

## 4.13. RIPARIAN AND WETLAND RESOURCES

Impacts to riparian areas in the VPA would be a result of surface-disturbing activities and forage use both within and outside of the riparian zones and are subject to restrictions to insure conditions are improved or at least not degraded. The Utah BLM Standards for Rangeland Health apply to riparian resources in the VPA. The Proposed RMP and all alternatives must adhere to Standard 2 of these standards, "Riparian and wetland areas [must be] in properly functioning condition (PFC). Stream channel morphology and functions are appropriate to soil type, climate, and function" (BLM 1997).

As identified in the preliminary riparian inventory, the VFO would maintain 295 miles and 3,674 acres of riparian areas currently in proper functioning condition. Also, the VFO would improve 133 miles and 1,452 acres functioning at risk and 79 miles and 1,213 acres not in properly functioning condition. These are preliminary numbers and will change as the inventory is completed. Monitoring by the permittee and the BLM would be used to determine the trend and condition of riparian areas (considering the soil type, climate, and land form). Site-specific conditions would need to be documented before modifying any prescriptions.

There are several potential impacts that would adversely affect riparian resources:

- Upland surface disturbance could cause a loss of vegetation that could accelerate soil erosion, which would in turn cause sedimentation in adjacent streams.
- Loss of riparian vegetation would lead to reduced riparian condition and loss of PFC.
- Degradation of riparian-wetland soils would lead to reduced riparian condition and loss of PFC.
- Drawdown of groundwater levels from oil, gas, and CBNG leasing could lead to dewatering of riparian areas.
- Roads would result in an indefinite to permanent loss of vegetation that can increase soil erosion and sedimentation. This can potentially result in channel instability and changes in channel types and/or less stable to instable channel cross sections in certain watersheds.

Decisions making lands unavailable for upland surface disturbance and riparian corridor disturbance may benefit riparian resources. Beneficial impacts may result from stubble height requirements, utilization levels, reduced use, and season of use changes that are proposed in some of the alternatives.

### 4.13.1. IMPACTS COMMON TO ALL

Under the Proposed RMP and all alternatives, management actions for the following resources would result in negligible impacts to riparian resources: air quality, cultural resources, hazardous materials, human health and safety, and paleontological resources. This is because protecting air quality, maintaining safety around AML sites and reducing the risks of hazardous materials spills and spill-site cleanup, protecting cultural resources under Section 106, protecting known fossil areas for fossil scientific study and recreational fossil collection, and would neither degrade nor improve the water, soil and vegetation components that comprise riparian resources.

Accordingly, the impacts of management actions for each of these resources are not analyzed further in this section.

The BLM would take measures to ensure riparian area productivity and sustainability in the event of wildland fire, drought, or other natural disasters, by reducing or eliminating livestock, wild horses, and/or wildlife forage allocations, reducing or eliminating recreational activities (camping and campfires, OHV use, etc.), and reducing or eliminating mineral exploration and acquisition until riparian conditions are properly functioning. Cultural and paleontological resource management would not have any effect on riparian resources.

Fire Management practices would have short-term, direct adverse impacts to riparian resources through practices such as prescribed burning or fuels reduction by increasing erosion rates, which could result in stream sedimentation. However, these fire management activities would reintroduce the natural fire return interval in the long term, decreasing or eliminating the occurrence of catastrophic rangeland fires, and promoting more productive rangelands, resulting in less soil degradation and subsequent stream sedimentation.

Effects to riparian resources specified under forage and wild horse management decisions would be short-term, direct, and potentially beneficial, depending on season of use and duration. These decisions would also have long-term direct beneficial impacts to riparian resources by improving riparian conditions. AUMs would be adjusted for livestock, wild horses, and/or wildlife when monitoring shows that riparian condition is not at PFC.

Effects from lands and realty decisions would be direct and long-term. Land withdrawals would have a beneficial effect on riparian resources by precluding areas from mineral entry and would result in riparian resource protection. Increasing visitor access to river segments would have long-term, indirect adverse impacts to riparian resources by increasing visitor traffic, bank trampling, and spread of noxious weeds. With respect to right of ways, the BLM has strict riparian area reclamation and restoration guidelines regarding linear projects such as pipelines; therefore, no impacts are expected.

Long-duration grazing would impact riparian areas through loss of vegetative cover and trampling of soils, potentially leading to riparian area degradation. Limited livestock grazing, when properly managed, would benefit riparian areas by stimulating new growth in riparian vegetation. Effects on riparian vegetation vary between seasons of use. For example, grazing riparian areas in late spring allows vegetation to grow through summer and into the fall, where it can protect banks during critical spring runoff and late summer thunderstorms. Any changes to season of use or AUMs would need to be in compliance with Standard 2 (and all other standards) of the Utah BLM Standards for Rangeland Health.

Effects of minerals decisions on riparian resources would be adverse, long-term, and direct, resulting in upland erosion and subsequent stream sedimentation through surface-disturbing activities. The impacts analysis represents relative risks of adverse impacts to riparian resources for the Proposed RMP and all alternatives, due to the incomplete riparian inventory data. Site-specific analyses would need to be undertaken on a case-by-case basis to establish quantitative impacts. Reclamation and restoration of oil and gas, locatable minerals, surface minerals, and

alternative energy sites would be required upon abandonment of the site, resulting in less stream sedimentation. The risks of accidental release of hazardous materials and petroleum products from oil and gas leasing (which includes CBNG) sites would also have an indirect, long-term, adverse impact on riparian resources. Drawdown of groundwater due to techniques used to extract oil, gas, and CBNG could lead to dewatering of riparian areas, increasing the risks of invasive species introduction and reducing water available for riparian ecosystems. Additionally, road development providing access to oil and gas leasing (which includes CBNG) would increase risks sediment runoff and noxious weed infestation into previously undeveloped areas. More roads would also increase access for illegal OHV use in remote riparian areas. Surface mineral developments would not be placed in wetlands and would be at least 100 m from riparian zones, and must occur outside the 100-year floodplain. These stipulations on surface disturbance are discussed in Appendix K, and would be used unless there are no practical alternatives or impacts would be fully mitigated. The limits placed on surface disturbance from locatable minerals would limit the adverse impacts from these activities and there is no measurable difference between alternatives.

Depending on the construction methods and materials used, roads built across riparian areas would result in a direct loss of riparian habitat at the crossing site. The loss of habitat would continue until the reclamation of the road occurs and traffic diminishes to a point that riparian habitat can re-establish itself.

The effects of rangeland improvements on riparian areas would be beneficial, long-term, indirect, and direct. Vegetation treatments would ultimately reduce stream sedimentation and improve riparian vegetative cover. Fencing of riparian areas would reduce impacts from grazing in these areas and development of other water sources away from riparian areas would limit grazing use of river corridors.

The effects of recreation decisions on soils would generally be long-term, indirect, and beneficial, by limiting OHV use to designated areas and by providing management for areas as SRMAs. Adverse effects would occur from increased visitor traffic, development of trails, and OHV use. Adverse impacts would include trampling of banks, compaction of soils, and spread of noxious weeds. Where limits are placed on OHV travel off designated routes for big-game retrieval, beneficial effects would occur. The "Tread Lightly" program is invaluable in educating OHV users to stay on existing trails, thereby decreasing impacts to riparian areas. "Sacrifice" areas would be designated for OHV users in areas that are not ecologically sensitive and present little or no risk to riparian condition and other components identified in the Utah BLM Standards for Rangeland Health.

Riparian management would be designed to improve riparian conditions. The effects of maintaining minimum vegetation stubble height thresholds on riparian vegetation would be beneficial, long-term, and direct. Maintaining plant stubble along the banks traps sediment and reduces stream bank erosion, thereby maintaining or enhancing riparian condition. Managing herbaceous and woody vegetation in riparian areas would have long-term direct beneficial effects by trapping sediment, attenuating floods, and providing stability for banks during periods of high flow. Proper functioning condition is the minimum acceptable goal for riparian areas. Riparian-

wetland areas would be maintained, restored, protected, and/or expanded to achieve PFC with respect to soils, vegetation, and hydrology/water quality.

Soils and watershed management would be beneficial to riparian areas by limiting surface disturbance and requiring erosion control on slopes steeper than 20%. Note: The percent varies by alternative and the Proposed RMP, but they all call for restrictions on slopes greater than 20%. Slopes below 20% would not be required to have erosion control plans and would have short-term adverse impacts to riparian areas through increased sedimentation and runoff. The BLM would reduce or eliminate the discharge of pollutants and sediment into surface waters with stipulations on surface disturbance, providing protection for fish, amphibians, wildlife, and water recreation. Oil and gas well pads would not be permitted in active floodplains, protecting watersheds and riparian areas from sedimentation as well. The BLM would examine the effects of prescribed fire, post fire management, invasive weed control, energy development, grazing, OHV use, and range improvement projects prior to taking action.

Special designation areas would have long-term direct beneficial effects to riparian areas, where management plans are designed to protect riparian ecosystems or limit surface disturbance by designating VRM Class I and II areas. WSR designations would have direct, long-term beneficial impacts to riparian resources by limiting development along river corridors. Increased visitor traffic would have long-term indirect adverse impacts due to increases in bank trampling and recreational use of these river segments. Wilderness study areas would be managed in a manner that does not impair riparian condition, as per Standard 2 of the Utah BLM Standards for Rangeland Health. These designations would not allow surface disturbance, thereby providing direct protection for riparian areas.

The effects of special status species on riparian resources would be beneficial, long-term, and direct by limiting surface development. The Proposed RMP and each of the alternatives offers varying level of protection to special status species and their habitats by placing no-disturbance buffers around critical habitat (e.g., raptor nests). Habitat protection indirectly equates to reduced soil disturbance and stream sedimentation. Inventories of these plant and animal resources would provide well-defined protection areas. Ute ladies'-tresses is the only TES plant that occurs in riparian areas within the VPA. The protection of this species' habitat would provide beneficial, long-term effects to riparian areas through limitation of surface-disturbing activities under all alternatives.

Travel decisions would have direct and indirect, short- and long-term beneficial impacts to riparian resources where newly permitted roads and trails are obliterated or returned to their original condition. Repair by maintenance, upgrade, or realignment of roads causing resource damage, and installation of water crossings designed to allow the free passage of aquatic life would be beneficial to riparian resources as well. Direct and indirect, long- and short-term adverse impacts would occur where riparian areas on BLM land are within areas open to OHV use with no limits on travel.

VRM decisions would be beneficial and long term, and would directly affect riparian resources by precluding some areas from surface disturbance due to their proximity to highways, scenic areas, and special designations. However, adverse, short-term, indirect impacts would occur if

vegetation treatments could not be implemented in VRM-sensitive areas. VRM classes range from I to IV; Class I lands are not open to surface disturbance (full retention), and Class IV lands are available for full development.

Wildlife and fisheries management would have limited direct effects on riparian resources. Introduction of moose populations would have long-term, indirect beneficial impacts on riparian resources by increasing biodiversity in these areas. The BLM would provide habitat for a diversity of wildlife and fish species by limiting fragmentation, resulting in less surface disturbance and stream sedimentation. The effects of wildlife management decisions on riparian resources would be beneficial, long term, and indirect, by limiting surface development within specified wildlife buffer zones. Most of the wildlife and fisheries management decisions involve seasonal constraints and would not necessarily preclude surface-disturbing activities. The only measurable component of wildlife and fisheries management decisions on riparian resources would be the preservation of crucial deer winter range and the enhancement of winter range to mitigate surface disturbance. The Proposed RMP and all alternatives are similar with respect to their effects on riparian resources.

Woodlands and Forest management would generally have long-term indirect, beneficial impacts to riparian resources. The BLM would follow national BLM Forest Health and Forest Management Standards and Guidelines to achieve desired future conditions, and minimize impacts to riparian resources, while providing for multiple forest product use. Adverse, short-term, direct impacts to riparian resources would occur with treatments and harvesting in the form of sedimentation. However, in the long term, treatments and harvesting would have the potential to reintroduce natural fire return intervals, reducing stream sedimentation through fewer catastrophic fires.

#### **4.13.2. THE PROPOSED RMP AND ALTERNATIVES IMPACTS**

Surface-disturbing activities for the Proposed RMP and all alternatives and all effects would generally be adverse to riparian resources through sedimentation. Surface stipulations in Appendix K would be applied to all surface-disturbing activities, and would limit disturbance of riparian areas. Exceptions to these stipulations could be authorized if: a) there are no practical alternatives; b) impacts could be fully mitigated; or c) the action is designed to enhance the riparian resources. Additionally, mineral developments require a network of access roads, which typically require some form of water crossing. The duration of these impacts is dependent on the action.

##### **4.13.2.1. IMPACTS OF FIRE MANAGEMENT DECISIONS ON RIPARIAN RESOURCES**

###### **4.13.2.1.1. ALTERNATIVES A, B, C, E, AND THE PROPOSED RMP**

Alternatives A, B, C, E, and the Proposed RMP would allow approximately 3 times more acreage of prescribed burning in the short term than Alternative D (No Action) (156,425 acres versus 50,900 acres). However, in the long term, these fire management activities would reintroduce the natural fire return interval to an area 3 times greater than that proposed in Alternative D (No Action). This would decrease or eliminate the occurrence of catastrophic

wildland fires, which often require aggressive suppression, promoting more productive rangelands with less soil erosion and stream sedimentation.

#### **4.13.2.1.2. ALTERNATIVE D (NO ACTION)**

Long-term benefits to riparian resources from prescribed fire would be three times less under Alternative D (No Action) than under other alternatives because the area for proposed fire treatments would be smaller.

### **4.13.2.2. IMPACTS OF FORAGE AND WILD HORSE MANAGEMENT DECISIONS ON RIPARIAN RESOURCES**

#### **4.13.2.2.1. ALTERNATIVES A, B, AND THE PROPOSED RMP**

Total AUMs for Alternatives A, B, and the Proposed RMP would be similar; however, Alternative B would have 10% greater forage utilization than Alternative A and the Proposed RMP. Greater forage utilization and more AUMs would put greater stress on riparian areas through loss of cover and trampling. This could potentially result in loss of PFC. The Proposed RMP and these alternatives provide more beneficial impacts to riparian resources than Alternative D (No Action), which has unspecified forage utilization.

#### **4.13.2.2.2. ALTERNATIVE C**

Alternative C has the most beneficial impacts to riparian resources relative to Alternative D (No Action) through reductions in livestock use and retention of AUMs for watershed in many localities.

#### **4.13.2.2.3. ALTERNATIVE D (NO ACTION)**

Alternative D (No Action) generally provides no specifications for forage utilization and has the highest allocation of AUMs; therefore, it would provide the least beneficial impacts to riparian resources.

#### **4.13.2.2.4. ALTERNATIVE E**

The impacts would be the same as Alternative C because the decisions are the same.

### **4.13.2.3. IMPACTS OF LANDS AND REALTY DECISIONS ON RIPARIAN RESOURCES**

#### **4.13.2.3.1. ALTERNATIVE A AND THE PROPOSED RMP**

Alternative A and the Proposed RMP would pursue public access to the White River at the mouth of Cowboy Canyon, Bonanza Bridge, and Wagon Hound Road. Additionally, Alternative A and the Proposed RMP would pursue acquisition of Indian Trust lands in Bitter Creek and near the confluence of South and Sweetwater Canyons. These actions would have greater long-term, indirect adverse impacts to riparian resources than Alternative D (No Action), by increasing

visitor use, thereby increasing trampling of banks and spread of noxious weeds. The Proposed RMP and Alternative A would preclude mineral entry on 22,814 acres of land withdrawals, and would therefore have less indirect beneficial impacts to riparian resources than Alternative D (No Action), which would preclude mineral and agricultural entry on 35,900 acres of withdrawal lands.

#### **4.13.2.3.2. ALTERNATIVE B**

Alternative B would not pursue public access to any new lands nor acquisition of Indian Trust lands, therefore would have similar impacts to Alternative D (No Action). This alternative would preclude mineral entry on 19,202 acres of withdrawal lands, therefore having similar impacts to Alternative A.

#### **4.13.2.3.3. ALTERNATIVE C**

Lands and realty decisions and impacts under Alternative C are similar to Alternatives A and the Proposed RMP, except more protective of riparian resources because the BLM would also pursue an easement for the old Uintah Railroad bed from the Utah/Colorado line to Watson in Evacuation Wash. Land withdrawal decisions would be similar to Alternative A and the Proposed RMP, except that 13,451 additional acres would be precluded from mineral entry. Alternative C would have slightly greater indirect beneficial impacts to riparian resources than Alternative D (No Action), because 365 more acres would be withdrawn from mineral entry.

#### **4.13.2.3.4. ALTERNATIVE D (NO ACTION)**

Alternative D (No Action) precludes mineral and agricultural entry on 35,900 acres of land. Land access decisions are unspecified under Alternative D (No Action).

#### **4.13.2.3.5. ALTERNATIVE E**

Alternative E would have similar impacts to Alternative C with the exception that the 277,597 acres determined to have non-WSA wilderness characteristics would not be available for disposal or exchange. Riparian areas that lie within non-WSA areas with wilderness characteristics would remain in public ownership and be managed as ROW exclusion areas, which would have additional long-term, beneficial protection-related impacts on riparian resources.

### **4.13.2.4. IMPACTS OF LIVESTOCK AND GRAZING DECISIONS ON RIPARIAN RESOURCES**

#### **4.13.2.4.1. ALTERNATIVE A AND THE PROPOSED RMP**

Alternative A and the Proposed RMP would use a phenology-based system for timing livestock use. This system would use timing of vegetation growth to determine proper grazing limits. Due to limits on grazing time, the Proposed RMP and Alternative A would provide an intermediate amount of direct, long-term beneficial impacts to riparian resources, as compared to Alternatives

B and C. The Proposed RMP and Alternative A would provide greater direct, long-term beneficial impacts than Alternative D (No Action).

#### **4.13.2.4.2. ALTERNATIVE B**

Alternative B would use a billed use-based system for timing livestock use. This system would generally allow more time for grazing than all other alternatives, therefore having more direct, long-term adverse impacts to riparian resources than Alternative D (No Action).

#### **4.13.2.4.3. ALTERNATIVE C**

Alternative C would use an adjudicated system for timing livestock use. This system would allow the least time for grazing, compared to all alternatives. The direct, long-term beneficial impacts to riparian resources would be the highest, as compared to Alternative D (No Action).

#### **4.13.2.4.4. ALTERNATIVE D (NO ACTION)**

Alternative D (No Action) would use a permitted system for timing livestock use. This system is currently in use and provides an intermediate amount of impacts between other alternatives.

#### **4.13.2.4.5. ALTERNATIVE E**

The impacts on riparian resources would be the same as Alternative C because the resource decisions are the same.

### **4.13.2.5. IMPACTS OF MINERALS DECISIONS ON RIPARIAN RESOURCES**

#### **4.13.2.5.1. PROPOSED RMP**

The Proposed RMP would potentially develop approximately 6,283 oil, gas, and CBNG wells, which is 535 more than Alternative D (No Action). The Proposed RMP would have a higher risk of more indirect, short- and long-term adverse impacts to riparian resources, due to a higher number of wells, more roads, and more acreage of surface disturbance, as compared to Alternative D (No Action).

#### **4.13.2.5.2. ALTERNATIVE A**

Alternative A would potentially develop approximately 6,391 oil, gas, and CBNG wells, which is 428 more than Alternative D (No Action). This alternative would have a higher risk of more indirect, short- and long-term adverse impacts to riparian resources, due to a higher number of wells, more roads, and more acreage of surface disturbance, as compared to Alternative D (No Action).

**4.13.2.5.3. ALTERNATIVE B**

Alternative B would potentially develop approximately 6,391 oil, gas, and CBNG wells, which is 535 more than Alternative D (No Action). This alternative would have the highest risk of indirect, short- and long-term adverse impacts to riparian resources due to a higher number of wells, more roads, and more acreage of surface disturbance, as compared to Alternative D (No Action).

**4.13.2.5.4. ALTERNATIVE C**

Alternative C would potentially develop approximately 6,224 oil, gas, and CBNG wells, which is 368 more than Alternative D (No Action). Compared to Alternatives A and B, this alternative would have the lowest risk of indirect, short- and long-term adverse impacts to riparian resources due a lower number of wells, fewer roads, and fewer acres of surface disturbance. Compared to Alternatives D (No Action), and E adverse impacts to riparian resources would be greater.

**4.13.2.5.5. ALTERNATIVE D (NO ACTION)**

Alternative D (No Action) would potentially develop approximately 5,856 oil, gas, and CBNG wells in the VPA.

**4.13.2.5.6. ALTERNATIVE E**

Alternative E would potentially develop approximately 6,118 oil, gas, and CBNG wells, which would be 262 more wells than Alternative D (No Action). Compared to Alternatives A, B, and C, this alternative would have the lowest risk of indirect short- and long-term adverse impacts to riparian resources due a relatively lower number of RFD-predicted wells, fewer miles of access roads, and fewer acres of minerals-related surface disturbances. Compared to Alternative D (No Action), the impacts to riparian resources would be more beneficial in the long term because of the greater protection afforded to riparian resources.

**4.13.2.6. IMPACTS OF NON-WSA AREAS WITH WILDERNESS CHARACTERISTICS DECISIONS ON RIPARIAN RESOURCES****4.13.2.6.1. PROPOSED RMP**

Under the Proposed RMP, approximately 106,178 acres with wilderness characteristics would be managed with VRM Class II objectives, closed to oil and gas leasing and closed to woodland product harvest. OHV use would be limited to designated routes. The impacts would be beneficial in the long term because these potential surface disturbances to riparian resources within non-WSA wilderness characteristics areas would not be allowed; however, the impacts would be minor, as the affected area would be comparatively small. Compared to Alternative D (No Action), the Proposed RMP would be more beneficial because it would indirectly protect riparian areas that lie within non-WSA wilderness characteristics areas.

#### **4.13.2.6.2. ALTERNATIVES A, B, C, AND D**

Under these alternatives, areas with non-WSA areas with wilderness characteristics would not be managed for protection of their wilderness values.

#### **4.13.2.6.3. ALTERNATIVE E**

Under this alternative, 277,596 acres with wilderness characteristics (including 1,753 acres of riparian area) would be managed as exclusion areas for ROW realty actions, managed under VRM Class I objectives, close to OHV cross-country travel, closed to mineral material disposal and closed to oil and gas and other mineral leasing. The impacts would be beneficial in the long term because these potential surface disturbances to riparian resources within non-WSA wilderness characteristics areas would not be allowed; however, the impacts would be minor, as the affected area would be comparatively small. Compared to Alternative D (No Action), this alternative would be more beneficial because it would indirectly protect riparian areas that lie within non-WSA wilderness characteristics areas.

#### **4.13.2.7. IMPACTS OF RANGELAND IMPROVEMENT DECISIONS ON RIPARIAN RESOURCES**

##### **4.13.2.7.1. ALTERNATIVES A, B, C, E, THE PROPOSED RMP, AND D (NO ACTION)**

Vegetation treatments for rangeland improvement would total 34,640 acres, 50,900 acres, 45,860 acres, 40,390 for Alternatives A/the Proposed RMP, B, C/E, and D (No Action), respectively. Therefore, Alternative B would be the most beneficial to riparian resources, and Alternative A/the Proposed RMP would be the least beneficial, as compared to Alternative D (No Action). The Proposed RMP fencing and water development projects would have beneficial impacts by improving conditions for timed livestock grazing and would have indirect beneficial impacts on riparian areas. There may be some trampling effects along fence lines, but water developments would provide water to upland range sites, keeping livestock and other ungulates out of riparian areas. Guzzlers, reservoirs, wells, and springs would attract livestock away from riparian areas and would decrease soil disturbance and sedimentation around riparian areas.

#### **4.13.2.8. IMPACTS OF RECREATION DECISIONS ON RIPARIAN RESOURCES**

##### **4.13.2.8.1. PROPOSED RMP**

The effects of recreation decisions on riparian resources would generally be long-term, indirect, and beneficial, by limiting OHV use to designated areas and by providing management for areas as SRMAs. Adverse effects would occur from increased visitor traffic, development of trails, and OHV use. Adverse impacts would include trampling of banks, compaction of soils, and spread of noxious weeds. Where limits are placed on OHV travel off designated routes for big-game retrieval, beneficial effects would occur.

The Proposed RMP would manage the 4 existing SRMAs: Browns Park (18,490 acres), Nine Mile Canyon (44,168 acres), Red Mountain-Dry Fork (24, 259 acres), and Pelican Lake (1,014 acres). The Proposed RMP would establish 3 new SRMAs: Blue Mountain (42,729 acres), White

River (2,831 acres), and Fantasy Canyon (69 acres). The Proposed RMP would have direct and indirect short- and long-term beneficial impacts to riparian resources (as compared to Alternative D, No Action) by designating the White River SRMA, which would be managed as VRM Class II, limiting surface disturbance within line of sight or up to 0.5 mile either side of the river. The designation of Blue Mountain and Fantasy Park would provide management of OHV use, which would not be managed in these areas under Alternative D (No Action). Under the Proposed RMP, non-WSA lands within SRMAs would be managed for non-motorized recreation, which would have long-term beneficial impacts to riparian areas by limiting the effects of motor vehicles.

Development of up to 400 miles of non-motorized trails would have long-term indirect adverse impacts due to increasing visitor traffic in riparian zones. This would be 345 more miles of trails developed than under Alternative D (No Action) and the same as under Alternative C. Not allowing OHV use for big-game retrieval off designated routes would have long-term indirect beneficial impacts to riparian resources by limiting trampling of riparian vegetation and spread of noxious weeds. OHV use off designated trails for big-game retrieval is unspecified under Alternative D (No Action).

#### **4.13.2.8.2. ALTERNATIVE A**

The effects of recreation decisions on riparian resources would generally be long-term indirect and beneficial, by limiting OHV use to designated areas and by providing management for areas as SRMAs. Adverse effects would occur from increased visitor traffic, development of trails, and OHV use. Adverse impacts would include trampling of banks, compaction of soils, and spread of noxious weeds. Where limits are placed on OHV travel off designated routes for big-game retrieval, beneficial effects would occur.

Alternative A would manage (and in some cases expand) the 4 existing SRMAs—Browns Park (52,720 acres), Nine Mile Canyon (81,168 acres), Red Mountain-Dry Fork (24,259 acres), and Pelican Lake (1, 014 acres). Alternative A would establish 3 new SRMAs: Blue Mountain (42,758 acres), Book Cliffs (273,486), and White River (24,183 acres). Alternative A would have direct and indirect short- and long-term beneficial impacts to riparian resources as compared to Alternative D (No Action) by designating the White River SRMA, which would be managed as VRM Class II, limiting surface disturbance within line of sight or up to 0.5 mile either side of the river. The designation of Blue Mountain and Fantasy Park would provide management of OHV use, which would not be managed in these areas under Alternative D (No Action). Long-term indirect adverse impacts would occur to these areas due to increase in visitor traffic.

Development of up to 400 miles of non-motorized trails would have long-term indirect adverse impacts due to increasing visitor traffic in riparian zones. This would be 345 more miles of trails developed than under Alternative D (No Action) and the same as under Alternative C. Not allowing OHV use for big-game retrieval off designated routes would have long-term indirect beneficial impacts to riparian resources by limiting trampling of riparian vegetation and spread of noxious weeds. OHV use off designated trails for big-game retrieval is unspecified under Alternative D (No Action).

**4.13.2.8.3. ALTERNATIVE B**

Alternative B would not designate any new nor expand current SRMAs (with SRMA designation the same as Alternative D, No Action). Long-term indirect adverse impacts would be the same as Alternative D (No Action), because the SRMA designations are the same. Alternative B and D (No Action) would have the least long-term, indirect, and beneficial impacts resulting from SRMA management and limiting OHV use to designated routes. Alternative B would have beneficial impacts as compared to Alternative D (No Action) as no miles of non-motorized trails would be developed and OHV use off route for big-game retrieval would not be allowed.

**4.13.2.8.4. ALTERNATIVE C**

In addition to the acreages listed under Alternative A, Alternative C would establish an SRMA for 273,486 acres in the Book Cliffs and would expand Brown's Park SRMA to 52,720 acres, White River SRMA to 47,130 acres and Nine Mile Canyon SRMA to 81,168 acres. Long-term, indirect, adverse impacts would occur to these areas due to increases in visitor traffic. In addition to the beneficial impacts listed in Alternative A, the expansion of Browns Park SRMA (52,720 versus 18,474 acres) would further protect riparian resources in this area, as compared to Alternative D (No Action), by managing parts of the SRMA as closed to OHV use; for VRM Class I landscape objectives; and for primitive, non-motorized, and undeveloped types of recreation. Additionally, under Alternative C, the Bitter Creek drainages and the head of Sweet Water Canyon would be closed to leasing.

**4.13.2.8.5. ALTERNATIVE D (NO ACTION)**

Alternative D (No Action) would designate no new SRMAs, but would continue managing Browns Park (18,474 acres) and Nine Mile Canyon (44,181 acres). Long-term indirect adverse impacts due to increases in visitor traffic, trampling of bank and spread of noxious weeds would be lower than Alternatives A, C, and E. With fewer acres managed as an SRMA than the other alternatives (except for Alternative B, with the same acreage), Alternative D (No Action) would have fewer long-term indirect and beneficial impacts resulting from limiting OHV use to designated areas and by providing management for areas as SRMAs. Management regarding OHV use off designated routes for big-game retrieval is unspecified.

**4.13.2.8.6. ALTERNATIVE E**

The impacts would be the same as Alternative C because the recreation decisions are the same.

**4.13.2.9. IMPACTS OF RIPARIAN MANAGEMENT DECISIONS ON RIPARIAN RESOURCES****4.13.2.9.1. ALTERNATIVES A, C, AND THE PROPOSED RMP**

Alternatives A, C, and the Proposed RMP would offer the most protection for riparian resources, where key streamside herbaceous vegetation, non-streamside herbaceous vegetation, and woody riparian vegetation utilization would be managed. The Proposed RMP and these alternatives would have more long-term direct beneficial impacts to riparian resources than Alternative D

(No Action), which specifies lower stubble heights, does not specify about woody riparian vegetation, and has no utilization requirements.

#### **4.13.2.9.2. ALTERNATIVE B**

Alternative B would also protect key streamside herbaceous vegetation, but would graze key non-streambank, herbaceous and woody vegetation more than Alternatives A and C. This alternative would have more direct, long-term beneficial impacts to riparian resources than Alternative D (No Action), but fewer beneficial impacts than Alternatives A and C.

#### **4.13.2.9.3. ALTERNATIVE D (NO ACTION)**

Alternative D (No Action) offers the least protection to riparian resources, because the minimum stubble height is less (3 inches versus 4 inches in Alternatives A, B, and C) and percent utilization is not specified.

#### **4.13.2.9.4. ALTERNATIVE E**

The impacts would be the same as Alternatives A, C, and the Proposed RMP because the decisions are the same.

### **4.13.2.10. IMPACTS OF SOILS AND WATERSHED DECISIONS ON RIPARIAN RESOURCES**

#### **4.13.2.10.1. ALTERNATIVE A AND THE PROPOSED RMP**

Alternative A and the Proposed RMP would use oil and gas industry slope disturbance guidelines (Gold Book) to limit surface disturbances from oil and gas activities, which would provide indirect, long-term beneficial impacts to riparian resources by reducing soil erosion on steep hillsides, and thus reducing the potential for increased stream sedimentation. Under Alternative A and the Proposed RMP, surface disturbances on slopes between 21%–40% would require erosion control, GIS modeling, and surveying, and slopes greater than 40% would not be disturbed unless other proposed construction alternatives would cause unnecessary degradation. These actions would also provide indirect, long-term beneficial impacts to riparian and wetland areas by reducing surface disturbances that cause soil erosion and subsequent stream and wetland sedimentation. These management actions would provide more indirect long-term beneficial impacts to riparian and wetland resources than Alternative D (No Action). The Proposed RMP would be slightly more beneficial than Alternative A, because it would adopt UDEQ BMPs that would limit surface discharges into waters.

#### **4.13.2.10.2. ALTERNATIVE B**

Alternative B would use oil and gas industry slope disturbance guidelines (Gold Book) to limit surface disturbances from oil and gas activities, and would require erosion control, GIS modeling, and surveying on slopes greater than 20% for unavoidable surface disturbances, with similar indirect beneficial impacts to riparian and wetland areas as described for Alternative A

and the Proposed RMP, but slightly less beneficial because disturbance would not be limited on slopes greater than 40%.

#### **4.13.2.10.3. ALTERNATIVE C**

Alternative C would have greater indirect beneficial impacts on riparian and wetland resources than the other alternatives by applying the same management actions (with similar impacts as Alternative A) on 21%–40% slopes and by prohibiting surface disturbances, and thus reducing the risk of increased stream sedimentation, on slopes greater than 40%.

#### **4.13.2.10.4. ALTERNATIVE D (NO ACTION)**

Alternative D proposes restrictions on slopes greater than 40% for mineral production only, and actions on slopes less than 40% are unspecified. Allowing other activities with no restrictions for slopes over 40% and not specifying slope restrictions on slopes less than 40% would have more indirect long-term adverse impacts to riparian and wetland resources, as compared to other alternatives.

#### **4.13.2.10.5. ALTERNATIVE E**

The impacts would be the same as Alternative C because the management decisions would be the same.

### **4.13.2.11. IMPACTS OF SPECIAL DESIGNATION DECISIONS ON RIPARIAN RESOURCES**

#### **4.13.2.11.1. PROPOSED RMP**

The Proposed RMP would have the least beneficial impacts on riparian resources due to ACEC decisions of any alternative. A total of 131,700 acres of ACECs would be designated, 42,654 fewer acres than under Alternative D (No Action). The effects of WSR designations under the Proposed RMP would be the same as described for Alternative A and C, except that the Proposed RMP would be slightly less beneficial because the White River below Asphalt Wash would not be identified as suitable for WSR designation.

#### **4.13.2.11.2. ALTERNATIVES A AND C**

Alternative C would offer the greatest protection to riparian resources through ACEC designations, protecting approximately 481,182 acres more than Alternative D (No Action). Alternative A offers the next best level of protection to riparian resources with approximately 180,069 more acres than Alternative D (No Action). Alternative C has the most miles of riparian corridor recommended for designation as either wild or scenic. Alternatives A, B, and D (No Action) would recommend for designation less miles of wild and scenic rivers than Alternative C.

**4.13.2.11.3. ALTERNATIVES B AND D (NO ACTION)**

Alternatives B and D (No Action) far less protection to riparian resources than Alternatives A and C, and would protect only half of the area that Alternative A would protect. Alternatives B and D would recommend for designation only the Lower and Upper Green River as Wild and Scenic; other streams, such as the White River, middle Green River, Bitter Creek, Argyle Creek, and Evacuation Creek would not be recommended as suitable for Wild and Scenic designation. Alternatives B and D (No Action) would not recommend for designation any new ACECs or wild and scenic river segments.

**4.13.2.11.4. ALTERNATIVE E**

The impacts on riparian resources would be the same as Alternative C because the decisions are the same.

**4.13.2.12. IMPACTS OF SPECIAL STATUS SPECIES DECISIONS ON RIPARIAN RESOURCES****4.13.2.12.1. ALTERNATIVES A ,C, AND THE PROPOSED RMP**

Alternatives A, C, and the Proposed RMP offer the best protection to riparian resources when compared to Alternative D (No Action) and are similar with respect to raptors; however, Alternative C and the Proposed RMP offer slightly more protection (particularly with respect to sage-grouse) than Alternative A.

**4.13.2.12.2. ALTERNATIVE B**

Alternative B would offer more habitat protection than Alternative D (No Action), providing more direct riparian resource protection, though the level of protection would be less than Alternatives A and C.

**4.13.2.12.3. ALTERNATIVE D (NO ACTION)**

Alternative D (No Action) offers the least direct protection of riparian resources because raptor buffers for surface disturbance are unspecified in the Book Cliffs Resource Area.

**4.13.2.12.4. ALTERNATIVE E**

The impact would be the same as Alternative C because the management decisions are the same.

**4.13.2.12.5. IMPACTS OF TRAVEL DECISIONS ON RIPARIAN RESOURCES****4.13.2.12.6. ALTERNATIVE A AND THE PROPOSED RMP**

Alternative A and the Proposed RMP would obliterate and/or return roads to their original condition when they no longer serve their permitted purpose or public interest. Additionally, roads causing resource damage would be repaired or closed, and water crossings would be

designed and built to allow for the free passage of aquatic life. These actions would provide more long-term direct, and indirect beneficial impacts to riparian resources by limiting sediment input into riparian systems, as compared to Alternative D (No Action), which is unspecified about roads and trails. With respect to OHV use, the Proposed RMP and Alternative A would have 781,657 fewer acres open, 756,200 more acres limited, and 25,457 more acres closed, as compared to Alternative D (No Action). Under the Proposed RMP and Alternative A, 4,860 miles of routes would be designated to OHV travel, where none would be designated under Alternative D (No Action). Alternative A and the Proposed RMP are second to Alternatives C and E with respect to riparian protection and would have more acreage of limited OHV use areas than Alternative C.

#### **4.13.2.12.7. ALTERNATIVE B**

Alternative B would not obliterate roads or trails if they serve a public interest. Roads causing resource damage would be repaired, but not closed if they are causing resource damage. These actions would be similar to Alternative D (No Action), with direct and indirect, short- and long-term adverse impacts to riparian resources. With respect to OHV travel, this alternative would have 782,425 fewer acres open, 772,626 more acres limited, and 9,799 more acres closed, as compared to Alternative D (No Action). Under Alternative B, 4,861 miles of routes would be designated to OHV travel.

#### **4.13.2.12.8. ALTERNATIVE C**

Alternative C would have similar impacts to Alternative A and the Proposed RMP. With respect to OHV travel, this alternative would have 782,425 fewer acres open, 466,254 more acres limited, and 316,171 more acres closed, as compared to Alternative D (No Action). Under Alternative C, 4,707 miles of routes would be designated to OHV travel. Alternative C would provide the second most protection to riparian areas of any alternative, by having the least acreage accessible to OHV use after Alternative E.

#### **4.13.2.12.9. ALTERNATIVE D (NO ACTION)**

Alternative D (No Action) would be unspecified about road and trail closure, obliteration, and repair. With respect to OHV travel, this alternative would have 787,859 acres open, 887,275 acres limited, and 50,388 acres closed. These actions would have direct and indirect, short- and long-term adverse impacts to riparian resources through increased sedimentation in riparian areas.

#### **4.13.2.12.10. ALTERNATIVE E**

Alternative E would have similar impacts to Alternative C. except that this alternative would manage 782,425 fewer acres as open to cross-country OHV travel, 438,749 more acres as limited to designated routes, and 342,430 more acres closed to OHV travel, when compared to Alternative D (No Action). Under Alternative E, 44,654 miles of routes would be designated to OHV travel (53 fewer miles of OHV routes than Alternative C in order to protect areas with non-WSA wilderness characteristics). Alternative E would provide the most protection to riparian

areas of any alternative, by having the least acreage accessible to OHV use and potential riparian surface disturbances.

#### **4.13.2.13. IMPACTS OF VEGETATION MANAGEMENT DECISIONS ON RIPARIAN RESOURCES**

Vegetation management decisions that affect riparian resources are a combination of fire management, forage allocation, livestock use, and range management. The direct and indirect impacts are discussed in the sections above.

##### **4.13.2.13.1. ALTERNATIVES A, B, C, D (NO ACTION), E, AND THE PROPOSED RMP**

Generally Alternatives A and the Proposed RMP provide more protection for riparian resources than does Alternative B and less protection than Alternatives C and E. Alternative D (No Action) provides less protection for riparian resources than any other alternative.

#### **4.13.2.14. IMPACTS OF VISUAL RESOURCE MANAGEMENT DECISIONS ON RIPARIAN RESOURCES**

##### **4.13.2.14.1. PROPOSED RMP**

The Proposed RMP would designate 57,776 and 231,911 acres as VRM Classes I and II respectively, which is 4,690 and 118,225 more acres with limits on surface disturbance than Alternative D (No Action). The Proposed RMP would provide more long-term indirect beneficial impacts, when compared to Alternative D (No Action), due lower levels of sedimentation and fragmentation of riparian areas.

##### **4.13.2.14.2. ALTERNATIVE A**

Alternative A would designate 63,136 and 294,773 acres as VRM Classes I and II respectively, which is 10,050 and 181,087 more acres with limits on surface disturbance than Alternative D (No Action). This alternative would provide more long-term indirect beneficial impacts, when compared to Alternative D (No Action), due lower levels of sedimentation and fragmentation of riparian areas.

##### **4.13.2.14.3. ALTERNATIVE B**

Alternative B would designate 52,764 and 114,030 acres as VRM Classes I and II, respectively, which is 322 fewer acres than Alternative D (No Action) under VRM Class I, and 344 more acres more under VRM Class II. This alternative would thus have similar impacts to riparian resources, as compared to Alternative D (No Action).

##### **4.13.2.14.4. ALTERNATIVE C**

Alternative C would designate 145,781 and 362,660 acres as VRM Classes I and II respectively, which is 95,695 and 248,974 more acres with limits on surface disturbance. This alternative would provide the second most long-term indirect beneficial impacts to riparian resources.

**4.13.2.14.5. ALTERNATIVE D (NO ACTION)**

Alternative D (No Action) would designate 53,086 and 113,686 acres as VRM Classes I and II respectively. This alternative would have long-term indirect beneficial impacts to riparian resources by restricting surface disturbances under the class objectives.

**4.13.2.14.6. ALTERNATIVE E**

Alternative E would designate 334,516 and 259,694 acres as VRM Classes I and II respectively, which is 281,430 more acres of VRM Class I and 146,008 more acres of VRM Class II, when compared to Alternative D (No Action), with greater limitations on surface disturbance. This alternative would have the most long-term indirect beneficial impacts to riparian resources by managing the most acreage under the VRM Class I objectives that would impose the most restrictions on surface disturbances to riparian resources.

**4.13.2.15. IMPACTS OF WOODLANDS AND FOREST MANAGEMENT DECISIONS ON RIPARIAN RESOURCES****4.13.2.15.1. ALTERNATIVES A, B, AND C, AND THE PROPOSED RMP**

The Proposed RMP and Alternatives A, B, and C would respectively have 546,152; 552,663; 554,108; and 552,152 acres of woodlands treated or harvested. This would be more than 250,000 more acres of harvesting and/or treatments than Alternative D (No Action), which would have long-term adverse impacts on riparian resources caused by soil erosion. Ecologically sound treatments and harvesting would occur under Alternatives A and C to ensure adequate biodiversity and reintroduce the natural fire return interval. Treatments and harvesting under Alternative B would be conducted with wood products production in mind. The goals of treatments and harvesting are unspecified under Alternative D (No Action).

**4.13.2.15.2. ALTERNATIVE D (NO ACTION)**

Alternative D (No Action) would have 288,300 acres of harvesting and/or treatments, with the least adverse impacts to riparian resources from soil erosion.

**4.13.2.15.3. ALTERNATIVE E**

Under Alternative E, there would be fewer impacts than those discussed under the Proposed RMP and Alternatives A, B, and C, but more impacts than under (Alternative D, No Action). Up to 421,133 acres would have treatments or be harvested. However, this would be partially offset by increased protection on 330,573 acres of non-WSA areas with wilderness characteristics that would be managed to prohibit woodland harvesting and wood gathering (primarily willow and cottonwood), with long-term, beneficial preservation-related impacts on riparian resources.

**4.13.2.16. SUMMARY**

In general, the greatest adverse impacts would be due to livestock and grazing, oil and gas leasing (which includes CBNG), and OHV use. Therefore the alternatives with higher open areas and fewer restrictions on activities would be least beneficial and most adverse to riparian areas. Alternative D (No Action) would have the greatest direct adverse impacts due to unmanaged OHV use and lack of limits on riparian grazing. Alternative B would have the greatest indirect adverse impacts due to oil and gas leasing (which includes CBNG). Alternative A and the Proposed RMP would have a moderate amount of direct and indirect adverse impacts, and Alternatives C and E would have the least direct and indirect adverse impacts of any alternative.

**4.13.3. MITIGATION MEASURES**

Riparian and wetland areas are protected under Section 404 of the Clean Water Act. Mitigation measures are required for development activities affecting these areas. Administrative actions can be undertaken where riparian resources are being degraded.

**4.13.4. UNAVOIDABLE ADVERSE IMPACTS**

Any proposed road water crossings would result in the loss of riparian habitat.

**4.13.5. SHORT-TERM USES VERSUS LONG-TERM PRODUCTIVITY**

Construction of well pad access roads would provide a short-term mineral use that would eventually result in long-term loss of riparian vegetation due to sedimentation, unless new roads are effectively maintained and restored after use.

**4.13.6. IRREVERSIBLE AND IRRETRIEVABLE IMPACTS**

There would be no irreversible and irretrievable impacts to riparian habitat from RMP decisions.