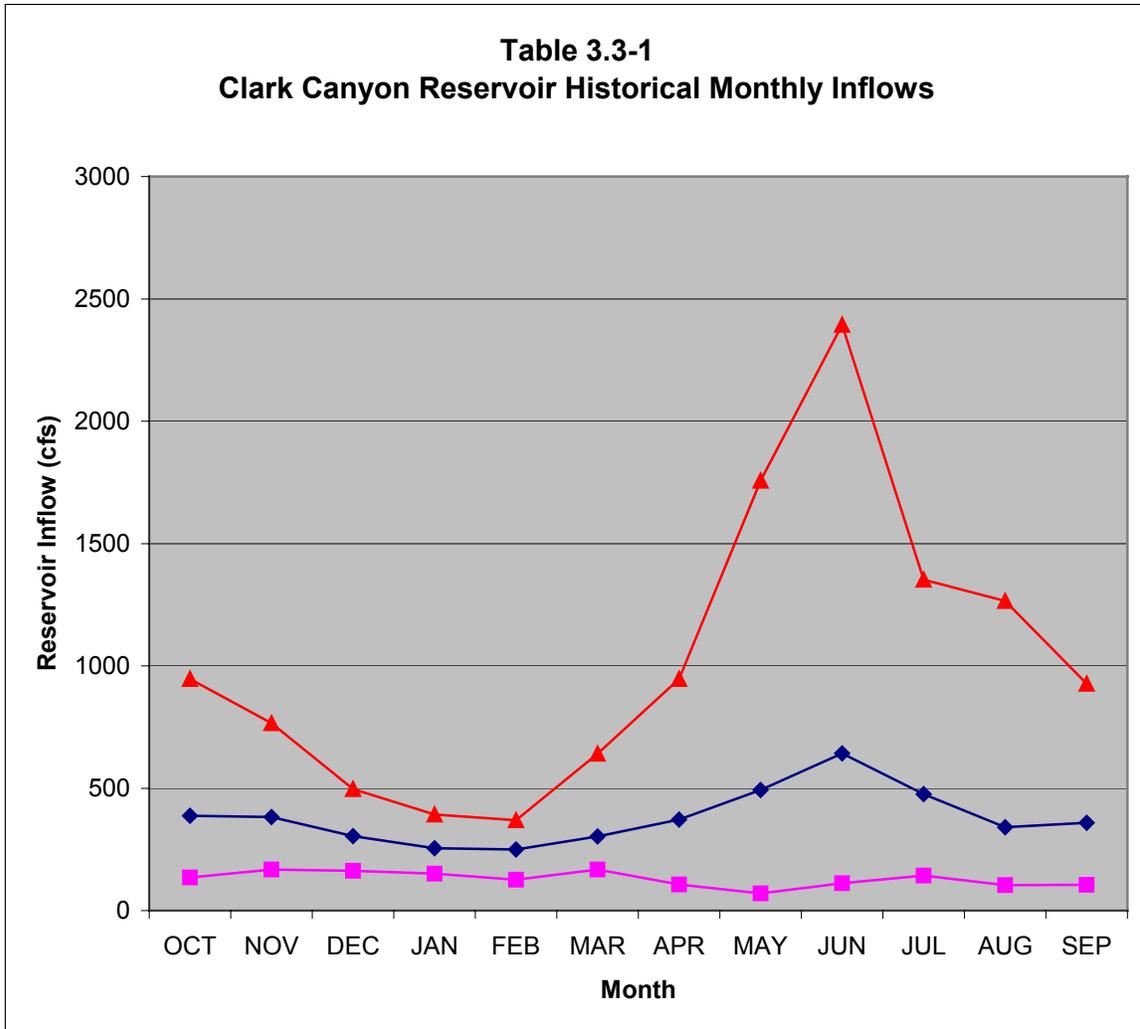
This section discusses the hydrology and water quality conditions including the Beaverhead River below Clark Canyon Dam to Barretts Diversion Dam. Although the RMP alternatives under consideration do not address changes in reservoir operations (i.e., storage in and releases from the reservoir), reservoir operations does effect recreation use patterns and the quality of recreation experience. In addition, certain activities associated with the RMP and recreation uses and development may have an effect on water quality. To understand these effects, a discussion of reservoir operation and water quality and identification of potential impacts is presented here.

3.3.1 Affected Environment

This section discusses historical and current water supply and operations of Clark Canyon Reservoir and presents water quality information to provide a context for the potential project impacts discussed in Section 3.3.2.

3.3.1.1 Water Quantity

The total drainage area above Clark Canyon Dam is 2,315 square miles and the two main sources of inflow to the reservoir are Red Rock River and Horse Prairie Creek (as shown on Location Map). During the 39 years of record since the construction of the Dam, the average annual inflow into the reservoir is 274,500 acre-feet (see Table 3.3-1). In 1984, the maximum yearly inflow occurred with a total of approximately 718,100 acre-feet while the minimum yearly inflow occurred in 2003, with a total of approximately 105,189 acre-feet.



Elevation of the reservoir is controlled by the operating plan established for Clark Canyon Reservoir. There are some target elevations used to manage the reservoir and to allow for protection against naturally occurring floods, as shown in Table 3.3.2. Plans for the reservoir operations calls for storage between elevations 5,542.1 above mean sea level (msl) and the spillway elevation of 5,560.4 msl to be exclusively used for flood control. Storage between elevations 5,535.7 and 5,542.1 msl is referred to as the joint use pool and can be used for irrigation storage as well as flood control. The surface area of the reservoir at the top of the active conservation pool is 4,496 acres at elevation of 5,535.7 msl. In 32 of the 40 years of operation, the reservoir has reached this elevation. The surface area of the reservoir at the top of the joint use pool is 4,935 acres at elevation of 5,542.1 msl. In 31 of the 40 years of operation, the reservoir has reached this elevation, thus historically the reservoir has reached a surface area of 4,935 acres 78% of the time. The surface area of the reservoir at the spillway is 5,903 acres at elevation of 5,560.4 msl. This elevation was only reached once (in 1984) during the 40 years of operation. Table 3.3-2 provides a summary of important elevations, storage capacities and surface areas, and the probability of occurrence for each.

**Table 3.3-2
Clark Canyon Reservoir Elevation Summary Table**

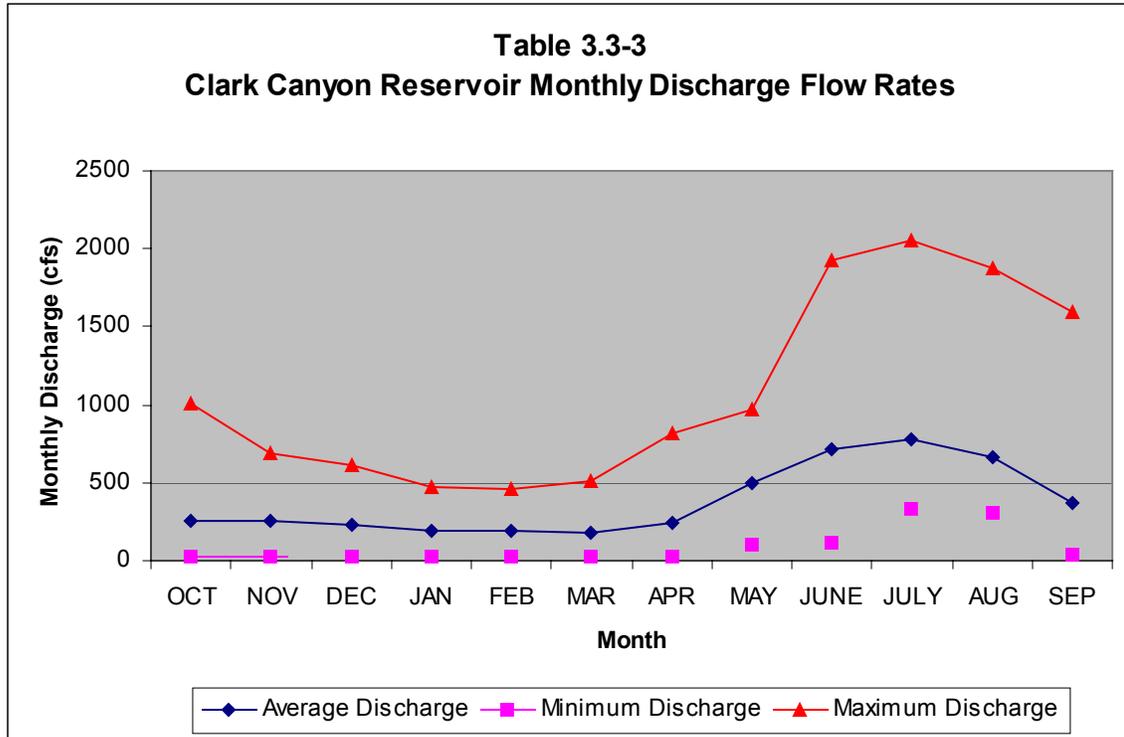
Description	Elevation (ft)	Probability	Storage Capacity (acre-feet)	Surface Area (acres)
Maximum Water Surface	5571.9	0%	328,979	6,600
Spillway Crest	5560.4	3%	257,152	5,903
Top of Joint Use Pool	5542.1	79%	157,863	4,935
Top of Active Conservation Pool	5535.7	82%	127,626	4,496
Top of Inactive Storage Pool	5470.6	100%	1,500	209

When irrigation season begins approximately (May 1st), the average level of the reservoir is 5,540.92 msl. The surface area of the reservoir at this elevation is 4,868 acres. In a normal (or average) year, the reservoir drops approximately 10 feet during the irrigation season. At the end of irrigation season (September 30th) the average level of the reservoir is 5,530.9 msl. The surface area of the reservoir at this elevation is 4,109 acres. During most years, approximately 759 acres of shoreline are exposed during the irrigation season.

As of early April 2004 the reservoir is approximately at elevation 5516 msl. The western United States is in the 5th year of a drought cycle. The drought has taken its toll on the storage and consequently the elevation of the reservoir. Due to the drought, the reservoir is at its lowest level since Clark Canyon Reservoir was filled in 1964. The surface area of the reservoir in its current condition is 937 acres. Elevation change of the reservoir has the greatest impact on the south and southwest shorelines. Because of the gradual slopes in these areas, a slight change in reservoir elevation translates into longer stretches of shoreline that are exposed. A change in reservoir elevation has the least impact on the northwest shoreline. The slope into the reservoir is more pronounced as a change in water level has a reduced effect on exposed shoreline.



Minimum releases from the reservoir have been adjusted this year (2003) to retain as much irrigation water as possible in the reservoir. In August 2003, the minimum flow released from the reservoir was 25 cubic feet per second (cfs). Table 3.3-3 shows monthly average, maximum and minimum discharge flow rates for the reservoir.



Average stream flow below the Clark Canyon Reservoir at the beginning of the irrigation season on approximately May 1 is 500 cfs. It normally peaks in July at 775 cfs and reduces to 475 at the end of September. Average stream flow during the non-irrigation season of October 1 thru April 30 is 200 to 475 cfs with a minimum of 25 cfs.

Since the construction of the Clark Canyon Reservoir, flooding has not been a problem and high flows have stayed within the banks of the Beaverhead River downstream of the dam.

3.3.1.2 Water Quality

Water quality within Clark Canyon Reservoir is affected by several factors, including water quality in the two primary tributaries, Red Rock River and Horse Prairie Creek; water levels within the reservoir; and contributing factors from land uses surrounding the lake. The water quality within Clark Canyon is safe for all contact sports and recreation and is considered to be “clean”, as compared to other similar reservoirs.

The Clean Water Act requires States to set water quality standards and enforce them. Flowing out of Clark Canyon Reservoir, the Beaverhead River is listed on the State of Montana’s 2002 303 (d) list of impaired water bodies for the segment from Clark Canyon Dam to Grasshopper Creek. This segment does not meet Montana State Water Quality Standards. The factors contributing to this listing include: bank erosion, dewatering, flow alternation, and inflows from agricultural and mining sources. In addition, Horse Prairie Creek from the headwater to Clark Canyon Reservoir and a portion Red Rock River from Lima Reservoir to Clark Canyon Dam are also included on the 303 (d) list of impaired water bodies. According to the Montana Department of Environmental Quality, this segment of the Beaverhead River was included on the 303 (d) list because historically high flows at various times were released out of Clark Canyon Dam. These flows resulted in concern about gas buildup in the release affecting the trout fishery downstream. As a result of this concern, the release regime was modified to release less volume over a longer period of time, and the concerns have been reduced. Today, the Beaverhead trout fishery is one of the most productive in Montana and at some time in the Future MDEQ will evaluate whether this inclusion on the list should be modified (MDEQ, 2003).

Water quality sampling at Clark Canyon Reservoir began in 2001 and continued through 2003. The general purpose of the sampling has been to identify potential problems and to establish baseline data, which will be compared to future data to determine changes in the reservoir. Five sites were sampled within the reservoir, as well as both inflows (Red Rock River and Horse Prairie Creek and the Beaverhead river immediately below the dam). Sampling occurred on a monthly basis beginning in April and continuing through October.

Basic limnological evaluations were completed at each site within the reservoir, consisting of water column profiles, secchi depth, nutrients, chlorophyll, phytoplankton and zooplankton samples. Water column profiles recorded water quality parameters for dissolved oxygen, specific conductance, pH and temperature from surface to bottom. Zero to 5 meter integrated samples were collected for chlorophyll analysis. Integrated samples of phytoplankton and 0-15m integrated samples of zooplankton were collected at 0-5m at each site for determining the number of species and density. Nutrient grab samples were collected from both the hypolimnion and epilimnion (i.e. near the bottom and top) of the lake. Samples were analyzed for ortho-phosphate, nitrate, ammonia, and nitrogen. Sediment samples for trace metals were collected in 2003. Samples were analyzed for identification and quantification of total extractable metals.

The inflows and outflow of Clark Canyon Reservoir water quality parameters tested for included temperature, dissolved oxygen, specific conductance, pH, ortho-phosphate, nitrate, ammonia, and nitrogen. All samples were taken in shallow (<1m) moving water near the shoreline.

3.3.2 Environmental Consequences

Project impacts were identified by evaluating each alternative compared to the no action alternative. For purposes of this evaluation, it was assumed that operation of the reservoir would remain unchanged. As the operation of the reservoir will remain unchanged, it is also assumed that the water supply to and from the reservoir will continue to follow the historical trends.

3.3.2.1 No Action Alternative

Under the No Action Alternative, no improvements to the reservoir recreation facilities or resources would occur beyond those anticipated under the current funding levels and maintenance practices. Therefore, no new impacts to water quality would be expected to result above current conditions. A continuation of the current maintenance practices would also not result in any major increase in recreation users; therefore, only minor increases in water use or discharges would occur.

3.3.2.2 Alternative A – Impacts and Mitigation

Water Quantity Impacts No impacts to water quantity or regional hydrologic patterns would be expected to occur as a result of implementation of actions associated with Alternative A.

Water Quality Impacts

Impacts on water quality may, result from construction of recreation improvements. Ground disturbance would expose soil to additional erosional forces (wind and water) and could increase sedimentation in the lake and adversely affect turbidity levels. However, only minor ground activities would take place and these would primarily consist of paving existing parking areas, landscaping, and installation of new signs. The impacts mechanisms would be similar to those described in Section 3.1, Geology and Soils, and because of the proximity of the ground disturbance to the reservoir, erosion could lead to adverse localized water quality effects depending on when the work is conducted and the measures taken to minimize erosion

As previously described in Section 3.1, Geology and Soils, the planned improvements include hardscaping (i.e., paving) additional areas within some of the existing public use areas, which would help reduce erosion of soils. If the areas to be paved are located up-gradient of bare soil areas, the hardscaping could slightly increase erosion during storm events. However, this is not expected to result in a large effect to water quality since the amount of erosion expected is similar to current levels.

Any construction activities that result in a land disturbance between 1 and 5 acres or construction activities disturbing less than 1 acre when part of a larger common plan for land disturbance must seek coverage for the work under the State's General Permit for Storm Water Discharges Associated with Construction Activities (Construction General Permit). The Construction General Permit requires that a Storm Water Pollution Prevention Plan (SWPPP) be prepared that incorporates an effective combination of erosion and sediment control practices to prevent and minimize any discharge of sediments or non-storm water discharges into receiving waters. An effective combination of erosion and sediment control includes the use of both structural and non-structural as defined by the Construction General Permit.

The improvements proposed in the RMP Alternative A could result in an increase the number of visitors to Clark Canyon Reservoir. As the number of visitors increases, the potential impacts to water quality are likewise increased. The improved public facilities would be designed to prevent water quality impacts. However, solid waste and pollutants associated with diesel fuels and gasoline from boats on the reservoir, could enter the reservoir in storm water runoff (e.g., oil and grease from parking areas, on shore spills of fuels and other petroleum products). Given the minor improvements anticipated under Alternative A and the corresponding minor increases in visitation, operational water quality impacts are not expected to be a significant.

Water Quality Mitigation Measures – The specific types of erosion and sediment control measures would be identified in the SWPPP since the selection and placement of environmental mitigation is site specific. There are a variety of measures that can be used for erosion control and sediment control (e.g. minimization of disturbed areas, use of erosion control blankets, fiber matting, hydroseeding, etc.). The selection of appropriate practices and measures must take into consideration the type of pollutant, the soil conditions, drainage, and ground slope to name a few factors. In addition, the SWPPP must include a program for inspection and maintenance of the erosion and sediment control measures in order to determine and maintain their effectiveness. The work that would be done in this alternative may be subject to the conditions of the Construction General Permit, and if so, would have to comply with all the conditions of that permit. In order to ensure adverse water quality effects are minimized, the following mitigation is recommended. All parking areas, restrooms, and boat fueling areas will be designed to minimize the possibility of pollutants coming in contact with storm water or leaking into the reservoir. The design will include placement of landscape areas or berms between the parking areas and the reservoir (as a means to provide some pollutant removal and filtration), identification of designated on shore fueling areas that are not located immediately adjacent to the shoreline, and design of restrooms to prevent sewage overflow that could enter the reservoir.

3.3.2.3 Alternative B – Impacts and Mitigation

Water Quantity Impacts – No impacts to water quantity or regional hydrologic patterns would be expected to occur as a result of implementation of actions associated with Alternative B.

Water Quality Impacts-The impacts expected to result from implementation of Alternative B are similar to those described in Alternative A; however, the potential for impacts on water quality would be greater for Alternative B than for Alternative A. Larger areas of soil disturbance will be required to implement the proposed improvements. Much of the required soil disturbance would occur in area potentially subject to erosion near the reservoir and could result in localized areas of degraded water quality from increased sedimentation and turbidity. In addition, the improvements associated with Alternative B have the capacity to significantly increase visitor use of the area and the impacts on water quality would correspond to this increase. The improvements proposed for the marina could result in increased pollutant loading into the reservoir as a result of additional boating and personal watercraft usage on the reservoir.

Water Quality Mitigation – The specific types of erosion and sediment control measures would be identified in the SWPPP since the selection and placement of environmental mitigation is site specific. There are a variety of measures that will be used for erosion control and sediment control

(e.g. minimization of disturbed areas, use of erosion control blankets, fiber matting, hydroseeding, etc.). The selection of appropriate practices and measures must take into consideration the type of pollutant, the soil conditions, drainage, and ground slope to name a few factors. In addition, the SWPPP must include a program for inspection and maintenance of the erosion and sediment control measures in order to determine and maintain their effectiveness. The work that would be done in this alternative may be subject to the conditions of the Construction General Permit, and if so, would have to comply with all the conditions of that permit. It would be necessary develop a reservoir water quality pollution prevention program that incorporates measures (both structural and non-structural) to address the potential for increased storm water pollutant runoff and to address potential in-reservoir impairment. Examples of measures that would be needed include: designated fueling, posting signage for visitors in to help raise public awareness regarding potential water quality impacts, providing additional spill response capabilities, and pre-treatment of storm water runoff from areas identified as potential significant sources of pollution (i.e., high use areas where leakage from parked vehicles/water craft and fueling spills directly enter the reservoir). The extent to which this mitigation will be needed will depend on the actual increase in visitor use. In addition, the dredging operation would be required to incorporate measures that may include, the installation of a temporary turbidity curtain, to control the release of sediments into the lake beyond the limits of the work area.

3.4 Vegetation

3.4.1 Affected Environment

3.4.1.1 Vegetation Types

Clark Canyon Reservoir is east of the Continental Divide with a continental climate. It is typical of the high, arid lands in the region, with wide variability between summer and winter. The Reservoir area is in the Beaverhead Mountains Section (Section M332E) of the Northern Rocky Mountain physiographic province (McNab 1996). The Beaverhead Mountains Section is generally mountainous with broad valley bottoms. Vegetation in the section consists of two primary types: 1) sagebrush steppe with small areas of alpine vegetation above 9,500 feet (75 percent) and 2) Douglas-fir forest (25 percent).

Clark Canyon Reservoir is in a valley bounded by the Blacktail Range to the east and northeast, by the Pioneer range to the northwest, and the Tendoy Range to the southwest. The reservoir has approximately 5,903 acres of surface area and 17 miles of shoreline at 5535 feet msl (top of active conservation pool elevation). The project area covers approximately 4,350 land acres surrounding the reservoir and owned by the Bureau of Reclamation (USDOI 2002). Of the land acres, approximately 150 (less than five percent) are developed for campgrounds, picnic areas, and boat launches. Much of the area was once irrigated pastured or hayed before the reservoir existed.

The land around the reservoir is one of the westernmost examples of short grass prairie habitat. Short grass prairie habitat is more common further east of the mountains. The grasses are primarily native bunch grasses and wheat grasses. There are swales in the reservoir land with sagebrush communities but extensive sagebrush steppe is more prevalent further toward the mountains. Mud flats appear in the reservoir seasonally as the water recedes. They generally develop populations of leafy spurge, a noxious weed.

3.4.1.2 Riparian Vegetation and Wetlands

As previously stated, the two main watercourses that supply water to Clark Canyon Reservoir are Red Rock River to the south and Horse Prairie Creek to the west. The reservoir drains to Beaverhead River. These three watercourses and riparian areas are bordered by willows, cattail marshes, and wet and semi-wet meadows. Riparian habitat and cattail marsh wetlands only cover small portions of the land in southwest Montana (less than one percent) but support much of the wildlife.



The Red Rock River is south of Clark Canyon Reservoir. It is located in the wide valley bottom and meanders through an emergent wetland and varies in size depending on runoff. The Red Rock River riparian area is predominately willows with adjacent semi-wet meadow including rushes and sedges. Based on field observations, there appears to be a buildup of plant residue in the riparian area, and large patches of the noxious weed Canada thistle near the south boundary of the Reclamation land. West of the Red Rock Creek riparian zone, is a monoculture growth of reed

canary grass. The reed canary grass appears to cover the area from the mid-reservoir water level to the high water level. The reed canary grass also appears to include a buildup of plant residue.

Much of the area adjacent to Horse Prairie Creek was once hay land or irrigated pasture, however, it has not been irrigated or grazed by domestic livestock since Clark Canyon reservoir was built in 1964. Based on field observations, there is a buildup of plant residue in the meadows and semi-wet meadows adjacent to the riparian area. There are patches of the noxious weeds, especially Canada thistle, and Whitetop.

Mud flats are located along segments of the reservoir during periods of low water. These mud flats provide habitat for shore birds such as marbled godwits, long-billed dowitchers, willets, western sandpiper, and spotted sandpiper. Pelicans have been seen in late summer (personal conversation J. Kirkley, University of Montana, Dillon, 4/17/03).

Barretts Diversion Dam has combined willow and cottonwood riparian habitat and also has a cattail marsh. The tree, shrub, marsh combination, together with rock faces on both sides of the adjacent road, provide a variety of habitats for bird nesting and foraging.

3.4.1.3 Noxious Weeds

Noxious weeds can be a serious environmental problem to natural resources. Noxious weeds can displace native plant communities (including endangered species), alter wildlife habitat, reduce forage for wildlife and livestock, increase erosion, and lower biodiversity. The Federal Noxious Weed Act of 1974 requires that each federal agency develop a management program with adequate funding to control undesirable plants on lands under its jurisdiction. It also requires that the agencies implement cooperative agreements with state agencies to coordinate management of undesirable

plants. The noxious weeds that are a problem and targeted for containment and suppression on the Clark Canyon Reservoir resource area are: Whitetop (hoary cress) *Cardaria draba*, Canadian thistle (*Cirsium arvense*), leafy spurge (*Euphorbia esula*), and spotted knapweed (*Centaurea maculosa*) (personal communications Jack Eddie, Beaverhead County Weed District, Dillon MT). The following is a brief summary of the noxious weeds identified for suppression within the Clark Canyon Reservoir area.

Whitetop – is a deep-rooted perennial plant that reproduces from root segments and seeds. Plants emerge in very early spring and have bloomed and set seed by mid-summer. Control is difficult because of the perennial root system, abundant seed production, and diverse habitat of the plant. This plant is common on alkaline, disturbed soils and is highly competitive with other species once it becomes established. Control is difficult because of the perennial root system, abundant seed production, and diverse habitat of the plant (Esser 1994). Whitetop may have some forage value but the foliage becomes coarse and bitter as it matures. Until research is able to better evaluate its toxicity, McInnis (McInnis et. al. 1993) recommends the following cautionary measures when allowing livestock to graze infested rangelands: provide supplemental iodine, graze mature and non-lactating animals, and provide alternate grazing areas.

Canada thistle – is a non-native, colony-forming perennial with deep and extensive horizontal roots. Canada thistle reproduces both through seed and asexually with spreading roots, root fragments, or from subterranean stem tissue. It has the potential to rapidly infest an area through vegetative reproduction. This aggressive weed is difficult to control. Flowering occurs during July and August. Canada thistle is generally not considered palatable by livestock. They generally avoid Canada thistle and may also avoid grazing in areas with heavy infestations. Fire may kill the above ground portion of Canada thistle, but the below ground portion can survive even severe fires (Zouhar 2001a).



Leafy spurge – is a perennial that reproduces by vigorous rhizomes and seed. It generally grows in clumps, up to 3 feet tall. Leafy spurge has an extensive underground rhizome and root system that can penetrate the soil to 15 feet to 30 feet deep. The deep rooting and thick, corky root bark help give the species drought resistance. The plants store carbohydrates and nitrogen within the rhizomes during fall and winter. Reserves accumulate in the fall as top-growth dies and are in low supply during the growing season. The entire plant contains a milky juice that has been reported to cause severe irritation of the mouth and digestive tract in cattle and may result in death. Cattle prefer to graze where there are not large infestations. The extensive root system containing large nutrient reserves makes leafy spurge extremely difficult to control (Simonin 2000).

Spotted knapweed – is a biennial or perennial with a stout taproot. Spotted knapweed reproduces almost entirely from seeds known for their longevity and durability. Knapweeds readily establish themselves on any disturbed soil, and their early spring growth makes them competitive for soil

moisture and nutrients. Spotted knapweed has good nutritional value and is eaten by livestock and wildlife. Generally, use of spotted knapweed is highest during early season when the plants are green and actively growing in the rosette and bolt stages.

3.4.1.4 Noxious Weed Management

Executive Order 13112 of 1999 was enacted to “prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts”. In this act, Federal Agencies were directed to: 1) prevent introduction of invasive species, 2) detect and respond to control such species in a cost-effective and environmentally sound manner, 3) monitor invasive species populations accurately and reliably, 4) provide for restoration of native species and habitats, 5) conduct research on invasive species and develop prevention and control techniques, and 6) promote public education on invasive species. Furthermore, they were directed to not authorize, fund or carry out actions that are likely to cause or promote invasive species. Federal agencies are also required to pursue these duties in cooperation with stakeholders.

The Montana County Noxious Weed Control Law (MCA 7-2101 through 2153) was established in 1948 and amended in 1991, to protect Montana from destructive noxious weeds. It established a set of criteria for the control and management of noxious weeds in Montana and is implemented and enforced at the local county level through county weed control boards. Montana law makes it unlawful for any landowner to permit noxious weeds to propagate or produce seeds on their land unless they adhere to the noxious weed management program of their county. While Montana laws do not apply to federal lands, the Federal Noxious Weed Act requires cooperative planning with the state/local weed administration.

Beaverhead County Weed District is active in highway weed management and works with the Bureau of Reclamation and other landowners to control noxious weeds. Table 3.4-1 is noxious weeds listed by the state and Beaverhead County Weed District. As previously discussed, the noxious weeds that are targeted for containment and suppression on Clark Canyon Reservoir resource area are: Whitetop, Canadian thistle leafy spurge, and spotted knapweed. They are all Category One Noxious Weeds, which are defined by Montana’s Weeds Control Law as: Currently established and generally widespread in many counties of the state. Clark Canyon management priorities currently include awareness and education, containment and suppression of existing infestations and the prevention of new infestations. Beaverhead County is contracted by Reclamation to treat the noxious weeds at Clark Canyon Reservoir and Barretts Diversion Dam. The County has also posted educational signs in several places around the reservoir. The noxious weed infestations that receive treatments are around the campgrounds and Beaverhead River below the dam. There is also a large infestation of leafy spurge in the area of the reservoir that is exposed due to low water (personal communication J. Eddie, Beaverhead County Weed District, Dillon, MT, 4/15/03).

While bio-control has been used in the past to treat leafy spurge, current weed treatment consists of herbicide application. In 2000 and 2001, weed treatment was reduced by at least half resulting in a notable spread in weeds (personal communication, with Steve Morehouse Bureau of Reclamation, Dillon, MT, 4/31/03). Beaverhead County Weed District resumed full treatment in 2002 and has increased its activities by obtaining a grant from the Montana Noxious Weed Trust Fund. The grant

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provides for up to five years of additional treatment on spotted knapweed that is 300 feet each side of the Beaverhead River on Reclamation property below the dam (personal communication J. Eddie, Beaverhead County Weed District, Dillon, MT, 4/15/03). The determination of effectiveness of noxious weed treatments is based on observation. The current program has not been monitored and there is not a clear determination of whether the noxious weeds are being contained or not.

Table 3.4-1 Noxious Weed List in Beaverhead County. (Source: Beaverhead County Weed Management Plan 2001)	
<p>Category I</p> <p>Species that are currently established and generally widespread in many counties of the state. Management criteria includes awareness and education, containment, and suppression of existing infestations and prevention of new infestations. These weeds are capable of rapid spread and render land unfit or greatly limit beneficial uses. This is a state designation.</p>	<p>Canada thistle <i>Cirsium arvense</i> Field bindweed <i>Convolvulus arvensis</i> Whitetop (hoary cress) <i>Cardaria draba</i> Leafy spurge <i>Euphorbia esula</i> Russian knapweed <i>Centaurea repens</i> Spotted knapweed <i>Centaurea maculosa</i> Diffuse knapweed <i>Centaurea diffusa</i> Dalmation Toadflax <i>Linaria dalmatica</i> St. Johnswort <i>Hypericum perforatum</i> Sulfur cinquefoil <i>Potentilla recta</i> Common tansy <i>Tanacetum vulgare</i> Ox-eye daisy <i>Chrysanthemum leucanthemum</i> Houndstongue <i>Cynoglossum officinale</i></p>
<p>Category II</p> <p>Species that have been recently found in the state or are rapidly spreading from their current infestation sites. These weeds generally have limited distribution and density that makes eradication feasible. Management criteria includes awareness and education, monitoring and containment of known infestations and eradication where possible. This is a state designation.</p>	<p>Dyers woad <i>Isatis tinctoria</i> Purple loosestrife <i>Lythrum salicaria, L. virgatum</i> Tansy ragwort <i>Senecio jacobea</i> Meadow hawkweeds <i>Hieracium pratense, floribundum, piloselloides</i>) Orange hawkweed <i>Hieracium aurantiacum</i> Tall buttercup <i>Ranunculus acris</i> Tamarisk [Saltcedar] <i>Tamarix</i> spp.</p>
<p>Category III</p> <p>Species that have not been detected in the state or may be found only in small, scattered, localized infestations. These species have imminent potential for introduction and pose a future threat to the resources. Management criteria includes awareness and education, early detection and immediate action to eradicate infestations. These weeds are known pests in nearby states and are capable of rapid spread and render land unfit for beneficial uses. This is a state designation.</p>	<p>Yellow starthistle <i>Centaurea solstitialis</i> Common crupina <i>Crupina vulgaris</i> Rush skeletonweed <i>Chondrilla juncea</i></p>
<p>Category IV</p> <p>Additional species designated as noxious by the county weed board.</p>	<p>Musk thistle <i>Carduus nutans</i> Yellow toadflax <i>Linaria vulgaris</i> Common mullein <i>Verbascum thapsus</i> Common teasel <i>Dipsacus fullonum</i> Field scabious <i>Knautia arvensis</i> Black henbane <i>Hyoscyamus niger</i></p>
<p>Category V</p> <p>Watch List species not known to be in the county and that are not at high enough levels to be designated for State list. Designated by Montana Department of Agriculture.</p>	<p>Scented chamomile White bryony</p>

3.4.2 Environmental Consequences

Maintaining plant health and diversity are the primary concerns when comparing the effects of alternatives on vegetation. The proposed alternatives could have an effect on vegetation in the Clark Canyon Reservoir area. However, appropriate measures and treatment would be used in all activities to prevent adverse impacts to vegetation when implementing proposed actions.

3.4.2.1 No Action Alternative

This alternative represents a continuation of existing management practices. Other than the current level of noxious weed control, this alternative would be expected to have a minimal effect on vegetation trends, as little new ground disturbing activities would occur. Because it is not clear whether the current level of weed control is effective at containing the existing infestation, the effects are unknown in the current treatment areas (below Beaverhead Dam and around campgrounds). There is not currently a weed treatment program for the areas around Red Rock River and Beaverhead River, and under this alternative that would not likely change. It is likely however that the colonization of weeds in those areas would increase. There is no grazing planned in this alternative. The build up of plant material would remain in the stream areas as it has been since cattle were fenced out when the dam was built approximately 40 years ago.

3.4.2.2 Alternative A – Vegetation Impacts and Mitigation

Vegetation Impacts – This alternative includes the addition of several campground upgrades that include minor grading (e.g., leveling existing campgrounds) and small amounts of paving (e.g., providing accessible walkways to public restrooms). These are minor ground disturbances and would have minimal effect on vegetation. If needed, re-vegetation would be done. Closing the roads at the Sacajawea Day Use and Cameahwait Campground should prevent potential future disturbance of vegetation in that area.



Plant residue build up and dead willows at Horse Prairie Mouth

An increase in the noxious weed control program is proposed under this alternative and would be expanded to include the Red Rock River area. The effectiveness of the current treatment has not been monitored and the proposed increase has not been quantified. While an increase would be expected to improve control of noxious weeds, it is unknown whether it would contain or reduce their extent. However, the noxious weed control program would be expanded under Alternative A, and the effect is expected to be more positive than the under the No Action Alternative.

Grazing has been successfully used as a management tool to reduce the build up of litter by breaking up it up by the trampling action of animal hooves. High intensity and short duration grazing, used as a management tool, minimizes impacts to woody and native species allowing them to compete with noxious weeds. A grazing plan, including a pre-treatment survey and subsequent monitoring, will be developed, with the aim of enhancing the vegetation by facilitating the reduction in accumulated

litter. It will be designed to prevent adverse impacts to the vegetation, and in fact, will be aimed at improving the vigor of desirable plants.

Vegetation Mitigation Measures –

Develop and implement a grazing plan to remove accumulated litter and stimulate new growth and vigor in plants. The grazing plan will be designed to improve vitality of the vegetation resources, and vigor of desirable plants. Since the plants have not been grazed for 40 years, decadent residue has accumulated, smothering many of the native plants. The recent drought has also had an impact on the plants not having enough moisture to produce vegetation at normal levels and compete with aggressive noxious weeds such as Canada thistle and Whitetop.

When possible, wetlands will be avoided during construction. In the event wetlands cannot be avoided, the following measures should be implemented. Construction will not occur until after July 15 to protect nest broods. Construction will be timed to coincide with dry periods when water tables are low. Disturbed wetlands will be restored to pre-construction contours. Delineate and assess functional capacity prior to construction. Follow all stipulation of Corps of Engineers 404 permit. Effects to wetlands will be negligible with required avoidance, compensation, and monitoring.

Pre-treatment survey and monitoring be conducted. The grazing plan will identify the areas to be grazed and the timing. The grazing plan will also identify the desired height of the plant at the beginning and end of the grazing period, percent ground cover, and desired objectives to be achieved.

Fencing will be needed to control animals and protect sensitive areas such as riparian vegetation and assuring access to water. Normally, more animals for a shorter period of time is better to break down the build up of residue through hoof action thus increasing the mineral cycling.

3.4.2.3 Alternative B – Vegetation Impacts and Mitigation



Horse Prairie Creek

Vegetation Impacts – This alternative includes all the activities in Alternative A, plus additional campground improvements and the creation of new campsites in Beaverhead Campground, Horse Prairie Campground and Lone Tree Campground. While the construction of new campsites includes increased ground disturbance, it is limited to the existing campground footprints and includes only ground leveling and vegetation removal. An indirect effect of building new campsites is the increase in tourist visitation. Increased visitation includes the risk of vegetation trampling and the potential for noxious weed transport.

Plans would be developed for vegetation recovery and noxious weed reduction in the Horse Prairie Creek area, including planting cottonwood trees, willow, and other native vegetation along the new channel. The alternative also includes planting trees at Lone Pine campground and a larger increase in noxious weed control program. These would all have positive effects on vegetation.

This alternative would include more vegetation disturbance than the No Action Alternative and Alternative A, and is designed to better handle any future increase in pedestrian traffic in the area. However, the area with new campsites is small, relative to the project area, and the vegetation disturbance is not expected to be substantially larger than in Alternative A. The efforts specifically directed at improving the quality of the vegetation would result in positive effects on vegetation, and it is expected to be more beneficial than Alternative A.

The grazing effects would be the same as discussed under Alternative A under Section 3.4.2.

The wetland mitigation measures will be the same as in Alternative B.

Vegetation Mitigation Measures – Mitigation for this alternative would be the same as that described under Alternative A.

3.5 Fish and Wildlife Resources

3.5.1 Affected Environment

3.5.1.1 Wildlife

As described in Vegetation Section 3.4, Clark Canyon Reservoir lands are primarily short grass prairie with areas of sagebrush habitat in the uplands. There are three riparian areas with willow and cottonwood habitat, cattail marshes, wet and semi-wet meadows, and mud flats are exposed during periods of low water. These diverse habitats around Clark Canyon support many bird and animal species such as golden eagles, ferruginous hawk, chestnut-collared longspurs, antelope, and white tailed deer. The sagebrush in the drainages also provides habitat for pygmy rabbits.

The wet and semi-wet meadows and cattail and willow wetland in adjacent to the streams provide forage and nesting habitat for several migrant birds including yellow-headed blackbird, red-winged blackbird, common snipe, Wilson's phalarope, rails, sora, and several species of ducks. The spring fed marsh below Clark Canyon Dam, with a constant temperature of 54° F (12° C), remains unfrozen and provides year round refuge for a myriad of wildlife species.

The portion of Beaverhead River immediately below the dam is diverse and well suited for viewing wildlife, springs, river, and plant diversity. It has been identified as a Montana Wildlife Viewing Area for the Montana State Watchable Wildlife Program by a panel of wildlife experts from state and federal organizations. The goals of the program are to: 1) identify and enhance opportunities for the public to enjoy wildlife on public and private lands; 2) contribute to local economic development; 3) Promote learning about wildlife and habitat needs; and 4) enhance active public support for resource conservation selected all sites. There is signage on the highway identifying the site and interpretive signage at the site. It is also listed in tour books as a Montana Wildlife Viewing Area.

The reservoir is in the Beaverhead/Red Rock Corridor flyway for migrating birds. It is a known resting or foraging spot for many migrant birds. During spring migration, loon are seen in the reservoir, courting behavior has been observed, and a nesting pair has been documented (personal

conversation S. Morehouse, Bureau of Reclamation, Dillon, MT). Snow geese, trumpeter swans, and tundra swans often stay in the reservoir area for days or weeks, depending on surface water area, as they migrate through the area to nest in Red Rock Lakes National Wildlife Refuge to the southwest.

Horse Prairie Creek is in a narrower valley than Red Rock River and the creek and has a more direct course. SR 324 runs west from the reservoir along Horse Prairie Creek. There is also a remnant of an old railroad grade in the drainage. The area is west of Clark Canyon Reservoir and is generally managed for wildlife habitat. There is signage identifying it as a Wildlife Resource Management Area. Based on field observation and personal conversation with B. Gibbons (Rangeland Management Specialist, NRCS Dillon Montana, 6/19/03) it appears that the willows and cottonwood north of SR 324 are in poor condition with many already dead. This appears to be a result of channel changes and the recent drought that have left the plants on dry ground. The new channel does not appear to have new cottonwood trees growing and has only a limited shrub component such as willows in the riparian zone.

At Barretts Diversion Dam, the tree, shrub, marsh combination, together with rock faces on both sides of the adjacent road, provide a variety of habitats for nesting and foraging.

3.5.1.2 Fish

The Clark Canyon Reservoir provides a diversity of fish habitat with the lake environment and three streams. The nationally renowned wild trout populations, unique species composition, easy accessibility by vehicles, developed campgrounds, boat launch facilities, and scenic qualities result in heavy angling pressure. The lake is therefore stocked to support harvestable populations under heavy use.

The reservoir provides fisheries for introduced rainbow and brown trout, native burbot, and mountain whitefish. Occasionally westslope cutthroat trout and brook trout have been found. Non-game species in the reservoir include native white and longnose sucker and non-native common carp and the redbreast shiner (discovered in 1998). The rainbow trout is stocked with annual additions of hatchery fish and the other species are wild and self-sustaining.

Rainbow stocking is generally done in early June to take advantage of a favorable thermal regime and the growth phase of the cladoceran zooplankton community. In general, the population size trends with the storage and surface area of the reservoir. Since management strategy of the rainbow trout stocking program shifted to the use of wild strain DeSmet and Eagle Lake strain spawning stocks, they have been monitored in the Red Rock River for migration and spawning. The Clark Canyon Eagle Lake rainbow trout population became an effective wild brood source of fertilized eggs for rearing as over-wintered yearlings in 1995. These are used for plants in Clark Canyon and in other locations. Since the program began, Clark Canyon has provided from 300,000 to 500,000 fertilized eggs annually. (Oswald 2002a).



Red Rock River MFWP Fish Trap Facility

The Beaverhead River, below the dam, supports a variable population of brown and rainbow trout with brown trout being the dominant species. The limited rainbow trout populations have been supported between Clark Canyon Dam and Dillon, Montana. Past angler use of the river has been concentrated in this area (Oswald 2002b).

3.5.2 Environmental Consequences

Maintaining quality habitat for fish and wildlife are the primary concerns when comparing the effects of alternatives on vegetation. The proposed alternatives could have a short-term effect on fish and wildlife in the Clark Canyon Reservoir area. However, measures would be used in all activities to prevent adverse impacts to fish and wildlife when implementing proposed actions.

3.5.2.1 No Action Alternative

This alternative represents a continuation of existing management practices. This alternative would not be expected to introduce any new effects on fish and wildlife habitat as little new ground disturbing activities would occur. There is no grazing planned under this alternative, and the build up of plant material would remain in the Riparian areas, as it has been, since cattle were fenced out when the dam was built approximately 40 years ago.

3.5.2.2 Alternative A – Impacts and Mitigation

Fish and Wildlife Impacts – This alternative includes the addition of several campground upgrades that include minor grading (e.g., leveling existing campgrounds) and small amounts of paving (e.g., providing accessible walkways to public restrooms). These are minor ground disturbances that would take place within the existing campground areas and, with the use of measures to protect against erosion and water quality impacts, are expected to have minimal effect on fish and wildlife habitat. Closing the roads at the Sacajawea Day Use and Cameahwait Campground is expected to prevent future use and disturbance of the area thus improving habitat conditions. Wildlife would only be displaced temporarily during and shortly after construction.

As discussed in Vegetation Section 3.4.2, an increase in the noxious weed control program is proposed under this alternative. Generally, when noxious weeds infest an area, habitat is reduced for native wildlife species. An increase in the weed control program would be expected to improve control of noxious weeds. The effect is expected to be more positive than the No Action Alternative.

Fish and Wildlife Mitigation Measures – Re-vegetation of construction sites and disturbed areas will be done. Continued noxious weed control by the Beaverhead County Weed District will be carried out. Because Horse Prairie Creek is a wildlife management area, a grazing plan will be developed to maintain or improve the quality wildlife habitat. The grazing plan will also address access of livestock to the riparian areas to prevent an increase of sedimentation to the streams that feed the reservoir.

3.5.2.3 Alternative B – Fish and Wildlife Impacts and Mitigation

Fish and Wildlife Impacts – This alternative includes all the activities in Alternative A, plus additional campground improvements and the creation of new campsites in Beaverhead Campground, Horse Prairie Campground and Lone Tree Campground. While the construction of new campsites includes increased ground disturbance, it is limited to the existing campground footprints and includes only ground leveling and vegetation removal.

Under Alternative B, the marina would be excavated and/or dredged to provide extended use during drought periods. The details of the plan are not developed but the impacts to fish are expected to be minimal if proper excavation is conducted at periods when the reservoir levels are low and can be accomplished on dry land. Otherwise, the use of proper measures (i.e. turbidity curtain) to adequately protect fish resources will be implemented. The plan will be developed to prevent adverse effects to fish or fish habitat and will solicit input of COE and DEQ on the site specific (project) NEPA document.

Under Alternative B, plans would be developed for vegetation recovery and noxious weed reduction in the Horse Prairie Creek area, including planting cottonwood trees, willow, and other native vegetation along the new channel. The alternative also includes planting trees at Lone Pine campground and a larger increase in noxious weed control program than is proposed for Alternative A. These would all have positive effects on vegetation and thus, improve the general habitat characteristics of the area.

This alternative would include more vegetation disturbance than the No Action Alternative and Alternative A, and is designed to increase traffic in the area. However, the area with new campsites is small, relative to the project area, and the habitat disturbance is similar to Alternative A. The efforts specifically directed at improving the quality of the vegetation would result in positive effects on habitat, and it is expected to be more beneficial than Alternative A.

Fish and Wildlife Mitigation Measures – Re-vegetation will be implemented to control erosion and sedimentation. During construction, measures will be taken to minimize impacts to fish and wildlife

3.6 Threatened and Endangered Species

The Endangered Species Act (ESA) of 1973, as amended (16 U.S.C 1653 et seq.) was enacted to conserve “the ecosystems upon which endangered and threatened species depend” and to conserve and recover listed species. Section 7 of the act requires federal agencies to consult with the US Fish and Wildlife Service regarding terrestrial and freshwater organisms to ensure that the actions they authorize, fund, or carry out will not jeopardize listed species. Federal agencies are required to utilize their authorities to conserve listed species and make sure their actions do not jeopardize the continued existence of listed species. As a Federal agency, Reclamation complies with the ESA for activities associated with their activities.

3.6.1 Affected Environment

In this document, Threatened and Endangered species include only species listed by U.S.F.W.S. as threatened or endangered. During the scoping process, the U.S.F.W.S. submitted a letter containing information on known occurrences of T&E species in Beaverhead County. (U.S.F.W.S.2002).

Wildlife –

Bald eagle –(*Haliaeetus leucocephalus*) is a federally listed threatened species. The Fish and Wildlife Service reclassified the Bald eagle (*Haliaeetus leucocephalus*) from endangered to threatened in the lower 48 States in 1995. The Bald eagle is a bird of aquatic ecosystems (Gerrard and Bortolotti 1988). It frequents estuaries, large lakes, reservoirs, major rivers, and some seacoast habitats. However, such areas must have an adequate food base, perching areas, and nesting sites to support Bald eagles. In winter, Bald eagles often congregate at specific wintering sites that are generally close to open water and that offer good perch trees and night roosts. Bald eagle habitats encompass both public and private lands. Bald eagles build large stick nests lined with soft materials such as grass, leaves, and Spanish moss. Nests are used for several years by the same pair of eagles, with the birds adding materials each year. Nests are often very large, measuring 6 feet across and weighing hundreds of pounds. Young eagles can fly in 11 to 12 weeks, but the parents continue to feed them for 4 to 6 more weeks while they learn to hunt. There are no known Bald eagle nests within two miles of the reservoir on both Red Rock River and Beaverhead River. Rock outcrops at Barrett Dam may provide suitable nest sites for the eagle, however, no nests have been found. The rivers and in the reservoir provide foraging habitat for the eagle. Foraging in the reservoir is particularly popular in the winter for many individual birds. In general, the population has grown significantly in the last couple decades and cottonwoods along the streams are good potential nesting habitat (personal conversation with J. Rosco, BLM, Dillon Mt. 4/18/2003).

Grizzly bear (*Ursus arctos horribilis*) is listed as a threatened species present in Beaverhead County. There is a known area of occurrence 5 miles east of the project area. Grizzly bear habitat typically consists of high mountainous regions, including wilderness and tundra areas. The project area does not contain suitable habitat for the grizzly bear. However, there is livestock near the project area that may potentially attract grizzly bear.

Ute ladies tresses (*Spiranthes divuvialis*) is listed as a threatened species present in Beaverhead County. It is a perennial orchid that arises from tuberous roots and flowers in August to early September. It is known to grow in wetlands and swales in broad open valleys and at habitat margins with calcareous carbonate accumulation. There may be potential habitat within the project area, but the orchid is not known to occur in the project area nor have any orchids been identified within the project area.

Other Wildlife Species

The Gray wolf, Canada lynx, and Montana arctic grayling are also federally listed species and are listed as present in Beaverhead County, but do not have suitable habitat in the project area (FWS2003) and these species will not be discussed further.

3.6.2 Environmental Consequences

Project effects were determined by evaluating the potential for the proposed activities to harm listed species. Also included are activities that would ensure that the Bureau of Reclamation complies with the Federal requirements to conserve listed species and make sure that the agency's actions do not jeopardize the continued existence of listed species. Reclamation has determined and requested concurrence from the USFWS that the RMP is not likely to adversely affect the Bald eagle, Grizzly bear, or Ute ladies' tresses.

3.6.2.1 No Action Alternative

This alternative represents a continuation of existing management practices. This alternative would be expected to have no effect on TES species or their habitat, as little ground disturbing activities would occur. There is no grazing planned in this alternative.

Continued management under the no action alternative will have no effect to TES species present or potentially present in the project area, and is not likely to result in a trend toward loss of viability on any of these species.

3.6.2.2 Alternative A – Impacts and Mitigation

Threatened and Endangered Species Impacts – This alternative includes the addition of several campground upgrades that include minor grading (e.g., leveling existing campgrounds) and small amounts of paving (e.g., providing accessible walkways to public restrooms). These are minor ground disturbances that would be short in duration, performed within the existing campground sites and are not likely to adversely affect 3 TES species or their habitat.

Before prescribed grazing is implemented at Clark Canyon, a grazing plan with a TES survey and monitoring, would be developed. The plan will address the specific environmental conditions of the area to be treated and would be designed to ensure that the proposed treatment has no effect on TES species.



To prevent harm to TES species, T&E surveys would occur. Grazing would not occur in areas with T&E plant species.

Increased visitor use is not likely to adversely affect Bald eagles. Bald eagles are migrants on Armstead Island with very little recreation pressure because it's a boat in Camp Ground.

Threatened and Endangered Species Mitigation – Consideration will be given to T&E species for their protection, prior to the development of all activities.

No activities would occur in areas where there would be potential to effect T&E species. The grazing plan would include surveys for T&E plant and wildlife species.

3.6.2.3 Alternative B – Impacts and Mitigation

Threatened and Endangered Species Impacts - This alternative includes all the activities in Alternative A, plus additional campground improvements and the creation of new campsites in Beaverhead Campground, Horse Prairie Campground and Lone Tree Campground. While the construction of new campsites includes increased ground disturbance, it is limited to the existing campground footprints and includes only ground leveling and vegetation removal. An increase in tourist visitation is likely, which may result in temporary disturbances of wildlife, but not to T&E species.

The proposed campsites are more than a mile from any suitable eagle nesting sites. The proposed new campsites are also unlikely to have small mammal nesting sites because they are adjacent to existing campsites.

Under Alternative B, plans would be developed for vegetation recovery and noxious weed reduction in the Horse Prairie Creek area, including planting cottonwood trees, willow, and other native vegetation along the new channel. The alternative also includes planting trees at Lone Tree campground and a larger increase in noxious weed control program than is proposed for Alternative A. These would all have positive effects on the quality of general wildlife habitat and on the quality of nesting and roosting sites for eagles after the cottonwood had matured.

This alternative would include more vegetation disturbance than the No Action Alternative and Alternative A, and is expected to increase traffic in the area. The area with new campsites is small, relative to the project area, and the habitat disturbance will not be larger than in Alternative A. The efforts specifically directed at improving the quality of the vegetation would result in positive effects on habitat

The grazing effects would be the same as discussed under Alternative A.

This alternative will have no adverse effect on individual T&E species present or potentially present in the project area

Threatened and Endangered Species Mitigation – Consideration will be given to T&E species for their protection, prior to the development of all activities. No activities would occur in areas where there would be potential to effect T&E species. The grazing plan would include surveys for T&E plant and wildlife species.

3.7 Cultural Resources

3.7.1 Affected Environment

3.7.1.1 Background



Beaver Slide

Since the early 1950's both intensive and non-intensive cultural resource surveys have been conducted at the Clark Canyon Reservoir (Deaver 1981) (Fenenga 1951). These studies have been carried out to comply with one or more of the many Federal historic preservation laws and regulations. These laws and regulations direct Federal Agencies to manage cultural resources and set forth a policy to provide guidance in the preservation of the prehistoric and historic resources of the United States.

Federal historic preservation laws are designed to protect cultural resources for future generations and to promote scientific study of those resources. Studying the past provides insight into how humans have utilized the environment in which they lived, and can provide keys to future changes.

In 1951, an Appraisal of the Archaeological and Paleontological Resources of the Jefferson River Basin, Montana, was completed by the Missouri River Basin Survey of the Smithsonian Institution. (Fenenga 1951). This survey included what is now the Clark Canyon Reservoir Area. The cultural resource survey, upon which this report was based, is very preliminary, and only a few late prehistoric sites were reported.

Following passage of the National Historic Preservation Act in 1966, cultural resource inventories in the Clark Canyon increased as Reclamation responded to the new mandates found in the legislation. In 1979, a cultural resource survey was conducted of the recreation area at Barretts and at three recreation areas at Clark Canyon Reservoir. A cultural resource survey for the entire reservoir area above the water line was undertaken with the report completed in 1981. Both of these surveys have been useful for management of cultural resources although neither were performed to current standards making the need for additional survey work necessary before specific projects are undertaken.

Prehistoric Period Resources – Research conducted in the area has revealed prehistoric sites and use areas that demonstrate extensive Native American utilization of the region. Artifact scatters and quarry sites show the area was used for stone tool production, bison kills and butchering sites demonstrate meat procurement, and camps with fire hearths and grinding stones demonstrate food preparation (Deaver 1981). Although none of the prehistoric sites at Clark Canyon Reservoir have been nominated to the National Register of Historic Places some may be eligible since they may be likely to yield information important in prehistory or history.

Historic Period Resources – The historic period at Clark Canyon Reservoir generally begins around in 1805 when the Lewis and Clark Expedition entered the area (Malone 1976). Their meeting with

the Lemhi Shoshoni Indians at “Camp Fortunate” at a location now under the waters of Clark Canyon Reservoir was an important factor in the success of the expedition. The Lemhi Shoshoni Indians were not the only tribe known to have utilized the area; research has reported usage by the Bannock, Flathead, Pend Oreille, Nez Perce and Blackfeet (Moulton 1997). Even as the Lewis and Clark expedition returned to St. Louis, trapping beaver and fur trading was becoming key to the economy of the area. Although no major fur trading posts were developed in the Clark Canyon Area, camps of traders were often located in the broad valleys of southwest Montana. Members of the tribes found in the area trapped furs and traded as well as others from outside the region.

The broad valleys of the Beaverhead and Red Rock Rivers, along with Horse Prairie Creek have been used as travel routes for thousands of years. One likely prehistoric trail, marked by a cairn line bypasses a location that would be difficult to travel during many times of the year. Following the establishment of the Oregon Trail in Idaho, travel into the area was north over Monida Pass, and then down the Red Rock River through the study area. This route, followed portions of the prehistoric trail, was followed not only by early travelers but stage and freight lines, and then the railroad.

Discovery of gold by John White’s party in 1862 started the gold rush to Montana. Bannack and Virginia City, located northwest and northeast of Clark Canyon became leading mining towns. Support systems including merchants, traders, stage transportation companies and saloons developed. By 1869, Corinne, Utah on the Union Pacific Transcontinental Railroad was the center for stage and freight traffic north to Montana. The trail was established from Corinne, Utah through Monida Pass, down the Red Rock River and on to Bannack, Virginia City, and other points north. Travel along this route brought many into the area. In the 1860’s cattle and sheep were brought from California and Oregon into Montana utilizing these trails. The Utah and Northern Railroad built north across Monida Pass in March of 1880 and Dillon was founded as a terminus town (Malone 1976).

The Gilmore & Pittsburgh Railroad was constructed from the mainline of the Utah and Northern up Horse-Prairie Creek to the mines at Salmon and Gilmore, Idaho. A community named Armstead, Montana developed at the junction of the two railroads. Portions of the grade were so steep, that the Gilmore & Pittsburgh gained the nickname “Get Out and Push”. The G, O & P was not profitable, and the tracks were removed in the early 1940’s. The post office remained open at Armstead until 1962 (Avon 1990).

Construction of the Clark Canyon Dam was completed in 1964. With the filling of the Reservoir numerous changes occurred to the cultural landscape in the immediate area of the project. The railroad was relocated to higher ground, as were the highways. Farms and ranches that were located in the valley bottom and the town of Armstead were removed. Few historic remains are located on Reclamation land adjacent to the Reservoir, and none are on the register of historic places.

Future Heritage Resources Focus – The Federal Government is required by law and regulations to protect and preserve significant cultural resources. To this end, Reclamation’s undertakings are subject to compliance required by the National Historic Preservation Act and its regulations found in 36 CFR Part 800. These mandate require that the Government consider the effects of its action or undertaking on prehistoric and historic resources before implementing those actions. Reclamation routinely consults with the Montana State Historic Preservation Officer (SHPO) and other interested

parties before undertakings take place. The objective of the compliance process is to reduce or mitigate negative impacts to cultural resources.

Paleontological Resources – Like Cultural Resources, Paleontological Resources are fragile and nonrenewable. At Clark Canyon Reservoir the geology is such that the presence of such resources is unlikely, and none have been reported.

3.7.1.2 Indian Trust Assets

Indian Trust Assets (ITAs) are legal interests in property held in trust by the United States for Indian Tribes or individuals. Examples of things that may be ITAs are lands, minerals, hunting and fishing rights, and water rights. The United States has an Indian trust responsibility to protect and maintain rights reserved by or granted to Indian Tribes or Indian individuals by treaties, statutes, and Executive orders; these rights are sometimes further interpreted through court decisions and regulations. The trust responsibility required that all Federal agencies, including Reclamation, take all actions reasonably necessary to protect trust assets.

3.7.1.3 Indian Sacred Sites

Executive Order # 13007 defines Indian sacred sites as “...any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian Tribe or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion: provided that the Tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site.” Federal agencies are required, to the extent practicable, to accommodate access to, and ceremonial use of, Indian sacred sites by Indian religious practitioners and to avoid adversely affecting the physical integrity of such sites.

3.7.2 Environmental Consequences

3.7.2.1 No Action Alternative

Under the No Action Alternative, Reclamation will continue to perform activities as before and will continue to consult with Tribes as required by regulations and in accordance with the ITA policy. Section 106 clearances will be continued as required by undertakings.

3.7.2.2 Alternative A – Cultural Resources Impacts and Mitigation

Under Alternative A there would be a continuation of all activities listed under the “No Action Alternative.” In addition, Reclamation would develop a program for interpretative signs at selected existing public locations such as campgrounds and access sites. This work will include stabilization of archaeological and historic sites as required. A cultural resource management plan will be developed. It is possible that there might be instances where proposed activities would be revised or altered if assets are identified in the area. Any of the moderate development proposals in the alternative would require more consultation with Tribes.

Cultural Resource Mitigation Measures – Existing statues require that Cultural Resources be protected. The preferred alternative is to prevent damage to the resources. In some cases however it is not possible to prevent damage to the Cultural Resource, and then mitigation is required. Mitigation may include activities such as scientific excavation, detailed recordation, or development of interpretive areas. Mitigation procedures are developed in accordance with the requirements found in 36 CFR Part 800 and is developed on a case-by-case basis. If consultations determine adverse impacts are occurring or would occur from implementation of any action alternative, Reclamation would seek means to avoid adverse impacts. If adverse impacts cannot be avoided, Reclamation would provide appropriate mitigation or compensation. Executive Order 13007 does not authorize agencies to mitigate for the impact of their actions on Indian sacred sites. However, it does direct them to avoid adverse impacts when possible. If consultations determine that adverse impacts are occurring, or would occur from implementation of any action alternative, the Reclamation would seek means to avoid adverse impacts.

3.7.2.3 Alternative B – Cultural Resources Impacts and Mitigation

Under Alternative B, all activities listed under the No Action Alternative, Alternative A would apply. This alternative also includes development of an Auto Tour Route for interpretation of Prehistoric and Historic use of the area. With the additional development considered under this alternative, more potential conflicts with Indian Trust Assets are possible. As with Alternative B, research would be required to confirm the ITAs on the lands managed by Reclamation. With the additional development listed in this alternative, more potential conflicts with Sacred sites are possible. As with Alternative A, research should be done to confirm the location of these resources on lands managed by Reclamation or the absence of such sites.

Cultural Resource Mitigation – The Mitigation for Alternative B would be the same as described for Alternative A as described in Section 3.7.2.2.

3.8 Land Use and Management

Existing land uses within and adjacent to Clark Canyon Reservoir and Barretts Diversion Dam could be affected or influenced by implementation of the RMP alternatives under consideration. This section describes current land uses and considers the potential for the proposed RMP alternatives to result in a change in, or conflict with local and regional land use management.

3.8.1 Affected Environment

Clark Canyon Reservoir and Barretts Diversion Dam are located within Beaverhead County, Montana. Approximately 70 percent of lands within Beaverhead County are under ownership or administration by public (federal and state) agencies. The largest portion (over 40 percent) is owned or managed by the U.S. Forest Service (Forest Service) and approximately 18 percent is owned/managed by the BLM. Lands under the jurisdiction of Reclamation comprise 4,747 acres, or approximately 0.1 percent of the total land area of Beaverhead County. A complete tabulation of land ownership and administration of lands within the county is provided in Table 3.8-1.

Ownership/Administration	Acres	Percent of County Total
Reclamation	4,747	0.1
BLM	662,940	18.7
U.S. Forest Service	1,442,682	40.7
U.S. Fish and Wildlife Service	39,229	1.1
U.S. National Park Service	675	< 0.1
U.S. Agricultural Research Service	15,508	0.4
Montana FWP	28,845	0.8
Montana DNRC	1,819	0.1
Montana State Lands	322,015	9.1
Private	1,007,200	28.4
Other	19,433	0.6
Total	3,545,093	100

Reclamation has management authority and jurisdiction over lands immediately adjacent to Clark Canyon Reservoir and those that comprise Barretts Diversion Dam (see Figure 3.8-1). A total of 800 acres of the Reclamation land surrounding Clark Canyon Reservoir is included within a land withdrawal granted by the BLM to Reclamation.² Lands surrounding those under Reclamation's jurisdiction include a combination of lands in private ownership and public ownership, including lands under the jurisdiction the BLM, U.S. Forest Service, and MFWP.

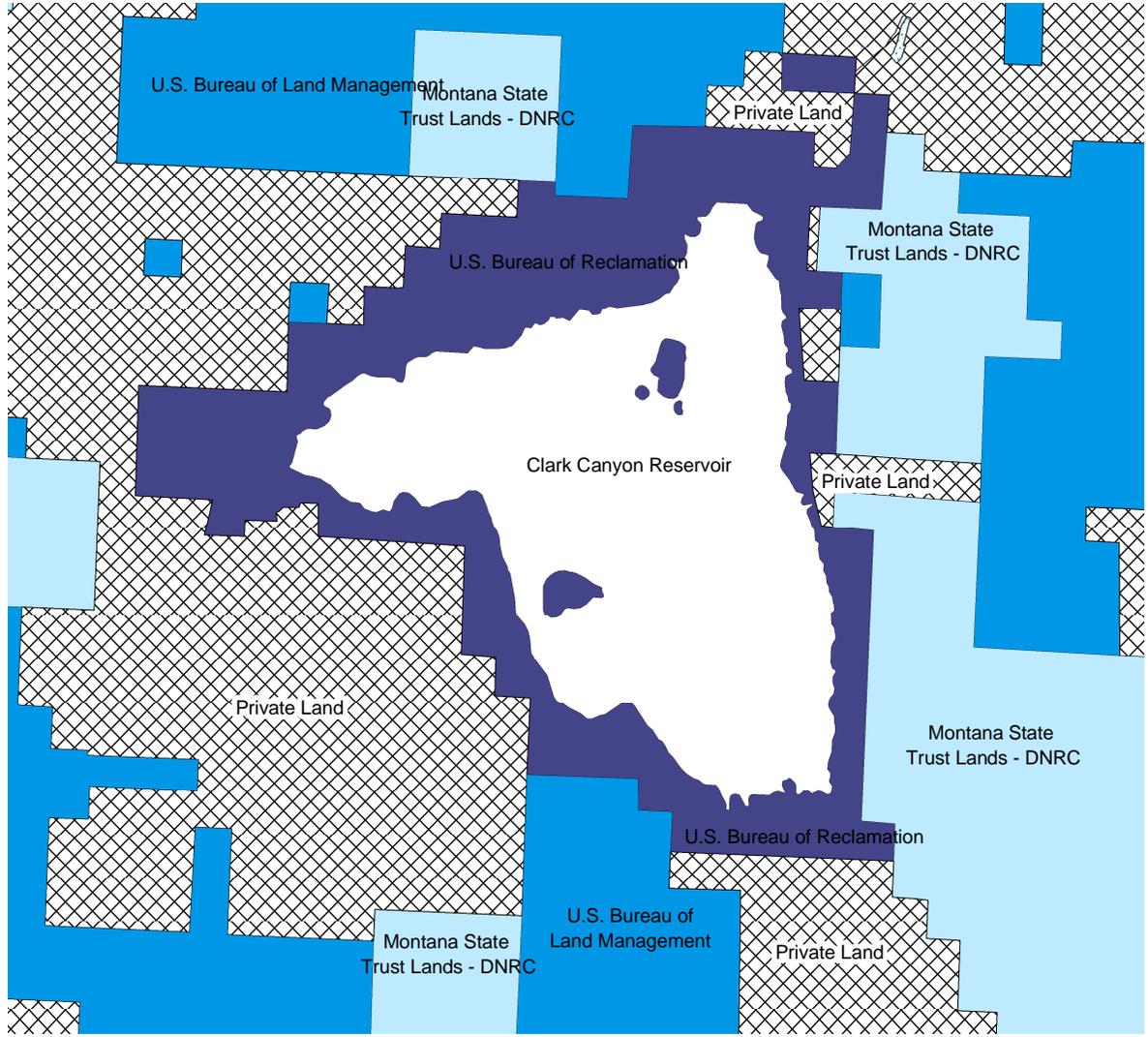
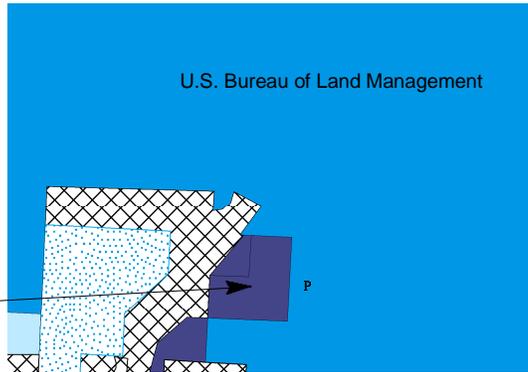
² A withdrawal is a formal action that sets aside, withholds, or reserves Federal lands by administrative order or statute for public purposes.

Legend

-  Montana Fish, Wildlife, & Parks
-  Montana State Trust Lands - DNRC
-  U.S. Bureau of Land Management
-  U.S. Bureau of Reclamation
-  Private Land
-  Clark Canyon Reservoir



Barrett's Diversion Dam
Recreation Area



DATE: p AUGUST 2004
 SCALE: 1" = 5280' P
 Land Ownership p
 H:\Client\USBR Area\1 - projects\Clark Canyon-MP\ 6-Mps & Figures\GIS P

BUREAU OF RECLAMATION
 CLARK CANYON RESERVOIR

FIGURE 3.8-1
 LAND OWNERSHIP

Clark Canyon Reservoir and Adjacent Lands – The lands within and immediately surrounding Clark Canyon Reservoir are publicly owned and managed through a coordinated effort between several entities that have different management responsibility. Reclamation maintains primary jurisdiction of the lands within the project area (Clark Canyon Reservoir and Barretts Diversion Dam).



Beaverhead County is responsible for public safety and boating activities. All out-grants for specific use of Reclamation lands are authorized and managed under license agreements, lease agreements, right-of-way easements, special use permits, and other legal and binding contracts. There are numerous such agreements currently in place and include using permits for utility right-of-way, and cooperative agreements for road maintenance, fire suppression, and grazing rights. (Reckmatch 2002).

Lands surrounding Reclamation lands at Clark Canyon Reservoir are either privately owned or under BLM or state jurisdiction. Very little development exists on these lands and, as with Reclamation lands, much is undeveloped open space.

Barretts Diversion Dam and Adjacent Lands – The area surrounding Barretts Diversion Dam is primarily in private ownership with transportation rights-of-way and BLM lands to the west of the park. The U.S. Government, through the Department of the Interior owns land at the Diversion Dam, however the East Bench Irrigation District operates the Diversion Dam and East Bench Canal that provides water to approximately 23,000 acres held in various private ownerships north of Barretts Diversion Dam.

Land Management Planning – In addition to Reclamation’s preparation and implementation of an updated Resource Management Plan for Clark Canyon Reservoir and Barretts Diversion Dam, other federal and state agencies have management plans, which guide their land, and resource management planning.

BLM Resource Management Planning – BLM is currently preparing a Resource Management Plan for the management of lands and resources within the jurisdiction of the BLM’s Dillon Field Office. These lands include those adjacent to Reclamation lands surrounding Clark Canyon Reservoir as well as lands located within the larger Clark Canyon Reservoir watershed. The decisions and plan direction taken by BLM in management of these public lands are an important consideration for Reclamation in establishing consistent policies. In January of 2003, BLM released baseline information collected as part of its Resource Plan development and NEPA compliance effort. Since that time, BLM and cooperating agencies have hosted a series of public workshops to gather public input concerning the project. BLM released the draft Resource Management Plan/Environmental Impact Statement in March 2004 for a 90-day review. BLM anticipates completion and release of an approved Resource Plan by August of 2005.

Montana Statewide Comprehensive Outdoor Recreation Plan (SCORP) – The state of Montana’s Statewide Comprehensive Outdoor Recreation Plan (SCORP) identified needs and opportunities for outdoor activities within the state during the 2003 through 2007 planning period. Although the

SCORP does not contain provisions or requirements that are directly applicable to Reclamation's management of resources and recreation at Clark Canyon Reservoir and Barretts Diversion Dam, the findings and objectives identified in the SCORP are relevant to Reclamation's management planning efforts, inasmuch as efforts to contribute to statewide recreation objectives could influence Reclamation's management decisions. The two most relevant findings are the need to enhance access for water-based recreation activities and to improve access for wildlife based recreation activities.

Montana Fish, Wildlife and Parks – The MFWP oversees fish and wildlife management activities within the state, including fishing and hunting activities on the Beaverhead River below Clark Canyon Dam. MFWP is currently developing a river recreation management program, planned for completion in 2005. To develop the program, MFWP intends to work with the public on developing reasonable and equitable proposals for funding a river recreation management program to carry out the state's final river recreation management plan. The final river recreation management policy the MFWP Commission adopts will reflect comments from the public, the recommendations of the RRAC, and input from MFWP river managers and others. The river recreation management policy will guide decision-making and management actions for individual rivers around the state.

In order to learn more about the interests and values of the public, MFWP appointed a River Recreation Advisory Council (RRAC) in August of 2002. The 22 council members represent anglers, boaters, outfitters, landowners, the Montana state legislature, the tourism industry, and the MFWP Commission. The RRAC developed recommendations for addressing the public's concerns about overcrowding and other social issues on rivers in Montana. The RRAC presented its recommendations to the MFWP Commission in July of 2003 and MFWP will use them to develop a river recreation management policy and program.

3.8.2 Environmental Consequences

This section discusses potential land use impacts associated with the RMP alternatives under consideration.

To determine potential land use impacts, management activities associated with the proposed RMP alternatives under consideration were considered in association with adjacent land uses and land use management activities for possible inconsistencies with such activities.

3.8.2.1 No Action Alternative

No new land use impacts have been identified for the No Action Alternative. Reclamation continued cooperation with other agencies preparing resource plans should, however lead to improved consistency in management of lands and management of recreation use patterns..

3.8.2.2 Alternative A – Impacts and Mitigation

Alternative A proposes facility modifications or additions that would be similar to those currently in place at locations around Clark Canyon Reservoir and at Barretts Diversion Dam. Management activities under Alternative A may also include grazing for the control of noxious weeds. The proposed elements are either on-going and have a demonstrated consistency with adjacent land use

or otherwise have not been identified as being inconsistent with adjacent land uses. As such, no adverse land use impacts have been identified for Alternative A.

The adoption of an RMP for Clark Canyon Reservoir and Barretts Diversion Dam would be expected to have beneficial impact on Reclamation's management of the resources under their jurisdiction.

Additional opportunities for improved coordinated management of resources will likely be possible through Reclamation's participation in the BLM Dillon Field Office RMP and the MFWP river recreation management plan (discussed in Section 3.8.1). Each of these plans may ultimately contain elements or provisions that could have either direct or indirect effects on resources adjacent to Clark Canyon Reservoir and on recreational activities and opportunities within the project area.

To date, the RRAC has not produced recommendations for river management that are specific to the Beaverhead River. Issues such as commercial outfitter permitting, stream bank erosion protection, and fisheries enhancement will likely be addressed in the river management plan. Reclamation's participation and review of draft documents and proposals by the RRAC would enable Reclamation to provide input concerning the RRAC's proposals that may have beneficial and/or adverse effects on recreation and other resources associated with the Beaverhead River below Clark Canyon Dam and at Barretts Diversion Dam.

Participation in the BLM's planning and RMP development process enables Reclamation managers to provide input and provide consistency between proposed elements of the BLM's Dillon Field Office RMP and the Clark Canyon Reservoir and Barretts Diversion Dam RMP. Potential issues of concern that would benefit from close agency coordination include those associated with:

- Vegetation management, such as grazing;
- ORV use and restrictions; and
- BLM designation and management of Areas of Critical Environmental Concern (ACECs) within the Clark Canyon Reservoir watershed.

3.8.2.3 Alternative B – Impacts and Mitigation

Although Alternative B facility modifications and management activities would be more substantial than those under Alternative A, the potential land use impacts would be similar and no adverse impacts would be expected. As discussed under Alternative A, Alternative B actions could also result in increased Reclamation participation in the planning activities of other agencies.

3.9 Recreation Resources

3.9.1 Affected Environment

The primary land use in the Project area is for public recreation and wildlife management. The area is especially suited to the pursuit of unconfined and generally primitive recreation opportunities and activities.

Recreation activities in the Project area consist of land and water-based activities that take place primarily from May 1 through Labor Day weekend in early September. In winter, there can also be recreation use associated with ice fishing when conditions are appropriate.

Clark Canyon Reservoir provides regional camping and water based recreation opportunities for the communities of Dillon, Anaconda, Butte and Idaho Falls as well as other Idaho and Montana residents. In addition, other out-of-state residents who are either passing through the area or are in the area to fish also patronize the facilities. It is estimated that approximately 57,000 visitors visit the area during the summer season.

Clark Canyon Reservoir and Beaverhead County are within planning Region 3 of the SCORP. The SCORP is planning process by which the state will meet Land and Water Conservation Fund guidelines, and obtain funds for local outdoor recreation facilities. The SCORP plan helps to determine the level of outdoor recreation demand and supply and identify future gaps or surpluses anticipated in future recreation needs. The current SCORP planning process is underway for the 2003 to 2007 planning period and will help to identify statewide outdoor recreation issues and priorities.



Armstead Island

The current planning process is far enough along that a characterization of national, statewide, and local trends has been established. Current trends in Montanan's recreation habits show that over 52 percent of the residents engage in watching wildlife which is about ten percent higher than national averages (Montana SCORP Planning Process 2002). In terms of physical activity and exercise, citizens in Region 3 have the third highest level of participation of all seven regions in Montana. In Region 3, local resident participation in fishing is the third highest outdoor activities, a rate higher than all other regions.

The activities most visitors engage in include fishing, boating, camping, picnicking, swimming, and wildlife viewing. Most of the popular activities at the site are highly influenced by reservoir levels which in turn are highly influenced by small changes in climatic conditions as well as annual operations at the dam.

3.9.1.1 Fishing

Clark Canyon Reservoir is the largest and most accessible reservoir in this part of south central Montana and provides a popular trout fishery. Anglers primarily catch burbot (ling), brown trout, and rainbow trout. Trout are the most important species. Until recently anglers were allowed 5 trout and 10 burbot (ling) per outing, but beginning in 2002 new rules by Montana Fish Wildlife and Parks limited the catch to no more than 2 trout and 2 ling per angler day. The new regulations were put in place mostly in response to low reservoir conditions. The Beaverhead River below Clark Canyon Dam is a Blue Ribbon Trout fishery. Angler use is relatively constant from May through October with the peak use in June and July.

3.9.1.2 Boating

Motorized boats are the principle means to access and enjoy many opportunities available at Clark Canyon Reservoir. Motorboats support such popular activities as fishing, sightseeing, and boat-in camping. There are minor amounts of waterskiing, tubing, sailboarding, and personal watercraft uses (i.e. jet skiing). The reservoir is four miles in length and three miles in width and provides 17 miles of shoreline. The highest concentration of boating activities occurs between and around Armstead Island and the dam. The reservoir is situated in a high mountain valley that is often exposed to high winds which often hamper boating activities. The few coves found on the reservoir margins become important shelters when water levels are high enough to cover the fill the cove bottoms.

3.9.1.3 Off-Road Vehicle (ORV) Use

All Reclamation lands in the Project area are closed to motorized travel except those roads or areas specifically designated “open” for such use. If ORV uses were to be accommodated, a plan would have to be developed and designated areas established as required by 43 CRF 420. However, the land areas are small, the low-lying vegetation is fragile, and most areas are used primarily for water based recreation uses. In spite of such closures, unauthorized ORV use occurs around several recreation sites. Reclamation has been erecting jack-leg fencing (crossed wood pole fences) to contain ORV use and this has been effective where it has been employed.

On adjacent lands administered by the BLM, management designations generally preclude ORV use which is also limited to existing roads and trails only.

3.9.1.4 Hiking

Other than the Watchable Wildlife Trail below the dam, there are no other constructed trails in the vicinity of Clark Canyon Reservoir. However, boat-in and other overnight campers on Clark Canyon Reservoir often choose hiking as their primary day-use activity. Camping opportunities on Armstead Island, at Hap Hawkins, Lone Tree and West Cameahwait Campgrounds offer excellent hiking opportunities into highly scenic and diverse landscapes.

3.9.1.5 Recreation Sites and Facilities

Recreation sites and facilities within the Project area included developed and primitive day and overnight use areas, a marina, and popular fishing and group day use sites. There are a total of 8 separate campgrounds, a marina, and 6-day use facilities currently in service at Clark Canyon Reservoir. The campgrounds range from a mix of well-defined campsites with camping pads, parking spurs, campfire rings, and wind break structures to poorly defined site camping pads, no defined parking, and few other facilities. Few of the campsites are fully compliant with current Accessibility standards.

A summary of facilities and conditions is provided below:

Barretts Diversion Dam– Barretts Diversion Dam is a very popular day use area used for day use activities including weddings, group picnicking, and fishing. The site is suitable for a variety of camping uses ranging from RV to tent camping uses. There are currently 22 defined campsites, one group shelter, a boat ramp and 4 toilets. The park is used extensively used by Dillon residents who often come in organized groups sometimes competing for use of the single group shelter, or pavilion. The boat ramp serves as a popular take out facility for anglers drifting the river upstream of the park.

Beaverhead River Fishing Access – Beaverhead River Fishing Access is a moderately used site situated immediately below Clark Canyon Dam. Compared to most other areas around the reservoir this area is lush with vegetation and is used by anglers, campers, bird watchers and other wildlife observers. The area is also a popular put-in location for anglers with drift boats. Access to the site is from a steep, winding road that begins near the top of Clark Canyon Dam. The site has five campsites, a rough boat ramp along the river shoreline, and two toilets.

Buffalo Bridge Fishing Access – The Buffalo Bridge Fishing Access is heavily used at certain times during the fishing season. The site is not signed, but is well known and accessed from the east side of I-15 and then crossing under the freeway bridge that spans the Beaverhead River just below the dam. The site has a small boat trailer turn-around area, a rough undefined parking area away from the river and a single toilet facility. During the fishing season the area is often congested and difficult to use, especially when anglers are trying to launch their boats.

Marina – The existing marina has RV campsites, picnic tables, a single lane boat ramp and a store that is presently not open. The marina is limited in use due to several factors, the primary being that there is no current operator (concessionaire). However, the marina facility is still used for RV camping. Until the spring of 2002 the facility was operated by a private operator under a concession agreement with the Reclamation. The concessionaire provided gas, oil, boating supplies, mooring slips, and some groceries. In the past 15 years, there have been several different concessionaires who attempted to operate the marina successfully, but they all had difficulties making it a successful business venture. Currently there appears to be little interest given the investment that would be required to upgrade the facility to modern standards. The need for an operator has been identified as critical if the marina is to remain an amenity at the reservoir, but Reclamation recognizes that improvements to the current facility will be needed in order to attract a new concessionaire. The site is presently a fee site with nominal fees for camping collected on a volunteer basis. The drought of the past recent years has had a major impact on the stream inflow into the reservoir. This has resulted in low water levels and decreased visitation to the marina and marina revenues.

Lewis & Clark Day Use Area - The existing Lewis & Clark Day Use Area was recently converted from a camping facility to day use only and provides four picnic sites with wind shelters and a single toilet facility. The area has traditionally received low use but because the access road leading into the site now serves as the main access route for visitors patronizing the Camp Fortunate Overlook, it is expected the site will receive increased use.

Beaverhead Campground - Beaverhead Campground is the most popular campground and most conveniently accessible camping site at the reservoir. Unlike most other campgrounds at the reservoir, the site has numerous shade trees, lawn areas, and well-defined camping sites. The facility has two boat launches, one suitable for use at low reservoir levels. There are 22 designated campsites and three toilets at the campground.



Camp Fortunate Overlook - The Camp Fortunate Overlook is an interpretive site with interpretive displays integrated in and around an attractive rock picnic shelter overlooking Armstead Island the lower reservoir area. The site has broad sweeping views of the reservoir and is increasingly popular for educational and interpretative uses celebrating the Lewis and Clark Expeditions of 1804-1806. The facility is also used for passive recreation (limited trail use) and provides dramatic views of the reservoir and undulating uplands. The site has a new ADA compatible toilet facility.

Horse Prairie Campground - Horse Prairie Campground is used for camping and fishing access on the north side of the reservoir. The campground has an east and west loop separated by a small gully. The west loop includes a boat ramp leading into the mouth of a small-protected cove, usable for launching and boat mooring during periods of higher reservoir levels. The site has 17 total camping units and two double ADA designed toilet facilities. Several unauthorized road spurs and road loops lead off of the campground roads and some of the adjoining hills are partially denuded of vegetation from random ORV and other unauthorized vehicular uses.

Cameahwait Campground - Cameahwait Campground, sometimes called East Cameahwait, has 11 camping sites including many with small wind shelters. The facilities show sign of aging and the camping sites are not well designated. This camping area is one of the first to loose direct water front when reservoir levels recede in summer because it is located on the shallow upper end of the reservoir. A new ADA designed double toilet facility replaced an older toilet facility in 2003.

Hap Hawkins Campground – The Hap Hawkins Campground is primarily a group use facility that has a large community shelter available for cooking and eating. This campground offers the most remote and rural recreation experience. The site has two defined camping areas but large areas of mowed grass. A nearby outdoor amphitheater that was originally part of the development has been pretty much abandoned and is in rough condition.

Lone Tree Campground – Lone Tree Campground is a popular group camping area that serves as a base camp for fishing access to the reservoir as well as for large gatherings of campers in multiple groups that desire shared facilities. The facility is flat and grassy with wooden wind picnic shelters

that provide shade, privacy and serve as a windbreak. The campground is a popular site on holiday weekends and is frequented by groups from Idaho, thus taking on the local name of “Little Idaho”.

Armstead Island – Armstead Island has two boat in camping sites and an older toilet facility. The site is in poor condition due to age, exposure and its lack of easy access have made continuous maintenance difficult.

South Shore Fishing Access – This site consists of a signed access road and large and flat shoreline area that provides fishing access to anglers during higher water levels. Currently there are no formal parking areas and the site is only very lightly used.

Red Rock Fishing Access – The Red Rock Fishing Access area consists of a gravel parking area and several informal trails leading to the lush wetlands and winding lower Red Rock River. The site can experience heavy use during peak fishing periods. The old highway often serves as a boat launch.

3.9.2 Environmental Consequences

The environmental consequences of the three alternatives are presented below.

3.9.2.1 No Action Alternative

The no action alternative would allow current management practices to continue indefinitely using annual operation and maintenance budgets that from time to time get period increase emphasis for extra maintenance or resolution of operational or minor facility problems or enhancements. While it is likely that Reclamation will continue to be able to dedicate an annual maintenance budget of approximately \$250,000, it is unlikely Reclamation that funding level will be adequate will be able to keep up with ongoing maintenance issues or provide many new measures that could help to lead to reduce environmental impacts, or provide the necessary improvements that would help to upgrade sites more in line with today’s standards.

Originally constructed in 1965, the majority of the recreation facilities at Clark Canyon Reservoir show their age and extended service. The continued random parking and driving patterns of RV and other private vehicles at campgrounds and day use areas will continue to lead to larger areas of exposed ground, diminished vegetative cover leading to increased soil erosion and dust problems. While Reclamation continues to work to close unauthorized user-made roads, based on the last ten years it is unlikely their will be enough budget to be able to provide the level of fencing or other structural improvements or management changes that would be necessary to alleviate the continuing adverse effects. Continued unauthorized use patterns could lead to an increase in visitor conflicts and detract from the recreation experience and discourage other more appropriate recreation uses along undeveloped reservoir shorelines.

As visitation increases around the Lewis and Clark bicentennial celebrations, the existing facilities will see more visitations and while this increase could lead to some short term crowding and user conflict problems, the current capacity of the existing sites is likely to be adequate to handle the increased use.

3.9.2.2 Alternative A – Recreation Impacts and Mitigation

Improvements to the camping facilities at most existing sites would greatly improve the quality of the recreation experience for most users and should help to better accommodate the increased number of users resulting from the increased visitation around the Lewis and Clark Bicentennial celebration. However, in the short-term, during construction of new facilities it is likely that the increased noise, dust, and closures or detours at sites under construction could diminish the experience of site users. This effect is likely to be short-term and localized to the individual facility.

Alternative A would maintain a mix of developed and dispersed recreation opportunities while maintaining and slightly improving the high quality scenic setting and other natural resource recreation values. By closing unauthorized user made roads, current and possibly increasing use levels would be accommodated in a way that sustains the natural resource setting and maintains comparable visitor access opportunities. Closing some roads would restrict some recreation use patterns and displace some users of dispersed areas thus would likely lead to some increase in use at developed facilities, however the capacity of most facilities during all but peak weekends should be able to easily handle the increased use.



Horse Prairie Creek Lands

Additional closures for ORV use would displace ORV users to other areas or could put more ORV users on designated campground roads as well as adjoining public roads. While it is illegal to drive unlicensed vehicles on state highways, if such use does increase it would likely lead to an increased safety hazard. If comparable off-site ORV use areas are not available, the closure of some areas near campgrounds could result in a net loss of ORV recreation opportunity.

At Barretts Diversion Dam, the addition of a new group shelter will greatly reduce the competition for facilities used by groups on popular weekends. Other improvements to this increasingly popular day use site should greatly improve the quality of the recreation experience for both local and out-of-state visitors. Adding ADA accessible pathways to toilet facilities and ensuring that all new facilities are ADA compliant will provide great improvements for all users, particularly those with disabilities.

Improvements to the marina facility should provide great improvements to the overall condition and site setting. Improvements to the water system will better serve the users and provide a more stable water supply for use in maintaining the grounds. By making these improvements it is much more likely that Reclamation can attract a marina operator. Even without a marina operator the improvements would provide increase choices and a quality recreation experience. Because the site is well suited for RV camping, as well as being close to I-15 access, on the water, and in close proximity to Camp Fortunate Overlook, it is likely the site will be well used by an increasing number of RV users affiliated with the increased publicity around the Lewis and Clark Bicentennial celebration. If a marina operator cannot be found, the lack of overnight moorage facilities and lack

of gasoline service on the lake would continue to hamper boating use and lessen the quality of the experience for some motorized boating users.

Alternative A Mitigation-

With the exception of reducing ORV use, operational impacts of Alternative A on recreation resources would be beneficial and no mitigation is necessary. Restricting ORV use on Reclamation lands at Clark Canyon Reservoir is considered to have a net benefit, and no mitigation for this impact is proposed.

3.9.2.3 Alternative B – Recreation Impacts and Mitigation

Alternative B would increase recreation opportunities through additional development and would enhance natural resource related recreation. Recreation management would remain similar to Alternative A, but the additional facility development would lead to even greater improvements to the quality of the recreation experience and would better serve a variety of users, particularly enhance the variety, quality and choices for RV camping.

The impacts of this alternative are similar to Alternative A, but because the improvements are more extensive. There would be more construction associated with this alternative. The short-term adverse effects would be more pronounced to recreation users in the vicinity of the individual site improvement projects. If site improvements are made during the primary recreation season, the impacts are much more pronounced since overnight camping users are extremely sensitive to noise, dust, and the inconvenience of closures or detours. However these adverse effects can be greatly reduced by limited major and most minor construction to the low use seasons of early spring or late fall as identified in Alternative construction impacts mitigation. ORV operation opportunities would be limited under Alternative B as discussed under Alternative A.

Under Alternative B, additional camping units would be provided at Barretts Diversion Dam, Beaverhead Campground, Horse Prairie Campground, and Lone Tree Campground. The increased number of sites would attract some new users and would lead to an overall increased level of visitation at Clark Canyon Reservoir, however because current use levels are low in relation to the capacity of the existing facilities the increases would be hardly noticeable. Improvements at the Sacagawea Day Use area would increase the number of formally developed sites from 6 to 7 and thus provide a new choice for users thus increasing the appeal of the area to both local and out-of-state users.

If a managing partner could be found and all improvements slated for the marina facility could be undertaken, the boating use at the reservoir would likely increase and the quality of the experience for most boaters would greatly improve. Increased boating use would not however, be desirable for all user groups as increases in boating use bring addition noise and crowding that is undesirable for some user groups. However, there are several other lightly used overnight camping areas near water in south central Montana that could likely accommodate displaced users without much new crowding at those facilities. Improvements to Beaverhead, Lone Tree, Horse Prairie, and Cameahwait campgrounds would be substantial and provide a much higher quality camping experience for most users. By upgrading the facilities, the level of service would better meet the public's expectations and demand for less primitive camping facilities. Because some more rural or

primitive camping settings would still be available to users, there would be more choices for users depending on individual user preferences. Improvements in accessibility should greatly increase the opportunities for disabled or partially disabled persons and provide a much better experience for all users, particularly large family groups with a span of age groups requiring differing levels of service and accessibility needs.

Alternative B Mitigation-

All construction activities should take place during mid-week periods or during the lower use periods of early spring or late fall to minimize any adverse effects on users. As with Alternative A, the closure of certain “roads” now used by ORV operators would have a net beneficial effect on area resources and no mitigation is proposed.

3.10 Visual Resources

Scenic resources and the general visual environment of the study area are recognized as an important component for recreational enjoyment of visitors, as well as to residents and travelers passing through the area. The purpose of this section is to provide a general overview of the visual setting of the study area, with a focus on aspects potentially affected by activities that may occur under the various management strategies under consideration. Visual resources include undisturbed and more natural appearing areas, as well as both temporary and permanent man-made features.

Visual quality is subjective, and it is recognized that certain visible features that may be considered appealing or valuable to one set of viewers may be considered distracting or displeasing to others. Although, in general, natural resources are considered less visually intrusive or adverse. Man-made features can also be considered to have a beneficial visual quality depending on their design and form, and whether they are consistent or contrast with the setting in which they are located.

3.10.1 Affected Environment

The following sections provide a general discussion of the existing visual resources of the study area.

3.10.1.1 Description of Project Area



Due to the general openness afforded by gently sloping terrain that surrounds much of Clark Canyon Reservoir, the reservoir is highly visible from adjacent lands, and is a dominant feature of the landscape to travelers on I-15. Barretts Diversion Dam is less visible from surrounding areas and is located at the base of a steep canyon wall that is more dominant. As such, the park is most visible primarily to visitors at the park and residents living east of the park. The following sections describe each of these areas in more detail.

3.10.1.2 Clark Canyon Reservoir

Although Clark Canyon Reservoir is man-made, the reservoir offers what can be considered a somewhat natural appearance, visible from surrounding shoreline areas and travelers on I-15. The reservoir is situated in a broad valley at the confluence of Red Rock River and Horse Prairie Creek, and maintains a roughly triangular surface area shape. The southwest shoreline is characterized by relatively gently rising hillsides that extend gradually upward and away from the reservoir, whereas the northern shoreline is somewhat steeper and rises more abruptly. The eastern shoreline has a linear appearance, and is moderately dominated by I-15 and the Union Pacific railroad which run parallel to the eastern edge of the reservoir, with eastward rising mountains in the background.

Certain areas of the shoreline contain marsh habitat, primarily in association with the stream delta areas at the southern end of the reservoir where Red Rock River flows into the reservoir and also on the western edge of the reservoir where Horse Prairie Creek enters the reservoir. With these exceptions, shoreline areas generally consist of grasses and barren areas with compact or sandy soils that slope to the water's edge. Surrounding terrain is generally open, with low vegetation consisting of grasses and brush, with dispersed areas of taller and denser vegetative cover.

Two dominant features near the northern end of the reservoir are Clark Canyon Dam and Armstead Island. Clark Canyon Dam is an earth and rock filled dam with a concrete spillway on its western end. The top of the dam serves as the Beaverhead River crossing for SR 324. Armstead Island is located south of the reservoir's northwest shoreline and is dominant in the view of the reservoir from the Lewis and Clark Overlook. The northern and western portions of the sparsely vegetated island rise abruptly from the surface of the reservoir, while the eastern and southern shores of the island have a more gradual slope.

The reservoir surface elevation fluctuates seasonally. Periods of low surface elevation can result in a significantly reduced surface area and expanded shoreline approach to the reservoir, especially along the gently sloping western and southern shorelines.

During wintertime, the reservoir surface typically freezes and may be snow-covered. Ice fishing is a common wintertime activity at the reservoir. Temporary ice fishing structures are often placed on the reservoir and are visible from surrounding areas, including motorists on I-15. The structures provide contrast to the otherwise barren, ice-covered reservoir surface, and are a common element of wintertime activities in the region.

3.10.1.3 Barretts Diversion Dam

Barretts Diversion Dam is located on the northern end of a relatively narrow canyon through which I-15, the Union Pacific Railroad, and the Beaverhead River pass. The park consists of a gravel parking area, turf areas located on both the west and east sides of the Beaverhead River which bisects the park, restroom facilities, signage, and a day-use group shelter on the east side of the river. Two small bridges are situated within the park, one for pedestrian access to the portion of the park on the east side of the river, and the other for vehicle access to the private residence on the east of the river.

Immediately east of the park and the Barretts Diversion Dam, steep canyon walls rise abruptly and provide a dominant, natural backdrop to the park's east and north facing viewers. With the exception of compact earth parking areas, most of the park is maintained turf covered, with numerous large deciduous trees which provide canopy cover over much of the park area during the spring and summer months.

3.10.1.4 Recreational Facilities

Day-use and overnight campground areas surrounding Clark Canyon Reservoir result in visible man-made structures, access roads, and other facilities. The most visually dominant areas are Beaverhead Campground located east of the dam, the marina (which is currently unused, but contains structures and signage), and Camp Fortunate Overlook. Collectively, these facilities contain access roads, delineated campgrounds and/or parking areas, restrooms, open-air shelters, hand-pump water wells, signage, trashcans, minimal landscaping, boat launch ramps, and other facilities. Although some of the facilities are readily visible to most visitors and in mid-ground views of travelers on I-15 and SR 324, the facilities are not considered dominant and do not appreciably detract from the overall view sheds from adjacent areas. Other campground and day use areas contain similar facilities, but generally have fewer structures and landscaping and are situated in areas that are less visible from area visitors and residents.

Minimal night lighting is installed and operational at Barretts Diversion Dam, Beaverhead Campground, and the marina. Night lighting is provided at these facilities for the purposes of safety, security, and user convenience. Lighting is limited to parking areas and buildings to provide some visibility during nighttime. Although such lighting can be visible from surrounding areas, it does not contribute a significantly intrusive degree of light or glare to the project area. Other sources of light associated with the project area are from vehicles on area roadways and within campgrounds, lighting associated with the few private residences and businesses adjacent to Clark Canyon Reservoir and Barretts Diversion Dam, and campfire and individual camp lighting (e.g., lanterns, motor home lights, etc.).

3.10.1.5 Wildlife Viewing Areas

Wildlife Viewing Areas have been designated within the study area. Wildlife viewing areas are discussed in Section 3.9, Recreation, in deference to their predominant role as a recreational resource as opposed to a solely scenic resource.

3.10.1.6 Scenic Byways

Big Sheep Creek Back Country Scenic Byway is located south and west of Clark Canyon Reservoir. The roadway intersects with SR 324 west of Clark Canyon Reservoir, heads generally south then east, passing south of the Big Sheep Back Country, before turning northeast to I-15 near the town of Dell. The roadway is not considered to be within the study area; however, it is discussed briefly here due to its proximity. According to the Montana Department of Transportation (MDT):

The road is mostly two-lane gravel with a few side roads that lead to the foot of the Rocky Mountains that provide many opportunities for solitude and exploration. Passing beneath the high rock cliffs of Big Sheep Canyon, one can look down into clear, deep pools of spring-fed Big Sheep

Creek. Perhaps nowhere else in America can one see so many trout without leaving the car. Bighorn sheep and deer are a common sight in the evenings. The Byway provides one with the opportunity to see this country as it was experienced by prehistoric Indians and the first mountain men. The Rocky Mountains have hidden this southernmost point of Montana well, and it remains unchanged for those willing to explore the backcountry. (MDT, 2003)

Motorists accessing the Big Sheep Creek Back Country Byway via SR 324 from I-15 would cross Clark Canyon Dam and traverse the northern portion of the study area. However, because the scenic byway is west of the study area, no special considerations would be necessary in association with the roadway.

3.10.1.7 Wild and Scenic Rivers

A segment of the Beaverhead River between Clark Canyon Reservoir and Barretts Diversion Dam is being studied for potential eligibility for inclusion in the national Wild and Scenic River system with a classification of “Recreation”, as presented in a recent report issued by the Montana BLM, Dillon Field Office entitled, “Final Report on Wild and Scenic River eligibility Determinations” released in July 2002. The segment being studied begins at the I-15 Bridge at Pipe Organ Rock and ends where it leaves BLM land near the Dalys exit on I-15. This segment of the Beaverhead is considered “outstandingly remarkable” for recreation, fish, and historic values. This section of the Beaverhead River is not within lands under Reclamation’s jurisdiction and is located outside the project study limits.

3.10.2 Environmental Consequences

Potential visual impacts of the RMP alternatives under consideration include those associated with facility modifications and land uses or restrictions that may alter the visual character of open lands.

This assessment of potential visual impacts of the RMP alternatives considers the potential for temporary and permanent changes in the visual character of the project area. Changes in the visual character of the project area (as described in **Section 3.10.1**) were considered, and are discussed below for the various alternatives.

3.10.2.1 No Action Alternative

Under the No Action Alternative, facility modifications and improvements would occur on a periodic as-needed basis. By not upgrading many of the facilities the visual design inconsistencies between older and newer structures would continue indefinitely.

3.10.2.2 Alternative A – Visual Resources Impacts and Mitigation

Elements of Alternative A that affects the visual character of the project area include modifications and improvements to existing facilities and construction of new facilities such as restrooms, shelters, delineated campsites, and access roads. Other elements include potential facility modifications at the marina, placement of signage at various locations surrounding the reservoir, fence improvement and replacement, and open space management activities such as increased discouragement of illegal use of unauthorized roads by ORVs and vegetation management.

Alternative A Mitigation-

Facility modifications and improvements would result in a minimally altered appearance of facilities, and the construction of new facilities would place visible features in areas where no such structures currently exist. These modified and new facilities would be most visible from within or immediately adjacent to the campground or day-use area to be modified. Resulting changes to the visual quality of the area would be relatively minimal and, depending upon the condition of the specific facility to be modified or replaced, visual quality may be improved with the modifications. The following mitigation measure would serve to ensure that any potentially adverse visual impacts from new facilities and modifications to existing facilities are kept to a minimum.

Reclamation will follow similar design parameters for all facilities within the project area, to promote that all new facilities and facility modifications are generally consistent with the surrounding natural and man-made landscape features. Criteria should include structure location, structure color, fence design and structure architecture, and should be applied to all new facilities as well as existing facilities undergoing substantial modifications.

Visual impacts associated with land management activities may occur as a result of modifications to vegetative cover (through potential grazing) and roadway closures. Visual impacts associated with such activities could include short-term changes in the appearance of areas on which vegetative coverage would be modified. As viewed from I-15 and areas surrounding Clark Canyon Reservoir, these changes may be noticeable to frequent observers but are not considered adverse. Increased efforts to minimize ORV use of unauthorized areas could have a beneficial visual impact as a result of restoration of certain areas now scared by trails created from unauthorized ORV use.

3.10.2.3 Alternative B – Visual Resources Impacts and Mitigation

Impacts of Alternative B would be similar to those identified for Alternative A, above. Due to the increased amount of facility improvements and new facility installation that would occur under Alternative B, there would be an increased potential for associated visual impacts. However, implementation of facilities impacts mitigation identified for Alternative A would also serve to reduce those that may be associated with Alternative B. Open space land management activity impacts of Alternative B would be expected to be the same or similar to those identified for Alternative A. As with alternative A, the closure of certain “roads” now used by ORV operators would have a net beneficent effect on area resources and no mitigation is proposed.

3.11 Noise

Noise can be defined as the intensity, duration, and character of sounds from any and all sources. Although subjective, sound generated from natural sources such as flowing water, wind, or wildlife is often considered welcome as a beneficial quality of the surrounding environments. Conversely, human-induced noise sources such as vehicle traffic, motorized watercraft operation, and gasoline-powered equipment (e.g., generators and maintenance equipment) are often considered annoying.

The effects of noise can be experienced by both human and wildlife receptors, and, in certain circumstances, sound-wave vibrations can affect physical structures through shaking. Of primary consideration here are the effects of noise on humans within the Clark Canyon Reservoir and

Barretts Diversion Dam areas (study area). Effects of noise on wildlife species are discussed, as relevant, in Section 3.5 (Fish and Wildlife Resources).

The discussion herein provides a means of considering the existing noise environment within the study area and effects of the RMP alternatives on existing noise levels. Measurements of actual noise levels within the study area have not been collected, and the discussion and assessment provided here is based on observation and qualitative consideration of noise characteristics within the study area. Because the RMP alternatives under consideration would not result in substantial changes to the types of noise-generating activities occurring within the study area, this qualitative consideration has been deemed appropriate for this assessment.

3.11.1 Affected Environment

3.11.1.1 Noise Sources

In general, ambient noise levels at Clark Canyon Reservoir and Barretts Diversion Dam are consistent with rural, open space areas. Background noise levels are relatively low in most areas, with the notable exception of areas adjacent to roadways, including I-15 and SR 324 to the east and north of Clark Canyon Reservoir, and the Union Pacific railway parallel to I-15 (see Section 3.12, Transportation and Access, for more detail on the transportation network within the study area).

I-15 experiences moderate volumes of truck and passenger vehicle traffic, which create a relatively continuous noise source. SR 324 and other area roadways experience much lower traffic volumes and vehicle speeds are lower, resulting in lower and less consistent noise levels.

Barretts Diversion Dam is located on the northern end of a relatively narrow canyon through which I-15, the Union Pacific railway, and the Beaverhead River pass. Noise produced by vehicle travel along I-15 is audible at Barretts Diversion Dam; however, the contour relief provided by the elevated Union Pacific railway grade, along with nearby trees, may serve as a buffer partially deflecting the noise generated along I-15 prior to its reaching Barretts Diversion Dam.

Other notable noise sources that contribute to the noise environment of the study area vary depending upon time of day, weather, and season, and include those associated with motorized recreational activities on and adjacent to Clark Canyon Reservoir, visitor activities at day-use and overnight campground areas, vehicular noise on area access roads, and snowmobile operation during the wintertime.

Of all the noise sources within the study area, motorized recreational vehicles (vehicles and watercraft in the summer and snowmobiles in the winter) may be the most prevalent. Noise from personal watercraft (PWC) and motorized boats is reflected off the water and, depending upon weather conditions, can be heard at locations far from the source. In addition, because sound levels from PWCs and other motorized boats are highly variable as a result of engine revving (as opposed to more constant from a source such as pump or airplane) the noise tends to be more noticeable. In the wintertime, snowmobiles produce noise that is distinctly audible, especially in the context of relatively quiet winter days and nights.

3.11.1.2 Sensitive Receptors

The effects of noise on human receptors, is dependent upon factors, including the presence of receptors and the sensitivity of such receptors. Participants in noise-generating activities are considered to be less sensitive to noise. Conversely, visitors or residents not participating in activities, which create significant noise levels, may be seeking solitude, and are therefore more affected by the presence of continuous or variable noise. It should be noted, that individual recreationists within the study area, may be considered as sensitive or less sensitive, depending upon time of day and the activities in which they are participating at any given time.

Evening, nighttime, and early morning hours are the times of day that most area visitors and residents are most sensitive to noise. Traffic volumes on I-15 and other area roadways are lighter, and the general solitude offered by decreased recreational activities during these times of day result in a greater prominence of any particular noise event that may occur. Thus, sensitive receptors are primarily considered to be visitors and residents present within the study area overnight, as well as users of day-use and fishing access areas.

Sensitive residential receptor locations within the study area include residences located adjacent to Barretts Diversion Dam, on the east side of the Beaverhead River and to the east of the existing Barretts Diversion Dam day-use shelter. A small number of residences located east of the I-15/SR 324 interchange (I-15 Exit 44) may also be considered sensitive receptors. Campgrounds, and day-use areas adjacent to Clark Canyon Reservoir and at Barretts Diversion Dam (see Site Map and Figure 2.5-2) and a private campground located east of Exit 44 are also considered to be areas that may be sensitive to noise associated with reservoir recreation activities.

3.11.2 Environmental Consequences

Potential noise impacts of the RMP alternatives under consideration include those associated with construction activities that would be required for modifying facilities, and facility maintenance and changes in noise levels that may result from changes in use levels or patterns.

This assessment of noise impacts of the RMP alternatives considers the potential for temporary and permanent changes in noise levels in the project area. The effect of noise that would be produced during construction activities and reservoir maintenance activities, as well as that from use of existing facilities, on the existing noise environment (as described in Section 3.11.1) was considered, and is discussed below for the various alternatives. Specific noise levels were not determined for this assessment. Instead, a qualitative assessment of the potential for temporary and/or permanent noise impact was conducted.

3.11.2.1 No Action Alternative

As discussed above, existing noise sources within the project area are associated with activities at Clark Canyon Reservoir and Barretts Diversion Dam, as well as those from natural and other sources from nearby human activities (e.g., traffic on adjacent roadways). Under the No Action Alternative, noise levels would continue as they currently exist, with noise from general maintenance, visitor use, and surrounding areas generally continuing as described in Section 3.11.1.

3.11.2.2 Alternative A – Noise Impacts and Mitigation



Barretts Diversion Park Recreation Area

Noise would occur during construction of new facilities and improvements to existing facilities. Alternative A improvements are discussed in Section 2, and include roadway improvement/modifications at existing day-use and campground sites, installation of additional amenities at certain locations including restrooms, pressurized water systems, shelters, and designated parking/camp sites. Construction would require the use of vehicles for worker, equipment, and supply transport, and construction activities would add a new noise source to the surrounding area.

Construction noise levels would be short-term and temporary, occurring only periodically during the construction period, and ending once the facility modifications have been made (construction durations of any one facility modification could range from one or two days, to several weeks). Noise from construction activities would create the potential for disturbing area visitors using facilities where construction was occurring, as well as other areas from where construction noises would be audible. This noise would be short-term and temporary, but depending on the noise level, timing, and proximity to receptors, could disturb sensitive receptors and detract from the recreation experience. These impacts could be reduced by implementation of mitigation identified below.

Activities include visitation and recreational use of Clark Canyon Reservoir and Barretts Diversion Dam facilities, as well as, maintenance activities conducted by Reclamation or its contractors to maintain facilities (such as restroom and other facility cleaning and stocking, waste collection, turf/vegetation trimming, etc.). Noise associated with maintenance is associated with vehicle and other equipment operation and other general activities. This noise would be consistent with the current and on-going management of such facilities and would not be expected to affect area users.

Alternative A would improve certain facilities and increased visitation is anticipated to occur over time. Increased visitation would create the potential for associated increases in user-generated noises. Generally, this noise would remain consistent with the type of noises that would be expected at the facilities. Increased restrictions to ORV access to certain areas could have a beneficial impact by reducing noise generated by ORV activities in certain areas.

Increases in water-based activities could occur over time as a result of both increased visitation and improved access opportunities that would occur with the implementation of Alternative A facility improvements. Such increases could result in noise impacts to shoreline and other reservoir users by increasing the number of boats and personal watercraft operating on the reservoir. These activities currently can create disturbance to reservoir visitors, especially during morning and evening hours when quiet and solitude are more often desired than at other times of the day.

Alternative A Mitigation-

The potential for noise impacts can be reduced by considering recreation use patterns when timing construction activities. It is recommended that Reclamation and its construction contractors will schedule construction activities to avoid construction during periods of anticipated high visitation. As such, construction should be scheduled to occur to avoid high-use summer periods and should occur during the spring and fall months. On a weekly basis, be scheduled to occur during weekdays and should avoid weekend construction. On a daily basis, construction should be scheduled to occur only between the hours of 7 a.m. and 6 p.m. Such scheduling considerations would reduce the severity of noise impacts.

To reduce noise impacts associated with facility maintenance activities, Reclamation and its contractors should schedule maintenance activities to occur during periods of low use, to the extent practical. It is recognized, however, that due to staffing and the need to regularly maintain facilities, certain maintenance activities would need to be done during higher use periods.

3.11.2.3 Alternative B – Noise Impacts and Mitigation

Impacts of Alternative B would be similar to those identified for Alternative A, above. Due to the increased amount of facility improvements, marina dredging or pile/mooring driving, and new facility installation that would occur under Alternative B, there would be an increased potential for construction-related noise impacts to occur. Possible pile/mooring driving to install boat docks at the marina would create a temporary noise source. Implementation of construction noise mitigation identified for Alternative A and timing any necessary pile/mooring driving to occur during periods of low visitation, would serve to reduce Alternative B construction-related impacts. Operation impacts of Alternative B would be expected to be the same or similar to those identified for Alternative A, and mitigation identified for Alternative A would also serve to reduce Alternative B impacts.

Alternative B Mitigation-

Mitigation measures for Alternative B would be the same as those identified under Alternative A (see Section 3.11.2.2)

3.12 Transportation and Access

3.12.1 Affected Environment

Regional access to Clark Canyon Reservoir and Barretts Diversion Dam is readily available to motorists from eastern Idaho and southwestern Montana via I-15. State Route 324 provides access from I-15 to the north and western areas of the reservoir, from which unpaved roads provide access to individual day-use and campground areas.

3.12.1.1 Interstate 15

Interstate-15 (I-15) is a four-lane, divided freeway that runs north/south through the project area. It is the major north/south roadway in western Montana and eastern Idaho, and provides for both

through-traffic and local traffic movement within the region. The freeway is a limited-access roadway, with ingress and egress occurring only at controlled interchanges. Through travel is maintained on the freeway year-round with snow clearing performed as necessary in the wintertime.

Exit 44, from the freeway, is located immediately east of Clark Canyon Dam. This exit is the interchange with SR 324 which runs west from this location, crossing the dam, and continuing along the northern side of the reservoir, then continuing out of the study area to points west and south. This interchange also provides access to a private campground to the east of I-15. From this location, a gravel road proceeds north for a short distance, and then turns west, passing under the freeway, and providing access to Buffalo Bridge Fishing Access on the Beaverhead River.

Exit 37, from I-15, is located south of Clark Canyon Reservoir and provides access to County Road 188 (CR 188), which runs northwest from this location.

Exit 56 is located approximately one mile north of Barretts Diversion Dam, and provides access to a frontage road that crosses I-15 and the Union Pacific railroad tracks to a gravel road that runs south to Barretts Diversion Dam.

3.12.1.2 State Route 324

State Route 324 is a two-lane, asphalt-surfaced roadway that interconnects with I-15 at Exit 44. From here, SR324 crosses Clark Canyon Dam, and continues westward through the study area. This roadway provides the most direct route of travel from I-15 to recreation facilities along the northern side of Clark Canyon Reservoir, including: Beaverhead Campground, the marina, Lewis and Clark Day Use, Camp Fortunate Overlook, Horse Prairie, Cameahwait Campground, and West Cameahwait Campground. Access to each of these recreation facilities from SR 324 is via unpaved access roads that are generally in moderate condition and passable to most passenger vehicles.



3.12.1.3 County Road 188 (Horse Prairie Cut-across Road)

County Road 188, Horse Prairie Cut-across Road, is gravel, and runs above the southwest shoreline of Clark Canyon Reservoir. The road interconnects with SR 324, approximately three miles west of the reservoir, and with I-15 near Red Rock, approximately 4 miles south of Clark Canyon Reservoir. The roadway provides access from I-15 or SR 324 to Hap Hawkins and Lone Tree Campgrounds, and South Shore and Red Rocks fishing access sites.

3.12.1.4 Recreation Facility Access Roads

As discussed above, access to individual recreation facilities at Clark Canyon Reservoir is generally via I-15 and either the SR 324 and/or CR 188, from which individual access roads provide routes to

each facility. Due to the reservoir shoreline contour, facilities along the northern shoreline of the reservoir (i.e., Beaverhead Campground, the Beaverhead marina, Lewis and Clark Day Use, Camp Fortunate Overlook, Horse Prairie, Cameahwait Campground, and West Cameahwait Campground) have generally shorter and steeper access roads, while facilities along the southwest shoreline (i.e., Hap Hawkins and Lone Tree Campgrounds, and South Shore and Red Rocks fishing access sites) have longer, but more gradually sloping access roads. All access roads are unpaved but maintained in a passable condition for most types of passenger vehicles.

There is an access road to the fishing access location on the west side of Beaverhead River just below the dam. This access road begins at SR 324 west of the dam, and winds down a steep grade to the fishing access near the base of the dam. The road is in moderate condition; however, it is subject to erosion due to water run-off. It contains sharp turns with steeply sloping sides and no guardrails or other safety improvements.

3.12.1.5 Planned Improvements

Construction of new and upgraded access roads is currently underway for the Camp Fortunate Overlook and Cameahwait areas. The current Camp Fortunate Overlook access road intersects with SR 324 at a bend in the highway and has limited visibility, which creates safety concerns. The new access road will utilize the marina access road intersection with SR 324 and runs south to the overlook, parallel to and approximately 100 feet east of, SR 324. It is anticipated that Construction of these improvements will be completed in 2004.

3.12.1.6 Access to East Side Lands

There is continuous public access from the Northern portion of (N ½ of Sec.5 T.9S. R.10W.) of Reclamation's property near the Buffalo Lodge to approximately 5 miles south to the Southern most boundary (center of Sec.28 T.9S. R.10W.). Reclamation either holds a 60-foot public access right-of-way or owns the 60-foot strip of land where the road is located. There are portions of this area where the road is undeveloped or is a two-track road.

In 1985 and 1986, the General Services Administration sold parcels of Federal land near Clark Canyon Reservoir. These parcels were owned and administered by Reclamation and located east of Interstate 15. On all parcels of land sold, a public access right-of-way was accepted and reserved unto the United States, its heirs and assigns. This public access right-of-way extends 60 feet Easterly from and paralleling the entire length of the West boundary of the sold parcels. This right-of-way was reserved to the United States, its heirs and assigns on the parcel of land located in the NE1/4SE1/4 Sec. 8 T.9S.R.10W. This public access right-of-way extends 60 feet easterly from and paralleling the entire length of the West boundary of the parcel and extending 60 feet Northerly from and paralleling the entire length of the South boundary of the parcel. This right-of-way was secured for public access and access to the repeaters.

3.12.1.7 Other Area Roads

In addition to recreation facility access roads, a small number of undesignated four-wheel-drive roads or trails are located within the Clark Canyon Reservoir area. Unauthorized travel on such roads is prohibited; however, illegal recreational use of these roads occurs on a limited basis and

prohibited use is difficult to enforce. Limited signage and fencing has been installed in some areas to educate motorists and deter illegal use of these roads.

3.12.1.8 Airports

Four airfields located in Dillon, Dell, Wisdom, and Wise River serves Beaverhead County. The Dillon, Wisdom, and Wise River facilities are owned by Beaverhead County, while the Dell Airport is owned by the State of Montana. The largest airport serving the region is the Bert Mooney Airport, which is located in Butte, approximately 70 miles north of Clark Canyon Reservoir. The Bert Mooney Airport serves several incoming and outgoing flights each day, and is a hub for interconnecting flights between smaller local airports and larger regional airports. The major airport in the county is the Beaverhead County Airport located 3 miles north of Dillon.

The facility is approximately 170 acres in size and has a 6,500-foot paved north-south runway, and a 3,600 foot paved east-west runway. Buildings on-site include hangars and a small terminal building. There are nineteen privately owned aircraft based at the Dillon Airport. Major improvements have occurred in recent years, including improvements in 1999 to the major runway, taxiway, and ramp. (Beaverhead County, 2003)

3.12.1.9 Railroads

Union Pacific Railroad runs parallel to and east of I-15 through the project area. The railroad travels north from Idaho, and terminates near Butte at an interconnection with the Montana Western Railway. Passenger service has not been identified as available along this route.



3.12.2 Environmental Consequences

Potential transportation and access impacts of the RMP alternatives under consideration include those associated with construction activities that would be required for modifying facilities, and facility maintenance and changes in traffic volume levels that may result from changes in use levels or patterns.

This assessment of potential transportation and access impacts of the RMP alternatives considers the potential for both beneficial and adverse impacts to vehicle movement and facility access. Vehicle trips associated with construction activities and reservoir maintenance activities, as well as those from the use of existing facilities were considered and are as discussed below for the various alternatives. Specific traffic volumes and vehicle trips were not determined for this assessment. Instead, a qualitative assessment of the potential for temporary and/or permanent changes in transportation facilities and access was conducted.

3.12.2.1 No Action Alternative

Under the No Action Alternative, certain improvements to access roads may occur (including those identified in Section 3.12.1). However, these improvements would not introduce any new impacts since they are typical of the types and extent of improvements normally provided in the region.

3.12.2.2 Alternative A – Impacts and Mitigation Measures

Transportation and access impacts of Alternative A would occur from construction, maintenance, and recreational use of project facilities, as discussed in the following sections.

Transportation and Access – Construction traffic would use area roadways and access roads during construction of new facilities and improvements to existing facilities. Alternative A improvements are discussed in Section 2, and include roadway improvement/modifications at existing day-use and campground sites and installation of additional amenities at certain locations including: pressurized water systems, shelters, and designated parking/camp sites. Construction would require the use of vehicles for worker, equipment, and supplies transport, and construction activities would add to existing traffic volumes on area roadways. Construction traffic levels would be temporary and would no longer be present once the facility modifications have been made (construction durations of any one facility modification could range from one or two days, to several weeks).

Traffic and activities associated with facilities construction would create the potential for causing traffic delays or access limitations near the work area. These delays would be short-term and temporary, and would not block access. The generally low volumes of traffic on area roadways and access roads also limit the potential impacts. In addition, construction mitigation measures discussed below would further reduce the potential for such impacts to occur.

During construction near roadways, the contractor(s) would be required to retain traffic routing options along through-roads by maintaining at least one lane in each direction and would be required to consider feasible options for retaining access to facilities during construction. All construction activities affecting roadways would be signed and flag-persons would be placed to guide traffic as necessary for public and worker safety. Implementation of these scheduling and construction practice considerations would serve to ensure that there would be no transportation impacts during construction.

Alternative A Mitigation-

The potential for noise impacts related to construction can be reduced, by considering recreation of use patterns when timing construction activities. It is recommended that Reclamation and its construction contractors will schedule construction activities to avoid construction during periods of anticipated high visitation. As such, construction would be scheduled to occur to avoid high-use summer periods and could instead be conducted during the spring and fall months. On a weekly basis, construction could be scheduled to occur during weekdays and would avoid weekend construction. On a daily basis, construction could be scheduled to occur only between the hours of 7 a.m. and 6 p.m. Such scheduling considerations would reduce noise impacts.

Traffic impact from long term activities include visitation and recreational use of Clark Canyon Reservoir and Barretts Diversion Dam facilities, as well as maintenance activities conducted by Reclamation or its contractors to maintain facilities (such as restroom and other facility cleaning and stocking, waste collection, turf/vegetation trimming, etc.). Traffic associated with maintenance activities would include staff trips to and activities at various facilities requiring maintenance. Under Alternative A, these vehicle trips would be similar to current and on-going management of such facilities and, when considered in association with existing low traffic volumes within the area, would not result in any delays in traffic movement or facility access.



Alternative A would improve certain facilities and increased visitation is anticipated to occur over time. Increased visitation would create the potential for associated increases in visitor vehicle trips on area roadways and facility access roads. Due to the current low volumes of traffic on area roadways, increases in visitation over time are not expected to affect transportation or access within the project area. As discussed in Section 3.12.1, the improvements underway at the access road include the Camp Fortunate Overlook and Cameahwait use areas. Alternative A also includes improvement of the access road to the fishing access site below Clark Canyon Dam, which would improve safety and traffic movement and is considered a beneficial impact of Alternative A. Other access road improvements that could occur under Alternative A would also be considered to have a beneficial effect on access.

All new and modified facilities constructed under the RMP alternatives would be designed for compliance with all applicable regulations pursuant to the ADA. Certain facilities within the project area do not meet current ADA guideline requirements. On-going facility improvements and installations by Reclamation have been in compliance with ADA guidelines. The increased level of facility modifications under Alternative A would result in a beneficial impact on accessibility for disabled persons by resulting in additional facilities being standardized to ADA guidelines.

3.12.2.3 Alternative B – Impacts and Mitigation Measures

Transportation and Access – Impacts of Alternative B would be similar to those identified for Alternative A above. Due to the increased amount of facility improvements and new facility installation that would occur under Alternative B, there would be an increased potential for construction-related traffic impacts to occur.

Longer-term impacts of Alternative B would be expected to be the same or similar to those identified for Alternative A. However, operation of the marina could increase the total volume of user vehicle trips on SR 324 between I-15 and the marina entrance. These increased vehicle trips could create minor, temporary traffic delays as trucks enter and depart the marina. The dredged marina and docks would improve boater access, and is considered a beneficial impact under Alternative B.

Alternative B would improve facilities and access for disabled persons in a manner similar to that described under Alternative A. Additional beneficial impacts would occur under Alternative B, however, as a result of increase facility modifications under this alternative.

Alternative B Mitigation-

Implementation of construction traffic mitigation identified for Alternative A would also serve to reduce Alternative B construction-related impacts.

3.13 Public Services and Utilities



This section describes the existing public services in Beaverhead County, including those that contribute to activities associated with the operation of Clark Canyon Reservoir and Barretts Diversion Dam. Potential impacts could include increased demands on public services and utilities as a result of implementation of the RMP alternatives under consideration.

3.13.1 Affected Environment

Clark Canyon Reservoir and Barretts Diversion Dam are located in Beaverhead County, Montana. Public services within the area include those offered by public agencies as well as private companies. The following sections discuss a number of public services provided by or provided for areas within Beaverhead County.

3.13.1.1 Beaverhead County Police Protection

Additional office space is provided for the Justice Court and staff and space is also provided for the Montana Driver's licensing agent and staff. (Beaverhead County, 2003)

Incorporated Cities – The City of Dillon contracts with Beaverhead County for dispatch services. Consequently, calls for service in the City of Dillon are dispatched through the Beaverhead County 911 Emergency Center. Dillon has seven full-time officers and three patrol units. Lima contracts for law enforcement services through the Beaverhead County Sheriff's Office.

State and Federal Agencies – In addition to local enforcement agencies, there are a number of State and Federal agencies that provide services and coordinate with the Beaverhead County Sheriff's Office. The Montana Highway Patrol provides traffic enforcement for all state highways (primarily I-15 in Beaverhead County) and county roads. MFWP, the United States Forest Service and the BLM provide wardens and law enforcement officers to enforce regulations on public land. The Beaverhead County Sheriff's Office contracts with both the U.S. Forest Service for patrol functions on federal lands and the Bureau of Reclamation for investigations and patrol functions in other areas of their jurisdiction. (Beaverhead County, 2003)

Beaverhead County Search and Rescue – The County Search and Rescue is a 60 member volunteer organization that operates under the direction of the Sheriff’s office.

According to the County, as the needs for service in all areas of operation increase, so will the need for additional staffing. The facilities currently being utilized will need to be enhanced in the near future. Within the next 10 years, the need for larger administrative facilities will have to be addressed. As jail regulations become more stringent or mandatory, the present detention center will most likely not be able to come into compliance. Other areas of concern will be additional jail staff and patrol staff to meet the needs of the public. (Beaverhead County, 2003)

3.13.1.2 Emergency Medical Services

Beaverhead Emergency Services, Inc. (Beaverhead EMS) provides emergency response to the City of Dillon and the surrounding area. Beaverhead EMS has three advance life support level ambulances.

The Wisdom Volunteer Fire Department also operates an ambulance. The Wise River Volunteer Fire Company provides full ambulance services with EMT’s. The Grant Quick Response Unit provides emergency response and non-transport emergency medical services to the Grant/Horse Prairie area. The Lima Volunteer Fire Department provides ambulance service in the southern portion of Beaverhead County. Air ambulance and life flight services are available out of Idaho Falls and Missoula. (Beaverhead County, 2003)

3.13.1.3 Medical Facilities

The nearest medical facility to Clark Canyon Reservoir and Barretts Diversion Dam is Barrett Memorial Hospital, which is a 31-bed medical facility located in Dillon. Medical services available include intensive care, surgery, in-patient and out-patient care, physical therapy, laboratory services, x-ray/ultrasound/CT/MRI, emergency services, and other related services. (Beaverhead County, 2003)

3.13.1.4 Volunteer Fire Districts and Companies

Three organized fire districts and two fire companies provide fire protection throughout the County. Volunteers man all of these organizations. The districts are largely funded with property tax revenue, although all of the departments and fire companies rely heavily on donations, fund raisers, grants, and support from the Natural Resources and Conservation (DNRC) which, in most cases, is responsible for wild land fire protection. While rural fire districts or fire companies cover most of the county, there are portions of the county that do not have adequate protection for private property. In these areas, the County Fire Warden (Beaverhead County Sheriff) has jurisdiction and authority. (Beaverhead County, 2003)

The Beaverhead County Wild land Fire Management Plan, updated in 1999, provides for cooperative and mutual aid agreements between all of the volunteer departments and companies in the county and the DNRC and USFS. The Beaverhead County Disaster Plan allows for mutual aid between all of the fire departments and companies for non-wild land situations.

A number of challenges make residential fire fighting difficult for the Volunteer Fire Departments (VFDs), particularly in the wild land residential interface. Lack of defensible space, limited water supplies and building materials that are not fire resistant make it difficult and dangerous for volunteers to adequately provide protection in these areas.

3.13.1.5 Solid Waste

The Beaverhead County Solid Waste District operates the Beaverhead County Landfill located five miles west of Dillon. The landfill is licensed for municipal waste and provides service to Beaverhead and Madison Counties, and parts of Silver Bow and Deer Lodge Counties.

The existing landfill has capacity until the year 2063 based on current volumes of waste of approximately 11,000 tons per year, and the landfill has the capability for future expansion. (Beaverhead County, 2003)

3.13.1.6 Electric Utilities

Two electric utility companies serve Beaverhead County. The Montana Power Company serves an area of 97,540 square miles, including areas within Beaverhead County, with a total of over 280,000 customers. The Montana Power Company has a total capacity of approximately 100,000 kilowatts (kW) with a peak demand of approximately 15,000 kW. The second electric utility that serves portions of the county is the Vigilante Electric Co-op. Vigilante Electric has a system capacity of approximately 30,000 kW, and serves rural areas including Melrose, Glenn, Divide, Wise River and Wisdom. (Beaverhead County, 2003)

3.13.2 Environmental Consequences

Potential impacts to public services or utilities from the RMP alternatives under consideration could occur if additional public services or utility services were required by the management activities associated with the RMP that exceed the current ability for such services to be provided.

To determine impacts to public services and utilities, the increased requirements for public services and utilities that could be associated with implementation of the RMP alternatives were considered. These increases were then compared to the existing levels of service and the capacity for additional levels of services to be provided to meet increased demands.

3.13.2.1 No Action Alternatives

Under the No Action Alternative, increased demands for public services and utilities will likely continue as a result of future increases in visitation. Such increases will likely take place even in the absence of facility improvements envisioned under Alternatives A and B. Any increases create additional demands on law enforcement and emergency services, however, the levels of increased use are not likely to strain the existing services beyond their current capacity.

3.13.2.2 Alternative A Impacts and Mitigation

Public Services and Utilities Impacts – The potential for public service or utility service impacts from Alternative A would be associated with increased demand for services as a result of increased public services and utility requirements. These increased requirements could be associated with the operation of new or improved facilities and a higher level of visitation that may occur over time at Clark Canyon Reservoir and Barretts Diversion Dam. Impacts are discussed in the following sections.

Potential Increases in Law Enforcement and Emergency Services Requirements – Increased Visitation at Clark Canyon Reservoir and Barretts Diversion Dam could result in a corresponding increase in incidents requiring emergency medical or law enforcement response. It is, however, expected that relatively minor increases could be accommodated through existing levels of staffing and services available. [However, as discussed in Section 3.13.1, certain services, including Sheriff's Department administration and detention facilities, are currently approaching their maximum service capacities and could need to be expanded to provide additional services if visitor numbers have more than doubled in the short term.]

Increased demands placed on these services and facilities as a result of increased visitation to Clark Canyon Reservoir and Barretts Diversion Dam could, therefore, have an impact on the provision of law enforcement and emergency services within Beaverhead County. This impact could be reduced or avoided with implementation of the following mitigation measures.



Increased facility requirements and increased visitation would result in increases in electricity demand (associated with improvements such as increases in lighted facilities, increases in electrical pumping for drinking water from electric wells, etc.) and disposal requirements for solid waste generated at recreation facilities. Such increases, however, are expected to be relatively minimal, and current electric utility services and landfill capacities are expected to be able to meet these increases. Therefore, no impacts to electric utility or waste disposal services are anticipated.

Public Services and Utilities Mitigation Measures – To minimize impacts to law enforcement and emergency services providers, Reclamation should continue to closely coordinate with these providers to provide early identification of increases in potential demands that would need to be accommodated.

In addition, Reclamation will include information to post on visitor information signs that provide information safety at recreational facilities to minimize the potential for injuries and illegal activities that may necessitate emergency response and enforcement. Such efforts could include developing and distributing brochures with information concerning safety and legal requirements/prohibitions associated with boating/PWC operation, camping and camp fires, firearm use and hunting, ORV/snowmobile operation, ice fishing, and other common activities.

3.13.2.3 Alternative B – Impacts and Mitigation

Potential public services and utilities impacts under Alternative B would be similar to those identified for Alternative A. However, due to the increased level of facility improvements anticipated under Alternative B and potential increases in visitation as a result, increased demands on law enforcement, emergency services, and utility and waste disposal services would be expected.

Potential increases in demands for law enforcement and emergency services would create a similar potential for impacts, as described under Alternative A. Potential increases in utility and waste disposal requirements would not exceed available capacities and services, and no impacts are anticipated.

Alternative B Mitigation-

Mitigation identified for this impact under Alternative A would also serve to reduce or avoid this impact under Alternative B.

3.14 Socioeconomic Factors (Environmental Justice)

Executive Order 12898, Federal Actions to Address Environmental Justice on Minority Populations and Low-Income Populations, signed by the President February 11, 1994, directs Federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of Federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. To address this directive, the potential for impacts of the project to be disproportionately borne by low-income or minority populations is also identified herein.

Social and economic impacts (both beneficial and adverse) could result from implementation of the RMP alternatives under consideration. This section provides information on existing social and economic conditions of the study area and identifies potential impacts.

3.14.1 Affected Environment

This section discusses the existing economic and social setting of the region within which Clark Canyon Reservoir and Barretts Diversion Dam are located. Much of the information contained herein was compiled by Reclamation in a Recreation Management Conditions Assessment (Reclamation, 2002) completed in August of 2002. The baseline socioeconomic data provides information necessary to assess potential social and/or economic impacts of the resource management plan alternatives under consideration, and to provide information concerning the potential for such impacts to be disproportionately borne by low-income or minority populations that may exist within the project area.

3.14.1.1 Regional Setting

Clark Canyon Reservoir serves as a regional recreation resource for southwest Montana and northeast Idaho. Day-use visitors are most likely to come from locations within one to two hours drive time of the reservoir, whereas overnight visitors are likely to come from locations of up to 8 to

10 hours drive time away. Estimated driving distances and drive times for selected cities in the region are shown in Table 3.14-1.

Table 3.14-1 Estimated Driving Distances and Driving Time to Clark Canyon Reservoir from Selected Cities		
City	Distance (miles)	Driving Time (hours: minutes)
Billings, MT	310	4:38
Bozeman, MT	168	2:33
Butte, MT	84	1:20
Dillon, MT	19	:20
Helena, MT	151	2:20
Missoula, MT	192	2:50
Idaho Falls, ID	128	2:00
Pocatello, ID	175	2:40
Source: Map Quest		

3.14.1.2 Population



Beaverhead County is located in southwest Montana, and shares its southern and western border with the state of Idaho. The county covers approximately 5,543 square miles. The county is sparsely populated with an average population density of less than two people per square mile. In 1990 the population was 8,424 and by 2000 the population had grown to 9,202. In 2000, Beaverhead County contained about one percent of Montana's total population of 902,195.

The town of Dillon, located approximately 19 miles north of Clark Canyon Reservoir, is the county seat, and in 2000 had a population of 3,752. Dillon is the site of Western Montana College, of the University of Montana, with a student population of approximately 1,100 during the school year. Montana and Idaho are geographically large states with relatively low populations. The year 2000 populations of selected locations within or near Beaverhead County are provided in Table 3.14-2.

Table 3.14-2 Populations of Selected Counties and Cities	
County or City	Population (year 2000)
Montana Counties	
Beaverhead	9,202
Broadwater	4,385
Deer Lodge	9,417
Gallatin	67,831
Granite	2,830
Jefferson	10,049
Lewis and Clark	55,716
Madison	6,851
Missoula	95,802
Powell	7,180
Ravalli	36,070
Silver Bow	34,606
Montana Cities	
Billings	89,847
Bozeman	27,509
Butte	2,899
Helena	25,780
Missoula	57,053
Idaho Counties	
Bingham	41,735
Bonneville	82,522
Butte	2,899
Clark	1,022
Fremont	11,819
Jefferson	19,155
Lemhi	7,806
Madison	27,467
Teton	5,999
Idaho Cities	
Idaho Falls	50,730
Pocatello	51,466
Source: U.S. Census Bureau 2001a	

3.14.1.3 Income

In 1999, Beaverhead County had a per capita personal income (PCPI) of \$20,493, and the county ranked 20th out of 56 counties in Montana. The PCPI was 95 percent of the Montana state average of \$21,997, however, only 73 percent of the national average of \$28,546. Montana's 1999 PCPI was ranked 48th in the United States (Bureau of Economic Analysis).

Major Industries by Earnings – In 1999, Beaverhead County residents earned a total of \$112,609,000. This amount was 0.89 percent of the total for the entire state of Montana. The largest industrial sectors of Beaverhead County were government, services, farming, and retail trade. Services, government, and retail trade were the largest segments of the state's economy when measured by earnings. Table 3.14-3 lists earnings by industry for Beaverhead County and the state of Montana.

Sector	Beaverhead County		State of Montana	
	Amount of Earnings	Percent of Total	Amount of Earnings	Percent of Total
Farm	\$12,205,000	10.8	\$346,696,000	2.7
Agricultural, Forestry, and Fishing	\$1,109,000	1.0	\$104,800,000	0.8
Mining	[confidential]	[confidential]	\$287,003,000	2.3
Construction	\$7,122,000	6.3	\$952,317,000	7.5
Manufacturing	\$2,105,000	1.9	\$920,290,000	7.3
Transportation and Public Utilities	[confidential]	[confidential]	\$1,009,496,000	8.0
Wholesale Trade	\$2,695,000	2.4	\$633,187,000	5.0
Retail Trade	\$11,978,000	10.6	\$1,492,441,000	11.8
Finance, Insurance, and Real Estate	\$9,712,000	8.6	\$744,002,000	5.9
Services	\$22,057,000	19.6	\$3,413,936,000	27.0
Government	\$29,740,000	26.4	\$2,728,937,000	21.6
Total Earnings	\$112,609,000	100.0	\$12,633,105,000	100.0
Source: U.S. Census Bureau, 2001b				

Major Industries by Employment – Total employment in Beaverhead County accounted for 0.95 percent of the total employment in the state of Montana in 1999. The largest sectors were services, government, retail trade, and farming. These industries accounted for almost 80 percent of all jobs in the county. Table 3.14-4 lists 1999 employment by sector for Beaverhead County and the state of Montana.

Sector	Beaverhead County		State of Montana	
	Number Employed	Percent of Total	Number Employed	Percent of Total
Farm	731	14.0	32,122	5.8
Agricultural, Forestry, and Fishing	132	2.5	8,554	1.5
Mining	[confidential]	[confidential]	6,498	1.2
Construction	297	5.7	34,527	6.3
Manufacturing		2.3	29,287	5.3
Transportation and Public Utilities	[confidential]	[confidential]	27,327	4.9
Wholesale Trade	156	3.0	20,784	3.8
Retail Trade	1,003	19.2	104,951	19.0
Finance, Insurance, and Real Estate	372	7.1	36,927	6.7
Services	1,409	26.9	167,868	30.4
Government	1,011	19.3	83,431	15.1
Total Employment	5,232	100.0	552,276	100.0

Source: Bureau of Economic Analysis

Unemployment – The unemployment situation in Beaverhead County has been better than that of the state as a whole. Table 3.14-5 lists unemployment rates for Beaverhead County, the state of Montana, and the U.S.

Area	1990	1995	2000
Beaverhead County	4.8%	4.3%	4.0%
Montana	6.0%	5.9%	4.9%
United States	5.6%	5.6%	4.0%

Source: Bureau of Economic Analysis

Poverty – From 1989 through 1997 the poverty rate for Beaverhead County was consistently higher than the rates for Montana and the U.S. Table 3.14-6 lists poverty rates for Beaverhead County, Montana, and the U.S. The poverty rate for Beaverhead County declined by one percentage point in 1997. However, this rate remained more than one percentage point higher than Montana’s rate and more than three points higher than the national average.

Area	1989	1993	1995	1997	1999
Beaverhead County	18.6%	16.8%	17.7%	16.7%	[na]
Montana	16.1%	15.2%	15.8%	15.5%	15.6%
United States	12.8%	15.1%	13.8%	13.3%	11.8%
na = not available Source: U.S. Census					

Year	1989	1993	1995	1997	1999
Income	\$8,343	\$9,728	\$10,259	\$10,805	\$11,214
Source: U.S. Census *Household poverty levels are determined annually by the U.S. Department of Health and Human Services (HHS). Poverty rates in this table are those published by the U.S. Census based on HHS poverty levels and by consideration of household income, age, family unit size, and number of children under 18.					

Regional Baseline Economic Conditions – In association with the Recreation Management Conditions Assessment (Reclamation, 2002), a computer-based modeling software program was used to present baseline economic conditions and calculate estimated contributions of Clark Canyon Reservoir to the local and regional economy. The IMPLAN³ input-output model, using 1996 data for Montana, identified the baseline economic conditions of total industrial output, employment, and labor income for Beaverhead County (see Table 3.14-8). The Beaverhead County output (in 1996 dollars) was \$345,335,000, which amounted to approximately 1 percent of the total output for the state of Montana (\$33,971,919,000). Only 5,218 of the state’s 523,325 jobs were located in Beaverhead County in 1996. Employee income for the county was approximately \$95,095,000; less than one percent of the state total of \$9,953,882,000.

Contribution of Recreation at Clark Canyon Reservoir to the Local Economy – In order to estimate the contribution recreation at Clark Canyon Reservoir adds to the Beaverhead County economy, data on visitor use and recreation-related expenditures are necessary.

³ IMPLAN is the Impact Analysis for Planning model software originally developed for the U.S. Forest Service and maintained and updated by Minnesota Implan Group, Inc. (MIG).



The five-year average for visitation approximates 59,000 recreation visits annually. However, only those visitors who live outside Beaverhead County and purchase goods and services in Beaverhead County contribute additional dollars to the county's economy. This is based on the assumption that if recreation opportunities were not available at Clark Canyon Reservoir residents would spend the same amount of money on other recreational activities within Beaverhead County. To account for the regional versus out-of-region visitor use, the annual visitor use figure is reduced to 50,000 recreation visits per year.⁴

Specific data on expenditures by visitors to Clark Canyon Reservoir are not available. Therefore, a benefits transfer procedure provided expenditure data for this analysis. Such data was collected and developed for Canyon Ferry Reservoir, which is located in Broadwater and Lewis and Clark counties. Canyon Ferry is a larger reservoir, but offers similar opportunities for boating, camping and fishing. Both reservoirs are in Montana and share overlapping market areas (i.e., they both draw visitors from some of the same counties in Montana). For the purposes of this analysis, the Canyon Ferry expenditure patterns and data are assumed to be similar and representative of the out-of-region Clark Canyon visitor expenditures.

In addition, the Canyon Ferry expenditure data were collected and developed in such a manner that expenditures by economic sectors were identified. This fact allows the use of this data with IMPLAN to estimate the financial contribution that recreation at Clark Canyon Reservoir adds to the economy of Beaverhead County (i.e., approximately \$252,500 in direct expenditures due to approximately 50,000 recreation visits originating from outside the region).

Total output related to recreation use at Clark Canyon Reservoir was approximately \$335,000 in 1996 dollars. This figure includes direct impacts⁵, indirect impacts⁶, and induced impacts⁷. Recreation supports approximately nine jobs and provides \$142,500 in labor income, as listed in Table 3.14-8. This contribution is less than one-fifth of one percent of the total in Beaverhead County.

⁴ p. 71 of the Recreation Management Condition Assessment, Clark Canyon Reservoir and Barretts Diversion Dam. Bureau of Reclamation, Montana Area Office, August, 2002.

⁵ Direct impacts are the recreation-related out-of-pocket expenditures by visitors from outside the region that cause the change in output, employment, and income in the region.

⁶ Indirect impacts are the changes in output, employment, and income caused by industries/firms purchasing goods and services from other industries within the region.

⁷ Induced impacts are the changes in output, employment, and income caused by new household income generated by the direct and indirect expenditures in the region.

Economic Measure	Clark Canyon Reservoir	Beaverhead County	Clark Canyon Reservoir Percent of County
Industry Output	\$335,456	\$345,335,000	0.10%
Employment	9.3 jobs	5,218 jobs	0.18%
Labor	\$142,569	\$95,095,000	0.15%
Source: IMPLAN and Bureau of Reclamation			

Net Benefits of Recreation – Data limitations require certain generalizations and assumptions to estimate the net benefits of recreation⁸ for Clark Canyon Reservoir. First, since fishing is the most popular activity of visitors, it is assumed that all visitors participate in this activity for at least some part of their visit to the reservoir and that the value for fishing will adequately represent the value for total recreation use by individuals at the reservoir. (A visitor to Clark Canyon Reservoir may participate in several different activities during the course of their visit, however, fishing has been selected as the proxy for all activities for the purposes of simplifying the analysis and assumptions.) The second assumption is that the most recent five-year average of visitation and use represents a reasonable expectation of future annual use (i.e., 59,000 recreational visits per year).

Benefit transfer research identified the average net benefits for fishing within the intermountain region, which includes Montana, as being \$40.82 per person per day in 1996 dollars (Rosenberger and Loomis, 2000). Accounting for inflation (using the Consumer Price Index from the Bureau of Labor Statistics) brings this value up to approximately \$46 in 2001 dollars. Therefore, the estimated annual value of recreation at Clark Canyon Reservoir is approximately \$2,714,000 in 2001 dollars.

Racial Data – Executive Order 12898, Federal Actions to Address Environmental Justice on Minority Populations and Low-Income Populations, signed by the President, February 11, 1994, directs Federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of Federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. As such, an assessment of potential disproportional or discriminatory effects of the project is necessary for the project. Racial data is provided here to present baseline data associated with the assessment of potential environmental justice impacts that may occur as a result of the Resource Management Plan alternatives under consideration. Table 3.14-9 provides racial composition data for Beaverhead County based on year 2000 census data.

⁸ Net benefits or value of recreation equals the amount of money an individual would be willing to pay over and above the amount they actually do pay to participate in a recreational activity. Economists also refer to this amount as consumer surplus.

Race/Ethnicity	Total Individuals	Percent of Total
White	8,821	95.86
Black	17	0.18
American Indian and Alaska Native	134	1.46
Asian, Native Hawaiian/Pacific Islander	21	0.23
Other race	100	1.09
Two or more races	109	1.18
Total	9,202	100
<i>Hispanic or Latino of any race</i>	<i>246</i>	<i>2.67</i>
Source: U.S. Census Bureau (as compiled by Census & Economic Information Center, Montana Department of Commerce, September 2001).		

3.14.2 Environmental Consequences

Potential socioeconomic impacts of the RMP alternatives under consideration include those associated with expenditures for modifying facilities, increases in staffing levels associated with maintenance that could be necessary from increased visitation over time and operation of the marina, and impacts to visitors that may be associated with potential fees for facilities use. Environmental justice issues may arise if adverse impacts of the project were to occur in a disproportionate manner to low-income or minority populations.

To determine potential socioeconomic impacts, existing economic and social characteristics of the project area and region were identified (as presented in Section 3.14.1). These conditions were then assessed in consideration of elements and actions proposed under the RMP alternatives that could influence or otherwise affect social or economic conditions of the study area. Determinations of specific quantified impacts of the project alternatives was not attempted for this assessment because the potential impacts (both beneficial and adverse) are depended upon many unknown factors that may occur over time. However, a qualitative assessment of the impacts that may occur from various components of the RMP alternatives under consideration is presented and provides the general magnitude of impacts that may be anticipated as a result of various management actions.

Potential impacts on low-income and minority populations (i.e., environmental justice impacts) were assessed qualitatively through consideration of the potential for project-related impacts (including socioeconomic impacts, as well as, other resource impacts identified in this document) to be disproportionately borne by low-income and minority populations within the region and local area.

3.14.2.1 No Action Alternative

Under the No Action Alternative, maintenance and facilities improvements would occur more slowly than under the project alternatives. The benefits to the local economy of increased expenditures and revenue from enlarged and improved facilities may not be realized under the No Action Alternative.

3.14.2.2 Alternative A – Impacts and Mitigation

Socioeconomics and Environmental Justice Impacts – The potential for socioeconomic impacts from Alternative A would be associated with increased expenditures necessary for modifying existing facilities or the construction of new facilities at Clark Canyon Reservoir and Barretts Diversion Dam, increased employment that could occur as a result of increased reservoir operations and maintenance staff, and impacts to visitors that may be associated with potential fees for facilities use.

Changes in Operations and Maintenance Expenditures and Effects on Local Economy – Reclamation’s annual operations and maintenance budget for managing recreation facilities at Clark Canyon Reservoir and Barretts Diversion Dam is approximately \$250,000. This budget provides for one full-time Reclamation staff position to oversee seasonal staff and coordinate recreation facilities management and provides funding for seasonal staff and contracted maintenance services. The annual operating budget is obtained through federally authorized funding each fiscal year.



Red Rock Creek

Facility improvements that would be made under Alternative A would require increased levels of federal funding and subsequent Reclamation expenditures. The improvements proposed under Alternative A would only be made if federal funding was available and authorized and a managing partner secured. As such, the additional expenditures would not be considered a impact to Reclamation’s operating budget, because the operating budget would increase in any given year to accommodate the planned facilities improvements.

The increased expenditures would provide a beneficial impact to the local economy by increasing local employment and income through increased staffing and purchase of services and supplies necessary for the improvements. In addition, increases in visitation over time that may be associated with improved facilities, and therefore greater user attraction, would contribute a corresponding benefit to generating income and employment to the local economy.

As shown in Table 3.14-7, expenditures by reservoir visitation account for only a small portion of total Beaverhead County direct and indirect industry output, jobs, and employment income. As such, while this would be a beneficial impact to the local economy, the magnitude of the benefits would be relatively small in comparison with overall County industry output, jobs, and employment income.

Potential Access and Use Fees – Reclamation does not currently have the authority to charge use fees at recreation facilities within the project area. With the exception of the marina, the potential for use fees to be charged at recreation sites is low and would be dependent upon Reclamation entering into an agreement with a managing partner for all recreation sites within the project area that would have the authority to charge user fees.



Marina Fees - Revenue Source Benefits – Under Alternative A, there would be an increased likelihood of Reclamation securing a concessionaire to operate the marina. In the event a private concessionaire were to operate the marina, the concessionaire would have the capacity to and would likely implement a use fee for boat launching, boat storage at marina docks, camping, and RV hook-ups. Use fees that could be implemented for operation of the marina would provide a revenue source for the concessionaire and it is reasonable to assume that much of the income generated would contribute to the local economy through subsequent

expenditures by the concessionaire for services, employees, equipment, and other items necessary for marina operation. Additionally, the presence of the marina and the amenities offered would likely provide an increased attraction to the reservoir and could result in a corresponding increase in visitation and user expenditures providing benefits similar to and in addition to those discussed in the preceding section.

Marina Fees - User Impacts – The potential for the implementation of user fees at the reservoir could be considered to have an adverse affect on some reservoir users as the use of marina facility would be a new personal expense. However, the reservoir offers numerous day-use areas, campground, and boat launch opportunities that would remain available for use at no charge. These options provide an alternative choice for users to avoid the fee at the marina.

Comprehensive Fee System Impacts – As discussed, a comprehensive project area fee system is not anticipated. However, the solicitation of a managing partner under Alternative A could ultimately result in the identification of a managing agency that would provide operation and management services at project area recreation sites. In the event that Reclamation were to enter into a managing partner agreement for reservoir-wide facilities management, it is likely that the managing partner would implement a fee system. In the event that a user fee system were implemented for all recreation sites at Clark Canyon Reservoir and/or Barretts Diversion Dam, the potential for perceived and real financial effects on visitors would exist. The likelihood of this occurrence is currently unknown and it is not possible to assess the potential impacts of a comprehensive fee system at this time. However, the mitigation discussed below could serve to help address this potential impact as necessary in the future.

Environmental Justice Issues – Alternative A would not create project-related impacts to occur in a disproportionate manner to low-income and minority populations. Adverse impacts to natural resources and on social and economic character of the project area would be minimal, and the project would generally result in beneficial impacts. As discussed in Section 3.14.1, the minority population of Beaverhead County comprises a very small percentage of the total population (see Table 3.14-9), and although the Beaverhead County poverty rate is somewhat higher than the national average (see Table 3.14-6), no disproportionate adverse impacts to low-income individuals would be expected from the project.

Mitigation Measures – No environmental justice issues have been identified, and no mitigation measures are necessary.

Socioeconomics and Environmental Justice – In the event that Reclamation considers entering into an agreement with a managing partner for the management of recreation sites in addition to the marina, Reclamation (or the managing partner) could investigate the potential to implement a fee system and conduct an assessment of impacts of the fee system on visitors. In the event that impacts are identified⁹, Reclamation would identify means of reducing the impacts to the extent practicable.

3.14.2.3 Alternative B Impacts and Mitigation

Socioeconomic and Environmental Justice Impacts – Impacts under Alternative B would be similar to those identified for Alternative A. However, due to the increased level of facility improvements anticipated under Alternative B, this alternative would result in corresponding increased benefits to the local economy associated with increased operations and maintenance expenditures as compared to Alternative A. Revenue and use fee impacts associated with marina operations would be similar to those identified for Alternative A, however, under Alternative B, there would be an increased likelihood of securing a marina concessionaire due to the increased improvements at the marina site under Alternative B. As with Alternative A, no environmental justice issues would be expected under Alternative B.



The potential for Reclamation to secure a managing partner (as discussed for Alternative A) would be greatly increased under Alternative B, and the associated potential for a comprehensive fee system would therefore also increase. In the event that such a fee system is considered, the comprehensive fee system mitigation, described under Alternative A, would also serve to address this potential impact under Alternative B.

3.15 Cumulative Impacts

A cumulative impact under NEPA (40 CFR 1508.7) is an impact that results from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time. This section discusses potential cumulative impacts that may result from the project, and as such considers the project-specific impacts identified in sections 3.1 through

⁹ Note that although a fee system would create out-of-pocket expenditures for visitors, the overall benefits of a managing partner and facility improvements that may be possible through the collection of use fees could be found to result in a net beneficial impact.

3.14, above, in conjunction with other past, present and reasonably foreseeable actions within the project area.

Past and current actions or activities within the project area include those associated with the Reclamation's management of recreational and other resources at Clark Canyon Reservoir and Barretts Diversion Dam. In addition, actions by other agencies and private landowners within the project area contribute impacts which must be assessed. These actions include periodic activities such as routine maintenance of area roadways, grazing on lands within the project area, prescribed burns or wildfires within the region, and land use and resources management decisions associated with lands and resources adjacent to Reclamation lands. The actions and activities are considered by combining their effects with project-specific impacts to result in cumulative impacts.

The following sections summarize the results of the cumulative impact assessment for each resource. The discussion in the following sections should be considered generally applicable to both Alternative A and Alternative B, unless noted otherwise.

Geology and Soils – Geology and soils impacts of the project would be associated primarily with potential short-term increases in soil erosion during construction of new or modified facilities. Other actions within the project area such as roadway improvements or development of facilities (residences or other structures) on adjacent lands may also require land disturbance that would create the potential for additional increased erosion or sedimentation. However, these impacts would also be short term, would occur on land other than those within the project area, and would not likely be concurrent with those of the proposed project. In addition, soil erosion impacts of the project would be mitigated through re-vegetation and adequate erosion control measures. As such, no adverse cumulative impacts associated with soil erosion would occur as a result of the project.

No cumulative soils or geology impacts would be expected to occur as a result of potential project-specific effects on soils from grazing on Reclamation lands adjacent to Clark Canyon Reservoir. Project-specific impacts would be specific to lands under Reclamation's jurisdiction and no other actions are anticipated that would contribute cumulatively to such impacts.

Air Quality – Potential air quality impacts of the project would be associated with short-term construction activities, and would be lessened through the implementation of mitigation measures identified in Section 3.2. Air quality impacts that could contribute cumulatively to project-specific impacts include vehicle emissions on area roadways and other emission sources. No new emission sources have been identified in the project area that would contribute cumulatively to the minimal project-specific air quality impacts, and therefore, no cumulative air quality impacts would be anticipated as a result of the project.

Water Quality – Potential water quality impacts of the project would be associated with short-term construction activities, and would be lessened through the implementation of mitigation measures identified in Section 3.3. The analyses of project-specific water quality impacts in Section 3.3 considered existing water quality. Therefore, it incorporates ongoing water quality impacts of other past and present projects. No new sources of water quality impacts have been identified in the project area that would contribute cumulatively to the minimal project-specific water quality impacts, and therefore, no cumulative water quality impacts would be anticipated as a result of the project.

Vegetation – Due to the relatively minor disturbance that would be associated with the project, substantial cumulative effects to vegetation are not anticipated. Increased noxious weed control in Alternatives A and B would be beneficial and would not contribute to adverse cumulative effects. Grazing could have substantial effects on vegetation. However, because grazing test plans proposed for Clark Canyon would be designed to enhance the vegetation and provide beneficial effects, no cumulative impacts are anticipated.



Fish and Wildlife Resources – Due to the relatively minor disturbance that would be associated with the project, cumulative effects on habitat are not anticipated. Increased noxious weed control in Alternatives A and B would be beneficial and would not contribute to adverse cumulative effects. Grazing would have effects on vegetation and wildlife habitat. However, because grazing test plans proposed for Clark Canyon would be designed to enhance the native plant community and provide beneficial effects to the wildlife habitat, no adverse cumulative impacts are anticipated.

Threatened and Endangered Species – Past and current actions include past grazing in most of the reservoir area, the construction and use of the Clark Canyon Reservoir and campgrounds, the construction and use of the roadway system and railroad, current grazing on adjacent lands and other ranch activities in the adjacent lands. Reasonably foreseeable future actions include continued ranching on adjacent lands and the proposed actions. The BLM is also revising its management plan for lands including those adjacent to Clark Canyon Reservoir. The BLM management plan will also include provisions for grazing. However, BLM management actions will have to be consistent with the ESA and would be designed to prevent harm to TES species.

Due to the relatively minor disturbance proposed under the alternatives, no cumulative effects are anticipated. Grazing will have no effects on TES species or their habitat. Grazing plans for Clark Canyon would be designed to accomplish a no effect to TES species. Therefore, no adverse cumulative impacts would be anticipated.

Cultural Resources – Impacts on cultural resources tend to be cumulative. Slow erosion and weathering, over time will destroy prehistoric and historic sites. Direct impacts, such as artifact collection, vandalism, and excavation also tend to increase with more intensive use of an area. The implementation of a Resource Management Plan will likely lead to slightly positive impacts on Cultural Resources. No impacts to Indian Trust assets or Indian Sacred sites have been identified. Awareness and more protective management measures should lessen the chances of degradation of cultural sites.

Land Use and Management – The project alternatives under consideration would be expected to have beneficial land use and management impacts through facilitating improved management of land. Other area land management activities include those by the BLM and MFWP. Coordination

and participation by Reclamation in other agencies management activities would have a beneficial effect on area land management planning and no adverse cumulative impacts would be expected.

Recreation Resources – With the exception of ORV use restrictions each of the alternatives under consideration would be expected to have beneficial impacts on recreational resources, and therefore, no adverse cumulative recreation impacts would occur. Restrictions or reductions in ORV use opportunities on lands surrounding Clark Canyon Reservoir could have a cumulative impact on ORV opportunities within the region if other land management agencies were to provide similar increased restrictions on other lands. This potential exists most prevalent with BLM’s preparation of a new RMP for its lands within Beaverhead County. Land use management mitigation discussed in Section 3.8.2.1 calls for Reclamation to participate in the BLM’s RMP development process. Such participation would aid BLM in identifying opportunities for consideration of ORV operation on BLM lands in light of restrictions that would be implemented under Reclamation’s RMP. This cumulative impact has potential to exist in the future, unless BLM were to adopt an RMP that included increased ORV restriction.

Visual Resources – The development of additional recreation facilities under the RMP alternatives under consideration would result in increases in the presence of manmade structures within the project area. However, as discussed in Section 3.10, the visual impacts of the facility modifications envisioned under the project alternatives are not expected to be adverse and therefore no adverse cumulative visual impacts would be anticipated.



Noise – Potential noise impacts associated with the alternatives would be localized. Existing area noise sources are considered in the project-specific noise assessment presented in Section 3.11. No other new future noise sources have been identified within the project area, therefore, no cumulative noise impacts would be expected.

Transportation and Access – Potential project-related increases in traffic would be associated with short-term construction activities and long-term increases that may occur as a result of increased visitation over time. Increases in non-project-related traffic are not anticipated. In the event that minor increases were to occur, there would be a cumulative increase in project area traffic over time. This cumulative impact, however, would be minimal; therefore would not create adverse traffic conditions on area roadways.

Public Services and Utilities – As discussed in Section 3.14, utility services within the project area are expected to be sufficient to meet projected minor increases in demand that may be associated with the project alternatives. Utility services are also anticipated to be adequate to accommodate non-project-related increases in utility services demand that may occur within the region. As such, the project would not be expected to result in a cumulative impact to utilities.

Potential impacts associated with public services could result in cumulative impacts as a result of certain services, including emergency response and law enforcement, currently approaching the capacity of existing services to meet demands within the County. However, the proposed

improvements are not expected to result in increases in demand use and it is assumed that any increased demand would be taken into account as local services are expanded to accommodate future service needs resulting from natural population growths in the area.

Socioeconomics – Because no adverse socioeconomic impacts would occur as a result of the project, no cumulative impacts to socioeconomics would be expected.

3.16 Unavoidable Adverse Impacts

The effects of alternatives would be limited to the areas fully discussed in this chapter. Based on the analysis presented there are few unavoidable adverse impacts beyond some minor and generally short-term effects. Under both action alternatives there could be some minor and short-term erosion resulting from construction activities, however standard construction mitigation measures will reduce those adverse effects. As a result of construction under any alternative there is likely to be a slight increase in noxious weed establishment on the disturbed areas, but those areas are small in comparison to the overall areas infested by noxious weeds. Those areas will be sprayed to control the noxious weeds. Lastly, during construction there could be some minor disruptions to recreationists using the Reservoir or at Barretts Diversion Dam facilities. These disruptions can be considered unavoidable, however by timing the construction to favor work in the early spring or fall, it is likely the adverse effect could be minimized. In considering the alternatives, Reclamation selected alternatives that would minimize adverse impacts while maximizing the positive impacts. Thus, any resulting adverse impacts are unavoidable.

Table 3.16-1				
CLARK CANYON RESOURCE MANAGEMENT PLAN				
SUMMARY OF MITIGATION MEASURES				
Alternative	Mitigation Measure(s)	Timing	Responsibility	Monitoring Elements
Geology				
No Action Alternative	None required	--	-- --	--
Alternative A	Contracts issued for the project and any work performed must incorporate revegetation measures to prevent and control erosion. Such measures may include: scheduling (i.e., scheduling work during the non-rainy season and limiting the amount of disturbed soil area at any given time); structural measures (i.e., fiber matt, fiber rolls, silt fencing); and non-structural measures including water disturbed soil areas to prevent wind erosion, hydroseeding disturbed soil areas following construction, and installing permanent landscaping to stabilize slopes or areas subject to erosion.	Construction	Reclamation	Reclamation to verify that contract includes similar bid language
Alternative B	Prior to implementing the proposed Alternative B improvements, a comprehensive plan would be developed to identify measures to prevent and control erosion. Such measures may include scheduling (i.e., scheduling work during the non-rainy season and limiting the amount of disturbed soil area at any given time); structural measures (i.e., fiber matt, fiber rolls, silt fencing); and non-structural measures including water disturbed soil areas to prevent wind erosion, hydroseeding disturbed soil areas following construction, and installing permanent landscaping to stabilize slopes or areas subject to erosion. Of particular importance is identifying the type and placement of permanent landscaping to stabilize key areas. The plan would also take into consideration the timing and phasing of the improvements' implementation.	Prior to plan implementation	Reclamation	Reclamation to verify that all contract bid specifications include bid language that requires the contractor(s) to implement erosion control.
Air Quality				
No Action	None required			

Table 3.16-1
CLARK CANYON RESOURCE MANAGEMENT PLAN
SUMMARY OF MITIGATION MEASURES

Alternative	Mitigation Measure(s)	Timing	Responsibility	Monitoring Elements
Alternative A	The anticipated short-term and temporary increase in air emissions, primarily dust and engine emissions can be reduced through prudent construction practices and scheduling. To the extent practicable, ground-disturbing activities should not be conducted on windy days and areas disturbed during the dry period should be periodically watered during construction to reduce the amount of generated dust. In addition, any large-scale earth disturbance and construction vehicle movement should be confined to periods of low visitor attendance. Any construction equipment used needs to meet current emissions standards for that type of equipment.	During construction	Reclamation	Reclamation to verify that all contract bid specifications include bid language that incorporates requirements of the mitigation measure included a requirements that the contractor have an active dust and equipment emission control program and prohibitions against working near public roadway or visitors during high winds.
Alternative B	Same as Alternative A	During construction	Reclamation And contractor(s)	Same as Alternative A
Water Quantity and Water Quality				
No Action Alternative	None required			
Alternative A	All parking areas, restrooms, and boat fueling areas will be designed to minimize the possibility of pollutants coming in contact with storm water or leaking into the reservoir. The design will include placement of landscape areas or berms between the parking areas and the reservoir (as a means to provide some pollutant removal and filtration), identification of designated on shore fueling areas that are not located immediately adjacent to the shoreline, and design of restrooms to prevent seepage overflow that could enter the reservoir.	Prior to construction – during project design	Reclamation	Reclamation to verify that the project design incorporates the required mitigation elements.
Alternative B	It would be necessary to develop a reservoir water quality pollution prevention program that incorporates measure (both structural and non-structural) to address the potential for increased storm water pollutant runoff and to address potential in-reservoir impairment. Examples of measures that would be needed include: designated fueling, posting signage for visitors to help raise public awareness regarding potential water quality impacts, providing additional spill response capabilities, and pre-treatment of storm water runoff from areas identified as potential significant sources of pollution (i.e., high use areas where leakage from parked vehicles/water craft and fueling spills directly	Prior to construction – project design	Reclamation	Reclamation to evaluate the need to incorporate specific design features based on project increase in visitor use. Reclamation to verify that the site design take into consideration water quality protection and post-construction erosion and sediment control measures and other measures to address other pollutants of concern.

Table 3.16-1

**CLARK CANYON RESOURCE MANAGEMENT PLAN
SUMMARY OF MITIGATION MEASURES**

Alternative	Mitigation Measure(s)	Timing	Responsibility	Monitoring Elements
	<p>enter the reservoir). The extent to which this mitigation will be needed will depend on the actual increase in visitor use.</p> <p>In addition, the dredging operation would be required to incorporate measures that may include, the installation of a temporary turbidity curtain, to control the release of sediments into the lake beyond the limits of the work area.</p>	<p align="center">Construction</p>	<p align="center">Reclamation and contractor(s)</p>	<p>Reclamation to verify that contract bid specification include requirements for the dredging contractor to make provisions for sediment control.</p>
Vegetation				
No Action Alternative	None required	--	--	--
Alternative A	<p>Develop and implement a grazing plan to remove accumulated litter and stimulate new growth and vigor in plants. The grazing plan will be designed to improve vitality of the vegetation resources, and vigor of desirable plants. The grazing plan must include pre-treatment survey and monitoring and will identify the areas to be grazed and the timing. The grazing will also identify the desired height of the plant at the beginning and end of the grazing period, percent ground cover, and desired objectives to be achieved. Fencing will be needed to control animals and protect sensitive areas such as riparian vegetation and assuring access to water.</p> <p>When possible, wetlands will be avoided during construction. In the event wetlands cannot be avoided, the following measures would be implement:</p> <ul style="list-style-type: none"> • Delineate and assess functional capacity prior to construction. Follow stipulation of Corps of Engineers 404 permit. • Construction will not occur until after July 15 to protect ground nest broods. • Construction will be timed to coincide with dry periods when 	<p align="center">Unspecified</p> <p align="center">During construction</p>	<p align="center">Reclamation</p> <p align="center">Reclamation and contractor(s)</p>	<p>Reclamation to verify that a grazing plan is prepared and implemented. Reclamation to also verify that the plan include a pre-treatment survey and monitoring and that criteria be established to measure the success of the grazing plan.</p> <p>Reclamation to determine if a Corps of Engineers permit is required and will be responsible for verifying that the construction bid specification includes language that requires compliance with the conditions of the permit by the contractor during construction. The bid specifications must also include allowable construction windows to protect</p>

Table 3.16-1
CLARK CANYON RESOURCE MANAGEMENT PLAN
SUMMARY OF MITIGATION MEASURES

Alternative	Mitigation Measure(s)	Timing	Responsibility	Monitoring Elements
	water tables are low. • Disturbed wetlands will be restored to pre-construction contours.			ground nest broods and periods of low water.
Alternative B	Same as Alternative A	Same as Alternative A	Reclamation	Same as alternative A
Wildlife				
No Action	None required	--	--	--
Alternative A	A grazing plan will be developed for Horse Prairie Creek, a wildlife management area, to maintain or improve the quality wildlife habitat. The grazing plan will also address access to water by livestock and to the riparian areas to prevent an increase of sedimentation to the streams that feed the reservoir.	Unspecified	Reclamation	Reclamation to develop a grazing plan for Horse Prairie Creek and develop criteria by which habitat improvement or degradation can be measured. Reclamation to identify specific access issues as it pertains to livestock entering riparian areas.
Alternative B	Re-vegetation will be implemented to control erosion and sedimentation. During construction, measures will be taken to minimize impact to fish and wildlife.	During construction and post-construction	Reclamation	Reclamation to verify that re-vegetation is conducted in accordance with an erosion and sediment control plan. Reclamation to require implantation of the plan in the construct bid specification. The bid specification will also identify specific measure to minimize fish and wildlife impacts.
Threatened and Endangered Species				
No Action Alternative	None required	--	--	--
Alternative A	Develop and implement a grazing plan in accordance (in accordance with the previous mitigation measures). Conduct site-specific survey for threatened and endangered species in areas identified for grazing in order to avoid direct or indirect impacts	Unspecified	Reclamation	Refer to previous grazing plan monitoring elements.

Table 3.16-1
CLARK CANYON RESOURCE MANAGEMENT PLAN
SUMMARY OF MITIGATION MEASURES

Alternative	Mitigation Measure(s)	Timing	Responsibility	Monitoring Elements
	on listed species.			
Alternative B	Same as described for Alternative A	Unspecified	Reclamation	Refer to previous grazing plan monitoring elements
Cultural				
No Action Alternative	None required	--	--	--
Alternative A	Existing statues require that cultural resources be protected. The preferred alternative is to prevent damage to the resources. In some cases however, it is not possible to prevent damage to the cultural resource, and then mitigation is required. Mitigation may include activities such as scientific excavation, detailed recordation, or development of interpretive areas. Mitigation procedures are developed in accordance with the requirements found in 36 CFR Park 800 and are developed on a case-by-case basis. If consultations determine adverse impacts are occurring or would occur from implementation of any action alternative, Reclamation would seek means to avoid adverse impacts. If adverse impacts cannot be avoided Reclamation would provide appropriate mitigation or compensation. If consultation determines that adverse impacts are occurring, or would occur from implementation of any action alternative, then Reclamation would seek means to avoid adverse impacts.	Unspecified	Reclamation	Reclamation to verify that mitigation has been implemented.
Alternative B	Same as Alternative A	Unspecified	Reclamation	--
Land Use and Management				
No Action Alternative	None required	--	--	--
Alternative A	Reclamation will participate in BLM’s planning and RMP development process and by doing so will enable Reclamation managers to provide input and provide consistency between proposed elements of the BLM’s Dillon Field Office RMP and the Clark Canyon Reservoir and Barretts Diversion Dam RMP.	Unspecified	Reclamation	Reclamation will coordinate with BLM in the schedule for the BLM planning process.
Alternative B	Same as Alternative A	Unspecified	Reclamation	Same as Alternative A

Table 3.16-1				
CLARK CANYON RESOURCE MANAGEMENT PLAN				
SUMMARY OF MITIGATION MEASURES				
Alternative	Mitigation Measure(s)	Timing	Responsibility	Monitoring Elements
Recreation				
No Action Alternative	None required.	--	--	---
Alternative A	None required.	--	--	--
Alternative B	All construction activities would take place during mid-week periods or during the lower use periods of early springs or late fall to minimize adverse effects on users.	During Construction	Reclamation	Reclamation will schedule the timing of the bid award and construction of improvements to avoid peak use periods (roughly June-August) or during mid-week periods.
Visual				
No Action Alternative	None required			
Alternative A	Reclamation will follow design parameters for all facilities within the project area, to assure new facilities and facility modifications are generally consistent with the surroundings natural and man-made landscape features. Criteria would include structure locations, structure color, fence design and structure architecture, and will be applied to all new facilities as well as existing facilities undergoing substantial modification	During project design	Reclamation	Reclamation will establish a set of design standards that result in compatibility of all facilities.. The design standards will strive to be compatible with the recently completed improvements. All site designs will be evaluated for compliance with the design standards.
Alternative B	Same as Alternative A	During project design	Reclamation	Same as Alternative A
Noise				
No Action Alternative	None required	--	--	--
Alternative A	Reclamation and its construction contractors will schedule construction activities to avoid construction during periods of anticipated high visitation. Construction would be scheduled to occur to avoid high-use summer periods and would occur during the spring and fall months. On a weekly basis, construction would be scheduled to occur during weekdays and avoid weekend constructing. On a daily basis, construction would be scheduled to occur only between the hours of 7	During construction	Reclamation and Contractor(s)	Reclamation to schedule bid award and construction are schedule to avoid peak use periods (roughly June-August) or during mid-week periods. Reclamation will verify that the construction bid specifications include limits on the hours of construction.

Table 3.16-1

**CLARK CANYON RESOURCE MANAGEMENT PLAN
SUMMARY OF MITIGATION MEASURES**

Alternative	Mitigation Measure(s)	Timing	Responsibility	Monitoring Elements
	a.m. and 6 p.m. To reduce impacts associated with facility maintenance activities, Reclamation and its contractor would schedule maintenance activities to occur during periods of low use, to the extent practical.	During on-going operations		The to extent practicable, Reclamation will review the current maintenance schedule and identify periods when maintenance could be scheduled without impacting users.
Alternative B	Same as Alternative A	During construction During on-going operations	Reclamation and Contractor(s)	Reclamation to schedule bid award and construction are schedule to avoid peak use periods (roughly June-August) or during mid-week periods. Reclamation will verify that the construction bid specifications include limits on the hours of construction. The to extent practicable, Reclamation will review the current maintenance schedule and identify periods when maintenance could be scheduled without impacting users.
Transportation and Access				
No Action Alternative	None required	--	--	--
Alternative A	Reclamation and its construction contractors will schedule construction activities to avoid construction during periods of anticipated high visitation. Construction would be scheduled to occur to avoid high-use summer periods and should occur during the spring and fall months. On a weekly basis, construction would be schedule to occur during weekdays and avoid weekend constructing. On a daily basis, construction should be schedule to occur only between the hours of 7 a.m. and 6 p.m.	During construction	Reclamation and Contractor(s)	Reclamation to schedule bid award and construction to avoid peak use periods (roughly June-August) or during mid-week periods. Reclamation will verify that the construction bid specifications include limits on the hours of construction.
Alternative B	Implementation of construction traffic mitigation identified for Alternative A would also serve to reduce Alternative B construction-related impacts.	During construction	Reclamation and Contractor(s)	Same as Alternative A
Public Service and Utilities				

Table 3.16-1
CLARK CANYON RESOURCE MANAGEMENT PLAN
SUMMARY OF MITIGATION MEASURES

Alternative	Mitigation Measure(s)	Timing	Responsibility	Monitoring Elements
No Action Alternative	None required	--	--	--
Alternative A	To minimize impacts to law enforcement and emergency services providers, Reclamation would continue to closely coordinate with these providers to assure early identification of increases in potential demand that would need to be accommodated.	On going	Reclamation	Reclamation to periodically coordinate with local law enforcement and emergency repose service providers.
Alternative B	Same as Alternative A	On going	Reclamation	Reclamation to periodically coordinate with local law enforcement and emergency response.
Socioeconomic Factors				
No Action Alternative	None required	--	--	--
Alternative A	None required	--	--	--
Alternative B	None required	--	--	--