RECLAMATION
Managing Water in the West

Final Environmental Assessment Project No. 2016-073

Resource Management Plan for
Horsetooth Reservoir
Carter Lake
Pinewood Reservoir
Flatiron Reservoir

United States Department of the Interior
Bureau of Reclamation, Great Plains Region
Eastern Colorado Area Office

September 2018

MISSION STATEMENTS

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

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ACRONYMS

ADA	Americans with Disabilities Act
ANS	Aquatic Nuisance Species
APE	Area of Potential Effects
ARPA	Archaeological Resources Protection Act
C-BT	Colorado Big-Thompson
CNAP	Colorado Natural Areas Program
CNHP	Colorado Natural Heritage Program
CPW	Colorado Division of Parks and Wildlife
CR	County Road
CSFS	Colorado State Forest Service
EA	Environmental Assessment
ECAO	Eastern Colorado Area Office
EO	Executive Order
FONSI	Finding of No Significant Impact
GI	Globally Impaired
IPAC	Information for Planning and Conservation
ITA	Indian Trust Asset
Larimer County	Larimer County Department of Natural Resources
MBTA	Migratory Bird Treaty Act
MOU	Memorandum of Understanding
NEPA	National Environmental Policy Act
NHPA	National Historic Presevation Act
NISP	Northern Integrated Supply Project
Northern Water	Northern Colorado Water Conservancy District
PFYC	Potential Fossil Yield Classification
PRPA	Paleological Resource Preservation Act
Reclamation	Bureau of Reclamation
RMP	Resource Management Plan
Sail Club	Carter Lake Sailing Club
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SHPO	State Historic Preservation Office
SSC	Horsetooth Sail and Saddle Club
USACE	United States Army Corps of Engineers
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service

INTRODUCTION

This environmental assessment (EA) has been prepared to programmatically evaluate environmental impacts associated with the Bureau of Reclamation's (Reclamation) approval of a proposed revised Horsetooth Reservoir, Carter Lake, Pinewood Reservoir, and Flatiron Reservoir, Larimer County Resource Management Plan (RMP) that outlines the vision and guidelines for future resource management decisions between Reclamation and the Larimer County Department of Natural Resources (Larimer County) (Appendix A). The proposed RMP updates and supersedes the previous RMP document that was executed in June 2007 (Reclamation, 2007).

The EA is programmatic; it establishes only a conceptual framework for evaluating resource impacts and does not contain sufficient detail to implement any specific activities and improvements. As such, it focuses on a broad scale of resource impacts associated with the Action Alternative and its broad level of proposed development activities. Site-specific resource impacts will be addressed under separate NEPA compliance tiered off of this environmental assessment prior to implementation.

The RMP will be used to:

- Guide safety decisions protecting public and staff on federal land.
- Ensure management of natural and recreational resources is compatible with authorized Colorado-Big Thompson (C-BT) Project purposes.
- Establish natural and cultural resource management goals and objectives.
- Guide Reclamation's planning and decision-making regarding existing and future infrastructure
- Protect natural and cultural resources and;
- Assist Larimer County in day-to-day management and project implementation to meet recreation demand.

Reclamation's approval of the RMP is a federal action subject to the provision of the National Environmental Policy Act (NEPA) of 1969.

This EA is prepared in compliance with the NEPA (Public Law 91-190) and under current guidelines established by the Council on Environmental Quality, the U.S. Department of the Interior, and Reclamation. If the environmental effects of the Proposed Action as disclosed in the EA are determined to be insignificant, Reclamation can issue a Finding of No Significant Impacts (FONSI) and an environmental impact statement will not be required.

PURPOSE AND NEED

The purpose of Proposed Action is to establish a plan that defines the management framework for the conservation, protection, and enhancement of four reservoirs constructed under the C-BT Project: Horsetooth Reservoir, Carter Lake, Pinewood Reservoir, and Flatiron Reservoir (Figure 1). The RMP will guide Reclamation, along with Larimer County and other participating agencies, in managing, allocating, and appropriately using the federal land and other resources at the four reservoirs while protecting the authorized C-BT Project purposes and natural resources. The update to the RMP is necessary to address

an increasing use at the four reservoirs and their associated recreational facilities and is valid for 10 years from date of issuance.

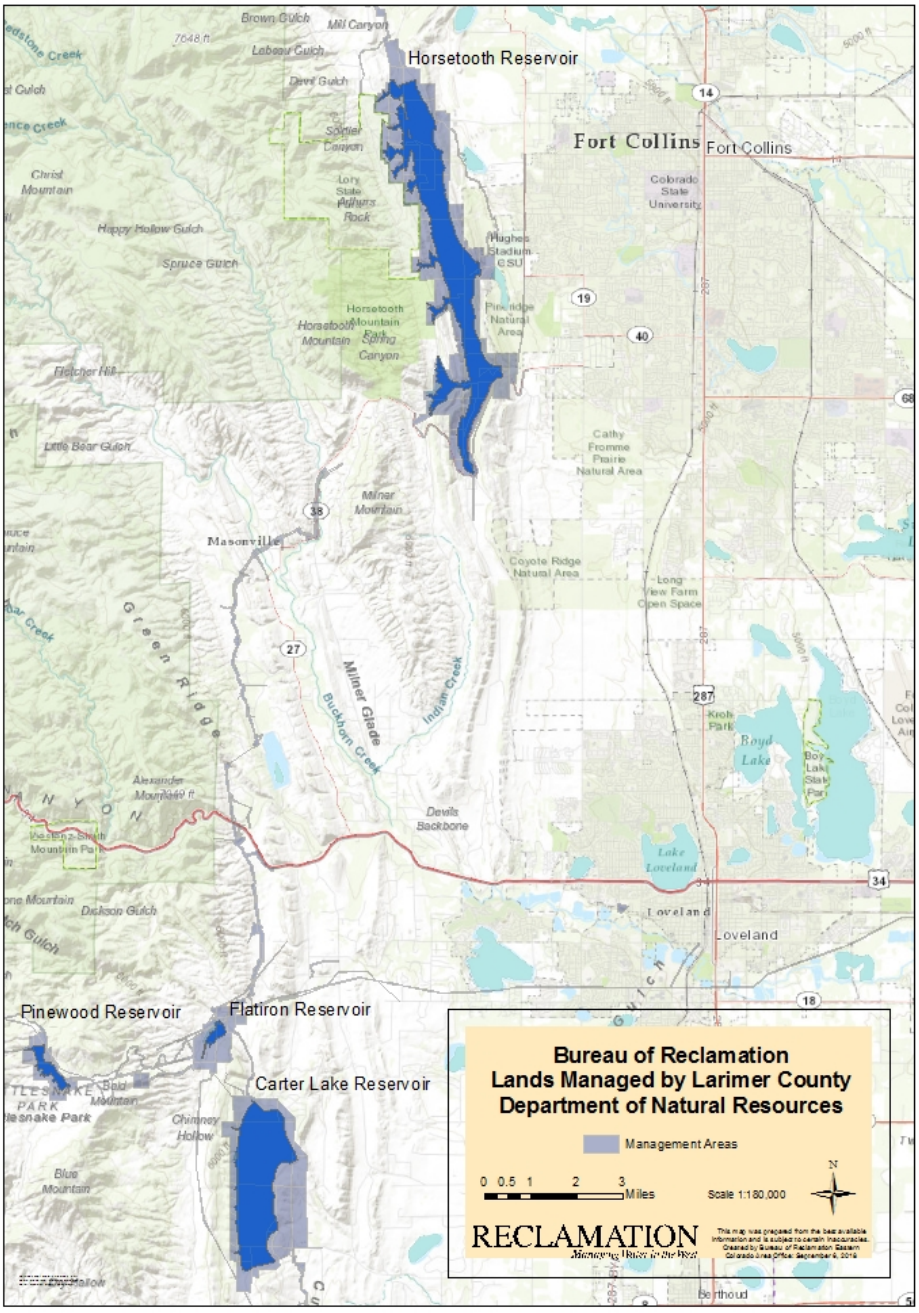

Figure 1- Project Area

The RMP is a planning document. It includes management goals with associated objectives for the four reservoirs. The management objectives have multiple purposes. The purposes include appropriate use and protection of the land and associated natural resources while, at the same time, protecting the authorized C-BT Project purposes consistent with the mission and goals identified in Reclamation's and Great Plains Region's mission and vision statements (https://www.usbr.gov/gp/about_us/vision.html) and the Department of Interior's Strategic Plan. Reclamation's and Larimer County's management goals are similar and include but, are not limited to: management, development, and protection of water and other related natural resources in a safe, efficient, and effective manner. The specific goals, or desired future conditions, with associated objectives to help reach the goals were described in the RMP (Appendix A, Chapter 3).

BACKGROUND

The RMP includes four reservoirs constructed under the C-BT Project: Horsetooth Reservoir, Carter Lake, Pinewood Reservoir, and Flatiron Reservoir. The four reservoirs are a portion of the C-BT Project. The C-BT Project was authorized by Congress on June 15, 1937 to bring 310,000 acre-feet of supplemental water annually from the western slope of the Continental Divide to meet the municipal, industrial, and irrigation demands of over 30 cities and towns in northeastern Colorado. Currently, the C-BT Project transports a yearly average of about 260,000 acre-feet. Northern Colorado Water Conservancy District (Northern Water), a public agency, was created in 1937 to distribute C-BT Project water through a network of canals once it leaves Horsetooth Reservoir and Carter Lake.

In addition to supplying water, the C-BT Project captures the energy of the flowing water to generate hydroelectric power. Horsetooth Reservoir and Carter Lake both provide terminal storage for the east slope C-BT Project. Pinewood Reservoir is what is known as a forebay, in which its water is impounded to provide head pressure for Flatiron power plant. Flatiron Reservoir acts as both a forebay for the Flatiron power plant's Unit 3 pump and it also serves as an afterbay for Units 1 and 2 power generators. An afterbay is a reservoir that water is emptied into after traveling through a power plant. Water can be pumped from Flatiron Reservoir to Carter Lake.

Larimer County manages the four reservoirs are managed for recreation. All four reservoirs support a variety of recreational opportunities near the cities of Fort Collins and Loveland, Colorado.

The RMP assists Reclamation, as the authorized federal landowner, with coordinating its planning activities and use authorizations with adjacent private and public landowners to ensure compatibility and to protect natural and cultural resources and infrastructure from the ever-growing population pressures and increasing threats of terrestrial and aquatic nuisance species (ANS), such as zebra/quagga mussels. Most lands adjacent to the four reservoirs are privately owned and used primarily for residential purposes. Larimer County own and manage several open spaces adjacent to or near the four reservoirs, such as Chimney Hollow, Ramsay-Shockey, and Horsetooth Mountain open spaces. The City of Fort Collins Natural Areas Department has several properties adjacent to Horsetooth Reservoir, including Maxwell, Reservoir Ridge, and Pineridge natural areas. Lory State Park is also adjacent to Horsetooth Reservoir.

Reclamation must ensure compliance with all federal laws, regulations, and executive orders (EOs), including the C-BT Project authorizing legislation, Senate Document 80. The RMP document will further describe other relevant laws, regulations, and EOs.

In 1954, Reclamation and Larimer County entered into an agreement allowing Larimer County to manage public recreation on the four reservoirs. In 1997, this original agreement was replaced with Memorandum of Understanding (MOU) No. 97-AG-60-09220. The MOU gives Larimer County the authority to issue and administer various licenses, leases, permits and contracts with private and civic groups for public recreation purposes. In addition to permitting numerous seasonal recreational events, such as fishing derbies, boating regattas, and weddings, Larimer County maintains longer-term agreements, with prior approval by Reclamation, for marina and paddleboard concession operations at Horsetooth Reservoir and Carter Lake. Larimer County also administers extended lease agreements with two recreational clubs; Carter Lake Sail Club (Sail Club) and the Horsetooth Sail and Saddle Club (SSC), both that have both been in existence since about the 1960s. The Sail Club is fully open to the public and provides a variety of public services regarding sailing at Carter Lake. The SSC is considered a private exclusive use under Reclamation's CFR 429. Reclamation will determine its compatibility with authorized Project purposes by seeking public input during the 10-year term of the RMP. If it is determined in the best interests of the public and Reclamation, it can continue as an existing private exclusive use for the next 20 years before a reevaluation. If the existing private exclusive use is determined to not be in the best interest of the public and Reclamation, the area may be determined to be better suited for another use.

The RMP is also relevant to a variety of other government agency partners who have resource and other management responsibilities. Primary agencies include:

- U.S. Forest Service/Colorado State Forest for fire and fuel reduction management.
- Northern Colorado Water Conservancy District (Northern Water) for operations and maintenance of the four reservoir water delivery facilities.
- Colorado Parks and Wildlife (CPW) for fisheries and aquatic nuisance species (ANS) management.
- US Army Corps of Engineers (USACE) for Clean Water Act enforcement.
- Larimer County Sheriff for local law enforcement responsibilities.

Reclamation may revise or amend the RMP within the established 10-year planning period as necessary. During the implementation or monitoring phases of the RMP, Reclamation, other agencies, or the public may identify problems, deficiencies, or additional issues that should be addressed. Changes in the social, economic, physical, or environmental conditions may also necessitate changes to the RMP. Reclamation expects that minor changes in project descriptions that do not conflict with the established goals and objectives would be documented and would not require further public involvement and NEPA compliance. Changes that would modify one or more of the prescribed decisions and require major changes to the established goals and policies would be documented by an amendment to the RMP and may require further public involvement and NEPA compliance. Reclamation will determine the level of public involvement and appropriate NEPA compliance. The RMP is expected to be re-evaluated at the end of the 10-year planning period (2027) to determine whether or not the RMP should be revised.

Reclamation's MOU with Larimer County is set to expire during the 10-year period which may require revision or amendment to the RMP; however, other specific significant changes or decisions that may impact the RMP are not known at this time.

ALTERNATIVES

NO ACTION ALTERNATIVE

For the No Action Alternative, Larimer County's 2007 RMP would not be revised. This would result in a continuation of current management practices. No new facilities would be provided to meet existing and future public needs or demands. Also, current resource management practices and operations would not change and management actions would occur on a case- by-case basis to meet federal, state, and local laws and regulations. Finally, maintenance of the existing facilities would occur as needed.

PROPOSED ACTION

Under the Proposed Action, Reclamation would revise Larimer County's 2007 RMP and issue an updated RMP. The Proposed Action includes a full range of activities and improvements that would be implemented in the project area. The Proposed Action provides for a moderate level of new recreation facility development, most of which occurs within existing developed project areas. Overall, improvements and upgrades would be made to maintain the current level of service. In addition to facility development, the RMP provides a new management framework for the reservoirs, defining a series of use zones that provide varying levels of resource protection, use types and intensity, and desired recreational experiences. Below are summary tables (Tables 1 and 2) that include the planned new developments and site enhancements.

Table 1-Total Area of New Development under the Proposed Action (within footprint of existing recreation not included)

Reservoir	Acres
Horsetooth Reservoir	47
Carter Lake	24.45
Pinewood Reservoir	0.5
Flatiron Reservoir	0.1
Total Acres	**72**

**New development within the footprint of existing developed recreation sites is not included in these totals.*

Table 2-Planned Campsites and Parking Spaces under the Proposed Action

	Horsetooth Reservoir	Carter Reservoir	Pinewood Reservoir	Flatiron Reservoir	Net Change
Proposed new recreational vehicle (RV) campsites	0	+6	0	0	+6
*Proposed new tent campsites**	+5	+6*	0	0	+11
Proposed new cabins	0	+6	0	0	+6
Proposed new car parking spaces	+40	+165	0	0	+205
Proposed new trailer parking spaces	+90	+57	0	0	+147

**Addition of 20 sites at Big Landia, removal of 7 sites from Carter Knolls and 7 sites from Big Thompson.*

Key projects under the Proposed Action for Horsetooth Reservoir and Carter Lake are highlighted below. Planned actions at Pinewood and Flatiron Reservoir are largely limited to enhancements of existing facilities. See the RMP (Appendix A, Chapter 3.7.5-Chapter 3.7.8) for details and associated conceptual maps.

Horsetooth Reservoir:

North of Horsetooth Dam (See RMP, Appendix A, Figure 3.2)

- Develop a static Archery Range near County Road (CR) 25G. This area was disturbed in the past by motorized recreational use. Allow day use only with safety as a priority (target distance, terrain shielding, etc.)
- Provide 40 parking spaces.
- Add a large group day use area and shelter.
- Provide a locked gate when archery range is closed (sunset to sunrise).
- Use wildlife-friendly Fencing around riparian and wetland area near archery range to prevent social trails, fragmentation, or disturbance.
- Construct single track walking trail with 3D targets along trail.

Satanka Bay and Expanded Parking Area (See RMP, Appendix A, Figure 3.3)

- Add guardrail path on south side of dike.
- Develop approximately 90 new trailer parking spaces. Construction would be phased in response to observed demand. This parking area would be used primarily during periods of higher demand, such as weekends and holidays.
- Construct 900 foot road access from Satanka Boat Ramp to parking in the North Dam area.
- Provide 1,200 foot access trail from parking to top of the day-use area with switchbacks up ridge.
- Construct an improved paddle sports launch area. Provide sand, improved access, and other means to reduce bank erosion and improve the visitor experience.

Carter Lake:

North Pines Campground (See RMP, Appendix A, Figure 3.5)

- Add approximately 10 new parking spaces.
- Add approximately 22 new boat trailer parking spaces, including 11 pull through and 11 pull in.
- Replace existing camping sites with day use areas.
- Construct dryland boat storage racks to store up to 50 sailboats on site during winter months.
- Replace or improve the Sail Clubhouse in partnership with the Sail Club when needed.

Big Thompson & Quarry Area (See RMP, Appendix A, Figure 3.6)

- Convert the campground to a day use area.
- Provide approximately 90 parking spaces for day use at Big Thompson.
- Designate and delineate up to 3 areas along the shoreline for swimming.
- Construct standing grills, landscaping and trees, and American Disability Act (ADA) accessible paths at Big Thompson.
- Develop a trail leading south to the existing natural swim area.
- Construct quarry overflow parking area in a future phase. Parking would be a natural surface, used only seasonally during high water, and fenced. It would include approximately 45 vehicle parking spaces and 35 boat trailer parking spaces.
- Provide a floating courtesy dock.
- Construct an enhanced pedestrian crossing and steps to the courtesy dock.

- Construct an overlook along CR 31.

Big Landia (See RMP, Appendix A, Figure 3.7)

- Construct 1 new restroom.
- Add approximately 20 parking spaces.
- Add 20 tent pads.
- Construct a group campground with large group shelter and fire ring.
- Operate group campground by reservation only, and install a locked gate for use during unreserved periods. Open camping to individual reservations if area is not reserved by groups (2 weeks out).
- Construct trail to existing natural swim area in a manner that protects the dam and install a cross walk to safely channel visitors crossing the county road.
- Add a loop trail extending to south.

Alternatives Considered But, Eliminated:

Horsetooth Reservoir:

Inlet Bay Campground

- Adding a substantial number of additional campsites was considered infeasible due to a lack of suitable land and the challenges associated with creating land using fill.
- Relocating the Inlet Bay Trail off campground roads is dismissed due to the lack of a viable alternative.

Inlet Bay Marina

- Increasing the number of moorings/slips at Inlet Bay Marina was considered infeasible due to the regulatory challenges associated with deepening the marina area.

North of Horsetooth Dam

A range of alternative elements were explored and dismissed, as follows:

- Limited development, including a passive interpretive trail as the only feature, was considered infeasible as it would not generate revenue sufficient to cover capital and ongoing maintenance costs.
- A trail connection across CR 23 to the Reservoir Ridge Trailhead was considered unsafe due to the potential of vehicle-pedestrian conflicts.
- Disc golf course was unsupported as the site is not large enough; discs could land in the canal; and five disc golf courses already exist in adjacent Fort Collins.
- RV, cabin, tent, or group camping was unsupported due to compatibility with the character of the site and concerns from adjacent neighbors.

Satanka Bay

- Converting Satanka Bay or coves to non-motorized paddle sports only was considered infeasible due to demand for motorized boating.
- Relocating a paddle sports concessionaire from Satanka Bay to a cove with access via Lory State Park was determined infeasible due to road construction requirements and seasonal water level changes.
- Limiting the number of boats at one time in any one cove would create a difficult management challenge.
- Walk-in camping from Lory State Park to the coves was unsupported due to the unique recreational opportunity afforded to boat-in camping.

- A hiking trail from Satanka Bay to Lory State Park is not considered feasible at this time due to terrain (cliffs) and private land rights.

Blue Sky Trailhead

- Community interest in a playground was dismissed as it is not consistent with Reclamation policy.

Fort Collins Shuttle to Horsetooth Reservoir

- Not enough interest has been demonstrated to merit consideration at this time.

Other Trails

Multiple trail connections were considered that could assist in achieving a vision for Horsetooth Reservoir to connect to Fort Collins and Lory State Park without requiring on-street travel. The primary obstacles for most trail alignments are private land rights, terrain (cliffs), and natural resource conflicts. As stated in the RMP (Appendix A, Chapter 3.2), Larimer County will work to acquire land or easements to complete trail connections on a willing seller basis. Larimer County already has over 20 regional trails that it is working to accomplish, as described in the 2015 Open Lands Master Plan. The following trail segments were evaluated and dismissed below.

- An off-street, multi-use trail from Pineridge Natural Area to South Bay Campground paralleling CR 38E is not feasible at this time. The County will continue to investigate opportunities to work with other County Departments to improve bicycle access and public safety along CR 38E to Horsetooth Reservoir. Multiple potential trail alignments were examined with stakeholders and in the field and dismissed for the following reasons:
  - The high cost of retaining walls and trail construction on CR 38E due to steep terrain and boulders;
  - Safety concerns of increasing bike use on CR 38E;
  - Homeland Security risks to Spring Canyon Dam and monitoring equipment; and
  - Trail user compatibility with South Bay campground users.
- A protected pedestrian and/or bike path across each dam was dismissed as the road shoulder is sufficient to allow safe passage at all major dams.
- A southern trail connection from west Trilby along Western's transmission line access road to Bighorn Crossing Drive to South Bay is not feasible at this time due to private property and private road constraints.
- A loop trail from Pineridge Natural Area north of the Spring Canyon Dam to Piano Boulders to Dixon Reservoir was dismissed due to wildlife impacts and lack of support by agency partners.

Carter Lake:

North Pines

- New and upgraded tent campsites were dismissed due to public support for additional day use areas.

Marina Area

- A full-service restaurant was considered infeasible due to water requirements that cannot be met at this time.

Big Thompson & Quarry Area

- Camping in the quarry area was dismissed due to demand for parking and concerns from adjacent property owners.
- Conversion of existing campsites to electric RV campsites at Big Thompson was dismissed due to demand for day use facilities.
- A walking path along the east of the reservoir would be difficult above the high water mark because of the steep terrain between the road and reservoir, especially during high water.

Carter Knolls

- Retaining Carter Knolls to a day use area or group day use was dismissed due to high wind conditions.

Big Landia

- Cabins or RV camping were dismissed to conserve the character of the area.

South Shore Campground

- Tent camping below the high water mark was dismissed as it would create a difficult management challenge and potentially impact aquatic habitats.
- Boat-in camping along the west shore of Carter Lake was dismissed at this time due to potential conflicts with trail users and because boat-in camping is available at Horsetooth Reservoir.

Pinewood Reservoir:

- New horse trailer parking at Fisherman's Cove or a new trailhead below the dam was dismissed at this time due to insufficient demand and space constraint at Fisherman's Cove parking area.
- A RV dump station would not be feasible at Pinewood. Visitors can use the Carter Lake dump station or private facilities.
- Cabins at Blue Mountain trailhead were dismissed due to insufficient demand.

Flatiron Reservoir:

Campground

- Additional restrooms were requested by the public. This element was dismissed as the demand and need are not sufficient to warrant additional restrooms at this use area.
- Full RV hook ups were dismissed because it would not be consistent with level of service provided at this reservoir.
- Water recreation activities including but not limited to, swimming, wading, and boating of any type (including belly boats, kick boats, canoes, kayaks, and stand-up paddleboards) were dismissed due to a strong current and outlet siphon that creates unsafe conditions.
- A disc golf course was dismissed because it would not be consistent with the mission and role of the reservoir recreation area.
- A trail around the entire Flatiron Reservoir, connecting to both ends of the campground, was considered. This alternative element was eliminated because of Homeland Security and public safety risks inherent to crossing the inlet canal and the trail's proximity to the Flatiron Powerplant.

RMP Implementation

The implementation of the majority of these projects would be phased over the next 10 years. Due to the uncertainty of funding from fiscal year to fiscal year, a precise long term schedule for each project cannot be accurately developed for the purposes of the RMP. Other factors that may influence the implementation of a particular action are based on whether the action: (1) is procedural or technical, such as preparing agreements or developing specific plans; (2) addresses public health and safety concerns; (3) is required to prevent resource damage or protect wildlife species or habitats; or (4) requires large capital investments, such as facility development.

Successful planning and coordination will be necessary to identify annual program priorities and will be essential in securing funding necessary to accommodate the goals and objectives of this RMP. To facilitate this, there will be annual coordination between Reclamation and Larimer County to discuss issues, solutions, funding sources, and implementation priorities of the management actions. Larimer

County will continue to provide its capital improvement plans and implementation schedules each year to aid planning efforts.

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Reclamation is following 43 CFR Part 46, Section 46.135-Incorporation of referenced documents for this NEPA analysis. This section establishes procedures for incorporating referenced documents as provided by Council on Environmental Quality regulations at 40 CFR 1502.21.

Existing resource conditions and potential impacts are organized per reservoir, however, most impacts are discussed broadly due to the fact that project details, designs, and specifications have not yet been fully developed. For most resources, the project area is defined as the lands and water within the boundaries of the four reservoirs. A broader area is considered for certain resources: e.g. socioeconomic resources, and where necessary to provide context. Where possible, impacts of each alternative are quantified; however, most impacts are discussed broadly due to the fact that specific project designs and construction details have not been fully defined. When activities are proposed, each site specific project designs and construction plans will be reviewed, assessed for the need for further environmental analysis and documentation beyond the scope of this EA, and approved by Reclamation to ensure consistency with the approved RMP and all applicable federal, state and local laws and regulations before they move to a construction phase.

It is understood that reasonable foreseeable actions may occur regardless of the implementation of the Proposed Action or the No Action alternative. It is also understood that these reasonable foreseeable future actions, when combined with the past/present actions and the alternatives evaluated in the RMP process, may result in cumulative effects.

Cumulative impacts are defined by Reclamation as, "The impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." Projects and activities considered in the cumulative effects analysis include:

- **Northern Integrated Supply Project (NISP) -** The final EIS is under public review until October 4, 2018. Because the Reclamation Action Option has been eliminated, there would be no direct effects on Horsetooth or Carter Reservoir if this project is implemented.
- **Grand County Water Quality/Clarity Study -** In 2008 the Colorado Water Quality Control Commission adopted a clarity standard for Grand Lake. In response to this standard, Reclamation will prepare an EA to evaluate alternatives to improve water quality in Grand Lake, Shadow Mountain Reservoir and Lake Granby without adversely affecting C-BT Project operations. Several alternatives will be evaluated, some of which could affect water levels in Horsetooth and Carter Lake. Long-term effects will be evaluated by the EA. Reclamation also entered into a MOU with Grand County, Northern Water, Northwest Colorado Council of Governments and Colorado River Water Conservation District in 2016 to implement an adaptive management process through 2020 to improve clarity at Grand Lake while conducting NEPA for long term solutions (MOU No. 16-LM-60-2578).
- **Windy Gap and Windy Gap Firming Project -** This project, being completed by Northern Water, can affect east slope reservoir levels when Windy Gap water is exchanged for C-BT Project water and delivered to entities within the Municipal Subdistrict of Northern Water. The

Windy Gap Firming Project's proposed Chimney Hollow Reservoir is located near Carter Lake and its development would affect resources similar to those located in the project area. In addition, the project would provide new recreational opportunities, including non-motorized boating.

- **Other Water Contracts** - Reclamation has Excess Capacity Exchange Contracts with Loveland, Berthoud and Tri-Districts that have minor effects on Reservoir elevation in Horsetooth and Carter. Combined, these contracts have an effect on reservoir elevations.
- **Regional Growth -** The project area is located in a rapidly growing region. This growth will likely influence resources at the four reservoirs and this effect is considered where appropriate.

The effects discussion in this affected environment and environmental consequences section addresses direct, indirect and cumulative long-term effects resulting from the implementation of the alternatives during the 10-year RMP planning period. Any short-term effects from new projects would be related primarily to construction activities and would be temporary and minor. Short-term effects from construction would include noise, dust and use area or facility closures. These activities would result in minor disturbance to humans, recreational use and wildlife.

Figures 2 through 5 below depict the existing resource conditions at each of the four reservoirs.

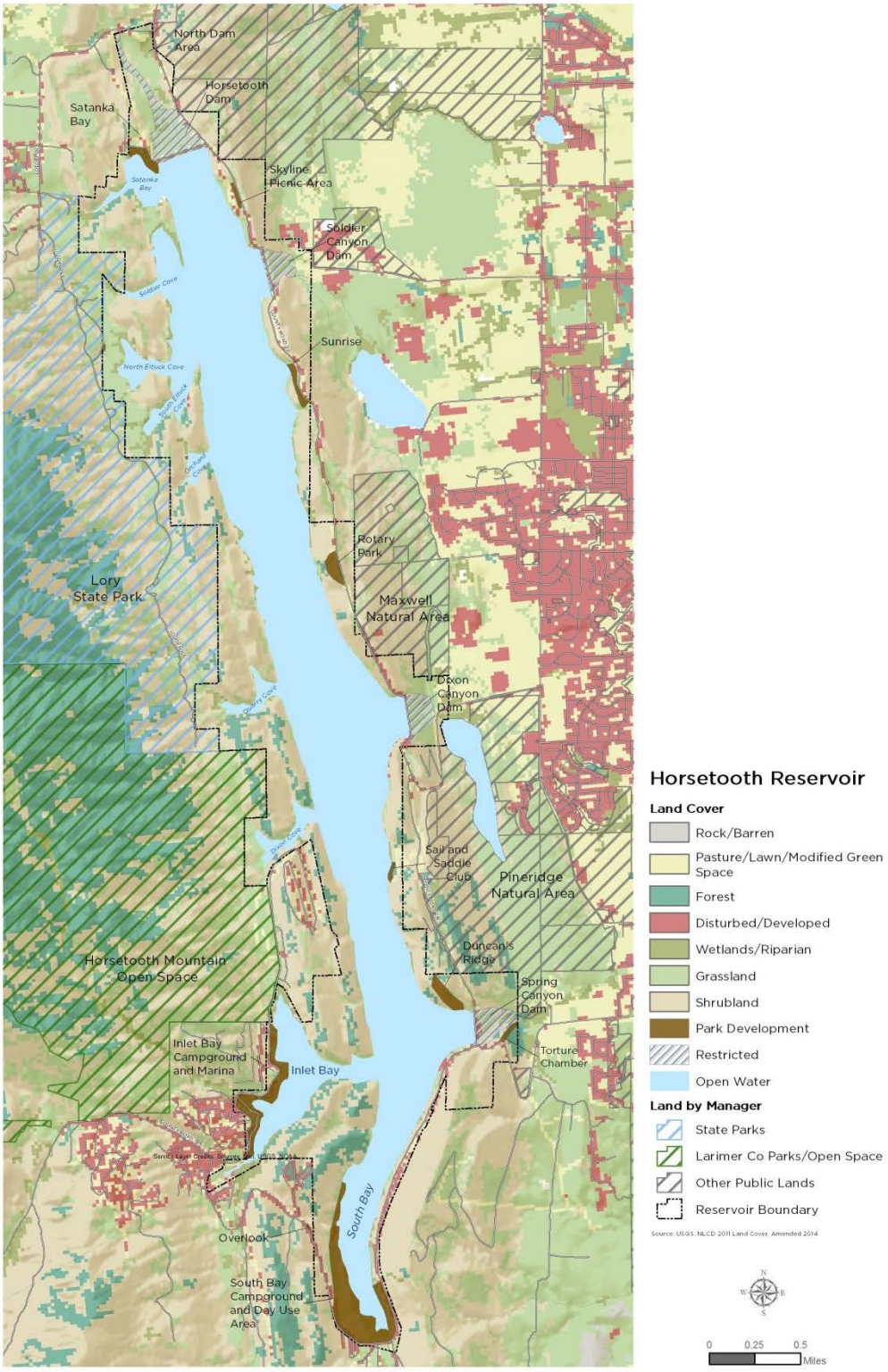

Figure 2-Horsetooth Reservoir Existing Conditions

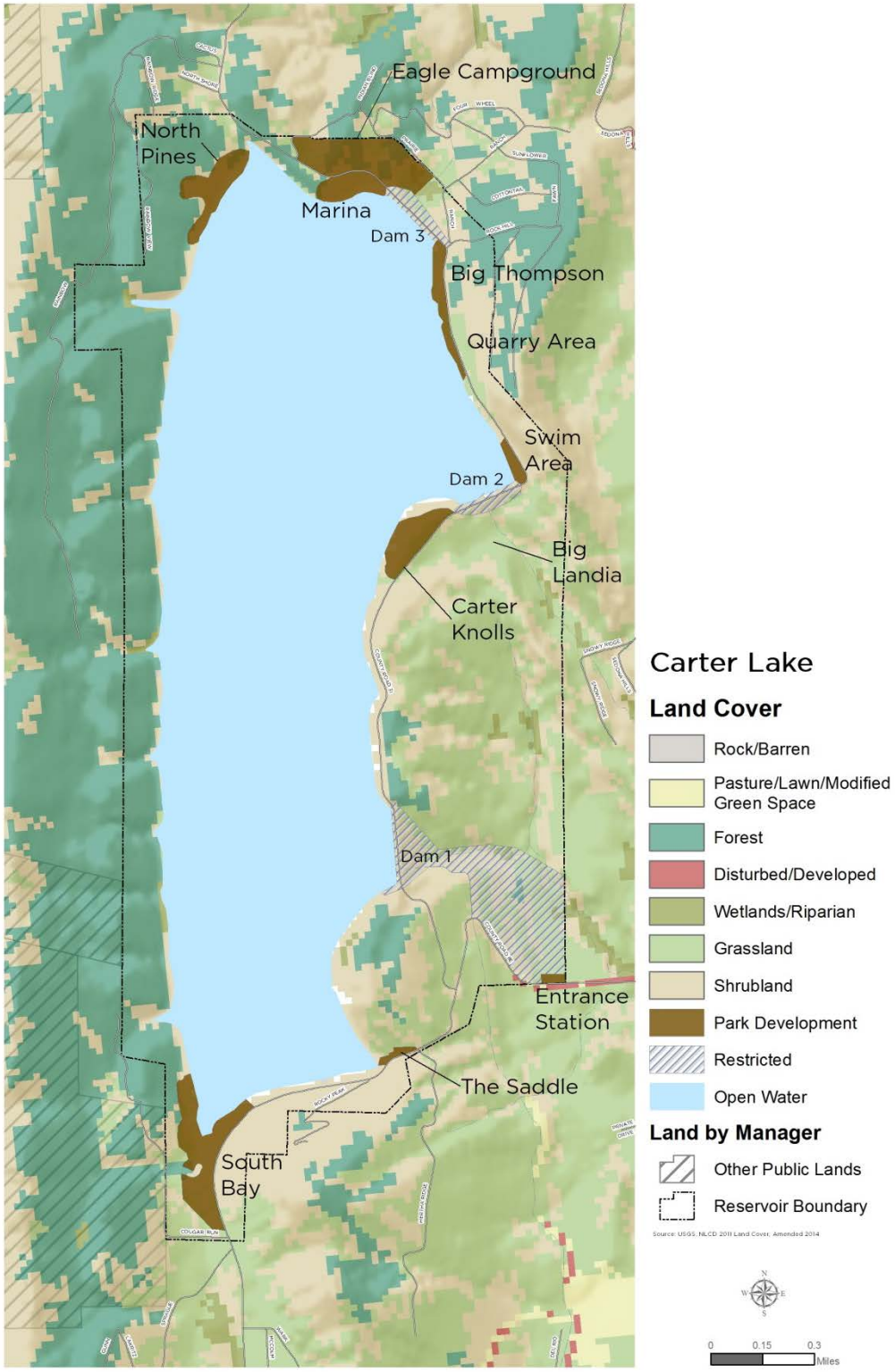

Figure 3-Carter Lake Existing Conditions

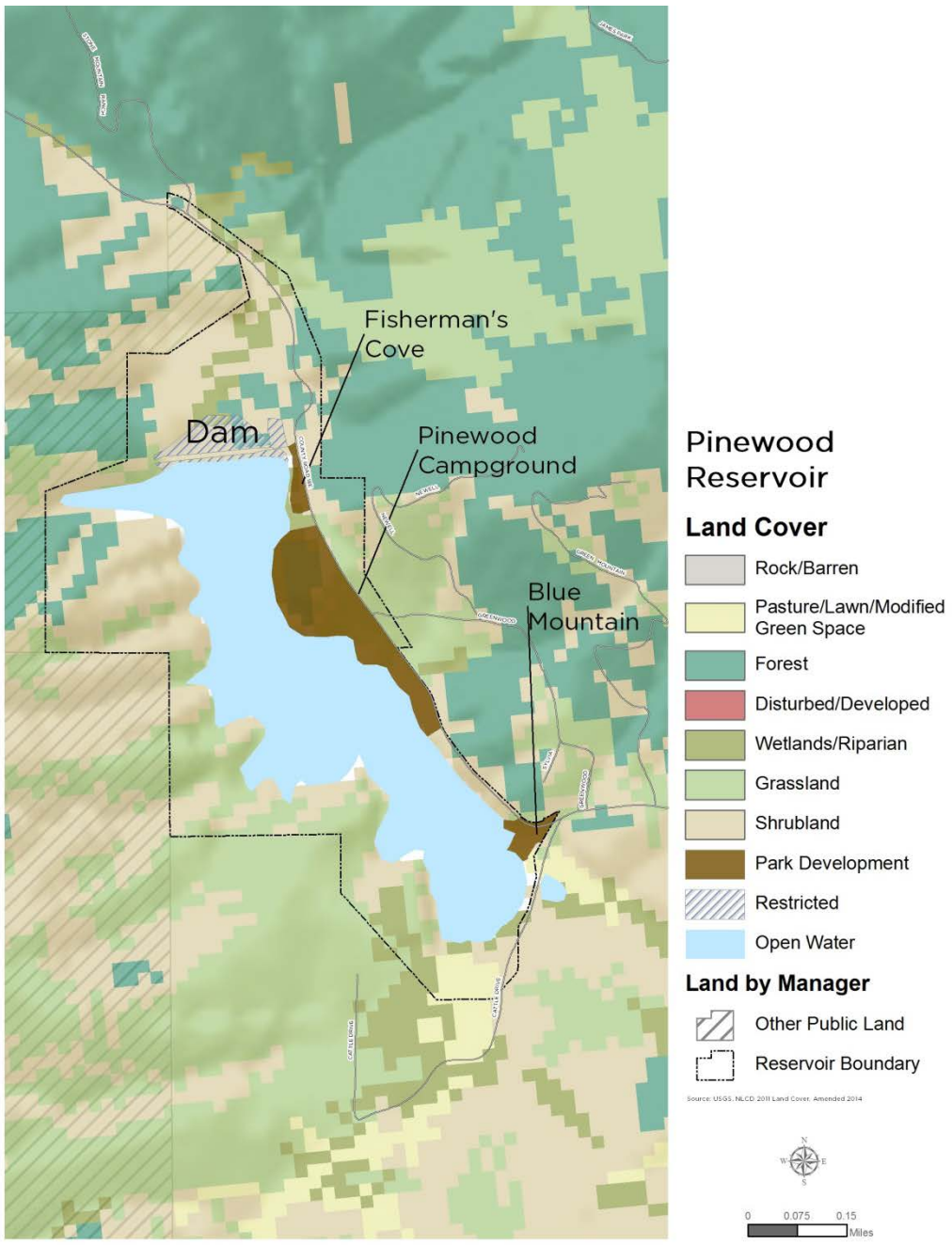

Figure 4-Pinewood Reservoir Existing Conditions

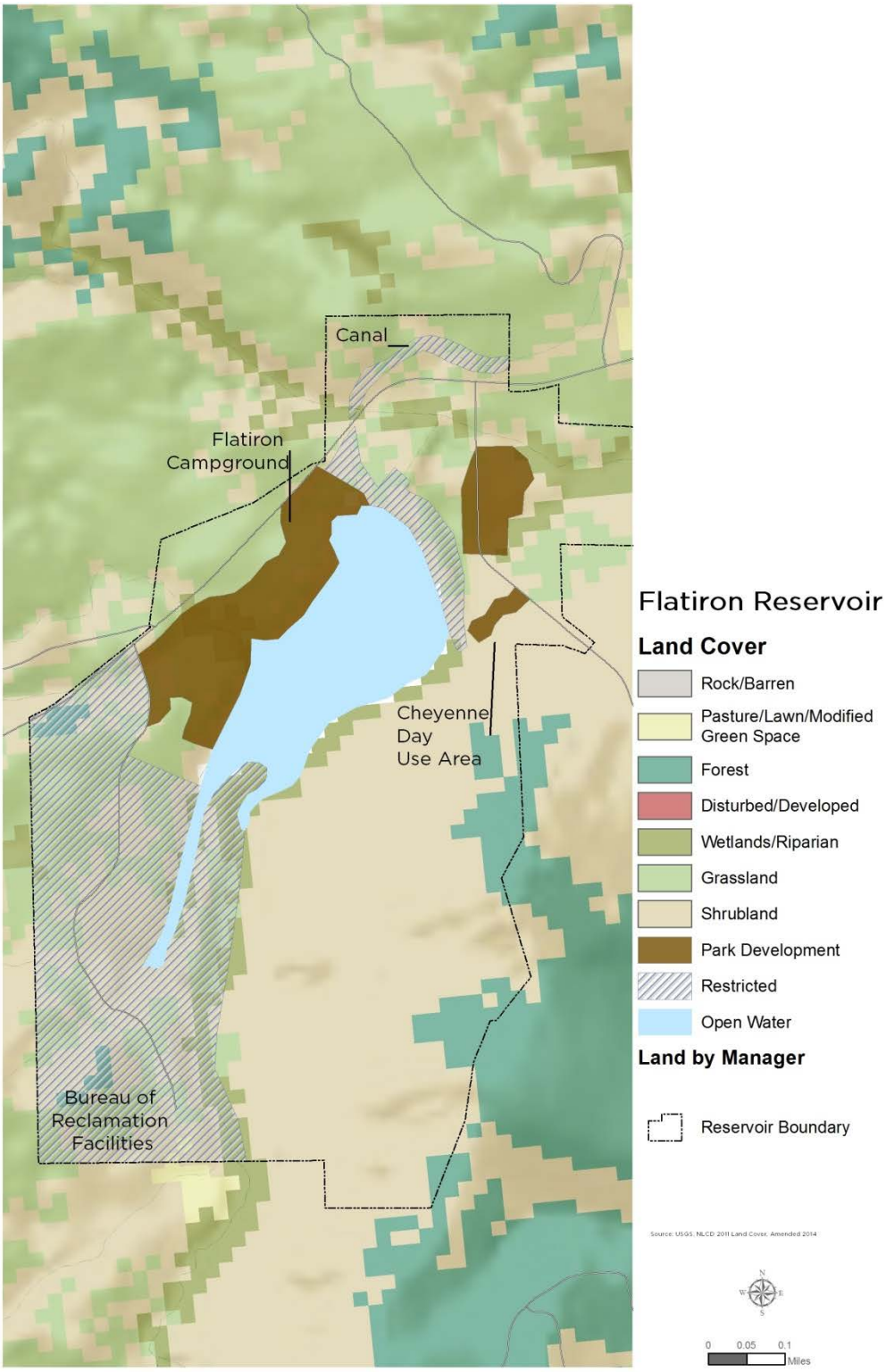

Figure 5-Flatiron Reservoir Existing Conditions

The affected environment and environmental consequences, and cumulative impacts related to implementing the Proposed Action as compared to the No Action, are described in the next section.

Hydrology and Water Quality

Affected Environment

The project area is located along the eastern slope of the Rocky Mountains, an area with a semi-arid climate zone characterized by strong seasonal variations in temperatures, abundant sunshine and relatively low precipitation. Average annual precipitation is approximately 15 inches with most precipitation received from April to September, often in the form of thunderstorms. Snowfall is approximately 50 inches per year but often melts quickly and is unreliable for skiing or other winter activities. Table 3 below summarizes some key characteristics of the four reservoirs.

Table 3-Characteristics of the Four Reservoirs in the Project Area

	Watershed Size (sq.mi.)	Max WS Elevation (feet)	Surface Area (acres)	Storage (acre-feet)
Horsetooth	17.5	5,430	2,040	156,735
Carter	19	5,759	1,114	112,228
Pinewood	3.5	6,580	97	2,179
Flatiron	7.0	5,472	44	722

Source: Reclamation Standard Operating Procedures, 2003-2005

Natural inflows to the reservoirs are from intermittent drainages, each of which contributes only a minimal amount of the water stored in the reservoirs. These include: Solider Canyon, Wells Gulch, Arthur's Rock Gulch, Mill Creek and Spring Creek at Horsetooth Reservoir; Dry Creek at Flatiron; Dry Creek (different from the Dry Creek located at Flatiron) at Carter Lake; and Mill Gulch at Pinewood Reservoir as well as several other unnamed drainages.

Pinewood Lake receives C-BT Project water from the west slope via the Olympus Tunnel and the Pole Hill Powerplant. Water is then delivered to Flatiron Powerplant and Flatiron Reservoir. Like Flatiron Reservoir, Pinewood Reservoir water levels vary daily. Fluctuations of 3 to 4 feet are normal and are related to power generation needs.

Water is delivered to Flatiron Reservoir via the Bald Mountain Flatiron penstock originating at Pinewood Reservoir. Power is generated at the Flatiron Powerplant in the process. Water is delivered from Flatiron Reservoir to either the Charles Hansen Feeder Canal or (by pumping) to Carter Lake. Flatiron water levels can fluctuate by more than 10 feet over the course of a single day based on water demand and power generation.

Carter Lake and Horsetooth Reservoir are terminal storage points for the C-BT Project. Water is delivered to Carter Lake by pumping from Flatiron Reservoir from December through May. Water flows out from Carter Lake to the St. Vrain Canal for supplemental agricultural, domestic, municipal and industrial uses. Carter Lake exhibits a similar pattern to Horsetooth described below but fills earlier in an average year (late April to early May) and drops slightly by June before dropping sharply through the remainder of the summer. In an average year, the reservoir fills to 5,748.7 feet, drops 18.7 feet by July (5,730), drops an additional 21 feet in August (5,712.8) and reaches 5,703 feet by September. Over the course of the summer season, the reservoir drops by approximately 45 feet.

C-BT Project water is supplied to Horsetooth Reservoir via the Charles Hansen Feeder Canal, generally from October through May. Water stored in the reservoir is used to supplement municipal and industrial supplies on a year round basis. Water stored in Horsetooth Reservoir for agricultural uses is also supplemental, but is more seasonal and occurs primarily during the growing season. As a result, water levels in Horsetooth Reservoir fluctuate substantially on both a seasonal and annual basis. The following discussion of water levels is derived from Reclamation's Standard Operating Procedures (Reclamation 2003-2005): In an average year, the reservoir fills in June and reaches a water surface elevation of approximately 5,412.5 feet. As demands for water stored in the reservoir increase, the water surface lowers, dropping by 10 feet in July to 5,402.2 feet and by an additional 10 feet in August, reaching 5,392.2 feet. The reservoir continues to drop in September, reaching an elevation of 5,387.5 feet, which represents a drop of nearly 25 feet through the summer months. After October, when the reservoir drops to its lowest level (5,382.7 feet), the reservoir begins to fill and the water surface elevation rises throughout the winter and into the spring. In average dry years, the reservoir only fills to 5,415 feet and drops to approximately 5,387 feet by September. An average wet year results in slightly higher water surface elevations throughout the year, filling to 5,425 feet in June and dropping to 5,398 feet by September.

Water quality in the four reservoirs is generally considered to be "good." This is due to the fact that source water is primarily derived from snow melt at high elevations and watersheds characterized by few contaminants and crystalline rock that provides for low dissolved solids content. The discussion that follows focuses on Horsetooth Reservoir and Carter Lake. Water quality in Pinewood and Flatiron reservoirs is similar to that of the water inflowing from the CB-T System due to the fact that both reservoirs have short hydraulic detention times and frequent movement of water in and out of each reservoir (Northern Water 2013).

The Colorado Department of Public Health and Environment's Water Quality Control Commission (WQCC) establishes designated uses and numeric water quality standards to protect those designated uses in Colorado. For brevity, all water quality classifications, standards, drinking water regulations, and procedural and planning rules can be accessed at: https://www.colorado.gov/pacific/cdphe/water-quality-control-commission-regulations. Non-attainment of water quality standards (impaired waters) is reported to the Environmental Protection Agency in Regulation 93. An interactive map of Colorado's 2018 Stream and Lake segmentation is available online at: http://cdphe.maps.arcgis.com/apps/Viewer/index.html? appid=f1541d2f21834642ba1551c674fd4a79.

The trophic status of Horsetooth Reservoir has evolved from an oligotrophic (low nutrient levels) state in its early years to mesotrophic (moderate nutrient levels) today. A mesotrophic classification indicates moderately clear water and a loss of salmonoids (primarily salmon and trout) with species such as walleye predominating. Carter Lake is considered oligotrophic, which indicates clear water, oxygen present in the hypolimnion (lower level of reservoir), and generally higher level of water quality than a mesotrophic reservoir. However, Carter Lake is also on the 303(d) list of impaired waters due to an elevated level of mercury in fish tissue found in some species taken from the reservoir.

Environmental Consequences

Impacts of the No Action Alternative

The No Action Alternative would have no effect on reservoir hydrology. Reservoir elevations would continue to fluctuate based on the hydrologic year, the volume of West Slope water moved through the Adams Tunnel and water demands downstream of Horsetooth Reservoir and Carter Lake.

Although no additional areas would be disturbed by construction of new facilities, some additional areas would be disturbed by the anticipated increase in visitation. This increase, in combination with a continuation of current visitation management practices, could probably result in a minor increase in the amount of sediment reaching the reservoir. An increase in visitation would also present a risk of increased coliform bacteria levels in the reservoirs due to visitors not using the proper facilities.

Current capacity limits would remain in effect. Anticipated demand in boating use would likely result in increased use during periods of lower use, e.g. weekday mornings, when capacity limits do not directly affect boating numbers. Increasing the amount of paved areas that are currently unpaved would also result in minor increases in runoff of associated hydrocarbons and other fluids leaked from vehicles.

Impacts of the Proposed Action

Like the No Action Alternative, the Proposed Action would have no effect on reservoir elevations. Increases in visitation are expected to occur, which could result in minor reductions in water quality. Continuation of boating capacity limits and the limited amount of new development planned at the four reservoirs would keep the degree of change minor.

Short term, minor impacts to water quality during construction under the Proposed Action would result from increased soil disturbance. Erosion and sediment control measures, spill control procedures and other measures will be implemented to minimize the risk of any contaminants reaching the four reservoirs (See the RMP, Appendix A, Chapter 5.4.4). Areas disturbed by construction would be revegetated to reduce the potential for increased sediment and impacts on water quality.

Long-term effects include an increased risk of contamination from human activities, including increased boating use. Although current capacity limits would remain in effect, the strong demand in boating use would likely result in increased use during periods of lower use, e.g. weekday mornings, when capacity limits do not directly affect boating numbers. Increasing the number of available parking spaces and paved areas that are currently unpaved would also result in minor increases in runoff of associated hydrocarbons and other fluids leaked from vehicles.

While the potential impacts to water quality under both the No Action and the Proposed Action are reduced with implementation of the standard environmental commitments (See Appendix B), minor adverse effects on water quality could occur.

Cumulative Impacts

There would be no hydrologic impacts associated with the No Action or Proposed Action. Therefore, there are no associated cumulative impacts to hydrology (reservoir elevations, etc.). Although a Grand County Water Quality/Clarity action alternative, if one is selected, might influence future water quality and reservoir operations at Horsetooth Reservoir and Carter Lake, no cumulative impacts on water quality are anticipated. In the absence of any effects from project implementation, no cumulative effects would occur.

With respect to water surface elevations at the four reservoirs, the situation is more complex. Regional growth and increasing demands for water are likely to modify operations at the four reservoirs with respect to the timing and extent of drawdowns. Because this RMP does not include reservoir operations, there are no cumulative effects on water levels. However, over the life of this RMP, may adjust reservoir operations in response to future water demands independent of the RMP.

Geology, Soils, and Topography

Affected Environment

Horsetooth Reservoir and Carter Lake are located in a complex geologic setting that marks the transition zone between the Great Plains and the Rocky Mountains. Both reservoirs occupy topographic depressions within an inter-hogback valley. The “hogbacks,” which are the erosional remnants of great folds in the sedimentary layers, create a setting with strong visual interest. At Horsetooth Reservoir, several of the hogbacks have been penetrated by intermittent drainages. At high water, the water reaches the west side of these hogbacks to form a series of protected coves along the shoreline.

The Lykins Formation is a potential geologic hazard at all four reservoirs due to its tendency to form sinkholes. Within the Lykins Formation, sinkholes have the potential to develop near the surface. The Carter Lake Anticline is a local geologic feature that is a good example of folded sedimentary rock.

The only commercial mineral resources in the RMP area are the sandstone formations that were quarried in the past for building materials. Quarrying occurred at Horsetooth Reservoir and, to a lesser degree, at Carter Lake. No other commercial mineral resources are present in the project area and mineral extraction is no longer permitted in the RMP area.

Pinewood Reservoir is located in a geological setting that is markedly different from that of the other reservoirs. Several faults and diverse rock formations converge in the vicinity of the reservoir, resulting in a complex geological pattern where the Fountain and other sedimentary formations of the lower areas meet the intrusive igneous and metamorphic formations characteristic of the foothills. The reservoir itself is located at the edge of Rattlesnake Park, a flat area surrounded by several prominent peaks, including Bald and Blue Mountains.

Blue Mountain, which is located approximately one mile from Pinewood Reservoir, is a prominent landmark that has been designated as a Colorado Natural Areas Site. Blue Mountain is significant as an example of geologic faulting (Colorado Department of Natural Resources 2006).
Flatiron Reservoir is located in alluvium and colluvium deposits associated with the Dry Creek and Chimney Hollow drainages. The Fountain Formation makes up the surrounding land forms, including Flatiron Mountain with its steep rocky slopes and nearly vertical cliffs below the summit.

Many areas in the project area have sensitive soils, which usually reflect a combination of steep slopes and shallow depth to bedrock. The Natural Resource Conservation Service states that sensitive soils have severe limitations for recreational use and facility development: "A limitation of severe means that costly soil reclamation, special design, or intensive maintenance, or a combination of these is required.” Development of existing recreation areas and facilities has generally avoided locations with severe soil limitations.

Elevations at Horsetooth Reservoir range from 5,366 feet (low water line) to approximately 5,800 feet. The reservoir occupies the relatively flat areas between the hogback ridges, leaving a shoreline that laps up against the steep slopes of the hogbacks at most locations. The western shoreline is more varied and includes a series of coves that extend up the small valleys where drainages have eroded through the hogback ridge. The terrain is gentler at the upper end of these small valleys, such as Inlet Bay, where Spring Creek enters the reservoir. As a result, much of the recreation facility development at the reservoir has occurred at Inlet Bay and at the south end of the reservoir where the valley between the two hogbacks remains above the high water line. Small areas of gentle slopes occur along the tops of the hogback ridges.

Elevations at Carter Lake range from 5,477 feet to approximately 6,000 feet. Carter Lake also occupies a natural basin located between two parallel ridges in the foothills. The reservoir occupies the flat areas of the basin, resulting in a shoreline that abuts steep ridges along most of the east and west sides of the reservoir. As a result, much of the shoreline and adjacent land areas are steep and difficult to utilize for recreational activities or facility development. Only a few shoreline areas, including the South Shore and a small area at the northeast corner of the reservoir, are not limited by steep slopes. Several smaller areas, such as near the southeastern entrance along Dry Creek and the tops of some ridgelines, also have gentler slopes.

Pinewood Reservoir is located at nearly 6,600 feet, which makes it the highest of the four reservoirs. Steep topography abuts the shoreline along much of the northeast side of the reservoir adjacent to CR 18E, leaving only a few areas suitable for site development. Slopes are gentler in the southwestern portion where the reservoir abuts Rattlesnake Park; however, no public roads provide access to the western shoreline areas.

Although it has a small area, the Flatiron Reservoir site has substantial topographic variation, ranging in elevation from approximately 5,470 feet to over 6,100 feet near the summit of Flatiron Mountain. Much of the western portion of the site and shoreline are nearly flat, which is the area where recreation facilities have been developed and much of the use occurs. The southeast portion of the site is dominated by Flatiron Mountain, which rises abruptly from near the edge of the shoreline. This portion of the site is visually interesting and contributes to the visual quality of the setting.

Environmental Consequences

Impacts of the No Action Alternative

Under the No Action Alternative, existing geologic features would remain unchanged. No additional use areas would be developed and no new areas would be disturbed. Minor impacts to soil resources would continue to occur as a result of ongoing maintenance activities in addition to visitors using existing social trails, and trampling soils and vegetation in the vicinity of developed use areas and along the shoreline.

Impacts of the Proposed Action

Approximately 66 acres would be disturbed by construction activities at new and expanded use areas. Most of the new disturbance would occur at Horsetooth Reservoir (47 acres) and a lesser amount at Carter Lake (25 acres). Less than an acre of disturbance would occur at Pinewood and Flatiron reservoirs. The majority of disturbance resulting from implementation of the Proposed Action would occur within areas that are already disturbed. For example, at Horsetooth Reservoir construction of the new archery range and expanded trailer parking north of the dam would occur at locations that were heavily disturbed by prior construction activities and other uses. Similarly, some of the new construction at Carter Lake would occur within the footprint of existing use areas or in an area that had been previously disturbed by quarrying activities. Sensitive areas, such as the small pond at the proposed archery range at Horsetooth, would be protected from disturbance.

The environmental commitments, listed in Appendix B, would be implemented and followed during operations of existing facilities and construction of areas disturbed outside of the footprint of new facilities, and use areas would be revegetated. As a result, only minor, increases in erosion and associated soil loss are anticipated in both the short term and long term.

Construction would not occur in areas of significant geologic features. If any structures are to be constructed in the Lykins Formation, a geotechnical evaluation would be performed to determine the risk of construction on or near sink holes.

Cumulative Impacts
No cumulative impacts have been identified for this resource.

Vegetation and Fire Management

Affected Environment
The project area is located within the Southern Rocky Mountain Steppe Ecoregion near the convergence of the Southern Rocky Mountain and Southern Rocky Mountain Foothills (United States Department of Agriculture 2016). Much of the project area lies at the lower end of the ecoregion, ranging from approximately 5,300 feet at Horsetooth Reservoir to 6,600 feet at Pinewood Reservoir. The landscape where these two regions meet is highly altered geologically, resulting in a diverse arrangement of plant communities due to variation in slope, aspect, elevation, precipitation, soil type, exposed bedrock and land use. Vegetation in the foothills region is an important resource, providing forage for native wildlife and habitat for rare and endangered plant species. Six community types can be found within the project area. These include:

- Wetlands/Riparian
- Grassland
- Mixed shrubland
- Ponderosa pine/Mixed shrubland
- Ponderosa pine
- Disturbed/Developed areas

Wetlands/Riparian
Wetland and riparian community types are generally defined as wet habitats occuring along watercourses or adjacent to other water bodies. This community type is generally found as depressions, broad areas associated with seepage from dams (Hansen Canal outlet north of Horsetooth Dam), narrow strips associated with intermittent and ephemeral drainages, broad flat areas that lack drainage outlets and narrow fringe areas around the perimeter of the four reservoirs at some locations. The unique soil conditions associated with these areas, largely due to the presence of water, led to the development of diverse vegetative communities that are important to many wildlife species. The U.S. Fish & Wildlife Service's (USFWS) National Wetland Inventory has identified three unique wetland types within the project area; including freshwater emergent wetlands, freshwater forested/shrub wetlands and riverine (USFWS 2016).

Common herbaceous species typically found in wetland and riparian areas include Baltic rush, sedges, redtop, goldenrod, field mint, curly dock and field horsetail. In areas where standing water occurs, water cress and broad-leaved cattail may also be found. Shrub species associated with riparian and wetland areas include coyote willow and the invasive species tamarisk, which is found in wetter areas. Chokecherry is found in areas that are somewhat drier. Tree species commonly found in wetland and riparian areas include plains cottonwood, narrowleaf cottonwood, peachleaf willow and the invasive species Russian olive.

Grasslands
Grassland plant communities are found in the valley bottoms and gentle side slopes. Soils in grassland areas are typically deeper than those of surrounding plant communities. Common herbaceous grass species typically found in grassland areas include needle-and-thread, blue grama, green needlegrass, western wheatgrass, indian ricegrass; and several introduced species, including smooth brome and crested wheatgrass. Grassland forb species include hairy golden aster, slender-flowered scurfpea, wild flax,

prairie sage, scarlet globemallow and milkvetch. Other species that occasionally exist in grassland communities include broom snakeweed, fringed sage, prickly-pear cactus, yucca and Arkansas rose.

Mixed Shrubland
Mixed shrubland plant communities are found in areas with relatively steeper slopes than grasslands and typically have shallow, rocky soils. The dominant shrub in this community is mountain mahogany. Other shrub species found in the mixed shrub community include three-leaf sumac, squaw currant and western snowberry. An understory of herbaceous plant species may include needle-and-thread, blue grama, western wheatgrass, slender-flowered scurfpea and prairie coneflower. The invasive species, cheatgrass, may also be found growing in mixed shrubland areas that have been disturbed by past fire or overgrazing.

Ponderosa Pine/Mixed Shrubland
Ponderosa pine/mixed shrubland plant communities are found on moderately steep slopes with rocky shallow soils. This community can be found at a slightly higher elevation than the mixed shrubland community, although they can be integrated. Ponderosa pine is the dominant tree species of this community and mountain mahogany is the dominant shrub species. A diversity of plant species can be found in this community and include species such as blue grama, fringed sage, elk sedge, prairie sage, prickly-pear cactus and yucca.

Ponderosa Pine
The Ponderosa pine plant community is similar to the Ponderosa pine/mixed shrubland plant communities but has denser stands of ponderosa pine. This community is also found in areas of moderate slope with shallow rocky soils. Plant species found in this community are similar to those described for the Ponderosa pine/mixed shrubland community, with a lower component of shrubs and more herbaceous species.

Disturbed/Developed
Disturbed/Developed area plant communities are found near the dams as well as at locations near parking areas, campgrounds and trails where the native vegetation has been removed. Although weed control efforts are on-going, weed species are typically more common in these areas. Vegetation associated with disturbed/developed areas includes cheatgrass, Japanese brome, puncture vine, common mullein, peppergrass and Canada thistle. Some disturbed areas that have been revegetated in the past are dominated by smooth brome and/or crested wheatgrass.

Special Status Plant Species
A review of the USFWS web-based database indicates that four federally listed threatened or endangered species have the potential to occur in the project area (IPaC 2016). These species are:

- Colorado Butterfly Plant (Threatened)
- North Park Phacelia (Endangered)
- Ute Ladies'-tresses (Threatened)
- Western Prairie Fringed Orchid (Threatened)

Colorado Butterfly Plant is a short lived perennial forb that typically occurs on sub-irrigated, alluvial soils of drainage bottoms surrounded by mixed grass prairie (elevation range 5,000-6,400 feet) (Spackman et al. 1997). The current estimated range in Colorado is 600,000 acres, however, occurrences in Larimer County are now considered historical and this species has possibly been extirpated (CNHP, 2004). Primary threats to the species include hydrologic alteration, broadleaf herbicide application and livestock grazing.

North Park Phacelia is found on poorly vegetated exposures of the Coalmont Formation in Jackson County, CO. These sites are characterized by steep-sided ravines, low sandy hills and bluffs (elevation

range 8,000-8,500 feet). Habitat for this species does not occur in the project area. Primary threats include OHV use, habitat fragmentation and infrastructure associated with Oil & Gas development (CNHP 2011).

Ute Ladies'-tresses is a perennial orchid found in sub-irrigated alluvial soils along streams, open seepage areas in cottonwoods and moist meadows on floodplains (elevation range 4,500-7,700 feet) (Spackman et al. 1997). The current estimated range in Colorado is over 8,000,000 acres with known occurrences approximately 1 mile northeast of Horsetooth Reservoir in a wet meadow area surrounded by dry pasture land (CNHP 2004). Primary threats to the species include hydrologic alteration, seed predation and livestock grazing (CNHP 2011).

Western Prairie Fringed Orchid most often occurs in mesic to wet unplowed tallgrass prairies and meadows. However, this species has been found in old fields and road ditches (IPaC 2016). No current or historical populations have been documented in Colorado. Primary threats include habitat loss, collection and pesticide application.

CNHP has also identified several special status species that could be potentially found in the project area (CNHP 2016). These species include (with their ranking and USGS Quad Element Location)[1]:

- Prairie Goldenrod (G5/S1), Horsetooth Reservoir
- Bell's Twinpod (G2G3/S2S3), Horsetooth Reservoir/Carter Lake/Masonville
- Slim-pod Venus'-looking-glass (G5/S1), Horsetooth Reservoir
- Rocky Mountain Phacelia (G3/SU), Horsetooth Reservoir
- Rocky Mountain Sedge (G5/S1), Horsetooth Reservoir
- Forktip Three-awn (G5/S1), Horsetooth Reservoir/Carter Lake
- Larimer Aletes (G2G3/S2S3), Pinewood Lake
- Gay-feather (G5/S2), Pinewood Lake
- Southern Rocky Mountain Cinquefoil (G3/S2), Pinewood Lake
- Large Water-Starwart (G5/S1), Masonville
- Blue Giant-hyssop (G4G5/S1), Masonville
- Jeweled Blazingstar (G3/S3), Masonville

CNHP Potential Conservation Areas

CNHP has delineated potential conservation areas that focus on capturing the ecological processes necessary to support continued existence of rare elements (species) or suites of rare elements (CNHP 2016). The following potential conservation areas (PCAs) are located within or partially within the project area:

[1] This list does not include CNHP ranked species that are also Federally listed or Colorado state listed.
Definition of Colorado Natural Heritage Program Imperilment Ranks.
G/S1=Critically imperiled globally/state because of rarity (5 or fewer occurrences in the world/state; or 1,000 or fewer individuals), or because some factor of its biology makes it especially vulnerable to extinction.
G/S2=Imperiled globally/state because of rarity (6 to 20 occurrences, or 1,000 to 3,000 individuals), or because other factors demonstrably make it very vulnerable to extinction throughout its range.
G/S3=Vulnerable through its range or found locally in a restricted range (21 to 100 occurrences, or 3,000 to 10,000 individuals).
G/S4=Apparently secure globally/state, though it may be quite rare in parts of its range, especially at the periphery. Usually more than 100 occurrences and 10,000 individuals.
G/S5=Demonstrably secure globally/state, though it may be quite rare in parts of its range, especially at the periphery.

- Green Ridge PCA
- Carter Lake Reservoir Hogbacks PCA
- Rattlesnake Park PCA
- Indian Creek Hogback PCA
- Horsetooth Reservoir Hogbacks PCA
- Redstone Creek Cliffs PCA
- Dixon Creek PCA

Table 4 lists these areas and provides additional information on each.

The Green Ridge PCA covers a large portion of south central Larimer County, totaling 68,471 acres in size and occupying the transition zone between the foothills and montane regions that span the Front Range (elevation range 5,400-9,550 feet). The Green Ridge PCA is located just west of Carter Reservoir, capturing Pinewood Reservoir within its boundary, and extends to the north primarily in the higher elevation zone around the Big Thompson River. The site includes two occurrences of the globally imperiled (G2) ponderosa pine/mountain mahogany/big bluestem savanna, known only on the Front Range north of Boulder, CO (CNHP, 2004).

The Carter Lake Reservoir Hogbacks PCA is located on the hogback immediately west of Carter Lake (elevation range 5,670-6,230 feet). The site contains fair occurrences of two globally imperiled (G2) plant communities, including the ponderosa pine/mountain mahogany/big bluestem foothills woodland that is only known to occur in northern Colorado's Front Range and mountain mahogany/New Mexico feathergrass foothills shrubland (CNHP 2004).

The Rattlesnake Park PCA is found on the south side of Pinewood Reservoir along intermittent drainages that flow into the reservoir (elevation range 6,600-6,900 feet). The site contains thousands of Southern Rocky Mountain cinquefoil plants that occur along the intermittent drainages, making it an excellent (A) occurrence of the globally vulnerable plant (CNHP 2004).

The Indian Creek Hogback PCA includes approximately six miles of the hogback ridge, from just north of Devil's Backbone to Horsetooth Reservoir's Inlet Bay (elevation range 5,400-5,800 feet). The site is characterized by the red sandstone hogback cliffs that provide unique habitat to populations of mountain mahogany and a variety of native grasses. Bells twinpod (G2) is found in patches throughout the PCA, typically growing from the base of the cliff's to the toe of the slopes (CNHP 2004). Management issues identified on the site include the invasion of noxious weeds and trail placement.

The Horsetooth Reservoir Hogbacks PCA is located west of Fort Collins, Colorado, in the area surrounding Horsetooth Reservoir. Bell's twinpod (G2) occurs on the site, as well as historical records of prairie goldenrod and forktip three-awn grass (CNHP 2004). The site also contains the globally imperiled (G2) ponderosa pine/mountain mahogany/big bluestem foothills woodland community, big bluestem-little bluestem xeric tallgrass prairie community, mountain mahogany/three-leaf sumac/big bluestem foothills shrubland, and globally imperiled (G2G3) mountain mahogany/New Mexico feathergrass foothills shrubland (CNHP 2004).

The Redstone Creek Cliffs PCA is a 1,025 acre site located between the Horsetooth Mountain Open Space parking lot and Redstone Canyon Road (elevation range 5,500-6,000 feet). The diverse topography in the area allows for large variation in plant communities and vegetative cover. The site also contains two fair occurrences of Bell's twinpod (G2), known only to occur on the foothills of the Front Range (CNHP 2004).

The Dixon Creek PCA extends along five miles of the Niobrara shale formation between the City of Fort Collin's Pineridge and Coyote Ridge natural areas. The site has two good and one fair occurrence of Bell's twinpod (G2). The site also contains a fair occurrence of the globally imperiled (G2G3) mountain mahogany/New Mexico feathergrass shrubland.

Table 4-Potential Conservation Areas and Potential Rankings

Name	Biodiversity Significance Rank	Protection Urgency Rank	Management Urgency Rank	Within Project Area	Within 1 Mile Buffer
Green Ridge	Very High	Definable Threat/ Opportunity but not within 5 years	Needed within 5 years to Maintain Quality	Yes (Pinewood)	Yes (Carter, Pinewood, and Flatiron)
Carter Lake Reservoir Hogbacks	High	Threat/ Opportunity within 5 years	Essential within 5 years to Prevent Loss	Yes (Carter)	Yes (Carter)
Rattlesnake Park	High	No Threat or Special Opportunity	Not Needed Now; No Current Threats; May Need in Future	Yes (Pinewood)	Yes (Pinewood)
Indian Creek Hogback	Very High	No Threat or Special Opportunity	Needed within 5 years to Maintain Quality	Yes (Horsetooth)	Yes (Horsetooth)
Horsetooth Reservoir Hogbacks	Very High	No Threat of Special Opportunity	Needed within 5 years to Maintain Quality	Yes (Horsetooth)	Yes (Horsetooth)
Redstone Creek Cliffs	High	Definable Threat/Opportunity but not within 5 Years	Needed within 5 years to Maintain Quality	No	Yes (Horsetooth)
Dixon Creek	Very High	No Threat or Special Opportunity	Needed within 5 Years to Maintain Quality	No	Yes (Horsetooth)

Source: CNHP 2016

Weeds

The diverse terrain, adjacent seed sources, and recreational use of the project area provides the potential for numerous weed species to become established. The Colorado State Noxious Weed Act (Title 35, Article 5.5, Colorado Revised Statues) lists 71 weed species considered to be a threat to the economy and the environment. Another 24 species are on the state's watch list. The Larimer County Noxious Weed Management Plan requires eradication of all List A species, as mandated by the state, and containment and suppression measures for 16 of the List B species identified as significantly troublesome (Larimer County 2008). List A species are of highest priority because they are not well established in Colorado but potentially a large problem to the state, requiring mandatory eradication.

There are seven List A species in Larimer County:

- Yellow starthistle
- Mediterranena sage
- Myrtle spurge
- Cypress spurge
- Orange hawkweed
- Purple loosestrife
- Knotweeds

Weeds identified as List B species, those recommended for eradication but common enough that statewide eradication is not possible, include

- Bull thistle
- Canada thistle
- Common teasel
- Dalmatian toadflax
- Diffuse knapweed
- Hoary alyssum
- Hoary cress
- Houndstongue
- Leafy spurge
- Musk thistle
- Perennial pepperweed
- Russian knapweed
- Scotch thistle
- Spotted knapweed
- Tamarisk or saltcedar
- Yellow toad

Other weed species reported to be present in small or isolated populations within Larimer County include black henbane, bouncingbet, Chinese clematis, common tansy, dames rocket, Eurasian watermilfoil, jointed goatgrass, moth mullein, oxeye daisy, plumeless thistle, Russian olive, salt cedar, sulfur cinquefoil, wild caraway, and yellow nutsedge (Colorado Department of Agriculture Weedlist 2016). Noxious weeds are actively treated in the project area by the Larimer County Weed District, USFS, and other agencies using the approved Integrated Pest Management Plan including chemical, mechanical, and biological control methods.

Fire Management

Fire management activities such as thinning and fuels treatments, fire potential mapping and suppression are is achieved by multiple agencies through agreements and partnerships. Reclamation implements a fire management plan that includes the four reservoirs. Reclamation is also a partner in the C-BT Headwaters Partnership with Northern Water, Colorado State Forest Service (CSFS), USFS, Larimer County, and Rocky Mountain National Park. Larimer County also maintains a fire management plan and uses methods such as thinning and fuels treatments, fire potential mapping, and suppression. Fire protection for public safety is provided by local fire protection districts, including Poudre Fire Authority, Loveland Fire Rescue Authority, and Berthoud Fire Department.

The 2012 High Park wildfire that burned 87,000 acres in Larimer County, and was followed by severe flooding in 2013, will likely increase active fire management and recovery projects in the RMP area.

Environmental Consequences

Impacts of the No Action Alternative

Under the No Action Alternative, the existing vegetation and plant communities, including sensitive species and conservation areas, would remain unchanged. No additional use areas would be developed. The extent of informal use areas and social trails could increase in response to the growth in visitation and

some additional vegetation would likely be disturbed. This adverse effect would be negligible and long term with the existing RMP in place. The No Action Alternative is predicted to have no effect on threatened or endangered plant species.

Impacts of the Proposed Action

The Proposed Action would affect primarily two communities including grasslands and shrublands. Most of the impacts to vegetation would occur within or adjacent to areas that have previously been developed or that have been disturbed in the past. A total of approximately 66 acres would be disturbed by construction activities at new and expanded use areas. Most of the disturbance to vegetation would occur at Horsetooth Reservoir (47 acres) and a lesser amount at Carter Lake (25 acres). Less than an acre of disturbance would occur at Pinewood and Flatiron reservoirs.

Of the 47 acres of that would be disturbed at Horsetooth Reservoir, the great majority of disturbance would occur within areas already disturbed. The new archery range would be located within a disturbed grassland area. This use area accounts for approximately 31 acres of the total area that would be disturbed. Sensitive areas, such as the small pond and small drainage, would be protected from disturbance. The expanded trailer parking north of the dam would be located almost entirely within an area of existing disturbance. Only a minor amount of new disturbance would result from trail construction (2 acres). Most of the trail construction would occur within a combination of disturbed area and shrubland.

Similarly, some of the new construction at Carter Lake would occur within the footprint of existing use areas or in an area that had been previously disturbed by quarrying activities. An exception to this statement is the new development planned at Big Landia, which would result in the disturbance of approximately 15 acres of undisturbed grassland. Other development activities along the shoreline north of Dam 2 would result in the disturbance of approximately 4 acres.

Other long term impacts to vegetation would occur due to trampling, or the collection of woody material for fuel for campfires. Reclamation does not allow collection of woody material for resale purposes.

Wetland and riparian areas and the associated federally listed species, Ute Ladies'-tresses and Colorado Butterfly Plant, are not anticipated to be impacted as no development would occur in these areas. No CNHP potential conservation areas or other sensitive plant species would be directly affected.

The potential for the spread or the introduction of weeds is present in all areas to be developed and would be controlled by methods described in the County's Integrated Pest Management plan. The potential for wildfire would not be measurably affected by the Proposed Action.

The need for additional fire protection would be in response to increased visitation, however, this additional need is not considered significant given the low intensity of development and the few buildings proposed. Overall, impacts to vegetation would be minor in both the short and long term.

Cumulative Impacts

Other planned projects, including NISP and Chimney Hollow, would result in the loss of vegetation communities similar to those affected by the Proposed Action. The small amount of vegetation loss associated with implementation of the Proposed Action would increase the total amount of vegetation and result in a minor cumulative effect.

Fish and Wildlife

Affected Environment

Wildlife Resources

A variety of wildlife species occur within and adjacent to the lands surrounding the four reservoirs, including several species of big game, small mammals, and migratory birds. Each of these groups of species is discussed briefly in the remainder of this section, followed by an overview of threatened and endangered and other sensitive species.

Large game, including deer, elk, mountain lion, and black bear are known to occur on project lands. No important migratory corridors or routes cross project lands. All four reservoirs are mapped by CPW as overall range for mule deer and a concentration area for this species occurs just south of Horsetooth Reservoir and extends nearly all the way to the Larimer/Boulder County line, thus encompassing both Carter Lake and Flatiron Reservoir (CPW 2016). Pinewood Reservoir is not within the mapped concentration area. The reservoirs also provide important winter range for mule deer, including areas mapped as both severe winter range and winter concentration areas. Excluding Pinewood, the reservoirs also provide habitat for white-tailed deer. The north end of Horsetooth Reservoir is mapped as severe winter range and winter concentration area for white-tailed deer and a winter concentration area extends nearly the length of the reservoir along its western boundary, reaching the shoreline near some of the coves.

Elk habitat also encompasses all four reservoirs and some project lands provide important elk winter range. Winter range, including both severe winter range and winter concentration areas, is mapped in an area that encompasses Carter Lake, Pinewood, and Flatiron reservoirs. No elk production areas occur at any of the four reservoirs.

None of the reservoirs provide suitable habitat for bighorn sheep or moose.

All four reservoirs are mapped as overall habitat for black bear and most project lands are mapped as a fall concentration area. However, the fall concentration area includes only the western and northern portion of land at Carter Lake. In addition, project lands at Horsetooth Reservoir are mapped as a summer concentration area for black bears.

Lands surrounding the reservoirs also support populations of mountain lion. This species preys mainly on deer and elk and typically inhabits rocky outcroppings and ridges near the foothills.

Other Wildlife

In addition to the big game species previously discussed, project lands support a variety of other species, including coyote, red fox, raccoon, bobcat and porcupine. Smaller mammal species are likely to include cottontail rabbit, deer mouse and northern pocket gopher. Common amphibians and reptiles are likely to occur on project lands, including species such as bullsnake, prairie rattlesnake and Woodhouse toad.

Migratory Birds and Raptors

Nearly all bird species potentially present in the project area are protected under the Migratory Bird Treaty Act (MBTA). Bald eagles, which were down listed from a federally threatened species in August 2007, are still protected under the MBTA and the Bald and Golden Eagle Protection Act. The bald eagle is discussed later in this section under Colorado Special Status Species. In addition to common songbirds, such as the American robin, eastern kingbird, western meadowlark and others, project lands provide habitat for great blue heron, golden eagles and a variety of other raptors, such as red-tailed hawk. No

great blue heron nesting areas are known to occur at the reservoirs; however, all four reservoirs are mapped as foraging areas for this species. Similarly, no golden eagle nests are known to occur at the reservoirs but the lands surrounding them are likely foraging areas for this species.

Fisheries Resources

The reservoirs support a fairly diverse mix of nonnative game species and a smaller number of nonnative and native forage species. At Horsetooth Reservoir, rainbow trout, smallmouth bass, walleye, and white sucker are common species, though rainbow trout have become less abundant in recent years. Populations of smallmouth bass and walleye have remained relatively stable. Other species include brown trout (which has become rare), gizzard shad, yellow splake, crappie and bluegill (USACE 2015). Carter Lake supports a similar mix of species, but it is known for its trophy walleye and rainbow trout, as well as largemouth bass. Table 5 lists the fish species documented to be present.

Pinewood Reservoir has a less diverse fishery but species stocked there include several trout species as well as tiger muskie. Tiger muskie, a hybrid species between northern pike and muskellunge, are stocked annually and is renowned as a sport fish because it can reach sizes over 50 inches long. Fishermen are allowed a take limit of one tiger muskie greater than 36" per day.

Flatiron Reservoir is heavily stocked with catchable trout on an annual basis.

Ice fishing is prohibited on all four reservoirs due to the fluctuating water levels that can lead to unsafe conditions, restricting winter fishing opportunities to open waters. Motorized boats are allowed on Horsetooth Reservoir and Carter Lake. Pinewood Reservoir is restricted to non-motorized boating due to lack of a certified ANS inspector, while Flatiron Reservoir does not allow boating.

Table 5-Species Reported to be Present in the Project Area

Common Name	Horsetooth 2016	Carter 2016	Pinewood 2016	Flatiron 2016
Black crappie	X			
Bluegill	X	X		
Brown trout	X		X	X
Common carp	X			
Cutbow trout	X	X		X
Cutthroat trout (native)	X			
Green sunfish		X		
Lake trout		X		
Largemouth bass	X	X		
Rainbow trout	X	X	X	X
Snake River cutthroat trout		X		
Splake	X	X		
Smallmouth bass	X			
Tiger muskie			X	
Walleye	X	X		
Yellow perch	X	X		

Source: CPW 2016a

Federally Listed Species

The USFWS has recorded the occurrence or potential habitat of wildlife species that are in danger of extinction throughout all or a significant portion of their range (endangered), or are likely to become an endangered species within the foreseeable future (threatened) within the project area. These federally protected species require additional environmental considerations and are listed in Table 6 (IPaC 2016). Since the project doesn't involve any additional water depletions, those species listed in Table 6 with an asterisk are not discussed further.

Table 6-Federal Listed Wildlife Species with Habitat or the Potential to Occur in Larimer County, Colorado

Common Name	Federal Status	Habitat or Known to Occur in Larimer County
*Least Tern**	Endangered	yes
Mexican Spotted Owl	Threatened	yes
*Piping Plover**	Threatened	yes
*Whooping Crane**	Endangered	yes
Black-footed Ferret	Endangered	yes
Canada Lynx	Threatened	yes
Preble's Meadow Jumping Mouse	Threatened	yes
Greenback Cutthroat Trout	Threatened	yes
*Pallid Sturgeon**	Endangered	yes

Source: IPaC 2016
** Water depletions in the North Platte, South Platte, and Laramie River Basins may affect listed species in Nebraska*

Mexican Spotted Owl – Mexican spotted owls are a federally and state threatened species that inhabit canyon and montane forest habitats across a long range that extends from Colorado to Mexico. Although no critical habitat for this species exists in the project area the USFWS has identified the potential for occurrence (IPaC 2016).

Black-Footed Ferret – This species is limited to open grasslands and is closely associated with the occurrence of prairie dogs. It has been estimated that about 40-60 hectares of prairie dog colony are needed to support one ferret. In the absence of any documented prairie dog colonies in the project area, it is doubtful that suitable habitat for the black-footed ferret is present at any of the four reservoirs.

Canada Lynx – Canada lynx are a federally threatened and state endangered species with potential habitat within the project area. After being extirpated from Colorado in the late 1970's, CPW launched a reintroduction program in 1999 by relocating 218 animals captured in Canada and Alaska back to the state. In 2010, CPW declared the reintroduction a success with an estimated 150-250 lynx living and successfully breeding within the state. Typical habitat includes dense subalpine forests and willow corridors along streams where high densities of prey exist. However, this species is known to travel long distances and utilize a variety of habitat types. Given the habitat types present at the four reservoirs, any occurrences of this species is likely to be incidental.

Preble's Meadow Jumping Mouse – The Preble's meadow jumping mouse is a federally threatened, state threatened and critically imperiled CNHP species with both occupied and potential habitat within the project area. Typical habitat is comprised of well-developed plains and riparian vegetation with a

relatively dense composition of grasses, forbs and shrubs; as well as adjacent, relatively undisturbed, grassland communities and a nearby water source. Preble's meadow jumping mouse are known to regularly range outward into adjacent uplands to feed and hibernate. There are three known populations (occupied range) that exist within the project area (CPW 2016). Two are located at Horsetooth Reservoir in the Arthur's Rock Gulch, as well as a small tributary of the gulch, and shoreline of Orchard Cove areas. The third is located at Flatiron Reservoir and occupies the entire reservoir shoreline and nearby riparian zones (specifically along Cottonwood Creek which Flatiron feeds into). All four reservoirs lie within overall range of the Preble's meadow jumping mouse indicating potential habitat exists throughout the project area.

Greenback Cutthroat Trout – Greenback cutthroat trout (Greenbacks) are a federally and state threatened coldwater species. Greenbacks prefer cold, clear, gravely headwater streams and mountain lakes that provide an abundant food supply of insects (CPW 2016). Due to extensive hybridization, genetically pure populations of Greenbacks only exist in small isolated areas outside of the project area. However, CPW is culturing these fish in the hatchery system and reintroducing them to their native waters, giving the potential to occupy the project area in the future.

Colorado Special Status Species

CPW has identified priority species and habitats that need conservation efforts specific to the state. These species, designated as special status in the approved state wildlife action plan, also require additional consideration (CPW 2016). These species are discussed below, excluding those species already discussed due to their federal listing status.

Mammals

The species listed in Table 7 are state special status species that may occur in the project area.

Table 7-CPW State Special Status Mammal Species with Potential to Occur in Project Area

Common Name	State Status	Habitat or Known to Occur in Project Area
Black Tailed Prairie Dog	State Special Concern	yes
Northern Pocket Gopher	State Special Concern	yes
River Otter	State Threatened	yes
Townsend's Big Eared Bat	State Special Concern	yes

Source: CPW 2016

Black-tailed Prairie Dog – Black-tailed prairie dogs are a state species of concern and CNHP vulnerable species that form large colonies or "towns" in shortgrass and mixed prairie habitats. While the overall range of the species lies within the project area, no colonies are known to exist within the project area (CPW 2016).

Northern Pocket Gopher – Northern pocket gophers are a state species of concern with an overall range that encompasses the project area. Typical habitat includes deep soils along streams, meadows and cultivated fields, but they are known to exist under many other conditions. Northern pocket gophers serve as prey for owls, hawks, foxes, bullsnakes, rattlesnakes and other wildlife known to exist in the project area.

River Otter – River otters are a state threatened species with the potential to occur within the project area. They can thrive in any water habitat (such as ponds, marshes, lakes and rivers) as long as there are

adequate food sources. River otter dens are found along the water edges in abandoned burrows and empty hollows with underwater entrances so they can be accessed easily.

Townsend's Big Eared Bat – Townsend's big eared bats (Townsend's) are a state species of concern and imperiled (CNHP) species that occupy semi-desert shrublands, pinyon-juniper woodlands, and open montane forests (as well as mines, caves and structures located within these habitat types). Townsend's do not make major migrations and are relatively sedentary. Hibernacula are characterized by low and stable temperatures, sometimes with moderate airflow and are generally occupied from late October to April.

Birds

The project area contains suitable habitat for raptor nesting as well as breeding habitat for a variety of localized and migratory bird species. Table 8 lists special status species that may occur in the project area, which are further described below. In addition, the CPW species activity mapping has identified the project area as having overall range for Canada geese, great blue herons, osprey, ring-necked pheasants, white pelicans and wild turkeys within the project area (CPW 2016).

Table 8- CPW State Special Status Bird Species with Potential to Occur in Project Area

Common Name	State Status
American Peregrine Falcon	State Special Concern
Bald Eagle	State Special Concern
Burrowing Owl	State Threatened
Ferruginous Hawk	State Special Concern
Least Tern	State Endangered

Source: CPW 2016

American Peregrine Falcon – American peregrine falcons are a species of state concern that nest on cliffs and forage over adjacent coniferous and riparian forests. Migrants and winter residents occur mostly around reservoirs, rivers, and marshes, but may be seen in grasslands, agricultural areas, and other habitats. In Colorado, they are rare spring and fall migrants in western valleys, foothills, lower mountains, mountain parks and on eastern plains. They are also rare summer residents in foothills and lower mountains; and very rare winter residents on eastern plains near foothills (NDIS 2006).

Bald Eagle – Bald eagles are a species of state concern with known winter and overall range, a roost site, summer forage and winter forage habitat within the project area (CPW 2016). Breeding habitat for bald eagles consists of forested areas near large bodies of water. Nests are typically placed in tops of tall trees located near suitable foraging habitat. Winter habitats occur along major river systems and along eastern and western North American coasts. Roosting habitat consists of tall trees that offer protection from prevailing winds and are generally located near aquatic foraging areas. Most roosting sites for bald eagles in western North America are in coniferous (or sometimes riparian) trees. The documented roost site within the project area is located in Lory State Park near Horsetooth Reservoir (CPW 2016). Wintering bald eagles are regularly observed within the vicinity of the reservoirs.

Burrowing Owl – Burrowing owls are a state threatened species that are found in or near prairie dog towns. The burrowing owl is a spring and summer resident and is found most commonly in eastern Colorado (NDIS 2006). Habitat is quite variable and ranges from areas that are relatively undisturbed mixed-grass prairie and rangelands to areas in residential developments. The absence of prairie dog colonies makes the occurrences of this species unlikely in the project area.

Ferruginous Hawk – Ferruginous hawks are a species of state concern known to inhabit grasslands and semi-desert shrublands; with rare occurrences documented in pinyon-juniper woodlands. Breeding birds nest in isolated trees, rock outcrops, structures such as power poles or on the ground. Winter residents concentrate around prairie dog colonies. Winter numbers and distribution fluctuate greatly depending on the availability of prairie dogs; when a local prairie dog population dies off due to plague, hawk numbers decrease drastically. Migrants and winter residents may also occur in shrublands and on agricultural areas on eastern plains.

Reptiles and Amphibians

Table 9 lists state special status species that may occur in the project area.

Table 9-CPW State Special Status Amphibian and Reptile Species in Project Area

Common Name	State Status
Northern Leopard Frog	State Special Concern
Wood Frog	State Special Concern
Common Garter Snake	State Special Concern

Source: CPW 2016

Northern Leopard Frog – This species occupies a variety of aquatic habitats, including slow-moving or still water along streams and rivers, wetlands, permanent or temporary pools, beaver ponds and human-constructed habitats, such as earthen stock tanks and borrow pits. Although these habitats are limited within the project area, it is possible that the northern leopard frog is present at one or more of the reservoir sites.

Wood Frog – Wood frogs inhabit various kinds of wooded habitats, including the edges of ponds and streams and willow thickets and grass/willow/aspen associations. These habitats are rare within the project area and important habitat for this species is unlikely to be present.

Common Garter Snake – Common garter snakes are a widely distributed species that can be found throughout North America and have been identified as a species of state concern in Colorado. Habitat can vary greatly but typically is found in forests, fields and prairies; as well as streams, wetlands, meadows, marshes and ponds. Common garter snakes are often found in close proximity to water and have an overall range that spans the project area.

Fish

The majority of special status fish species within the state of Colorado exist primarily in flowing waters and natural lakes. The project area does not contain any documented populations. There are two species with suitable habitat that have the potential to be present. Species listed in Table 10 are discussed below, excluding those species already discussed due to their federal listing status.

Table 10- CPW State Special Status Fish Species with Potential to Occur in Project Area

Common Name	State Status
Colorado River Cutthroat Trout	State Special Concern
Iowa Darter	State Special Concern
Lake Chub	State Endangered

Source: CPW 2016

Colorado River Cutthroat Trout – This species is currently limited to a few small headwater streams of the Green and upper Colorado rivers in Colorado, Utah and Wyoming. No genetically pure occurrences of this species are known to occur within the project area.

Iowa Darter – Iowa darter is a species of state concern that is found throughout the Front Range of Colorado in streams and ponds. They are known to exist in the Arapaho-Roosevelt National Forest and have the potential to exist within the project area. Typical habitat includes clear to lightly turbid water in small cool lakes, bogs, ponds and slow-moving rivers; they are primarily associated with submerged vegetation.

Lake Chub – Lake Chub are a state threatened species that has the potential to exist within the project area. They are most commonly found in lakes but can also live in streams and rivers with adults moving to deeper waters in mid-summer to avoid the warmer water temperatures associated with lake shores during this time.

Aquatic Nuisance Species

ANS, also known as aquatic invasive species are non-native species, exotic species, non-indigenous species, noxious weeds or pests and can be either animals or plants. ANS plants and animals can outcompete native species and cause economic or environmental harm or harm to human life. The State of Colorado defines ANS as exotic or nonnative aquatic species that have been determined by the CPW board to pose a significant threat to the aquatic resources or water infrastructure of the state, including but not limited to the following in Table 11 (2 CCR 405-8).

Table 11-CPW State Special Status Fish Species with Potential to Occur in Project Area

Common Name
Animals:
Crayfish, rusty
Mussel, quagga
New Zealand mudsnail
Waterflea, spiny
Plants:
African elodea
Brazilian elodea
Eurasian watermilfoil
Giant Salvinia
Hyacinth, water
Hydrilla
Parrotfeather
Yellow floating heart

Mandatory motorized boat vessel inspections have been required at all reservoirs. Larimer County has been operating ANS inspection stations at both Horsetooth and Carter Lake Reservoirs. Small motorized boats could launch at Pinewood Reservoir until May 2018, when Reclamation began requiring inspectors to be present for all public boat launching. Since there was no inspection station available at this location, the reservoir was closed to public boating until such a time an inspection station could be funded.

Environmental Consequences

Impacts of the No Action Alternative

Effects on wildlife resources under the No Action Alternative would reflect the impacts of anticipated increased visitor use. While no habitat would be removed, use of the shoreline for recreational purposes would result in increased habitat degradation, especially in more heavily used areas. These effects would be long term and minor.

The effects of the No Action Alternative on fisheries would be a continuation of the existing conditions. Over time, visitation is expected to increase and demands on the fishery would be greater. To maintain a fishery of similar quality and makeup to what presently exists, current fishery management practices may need to be modified (e.g. stocking, catch limits). Other naturally reproducing populations would continue to reproduce, but their numbers would diminish without implementation of a stocking regime for these species.

The No Action Alternative would continue to require ANS inspections for all motorized boat vessels prior to launching in Reclamation reservoirs. All boat ramps have locking gates, which are closed and locked when inspectors are absent.

Impacts of the Proposed Action

The small amount of additional disturbance and avoidance of sensitive habitats would result in only minor impacts on wildlife. The majority of the disturbance (approximately 66 acres) would occur in areas that have been previously disturbed and that have lower habitat values. Small areas of shrubland and grassland would be disturbed but most of this disturbance would occur in areas that are adjacent to previous disturbances and/or existing development.

No effect to any threatened, endangered or special status species is anticipated. The Proposed Action would not result in direct disturbance to habitat for any federally listed species. Several of the listed species (See Table 6), including the least tern, piping plover, whooping crane, and pallid sturgeon, are listed only in reference to projects that could result in water depletions that may affect listed species in Nebraska. The Proposed Action would not result in any water depletions. Suitable habitat for other listed species, including the Mexican spotted owl, black-footed ferret, Canada lynx, and greenback cutthroat, is not located at any of the reservoirs. Only the Preble's meadow jumping mouse has been documented as occurring in the project area and no disturbance of known or potential habitat for this species would result from implementation of the Proposed Action.

In addition, no known raptors nests or roost sites would be directly affected. Effects to wildlife resulting from increasing visitation would also occur. Increased human presence, additional vehicle traffic, and dispersed recreational activities would produce more disturbances to wildlife, including increased vehicle-related mortalities and wildlife harassment. Construction of the trail from Carter Lake to Chimney Hollow would occur during the summer months in order to avoid wintering elk populations. Overall, adverse impacts on wildlife would be long term and minor.

Similar to the No Action Alternative, growth in visitation could increase fishing pressure which could lead to increased harvests affecting the population of some species.

Physical closure of all non-authorized boat ramps provides improved ANS protections at all four reservoirs under existing conditions and would continue.

Cumulative Impacts

Although several projects were identified at the beginning of the section that could result in cumulative effects, cumulative impacts on this resource would be negligible. The small amount of habitat disturbance

resulting from the Proposed Action and lack of adverse impacts on wildlife would not augment the impacts identified for each of individual projects considered.

Recreation

Affected Environment

Recreation at the four reservoirs is managed by Larimer County and includes both land and water-based activities. This section includes an overview of recreational activities and facilities, visitation and participation rates, and an analysis of recreation trends.

Recreational Activities

The primary activity at Horsetooth Reservoir is motorized boating, including wake boarding, tubing, water-skiing, fishing, and jet-skiing. Boats can be launched from South Bay, Inlet Bay or Satanka Cove on the north end of the reservoir. The Inlet Bay Marina has 250 slips and 50 moorings, and there is currently a wait list for slips at the marina. Swimming, fishing, and paddle sports are also popular day-use activities as are picnicking, hiking and mountain biking. Hunting is not currently permitted. The east side of the reservoir features renowned rock climbing and bouldering opportunities. The west side coves are designated wakeless areas and offer excellent fishing, camping, and paddling opportunities. Two large campgrounds are located at the south end of the reservoir. There are 53 campsites at Inlet Bay and 85 campsites at South Bay for a total of 138 sites.

Motorized boating is also one of the most popular activities at Carter Lake; however, the reservoir also provides some of the better opportunities for sail boating along the Front Range. The entire eastern shoreline is designated as a wakeless zone. The north and south ends of the reservoir receive the most intensive use; these use areas consist of boat launches, day use areas, campgrounds, and the marina. The marina has 100 slips and 80 moorings and there are 50 slips available through the Sail Club at North Pines. There are 52 campsites at the South Shore area, 7 at Carter Knolls, 8 at Big Thompson, 8 at North Pines and 49 campsites at Eagle Campground for a total of 124 campsites.

Pinewood Reservoir is open to wakeless boating only, and is currently limited to non-motorized boats due to the lack of an ANS inspector. Use and visitation levels are typically less intensive than the other reservoirs, which is primarily a function of the reservoir's location, size, water temperatures, and management policies. The most popular activities are fishing from non-motorized boats such as kayaks and canoes, and camping. Fisherman's Cove at the northwest end of the reservoir is an especially popular fishing spot, and is accessible by foot only. The Rattlesnake dam is open to foot traffic and provides fishing access to the west shoreline. There are a total of 31 campsites at Pinewood.

Flatiron Reservoir is also less intensively used than Horsetooth Reservoir and Carter Lake. The user population at Flatiron Reservoir is historically comprised of an older population base that prefers RV camping to tent camping. A total of 37 camp sites are available. Because of safety concerns relating to water level fluctuations, no boating or swimming is allowed at this site. The most popular recreation activities are fishing from shore, picnicking, and camping. Fishing opportunities are accessible from the campground and from the day use areas on the north side of the reservoir. Another day use area (Cheyenne) is located along the south side of the reservoir and accessible via CR 31.

A complete inventory of recreation facilities by reservoir and site is provided in Table 12.

Visitation & Participation

While no formal visitation studies have recently been completed, annual passes and day use permits are tracked on an annual basis. Annual visitation was estimated by multiplying day use permits by an average

group size and annual passes by a typical visitation rates and the average group size. Based on a study from CPW on visitation at state parks, which have similar visitation patterns, the average group size is 2.84 people. From the same study, average annual visits at reservoir parks within the Colorado State Parks system range between 10.97 visits at Boyd Lake State Park to 42.38 visits at Chatfield State Park. Boyd Lake is a comparable example based on size, location, and types of uses (CPW 2009). Total visitation to the four reservoirs is estimated between 650,000 and 1.4 million annually. This estimate does not include trail users who enter the park without a day or annual pass. Additional information on visitation is provided in Tables 12 - 14.

Table 12- Estimated Visitation by Day and Annual Passes

Day Permits			
	*Total Day Permits Sold**	*Group Size+*	*Total Visitors (Day Permits)*
2016	140,163	2.84	398,063
2015	135,505	2.84	384,834
2014	120,485	2.84	342,177
2013	106,215	2.84	301,651
2012	85,995	2.84	244,226

Annual Passes					
	*Total Annual Passes Sold**	*Annual Visit Times (Low)+*	*Annual Visit Times (High)+*	*Group Size+*	*Total Visitors (Annual Passes)*
2016	8,470	10.97	42.38	2.84	263,881 - 1,019,442
2015	7,752	10.97	42.38	2.84	241,512 - 933,025
2014	6,983	10.97	42.38	2.84	217,554 - 840,468
2013	5,108	10.97	42.38	2.84	159,139 - 614,795
2012	8,547	10.97	42.38	2.84	266,280 - 1,028,710
*Source: *Larimer County 2017, +CPW 2009*					

Table 13- Inventory of Existing Facilities

	Blue Sky Trailhead	Inlet Bay Marina	South Inlet Bay Campground	North Inlet Bay Campground	South Bay Day Use Area	South Bay Campgrounds	Administration/ Maintenance	Sunrise Day Use Area	Skyline Day Use Area	Satanka Bay	Rotary Day Use Area	Sail and Saddle Club (private)	West Shoreline	Horsetooth Reservoir Total	Marina	Eagle Campground	North Pines Area	Big Thompson Campground	North Entrance	East Entrance Area	Swim Beach - Dam 2	Carter Knolls	The Saddle & Fawn Hollow Trailhead	South Shore Area	Carter Lake Total	Blue Mountain Area	Pinewood Campground & Launch Area	Fisherman's Cove Area	Pinewood Reservoir Total	Flatiron Reservoir Total
Entrance station	0	1	0	0	0	1	0	0	0	0	0	0	0	**2**	0	0	0	0	1	1	0	0	0	0	**2**	0	0	0	**0**	**1**
Self-serve fee collection station	1	1	0	0	1	0	0	1		1	1	0	0	**6**	0	0	0	0	1	1	0	0	0	0	**2**	0	0	0	**0**	**1**
Picnic area	0	1	0		1	0	0	1	1	1	1	0	0	**7**	1	1	1	0	0	0	0	1	0	1	**5**	0	0	2	**2**	**1**
Individual picnic shelters	1	1	0	0		1	0	2	0	0	0	0	0	**2**	0	0	0	0	0	0	0	0	0	0	**0**	0	0	0	**0**	**4**
Reservable group picnic shelter	0	0	0	0	1	0	0	1	0	0	0	0	0	**1**	0	0	0	0	0	0	0	0	0	1	**1**	0	0	0	**0**	**1**
Total campsites	0	0	26	27	0	88	0	0	0	0	0	0	15	**156**	0	49	4	8	0	0	0	7	0	52	**120**	0	27	0	**27**	**36**
Basic campsite (non- electric)	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	4	8	0	0	0	7	0	0	**19**		11	0	**11**	**0**
Electric campsite	0	0	26	27	0	60	0	0	0	0	0	0	0	**113**	0	49	0	0	0	0	0	0	0	46	**95**	0	16	0	**16**	**33**
Walk-in campsite (sub set of basic campsite)	0	0	0	0	0	4	0	0	0	0	0	0	0	**4**	0	0	4	0	0	0	0	2	0	6	**12**	0	11	0	**11**	**3***
Full hook-up	0	0	0	0	0	17	0	0	0	0	0	0	0	**17**	0	0	0	0	0	0	0	0	0	0	**0**	0	0	0	**0**	**0**
ADA electric campsite (sub set of electric or hook up campsites)	0	0	2	2	0	3	0	0	0	0	0	0	0	**7**	0	3	0	0	0	0	0	0	0	3	**2**	0	0	0	**0**	**1**
Cabin	0	0	0	0	0	7	0	0	0	0	0	0	0	**7**	0	0	0	0	0	0	0	0	0	0	**0**	0	0	0	**0**	**0**
Backcountry/Boat-in campsites	0	0	0	0	0	0	0	0	0	0	0	0	15	**15**	0	0	0	0	0	0	0	0	0	0	**0**	0	0	0	**0**	**0**
Swim Area	0	0	0	0	1	0	0	1	0	0	0	0	0	**2**	0	0	0	0	0	0	1	0	0	0	**1**	0	0	0	**0**	**0**
Disabled accessible fishing pier	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	0	0	0	0	0	0	0	0	**0**	0	0	0	**0**	**1**
Car parking spaces	52	194	0	18	93	20	8	88	30	40	63	15	0	**511**	10	25	30	5	0	0	62	8	20	60	**220**	20	21	15	**56**	**40**
Trailer parking spaces	4	100	0	0	150	40	0	0	0	40	0	0	0	**334**	4	35	56	0	0	0	0	0	0	35	**130**	0	10	0	**10**	**0**
Vault toilet	1	2	4	4	3	5	0	4	2	2	2	0	3	**32**	0	3	2	1	0	0	1	1	1	3	**13**	1	3	0	**4**	**3**
Flush toilet	0	0	1	0	1	1	1	0	0	0	0	0	0	**4**	1	1	0	0	0	0	0	0	0	1	**3**	0	0	0	**0**	**0**
Potable water	0	2	3	3	3	12	3	0	0	0	0	0	0	**26**	0	3	0	0	0	1	0	0	0	0	**2**	1	4	0	**5**	**1**
Drinking fountain	0	2	2	2	2	6	0	0	0	0	0	0	0	**14**	0	3	2	1	0	0	0	0	0	0	**6**	0	1	0	**1**	**3**
Dumpster	1	9	3	3	4	1	4	2	1	2	1	0	0	**32**	2	6	4	2	0	1	1	2	1	9	**29**	1	3	1	**5**	**8**
Sanitary dump station	0	0	1	0	0	1	0	0	0	0	0	0	0	**2**	0	0	0	0	0	1	0	0	0	0	**1**	0	0	0	**0**	**0**
Boat ramp	0	1	0	0	3	0	0	0	0	1	0	1	0	**6**	1	0	1	0	0	0	0	0	0	1	**3**	0	1	0	**1**	**0**
Dock	0	3	0	0	1	0	0	0	0	1	0	0	0	**5**	2	0	2	0	0	0	0	0	0	1	**5**	0	0	0	**0**	**0**
Marina	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**	1	0	0	0	0	0	0	0	0	0	**1**	0	0	0	**0**	**0**
Boat slips/moorings	0	300	0	0	0	0	0	0	0	0	0	15	0	**315**	180	0	50	0	0	0	0	0	0	0	**190**	0	0	0	**0**	**0**
Boat/sewage pump station	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**	1	0	0	0	0	0	0	0	0	0	**1**	0	0	0	**0**	**0**
Gas	0	1	0	0	0	0	1	0	0	0	0	0	0	**2**	1	0	0	0	0	0	0	0	0	0	**1**	0	0	0	**0**	**0**
Boat rental	0	1	0	0	0	0	0	0	0	1	0	0	0	**2**	1	0	0	0	0	0	0	0	0	0	**1**	0	0	0	**0**	**0**
Food concession	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**	1	0	0	0	0	0	0	0	0	0	**1**	0	0	0	**0**	**0**

*Source: Reclamation Recreation Use Data Report, Part I and II, FY 2016 and Larimer County *Walk-in Site are Tipis*

Table 14-Annual Permits Sold by Location

	2016	2015	2014	2013	2012	2011
Horsetooth Reservoir	3,374	3,056	2,598	1,978	2,915	3,666
Carter Lake District (Carter & Flatiron Gatehouse & Natural Resources Admin)	2,201	2,115	1,981	763	1,305	1,264
Other (Outside Vendors, Citizen's Information Center, and Online Sales)	2,895	2,581	2,404	2,367	3,863	3,712
Total	**8,470**	**7,752**	**6,983**	**5,108**	**8,083**	**8,642**

Source: Larimer County 2017

Boating vessel capacities at Horsetooth Reservoir and Carter Lake are influenced by water levels. Currently, boating capacity is limited by the number of parking spots available to boat trailers. The following capacities (boats at one time) have been established by Larimer County for each of the four reservoirs under full water conditions:

Horsetooth—380 boats
Carter—189 boats
Pinewood—16 boats
Flatiron—no boat access

Demand for water stored in Horsetooth Reservoir and Carter Lake is greatest during the prime recreation season, June through August. Reservoir levels fluctuate widely. (See Hydrology section for more details.) At Horsetooth and Carter Lake, areas near the high water shorelines become isolated from the water edge at lower water levels. For example, at Horsetooth the drawdown nearly dries up the southern end of South Bay and the water recedes several hundred feet in other areas by the end of the summer. A similar pattern in water levels occurs at Carter Lake.

Horsetooth Reservoir and Carter Lake Reservoir both have a very high risk rating for ANS introduction based on the habitat suitability and watercraft risk levels analyzed by Colorado Parks and Wildlife (CPW). According to the 2014 Colorado Statewide Comprehensive Outdoor Recreation Plan (SCORP), 13.3 percent of the state's population participate in power boating annually and 36.4 percent participate in fishing (all types) (State of Colorado 2014). On average 59,000 boats go through ANS boat inspections every year at Horsetooth and Carter (See Table 15). These numbers do not account for the number boats that leave from the marinas.

Table 15-Aquatic Nuisance Species Boating Inspections

Year	Total Inspections	Decontaminations
2016	59,500	1,325
2015	59,946	1,256
2014	54,555	258
2013	60,219	212
2012	49,741	217
2011	61,489	271

Source: Larimer County 2017

Recreational use varies seasonally and throughout the week; however, there is a growing trend of more use during the shoulder seasons and during the week. The heaviest use, approximately 80 percent, continues to occur on the weekends and holidays between late May and early September.

Camping is available at all four of the reservoirs. Camping accommodations range from full RV hook-ups to walk-in tent sites. Horsetooth Reservoir also offers boat-in camping along the western edge of the reservoir and cabins at the South Bay Campground. A complete inventory of camping sites by campground at each reservoir is provided in Table 16.

Camping reservations are highest during the peak season, between Memorial Day and Labor Day. Occupancy rates continue to rise for all seasons, with the late shoulder season and off seasons showing strong increases in occupancy.

Table 16 provides occupancy rates for all four reservoirs over the past 5 years.

As part of this planning process, Larimer County conducted an informal, online questionnaire to determine level of satisfaction, use patterns, issues and desired experiences (Reclamation 2016). Hiking, mountain biking, swimming, picnicking, motorized boating, and fishing are the most popular activities. Overall, visitors have expressed the need for additional swimming/swim beach areas, mountain biking, hiking, snowshoeing, and additional restaurants/concessionaires at the four reservoirs. Additional educational programming for youth was also desired.

Figure 6 illustrates the desire for more activities at the reservoir.

Table 16-Reservable Camping Sites by Reservoir

	Reservation Nights					Occupancy Rate				
Year	Annual Quantity	Peak (Memorial - Labor Day)	Early Shoulder (April 1-Memorial Day)	Late Shoulder (Labor day -Oct 31)	Off Season (Nov 1-Mar 31)	Annual	Peak (Memorial - Labor Day)	Early Shoulder (April 1-Memorial Day)	Late Shoulder (Labor day -Oct 31)	Off Season (Nov 1-Mar 31)
Horsetooth										
2016	21,158	12,621	3,382	3,508	1,647	49%	87%	40%	44%	13%
2015	19,730	12,816	2,652	3,117	1,145	51%	82%	34%	43%	14%
2014	17,156	11,243	2,363	3,072	478	42%	77%	29%	37%	5%
2013	12,961	9,527	1,680	1,563	191	36%	65%	20%	20%	4%
2012	9,099	6,639	1,656	601	203	26%	49%	21%	11%	3%
2011	9,843	7,201	1,214	1,302	126	29%	54%	16%	18%	2%
Carter Lake										
2016	11,391	6,835	2,074	2,000	482	40%	74%	37%	37%	6%
2015	10,547	6,746	1,642	1,772	387	36%	67%	32%	35%	4%
2014	9,232	5,731	1,521	1,691	289	32%	60%	30%	31%	3%
2013	7,492	5,248	1,190	951	103	No Data	No Data	No Data	No Data	No Data

	Reservation Nights					Occupancy Rate				
Year	Annual Quantity	Peak (Memorial - Labor Day)	Early Shoulder (April 1-Memorial Day)	Late Shoulder (Labor day -Oct 31)	Off Season (Nov 1-Mar 31)	Annual	Peak (Memorial - Labor Day)	Early Shoulder (April 1-Memorial Day)	Late Shoulder (Labor day -Oct 31)	Off Season (Nov 1-Mar 31)
2012	6,095	4,173	1,043	830	49	24%	44%	20%	15%	1%
2011	5,801	4,209	791	797	4	24%	45%	14%	15%	0%
Pinewood										
2016	2016	2016	2016	2016	2016	2016	2016	2016	2016	2016
2015	2015	2015	2015	2015	2015	2015	2015	2015	2015	2015
2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014
2013	2013	2013	2013	2013	2013	2013	2013	2013	2013	2013
2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012
Flatiron										
2016	4,298	2,335	792	863	308	34%	66%	40%	43%	6%
2015	3,997	2,382	526	806	283	33%	63%	32%	43%	6%
2014	3,652	2,025	641	786	200	29%	57%	34%	37%	4%
2013	3,411	2,152	585	539	135	38%	66%	32%	28%	7%
2012	2,650	1,608	532	475	35	22%	50%	29%	25%	1%
2011	2,714	1,750	442	493	29	23%	54%	23%	27%	1%

Source: Larimer County 2017

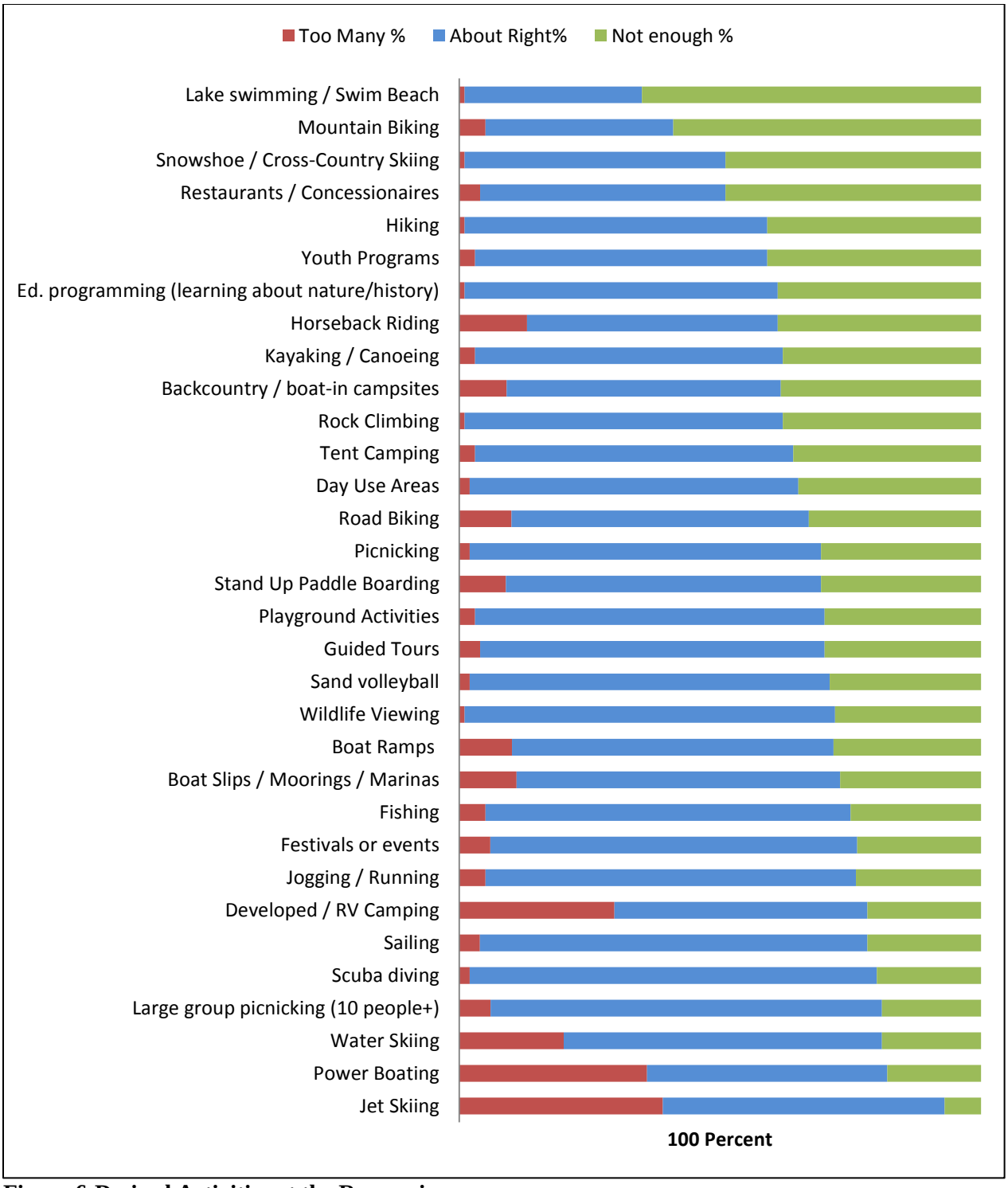

Figure 6-Desired Activities at the Reservoirs

Water-based recreation trends across the state show an increase in paddle sports and adventure sports. This is indicated by an increase in the number of paddleboard and kayak rental operations and sales, both at the reservoirs and at local retailers. In addition, rentals of power boats are on the rise as it becomes more expensive to own a boat and the cost of renting becomes more attractive.

Visitors to Horsetooth Reservoir often visit more than 10 times per year, while visitors to Carter Lake visit 2 to 5 times per year. Participants noted that if they did not visit the reservoirs, it was because of a lack of free time, a concern that there were too many people, or the reservoir didn't offer the activities they are interested in.

Conflict between motorized and non-motorized users of the reservoirs is an apparent theme. Most of this conflict seems to happen while on the water, as opposed to launch areas, and non-motorized watercraft and power boats often occupy the same areas. Frustrations over the turbulence caused by power boats, interference of non-motorized watercraft in motorized areas, and noise/exhaust complaints are among the most frequent responses. Boat ramps are the second-highest area of conflict between these two user groups, mostly due to safety concerns.

The online questionnaire also included a question on how visitors would respond to crowding at the four reservoirs. The majority (73.5 percent) of respondents said that they would choose to visit the reservoirs during off-peak times, while 40 percent would choose to go to other, more remote properties (See Figure 7). According to the "other" responses, respondents indicated they use less-crowded locations to access the reservoirs, or live close enough to walk or bike rather than use a vehicle. Some responses had no issues with parking but noted congestion on the trails.

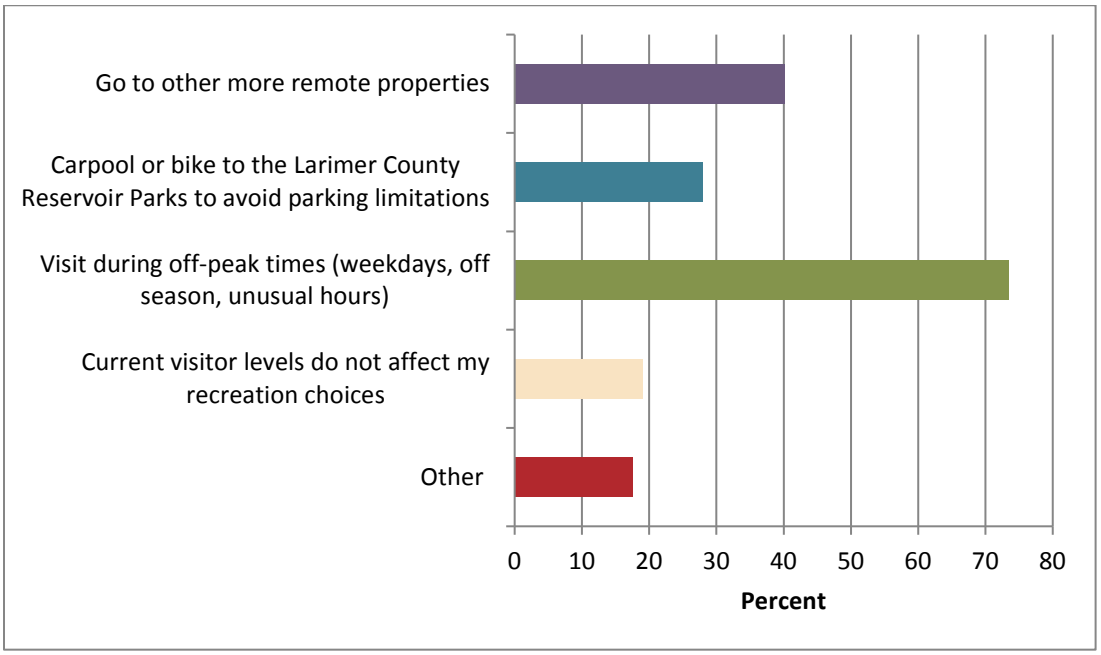

Figure 7-How Visitors Respond to Crowding at the Reservoirs

In response to a question on improving the recreational experience, the majority (66.1 percent) of respondents identified the need for acquiring additional properties in Larimer County in order to expand recreational opportunities. Other top responses were alternative modes of transportation to the reservoirs (40.4 percent) and online social media posts or web cameras showing parking lot capacity conditions (34.7 percent). Responses in the "other" category include expanding the soft-

surface trail network within recreation areas and providing connections to nearby communities. Other suggestions included considering separating uses on trails; limiting the number of users, including the number of boats on the water; increasing fees; and not building additional camping sites (See Figure 8).

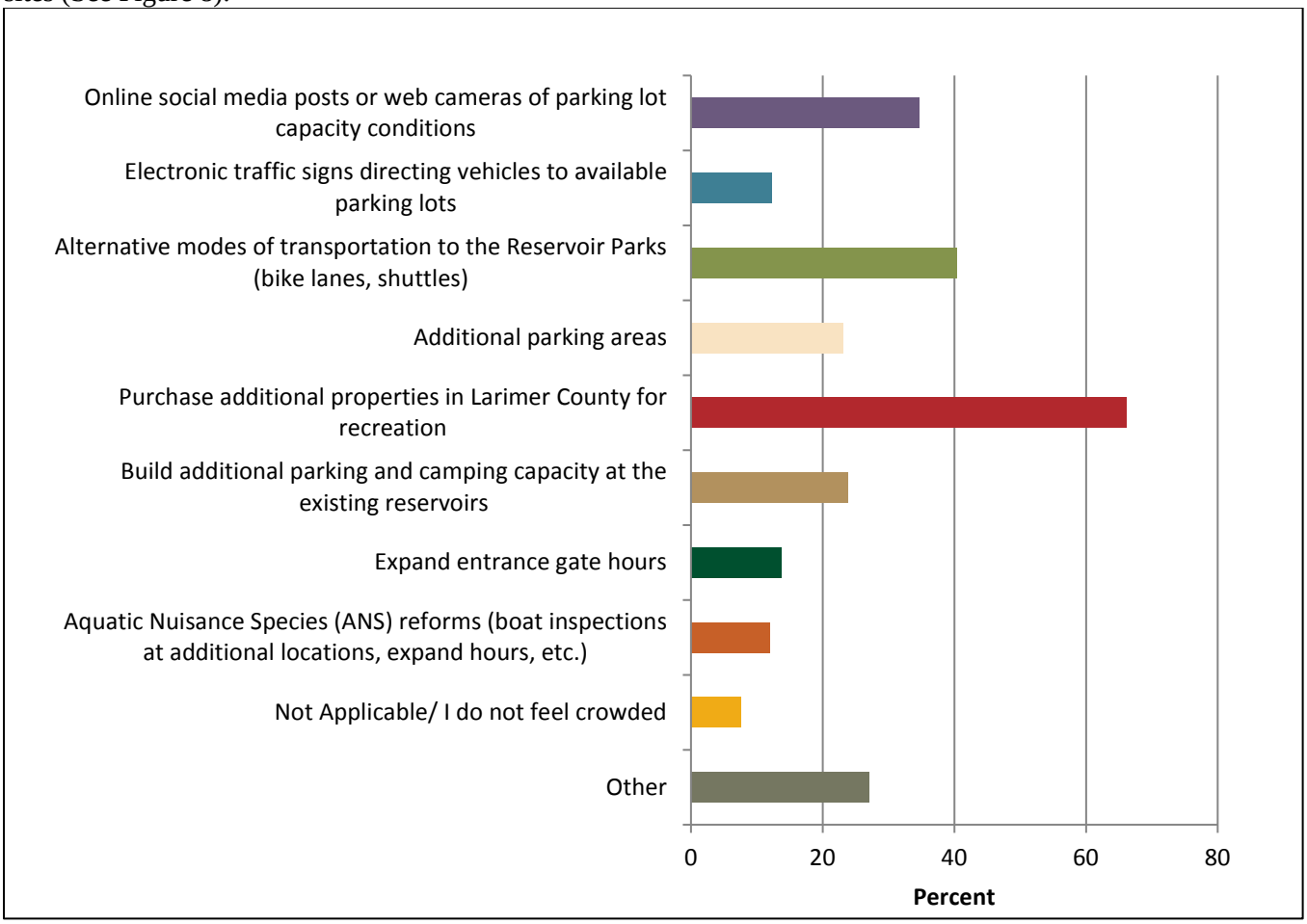

Figure 8-Strategies to Improve Recreational Experience

Environmental Consequences

Impacts of the No Action Alternative

Reclamation and Larimer County would continue to manage facilities and public activities in accordance with current practices and current boating capacity limits would be maintained. Boat ramps would continue to be locked when an ANS inspector is absent. This physical closure of boat ramps in the absence of boat inspections inconveniences some boaters during evening and night time hours. Under No Action boaters need to be off the water before the boat ramp closes or be prepared to dock their boats until the boat ramp reopens.

Impacts of the Proposed Action

Overall, implementation of the Proposed Action would have a minor, but positive impact on recreational use and the quality of the experience at the four reservoirs. For the most part, the types of activities, facilities, and experiences provided would remain similar to what is currently available. Current boating capacity limits would be maintained.

At least in the short term, the upgrading of existing recreation sites including improving some boat ramps to facilitate night-time fishing and construction of new facilities, including additional

day use facilities, would increase recreational opportunities available to the public. Additional facilities and new opportunities would help to alleviate the feeling of overcrowding that would likely worsen as a result of increased user populations and demands. Furthermore, the reconfiguration of some high-traffic existing parking areas would improve circulation and reduce traffic related user conflicts.

Because of the increase in the number and types of recreation facilities and opportunities, visitor use and satisfaction would probably increase. However, as visitor use increases, the number of visitors experiencing a feeling of overcrowding may increase, especially among historic users of the four reservoirs. Dispersing user groups to the various recreation sites within the reservoir area, particularly at Carter Lake, would minimize the feeling of overcrowding. The construction of new, designated trails in high-use areas, such as at Rotary (Horsetooth Reservoir) would help to alleviate the creation of social trails in these areas.

Some individuals who desire unconfined and unregulated experience could be displaced to areas where those opportunities are available at other locations. The loss of those users would likely be offset by increases in other visitors attracted by improved opportunities and facilities at the four reservoirs.

Cumulative Impacts

The completion of planned projects, including NISP, the Windy Gap Firming Project Chimney Hollow Reservoir, and minor excess capacity contracts, would increase the amount of water-based recreational opportunities in the region. The availability of these additional opportunities, combined with improvements resulting from implementation of the Proposed Action, could reduce crowding and provide a beneficial effect on recreational use and experience at the four reservoirs.

Visual

Affected Environment

The setting of each of the four reservoirs is described separately in the remainder of this section. None of the four reservoirs are located on public lands that have a formal visual resource management system in place. Therefore, existing conditions are described in general terms.

Horsetooth Reservoir and shoreline areas are characterized by a sense of enclosure created by the reservoir's location between two parallel ridges. A series of coves on the west side of the reservoir add to this sense of enclosure, providing a setting where the main body of the reservoir and other popular use areas are not fully visible or audible.

As with most reservoirs, the setting is most attractive at higher water levels when the shoreline appears almost natural and the vegetation and water meet without the adverse visual influence of a broad, barren drawdown zone. Nevertheless, Horsetooth is attractive at most water levels thanks to the visual interplay between the water and the red and brown hogback outcrops at nearly every point on the reservoir.

The influence of human activity is evident at many areas at Horsetooth, particularly around Inlet Bay, South Bay, and Satanka Cove where facilities and residential development combine to create a more developed setting. Most areas, however, have a natural or semi-natural appearance, especially in the coves on the west side. Elevated viewpoints on the surrounding lands, such as Centennial Drive and Foothills Trail on the east shoreline, provide exceptional views of the

foothills, including Horsetooth Rock and Lory State Park's Arthur's Rock. Trail systems provide viewpoints with unobstructed views to the eastern plains and City of Fort Collins.

Carter Lake is also located between two prominent landforms: a forested, smooth ridge to the west and a complex of hogbacks and irregular ridges to the east. The western ridge encloses the reservoir and adds visual interest - the heavily forested vegetation contrasts with the more sparsely vegetated adjacent shrub and grasslands. The east side of the lake is dominated by colorful, irregular hogbacks and rock outcroppings, including the Carter Lake Anticline. The Anticline is visible from all points on the reservoir and is characterized by a steeply dipping sedimentary rock dome.

Overall, the Carter Lake landscape retains a semi-natural appearance, particularly on the west side of the lake. In areas where residential development has occurred adjacent to the reservoir boundary (primarily the northeast end) and at sites on the east side disturbed by quarrying activities, the semi-natural landscape has been modified. Visual quality is also impaired at some of the use areas, such as the South Shore and Carter Lake Marina, where a lack of vegetative screening and recreation facilities and other modifications dominate the landscape. Portions of Eagle Campground abut residential development with little buffering.

Pinewood Reservoir is located in a foothills setting distinct from the other reservoirs. The surrounding landscape combines the openness of the grasslands in the adjacent Rattlesnake Park with a more enclosed mountainous landscape characteristic of the foothills. Views to the south are dominated by Blue Mountain, a natural feature recognized in the Colorado Natural Areas Program (CNAP). CNAP is a statewide program focused on the recognition and protection of areas that contain at least one unique or high quality natural feature of statewide significance. The CNAP designation is based on the exposure of the Blue Mountain Fault, where the zone of mingling between the alluvial fan of the ancestral Rockies and the ancestral sea are clearly visible (CNAP 2016). Overall, Pinewood Reservoir retains a natural appearance. From some points along the shoreline, no human made structures or facilities are visible; recreational development and facilities are limited to the north side of the reservoir. Use areas near County Road (CR) 18E are influenced by adjacent residential development and passing vehicles.

Flatiron Reservoir is located in a scenic, natural setting on the flanks of Flatiron Mountain, a prominent landmark that dominates the setting. Steep slopes and colorful rock outcroppings on the mountain form a visually interesting backdrop to the reservoir. The landscape surrounding the reservoir has retained a semi-natural appearance. Reclamation facilities, such as the Flatiron Powerplant, are recessed and not prominent in views from the major use areas. The use areas have an urban park character resulting from the non-native tree species and lawn-like areas that contrast with the surrounding native vegetation.

No formal policies have been adopted by Larimer County to protect or enhance visual quality within the reservoirs, apart from environmental commitments made in the 2007 RMP and Parks Master Plan, both of which are available upon request to Reclamation and/or Larimer County. Reclamation's Visual Identity Online Manual and other manuals and guidelines for signs and recreation facility design require an evaluation of appropriate architectural styles and materials on a case-by-case basis to complement the surrounding landscape as much as practical. The majority of facilities such as toilets, fee stations, and kiosks, are consistently themed. Development on private land adjacent to the four reservoirs must conform with the Larimer County Comprehensive Plan and Land Use Code.

Environmental Consequences

Impacts of the No Action Alternative

Under the No Action Alternative, no additional recreation facilities would be developed. Therefore, no direct effects to the existing setting would occur.

Impacts of the Proposed Action

Visual quality would be modified by implementation of the Proposed Action. However, the degree of change would be reduced by the fact that most new facilities would be located in existing use areas where facilities of a similar scale and density already exist. Visual impacts at each reservoir are further discussed in the remainder of this section.

Visual changes at Horsetooth Reservoir would be most notable at the north end of the reservoir. Development of a small parking area, group shelter, restroom and archery facilities would be visible from adjacent county roads and a few residences. The footprint for the majority of these facilities would occupy a reclaimed motocross course that still bears scars of its former use. The small scale of proposed new development, prior disturbance, screening from the reservoir, and presence of other facilities, such as the Charles Hansen Supply Canal, reduce the degree of change visible in the landscape at this location. Similarly, the expanded boat trailer parking area near Satanka Cove is located in a highly modified setting just below a dam and other Reclamation facilities. The boat trailer parking area is further screened by a hogback ridge that reduces visibility from nearby residential areas and county roads. Other facility improvements, including a new boat storage building at Inlet Bay, are located in areas that are already characterized by recreation facilities and related development. Overall, new and improved facilities would result in a minor, long-term, adverse impact at Horsetooth Reservoir.

Visual changes at Carter Lake would vary by site. Some visual changes would be negligible, including those areas where proposed facilities are renovations of existing facilities or new parking would be located on previously developed or disturbed lands. The most notable changes are expected to occur at Carter Knolls and the new group campground at Big Landia.

At the Carter Knolls Campground, the addition of 6 cabins would result in the addition of larger, permanent structures that would be visible near the ridgeline as viewed from the reservoir. This development would diminish the natural qualities of the landscape at this location. The development of 6 RV pull-through camp sites would further contribute to this loss seasonally.

The proposed Big Landia group use area, though not visible from the reservoir, would be located in a currently undeveloped area that is visible for 0.5 miles along CR 31. This development would also diminish the natural landscape character at this location.

Development of new day use facilities, including a series of natural swim areas in the vicinity of the Big Thompson Campground, is not expected to result in adverse visual effects due to the fact that new development would largely occur within the footprint of existing use areas and would not require construction disturbance at swim areas. Overall, new and improved facilities would result in a minor, long-term, adverse impact at Carter Lake.

Visual changes and impacts to scenic quality at Pinewood and Flatiron reservoirs would be negligible due to their small scale and improvements within existing developed areas.

Cumulative Impacts

Implementation of the Proposed Action would result in minor, long-term cumulative effects on the natural setting surrounding the four reservoirs, primarily at Horsetooth Reservoir and Carter Lake. These adverse effects would result from the interaction of planned improvements at the four reservoirs and on-going land use changes on private lands adjacent to the four reservoirs. Although no large-scale developments are anticipated, isolated residential development is likely to continue.

Land Use

Affected Environment

The four reservoirs and lands surrounding the reservoirs are owned by Reclamation but are managed by Larimer County under a cooperative agreement to provide public recreational opportunities. (described in detail in the Background section.) The dams, inlet and outlet structures, canals, and other auxiliary structures are managed by Reclamation and Northern Water; public access to these areas is restricted pursuant to the Homeland Security Act of 2002 and other pertinent rules and regulations. Lands adjacent to the reservoirs are comprised of a variety of ownership and use types. Various utilities cross federal property within granted easements. No agricultural or grazing leases currently exist at any of the four reservoirs.

The four reservoirs are comprised of approximately 6,611 acres. Water surface area and surrounding land area is shown in Table 17. The majority of lands within the federal ownership boundaries are largely undeveloped. Developed areas include a variety of recreation use areas, including day-use, camping, and other recreation sites, and infrastructure associated with the dams and auxiliary structures. The undeveloped lands at the four reservoirs are used primarily for dispersed recreation and wildlife habitat. Only a limited amount of undeveloped, usable area remains at the four reservoirs. Table 17 summarizes existing land use.

Table 17-Summary of Existing Land, Water, and Developed Acreage at Each Reservoir (acres)

	Total area (land + water)	Land Area	Water Surface Area (normal water elev.)
Horsetooth Reservoir	3,765	1,725	2,040
Carter Lake	2,218	1,104	1,114
Pinewood Reservoir	238	141	97
Flatiron Reservoir	390	346	44
Total	6,611	3,316	3,295

Source: Reclamation Standard Operating Procedures, 2003-2005

Adjacent land uses at Horsetooth Reservoir are varied and complex. The reservoir is located among several open space properties, a state park, and urbanizing lands within and adjacent to the City of Fort Collins. Much of the western boundary borders Horsetooth Mountain Open Space and Lory State Park. There is a permit agreement between Lory State Park and Larimer County to allow trail users to pass from Horsetooth Reservoir to Lory, and vice versa, with the pass of the area they originated in via hiking/biking trails or boat access. Much of the eastern boundary of Horsetooth Reservoir borders City of Fort Collins Natural Areas and state-owned land.

Residential development has occurred adjacent to the reservoir at several locations, including Satanka Cove, Inlet Bay, South Bay, and Dixon Cove. Residential development has occurred at these locations because of the proximity to Fort Collins and the overall attractiveness of the setting. The density of residential development, however, is limited by steep slopes and other environmental factors. Nevertheless, demand for view lots and homes in this setting has remained strong and limited development continues to occur.

Colorado State University (CSU) owns a large block of land east of the reservoir. CSU owned-lands include research facilities and the site of Hughes Stadium. The City of Fort Collins maintains several natural areas that border the reservoir, including Maxwell, Pineridge, and Reservoir Ridge natural areas. The City also operates a water treatment facility below Soldier Canyon Dam. There is very little commercial use of the properties adjacent to the reservoir, with the exception of several locally-owned businesses.

At Carter Lake, residential development has occurred adjacent to the reservoir, particularly along CR 31 at the north entrance, south of CR 8E, and in a large residential subdivision on the east side above the quarry. The majority of land adjacent to Carter Lake, however, remains largely undeveloped.

Other land uses in the vicinity of Carter Lake include limited commercial uses at the north entrance and water treatment facilities below Dam 1. Northern Water owns land on the west side of the ridge from Carter Lake, where the proposed Chimney Hollow Reservoir is expected to be constructed. Larimer County will manage recreation use on the reservoir and its adjacent lands. Larimer County also owns 1,847 acres of open space adjacent to the reservoir. A separate management plan between Larimer County and Northern Water regarding Chimney Hollow will be prepared in the future.

Pinewood Reservoir is the most rural of the four reservoirs and it is located farthest from any city. Directly adjacent to the reservoir is Ramsey-Shockey Open Space. The two properties share a trailhead at the north end of the reservoir. One larger subdivision, Newell's Lake, is located to the east of the reservoir and large lot residential development exists past the reservoir on CR 18E. A section of State Land Board property is located to the west of the reservoir.

Flatiron Reservoir is primarily surrounded by public land to the west and south. Directly east of the reservoir is Larimer County Natural Resources Administrative Building and associated maintenance shop. Large lot residential exists north of the reservoir, across CR 18E.

Environmental Consequences

Impacts of the No Action Alternative

Under the No Action Alternative, existing land use would remain unchanged. No additional use areas would be developed. Informal use areas and social trails would likely increase in response to growth in visitation associated with population growth in the surrounding region.

Impacts of the Proposed Action

Approximately 66 acres would be converted from undeveloped to developed uses at the four reservoirs. Most of the new development would occur at Horsetooth Reservoir and most of the remainder at Carter Lake. Acreages of new development at each reservoir are shown in Table 18. The percentage of the total developed area at all four reservoirs would increase slightly but remain less than 10 percent of the total area. Generally, the Proposed Action would have no direct effect on adjacent land uses.

Table 18-Comparison of Alternatives: Developed Lands (land acres only)

	Alternative A Total Developed Area (acres)	Alternative B Total Developed Area (acres)	Alternative B Change from Existing Conditions (acres)
Horsetooth Reservoir	159	206	+47
Carter Lake	107	126	+19
Pinewood Lake	23	23.5	+0.5
Flatiron Reservoir	44	0.1	+.1
Totals	**333**	**399.6**	**+66.6**

Source: Larimer County, 2017

At Horsetooth Reservoir, construction of a new archery area north of Satanka Cove would convert approximately 31 acres from undeveloped to developed use. Only a small portion of the 31 acres would be developed with new facilities, i.e. parking area and buildings. The great majority of the 31 acres would have only limited development, including pathways and target areas. The archery range would only be open during day light hours and use would be managed via a locked gate. An additional 14 acres would be developed north of Satanka Cove for use as boat trailer parking area on an as-needed basis. Overall, new land uses at Horsetooth would constitute a long term but minor impact on land use. The trailer parking lot would be used to accommodate peak use periods and use would be managed via a locked gate.

Construction of new facilities at Carter Lake would result in the conversion of approximately 25 acres of undeveloped area to new uses. Most of this would occur at Big Landia, where approximately 15 acres would be converted to a group campground. Most remaining development would occur within the footprints of existing use areas. Overall, impacts on land use would be minor and long term.

Impacts on land use at Pinewood and Flatiron reservoirs would be negligible.

Cumulative Impacts

No cumulative impacts have been identified for this resource.

Public Facilities and Transportation

Affected Environment

Public facilities and transportation resources consist of facilities and services available to visitors, such as adequate access, potable water, electricity (where applicable), or trash collection. This section first describes the facilities and services that are common to all four reservoirs and then the unique conditions by reservoir.

Table 13 summarizes the availability of potable water, flush toilets, dump stations, and staffed entrance/information stations, and other services at each use area.

The four reservoirs are easily accessible from the Front Range region and southern Wyoming. Interstate 25, the primary north-south artery through central Colorado, is located approximately 8

miles east of Horsetooth Reservoir, the furthest east reservoir, and more than 15 miles from Pinewood Reservoir. Several major highways link Interstate 25 to Loveland and Fort Collins, including Colorado Highway 14 and US 34. A network of county roads links the highways to the four reservoirs. The Larimer County Road and Bridge Department maintains the county roads that access the four reservoirs while the Larimer County Department of Natural Resources maintains the roads internal to the each of the four reservoirs.

Developed parking areas support visitation to each reservoir and are one of the tools used to manage carrying capacity. The number of parking spaces is shown in Appendix A of the RMP, Table 4.10. However, at Carter Lake visitors are allowed to park at some locations below the high water line during lower water conditions, in designated parking areas, which increases the amount of parking available at that reservoir.

Larimer County provides on-site rangers and is responsible for public safety and law enforcement at all four reservoirs. Larimer County Emergency Services responds to backcountry and more serious emergencies and the Larimer County Sheriff's Department provides law enforcement support when needed. In 2016, Larimer County began to partner with University of Colorado Hospital Authority (also known as UC Health) and Poudre Fire Authority to staff a ranger boat, which has medical personnel on board during summer weekends and holidays at Horsetooth Reservoir. Trash is collected from dumpsters and trash receptacles by Larimer County staff on a weekly basis. Trash receptacles are available at all major facilities.

Larimer County, in association with Reclamation, manages concessionaire agreements with local businesses at Horsetooth Reservoir and Carter Lake. Two concessionaires operate at Horsetooth Reservoir, including a full service marina with moorings, slips, guides, snack foods, fuel, boat rental and recreational equipment at Inlet Bay. An additional concessionaire is located at Satanka Bay and provides paddle sport equipment, including stand-up paddleboards and kayaks. Other services are available from businesses located on private lands, including a restaurant and general store. At Carter Lake, there is currently one concession operation. The Carter Lake Marina provides moorings, slips, fuel, boat rentals, and recreational equipment rentals.

No concessions currently operate at Pinewood or Flatiron reservoirs.

Horsetooth Reservoir

Four paved county roads provide direct access to Horsetooth Reservoir. CR 42C, CR 23, and 38E approach the reservoir from the east (Fort Collins). County Road 42C is located at the approximate north-south midpoint of the shoreline. CR 23 approaches the reservoir from Bellvue (north) and extends along the entire length of the reservoir, intersecting CR 38E at Spring Canyon Dam. CR 38E continues around the south end of the reservoir and allows access from the west via Masonville. Shoreline Drive provides access between the Spring Creek inlet and Dixon Cove. The western shoreline between Satanka Cove and Dixon Cove is the only portion of the reservoir shoreline that is not adjacent to an improved road.

Horsetooth Reservoir does not have a single main entrance; instead there are multiple access points around the perimeter that provide access to various use areas. Staffed entry/fee collection stations are located at the South Bay and Inlet Bay entrances. During off-peak times, these stations are self-service. The remaining use areas, including multiple sites located along the east side of the reservoir, have self-service fee collection stations that are regularly patrolled by staff.

Electrical power at Horsetooth Reservoir is provided by Poudre Valley Rural Electric Association and is currently available at the North Inlet Bay, South Inlet Bay, and South Bay campgrounds.

Approximately 130 campsites currently have electrical hook-ups. Potable water is available at all locations except the day-use areas, Satanka Cove, and the SSC facility. Flush toilets for public use are located only at the Horsetooth Information Center and at Inlet Bay shower house. Sanitary facilities at other locations are vault toilets. Sewer lines currently cross at South Bay and Inlet Bay. There are three sanitary dump stations at the reservoir; two of these stations are used to dispose of RV holding tank waste, the third is used to dispose of boat holding tanks.

Carter Lake
Carter Lake has two staffed entrance stations; one station is located on the eastern approach on CR 8E and the second station is located north of the reservoir adjacent to the Larimer County Natural Resource Administrative Building (Admin Building) on CR 31. Information and annual passes can be obtained at the Admin Building during normal business hours, Monday through Friday. During off-peak times, these stations are self-service. The remaining use areas have self-service fee collection and information stations and are regularly patrolled by staff.

Vehicular ingress and egress into the Carter Lake Marina, swim beach, and the Saddle and Fawn Hollow Trailhead has several challenges, including a lack of visibility, small turning radii, poor line of sight, and high volume of traffic.

Electrical power is currently available at the north and south ends of the lake. Approximately 74 campsites currently have electrical hook-ups. Potable water is available at the Carter Lake Marina, the Eagle Campground, South Shore Campground, Big Thompson Campground, North Pines Campground, and at the two main entrance stations. The Eagle day use area is the only day use area that offers potable water. Flush toilets are only available at the Eagle Campground. The remaining sanitary facilities are vault toilets. There is one sanitary dump station at the east entrance station; this station is used only for waste disposal of RV holding tanks. There is a boat dump station for boat holding tanks at the marina (North Pines Boat Ramp).

Pinewood Reservoir
Pinewood Reservoir does not have a single main entrance point on CR 18E. Instead, each use area around the reservoir has a separate access point from the county road. There are no staffed entrance stations at Pinewood. Instead, fee collection and information stations are provided at the County managed Administrative Building.

The development of the land-based recreation facilities and use areas at the reservoir is limited by topography and steep, rocky slopes at many locations adjacent to CR 18E. Recreation facilities have been constructed on the few flat, developable areas and the remaining shorelines have remained generally in a natural condition.

With the exception of the campground host RV site at the Windy Pines Campground, none of the campsites have electrical hook- ups. Potable water is available at two sites: the Blue Mountain area and the launch area. Sanitary facilities consist only of vault toilets that are not connected to a central sewage treatment facility. There are no sanitary dump stations; the closest facility is on the east side of Carter Lake.

Flatiron Reservoir
Flatiron Reservoir has one major entry point located off of CR 18E. There are no staffed entrance stations. Instead, self-service fee collection and information stations are available at the nearby Admin Building. Within the site, two main loop roads provide access to the major use areas, including the group picnic and day use areas and the main campground. Informal access to the

shoreline via the campground has resulted in social trails leading to the water. Roads are graded, gravel surfaces.

Electrical power is currently available at the Flatiron Campground. Thirty-four (34) individual campsites have electricity. Potable water is available at two locations within the Flatiron Campground. No other potable water sources are available on site; however, the Administrative Building has potable water. Flush toilets are available at the Admin Building during business hours; however, only vault toilets are available at the campground. There are no sanitary dump stations at the reservoir. The nearest dump station is at the east entrance to Carter Lake (Gate 1).

Environmental Consequences

Impacts of the No Action Alternative

The No Action Alternative would have no major impacts on public services available at the four reservoirs. Visitation is expected to increase, however, commensurate with population growth and increasing recreational demands. Increased visitation would likely result in additional law enforcement demands. Traffic congestion and crowding at some use areas would likely increase.

Impacts of the Proposed Action

The Proposed Action would have minor impacts on some public services and utilities and no impact on others. Upgraded sanitation facilities would be self-contained systems that would not impact existing systems or providers. None of the proposed electrical hook-up improvements would require substantial amounts of electricity. Increased visitation would likely result in an increased need for additional law enforcement personnel. This would impact the Larimer County staffing levels, including the Department of Natural Resources and potentially the Sheriff's Department. Law enforcement needs on adjacent roads and lands could also increase with increased visitation; however, this impact is expected to be minor. Improvements in the design of the access points to the major recreation areas would reduce the probability of traffic accidents.

The scale of development contemplated under the Proposed Action would minimally increase visitation and the volume of traffic on interior and exterior roads above what would be anticipated under the No Action Alternative. New use areas, including the proposed archery range at Horsetooth Reservoir, would not increase traffic on the adjacent roads to a level that would result in congestion or safety problems. The majority of the county roads adjacent to the reservoirs are designed to a collector level; therefore, the existing infrastructure is adequate to address the increases in use.

Cumulative Impacts

Visitor use increases are expected under both alternatives as a result of the growing human population of the surrounding area and residential development is increasing in proximity to the four reservoirs. Additionally, seasonal occupancy in the foothills surrounding the four reservoirs is changing to more of a year-round occupancy, generating more local traffic on area roads. Increases in visitation and visitor traffic, combined with an increase in permanent residences in the area, would increase traffic and congestion on the surrounding roads. Increase in recreational traffic is minimal in comparison to year-round residential traffic. Traffic problems would continue to increase during the recreation season (June to September), with the heaviest concentrations occurring on weekends and holidays.

Socioeconomics

Affected Environment

This section addresses socioeconomic trends and the economic impact of the four reservoirs on the greater region.

Economic Impact

Outdoor recreation is incorporated into the day to day lives of Colorado residents and it is a key driver of tourism. Larimer County is repeatedly touted for its high quality of life due, in part, to the abundant outdoor recreation opportunities it offers. In 2010, the top three primary reasons for choosing the Fort Collins area to visit were being on vacation, visiting family and friends, and outdoor recreation. Approximately one-in-four non-resident visitors come to the area primarily for outdoor recreation according to one survey (Loomis 2010).

The 2014 SCORP determined that outdoor recreation contributes over $34.5 billion in annual economic activity and creates 313,000 jobs. Outdoor recreation in the North Central region, which includes Larimer and surrounding counties, annually generates just over $8 billion dollars in economic output. In 2015, overnight visitors in Larimer County spent over $600 million; which has steadily risen by 4 percent over the past 5 years (Runyan Associates 2016).

In the 2007 Parks Master Plan, it was determined that 60 percent of reservoir visitors come from outside of Larimer County. By drawing non-local visitation to the area, the four reservoirs generate economic benefits locally and for the greater region in the form of direct and indirect spending by visitors.

Population

Approximately nine Front Range counties comprise the "region of influence" for the four reservoirs: Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, Jefferson, Larimer, and Weld. Population in the region of influence has been steadily growing in each county; growth rates for the past 30 years vary between a low of 22 percent in the City and County of Denver to a high of 1,035 percent in Douglas County.

Colorado Department of Local Affairs projections indicate that population throughout Colorado will continue to grow at a substantial rate (DOLA. 2016a). In Larimer County alone, the population is predicted to grow by 150,000 by 2040; the equivalent of adding another Fort Collins. Between 2010 and 2020, the area of influence is anticipated to add 715,817 people, the majority of which will occur in Arapahoe, Denver and Weld Counties. As Table 19 shows, population growth in the area of influence is expected to continue.

A majority of the people living within the region of influence reside in urbanized areas. U.S. Census Bureau statistics show that the populations of the cities of Fort Collins and Loveland grew 11.7 percent and 12.5 percent, respectively from 2010 to 2015 (Census 2016a). Furthermore, four of the top 100 fastest growing cities in the nation for the period 2000-2014, with populations greater than 50,000 persons, are located in the area of influence, including Castle Rock, Douglas County (ranked 13th, 175.6 percent increase), Commerce City, Adams County (ranked 21th, +146.6 percent increase), Broomfield, Broomfield County (ranked 84th, +62.4 percent increase), and Thornton, Adams/Weld Counties (ranked 96th, +58.2 percent increase) (DOLA 2016b).

Table 19-Historical and Forecast Population

	Adams	Arapahoe	Boulder	Broomfield	Denver	Douglas	Jefferson	Larimer	Weld	Colorado [a]	USA (millions)
1950	40,234	52,125	48,296	n/a	415,786	3,507	55,687	43,554	67,504	1,325,089	150.7
1960	120,296	113,426	74,254	n/a	493,887	4,816	127,520	53,343	72,344	1,753,947	179.3
1970	185,789	162,142	131,889	n/a	514,678	8,407	235,368	89,900	89,297	2,207,259	203.2
1980	245,944	293,292	189,625	n/a	492,694	25,153	371,753	149,184	123,436	2,889,964	226.5
1990	265,038	391,511	225,339	n/a	467,610	60,391	438,430	186,136	131,821	3,294,394	248.7
2000	363,857	487,967	291,288	n/a	554,636	175,766	527,056	251,494	180,936	4,301,261	281.4
2010[b]	441,603	572,003	294,567	55,889	600,158	285,465	534,543	299,630	252,825	5,029,196	308.9[c]
2020[b]	545,237	687,520	337,897	72,388	734,079	352,955	595,849	360,434	340,265	5,935,920	334.5[c]
2030[b]	665,364	810,672	379,714	92,051	804,797	425,395	652,326	424,882	466,717	6,970,651	359.4[c]
2040[b]	787,411	935,138	416,942	95,453	867,545	482,079	686,319	483,322	605,605	7,925,230	380.2[c]
2050[b]	893,563	1,016,184	436,166	95,658	922,512	494,181	700,173	542,039	738,396	8,686,850	398.3[c]

Source: Census 2016a. Compiled by the Demography Section from U.S. Census Bureau Records
[a] *Source: DOLA 2016b*
[b] *Source: DOLA 2016a*
[c] *Source: Census 2016b*

Environmental Consequences

Impacts of the No Action Alternative

The No Action Alternative would have a minor direct effect on the local and regional economies. An increase in visitation commensurate with population growth and increasing recreational demands would likely benefit local businesses and Larimer County revenues.

Impacts of the Proposed Action

Implementation of the Proposed Action would result in both short term and long term socioeconomic impacts. Short term impacts would be associated with the construction phase of the project, including expenditures for workers, materials and services. Construction activities would likely be phased over a several year period and employment and expenditures would be minor relative to the scale of the local and regional economies; therefore, short-term effects would be negligible.

Long-term effects would be associated with increased visitation and associated increases in expenditures for gas, lodging and services. As previously discussed, growth in visitation is anticipated even without completion of any of the facility enhancements and expansions that are included in the Proposed Action. Given the small scale of proposed facility expansions, only a minor increase in visitation can be attributed to the Proposed Action (See the RMP, Appendix A, Chapter 3, Table 3.3 – Comparison of Planned Campsites and Parking Spaces). For this reason, long-term effects on socioeconomics are anticipated to be minor.

Cumulative Impacts

On-going population growth in the project region, as well as specific planned projects such as NISP and Chimney Hollow Reservoir, would result in impacts to socioeconomics in the region. If construction of new and expanded facilities occurs concurrently with that of planned new reservoirs, some cumulative effects would occur. However, the increment of new economic activity and employment associated with implementation of the Proposed Action would be minor and any resulting short-term effects on socioeconomics would be negligible.

Cultural Resources

Affected Environment

The four reservoirs and facilities associated with the C-BT Project are an important aspect of local and regional history. These facilities lie within a proposed historic district, the Colorado-Big Thompson Project Historic District, which was determined to be eligible for listing on the National Register of Historic Places (NRHP) in 1998. Most of the project facilities at the four reservoirs: e.g. the dams, canals and other structures are considered to be contributing resources to the district. These contributing features are numerous and are not individually listed in the discussions that follow for each reservoir. In addition, a number of other cultural sites have been documented on project lands at all four reservoirs. These resources are summarized in the remainder of this section.

Historic sites at Horsetooth Reservoir are predominantly associated with stone quarrying activities. Limited quarrying occurred at the reservoir in the 1870s, but large-scale development began in the early 1880's with the arrival of the railroad. Stone quarried at the reservoir site was shipped as far as Kansas City and other Midwest cities. Stone from the reservoir site was also used in many prominent buildings in several Front Range communities, including Denver, Boulder and Fort Collins. Commercial quarrying operations sharply declined in 1893 and completely ceased by 1920. Many of the historic quarry sites are located on the west side of the reservoir and the sites retain relatively little evidence of past activities. Remnants of stone retaining walls are evident above the high water line north of the swim beach.

Settlement at Horsetooth Reservoir included agricultural homesteads and a community supporting the quarry operations. The original town of Stout, now inundated, included homes, schools, shops, a post office, three saloons and a brothel. No residences or other major structures remain from the early settlement period; however, stone enclosures and wall remnants have been found at numerous locations throughout the reservoir site. These remnant enclosures and walls were primarily used to confine livestock. Most of the historic sites at Horsetooth Reservoir are not eligible for NRHP listing; however, three sites at Horsetooth Reservoir are eligible for NRHP listing. The eligible sites include the Walthen Ranch and Second Stout Post Office site, an historic quarry site and an historic trash dump. Two of these sites are located below the high water line.

Prehistoric sites have also been identified at Horsetooth, including lithic scatters, hearths, and other indications of campsites or tool manufacturing. Two of these prehistoric sites are considered potentially eligible for NRHP listing and several other sites require additional investigation before their NRHP status can be determined.

A Class III cultural resources survey was completed for Carter Lake in 2008 (Kester-Tallman/Brant, 2008). A total of 17 sites were documented. Of these sites, five are considered

eligible for listing on the NRHP, including four prehistoric sites and one historic site. One of the eligible prehistoric sites is a human burial that may contain additional human artifacts and materials. Two of the other eligible sites are open camps and the third is a quarry site where tools were manufactured.

The eligible historic site at Carter Lake is a historic farmstead containing a foundation, linear alignment of stone slabs and a trash scatter.

Previous cultural resource surveys at Pinewood Reservoir have identified 12 cultural site locations, including eight prehistoric sites. Only one of the prehistoric sites is considered eligible for NRHP listing, which is an open camp site with a hearth and an assemblage of stone tools.

Cultural resources at Flatiron Reservoir include one eligible historic site, which consists of masonry and walls/culverts constructed along an old road to Estes Park that was in use from 1881 to 1933. It may have functioned as a bridge over the intermittent stream.

Environmental Consequences

Impacts of the No Action Alternative

No direct disturbance of cultural resource sites would result from the No Action Alternative. Existing access control and visitor management practices would continue. However, increased visitation, as a result of population growth and growing recreation demands, would present increased risk of disturbance to cultural sites due to trampling, increased erosion, and higher instances of vandalism.

Impacts of the Proposed Action

One NRHP eligible historic site would be directly impacted by construction at Big Landia. The goal of cultural resource management is to avoid affecting historic properties (sites eligible for nomination to the NRHP). Reclamation will work with Larimer County to avoid as much of the site as possible in the final design and develop a mitigation plan in consultation with the State Historic Preservation Officer (SHPO) and local historic preservation groups prior to any ground-disturbing activities.

No other known historic properties will be directly affected by the proposed action. However, potential impacts to unknown or unrecorded cultural resources could occur, and would be associated primarily with physical disturbance during construction of new facilities or the reconfiguration of existing facilities outside of the footprints of existing developed recreation sites. Cultural resource inventories at Horsetooth Reservoir are outdated, and areas of new development will require new surveys prior to National Historic Preservation Act (NHPA) Section 106 compliance.

This RMP establishes only a conceptual framework for managing resources and does not implement any specific projects. As such, the scope of this RMP focuses on a broad scale of cultural resource impacts associated with the array of alternatives and their broad levels of proposed development within the Project Management Boundary. Site-specific cultural resource impacts will be addressed as part of separate NEPA and NHPA Section 106 compliance processes prior to the implementation of individual projects proposed as part of the selected RMP; those site-specific impacts are not addressed in this RMP.

In addition, all contracts would include a "stop work" clause if evidence of cultural resources is found during construction. If cultural resources are encountered during construction, avoidance of

any further disturbance and protection of the resources discussed would occur whenever possible. If avoidance is not possible, Reclamation would enter into consultations with SHPO regarding the eligibility of the subject sites for inclusion in the NRHP. This information would take the form of cultural resource reports and site forms, and could also include the results of archaeological testing of the subject sites. If avoidance of sites that are determined eligible for inclusion in the NRHP is not possible, Reclamation would take measures to mitigate impacts to those sites. The nature and extent of those mitigation measures will be determined in consultation between the SHPO and Reclamation.

Increased visitation, as a result of population growth, growing recreation demands, and improved recreation opportunities would present increased risk of disturbance to cultural sites due to trampling, increased erosion, and higher instances of vandalism.

Cumulative Impacts

No cumulative effects would occur due to direct disturbance associated with implementation of the Proposed Action. However, increased visitation combined with regional growth could result in additional effects to cultural resources due to an increased risk of vandalism and inadvertent damage from trampling and the creation of social trails.

Paleontological Resources

Affected Environment

Paleontological resources are defined as any fossilized remains, traces, or imprints or organisms preserved in or on the earth's crust that are of paleontological interests and provide information about the history of life on earth except those associated with an archaeological resource, as defined in Archeological Resources Preservation Act (ARPA) or cultural items, as defined in the Native American Graves Protection and Repatriation Act of 1990.

Section 6302 of the Paleontological Resources Preservation Act of 2009 (Sections 6301-6312 of the Omnibus Land Management Act of 2009 [Public Law 111-11 123 Stat. 991-1456]) requires the Secretary of the Interior to manage and protect paleontological resources on federal land using scientific principles and expertise.

Potential effects of the described alternatives on paleontological resources are the primary focus of this analysis. The affected environment for paleontological resources corresponds to the Area of Potential Effects (APE) for direct effects for historic properties.

Environmental Consequences

Reclamation contacted the Bureau of Land Management to obtain information concerning the Potential Fossil Yield Classification (PFYC) for paleontological resources within the APE. The PFYC is a system used by the agency to assess the potential for discovery of significant paleontological resources or the impact of surface disturbing activities on these resources.

The geologic formations within the four reservoirs are generally known to contain vertebrate fossils or scientifically significant non-vertebrate fossils, but these occurrences are widely scattered. Horsetooth and Carter reservoirs both contain Morrison Formation deposits on the east side of the reservoirs, which are classified as PFYC 5. These areas are known to contain vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils. Most of the other formations within the four reservoirs are classified as PFYC 3, which indicates moderate potential

for significant fossils. Northern portions of Pinewood Reservoir have granite and metamorphic rock which have a very low (PFYC-1) likelihood of fossils.

Impacts of the No Action Alternative
Under the No Action Alternative, there would be no foreseeable impacts to paleontological resources.

Impacts of the Proposed Action
There is a potential for impacts to paleontological resources but impacts to significant paleontological resources is minimal. The potential for the Proposed Action to impact a significant fossil locality is low but is somewhat higher for common fossils.

Improvements made on the east side of Horsetooth Reservoir and Carter Lake, especially at a new developed site like Big Landia, may have impacts to paleontological resources. A field survey may be necessary prior to surface disturbing activities. Increased visitation, as a result of population growth and growing recreation demands, would present increased risk of disturbance due to trampling, increased erosion, and higher instances of vandalism.

This RMP will establish only a conceptual framework for managing resources and does not implement any specific projects. As such, the scope of this RMP focuses on a broad scale of paleontological resource impacts associated with the array of alternatives and their broad levels of proposed development within the Project Management Boundary. Site-specific paleontological resource impacts will be addressed as part of separate NEPA and paleontology compliance processes prior to the implementation of individual projects proposed as part of the selected RMP; those site-specific impacts are not addressed in this RMP.

The standard environmental commitments for all four reservoirs includes a stop work clause in the event resources are discovered during ground disturbing activities associated with the Proposed Action.

Cumulative Impacts
No cumulative effects would occur due to direct disturbance associated with implementation of the Proposed Action.

Other Resources
The Proposed Action will have no effect on other resources such as air quality, environmental justice, Indian Trust Assets (ITAs), wilderness, wild and scenic rivers, and national landmarks.

ITAs are legal interests in property held by the United States for Indian Tribes or individuals, as well as rights granted under treaties, such as fishing and hunting rights. The Department of the Interior's policy is to recognize and fulfill its legal obligation to identify, protect and conserve the trust resources of federally recognized Indian tribes and tribal members; and to consult with the tribes on a government-to-government basis whenever plans or actions affect tribal trust resources, trust assets, or tribal health and safety (Department of Interior, Departmental Manual 512, Chapter 2). The affected environment for ITAs corresponds to the APE for direct effects for historic properties. Reclamation contacted the Bureau of Indian Affairs, Anadarko, Concho, Fort Peck, Northern Cheyenne, and Wind River Agencies to identify any potential impacts to ITAs within the APE. No ITAs were identified within the boundaries of the recreation areas.

Executive Order (EO) 12898 on Environmental Justice requires federal agencies to analyze programs to assure that they do not disproportionately adversely affect human health and environmental effects on low income and minority populations. No minority populations exist in the general project area and implementation of the Proposed Action would not disproportionally affect low-income or minority populations.

Unavoidable Adverse Impacts

Unavoidable adverse impacts are assumed to be long-term impacts to resources that would be affected by implementing the RMP. No unavoidable adverse impacts are expected as a result of this federal action.

Relationship between Short-Term Uses and Long-Term Productivity

For this federal action, short-term is defined as the 10-year planning life of the RMP. New projects and other implementation actions identified in the RMP would be accomplished within the 10-year timeframe. Although rehabilitating and revegetating disturbed areas to their natural state may require more than 10 years, the process would begin during the planning life of the RMP/EA and most areas where new disturbance is planned have already been disturbed and would return to a condition as good as or better than current conditions within 10 years. These actions are therefore considered to be short term. Long-term is defined as conditions extending beyond the 10-year planning life of the RMP.

The management actions detailed in this RMP are intended to prevent further degradation of the environment that is occurring under the current conditions or is likely to occur as a result of future visitation. It is assumed that the short- and long-term goals and objectives for managing the area would not change over time and that there would be no loss of productivity of the natural and social environment.

Irreversible and Irretrievable Commitments of Resources

Irreversible and irretrievable commitments are considered to be the permanent reduction or loss of a resource. Implementation of either of the alternatives would not result in any irreversible loss of resources. The primary commitment of resources occurred when materials and lands required for construction of the dam, reservoir, and associated conveyance features were made. These resources have already been irreversibly committed for the life of the four reservoirs.

No irretrievable commitments of resources are expected under either of the alternatives. New and enhanced facilities would require a very limited commitment of building materials and their construction would occur in a manner that minimizes any irreversible or irretrievable commitment of resources.

SUMMARY OF ENVIRONMENTAL EFFECTS

No unavoidable adverse impacts or irreversible and irretrievable commitment of resources are expected under the Proposed Action or the No Action. Table 20 below is a summary comparison of each resource included in the RMP and a brief summary focused on impacts under the Proposed Action.

Table 20- Summary of Resource Impacts

Resource Topic	Alternative A No Action	Alternative B Proposed Action	Cumulative Impacts
Hydrology and Water Quality	No effect on reservoir hydrology. Reservoirs elevations would continue to fluctuate based on natural inflows, precipitation, water demands, and reservoir operations. Anticipated increase in visitation that may result in **long term minor adverse impacts to water quality** such as higher erosion into reservoir due to foot traffic and increased coliform bacteria levels due to visitors not using proper facilities. Capacity limits would not change.	No effect on reservoir hydrology. Capacity limits would not change. **Short term minor adverse impacts to water quality** during construction activities resulting from increased soil disturbance. Erosion and soil control methods would be implemented. **Long term minor adverse impacts to water quality** are increased risk of undesirable contamination from human activities and increased run-off from increased boating use.	**No cumulative impacts expected** for hydrology or water quality. Note that the RMP/EA does not include analysis on reservoir operations, therefore, cumulative effects to reservoir water levels have not been quantified.
Geology, Soils, Topography	Existing geologic features remain unchanged. **Minor long term adverse impacts to soil resources** would continue to occur as result of ongoing maintenance activities and visitor use.	**Approximately 72 acres of soil resources would be disturbed by construction activities.** Horsetooth Reservoir (47 acres), Carter Lake (25 acres), and < 1 acre at Pinewood and Flatiron Reservoirs. Erosion and soil control methods would be implemented.	**None expected.**

Resource Topic	Alternative A No Action	Alternative B Proposed Action	Cumulative Impacts
Vegetation and Fire Management	No change to existing vegetation communities, including sensitive species and conservation areas. **Negligible long-term minor adverse impacts to vegetation** from increased visitor use. Noxious weeds would continue to be controlled under an Integrated Pest Management Plan.	**Approximately 72 acres of vegetation would be disturbed by construction activities.** Horsetooth Reservoir (47 acres), Carter Lake (25 acres), and < 1 acre at Pinewood and Flatiron Reservoirs. Erosion and soil control methods would be implemented. **Short term minor adverse impacts from potential for increased growth in noxious weeds** would be controlled under an Integrated Pest Management Plan. No potential for wildlife would not be impacted by the Proposed Action.	**Minor**, related to total loss of vegetation with other reasonably foreseeable projects.
Fish and Wildlife	**Long term minor adverse impacts to wildlife resources** due to increased habitat degradation. Fisheries resources would continue to have pressure from increased visitation and may need modified management/restocking practices. No effect to threatened, endangered, or special status species.	**Similar types of long term minor adverse impacts to wildlife resources as No Action** due to increased habitat degradation but, also due to development of new facilities. The majority (72 acres) of the disturbance would occur in previously disturbed and lower habitat areas. No effect to threatened, endangered, or special status species. No water depletions associated with Proposed Action, so no additional impact to Colorado River endangered fish species.	**Negligible,** related to total loss of wildlife habitat with other reasonably foreseeable projects.

Resource Topic	Alternative A No Action	Alternative B Proposed Action	Cumulative Impacts
Recreation	Current practices and boating capacity maintained. Expected shortages in parking, facilities, increased maintenance costs due to expected increase in population growth and associated visitation of the reservoir areas.	**Minor long term beneficial impacts on visitor use and satisfaction** from improvements with current practices and boating capacity maintained.	**Beneficial,** related to Proposed Action in addition to other increased amount of recreational opportunities in the region.
Visual Resources	Visual quality at all reservoir sites would remain the same. No direct effects to the visual resources.	**Minor long-term adverse visual impacts to Horsetooth and Carter Lake Reservoirs.** Visual impacts at Pinewood and Flatiron Reservoirs would be negligible.	**Minor, long-term,** from interaction of planned improvements in addition to on-going land-use changes on adjacent private lands at the reservoir sites.
Land Use	Land use at all reservoir sites would remain the same. Expected increase in population growth and associated visitation of the reservoir areas.	**Minor long-term adverse visual impacts to Horsetooth and Carter Lake Reservoirs.** Impacts on land use at Pinewood and Flatiron Reservoirs would be negligible. **No direct effects to adjacent land use.**	**None expected.**
Public Facilities and Transportation	Negligible impacts to public services. Expected increase in population growth and associated visitation of the reservoir areas may mean increased law enforcement demands and increased traffic congestion in some use areas.	**Minor long-term adverse impacts to some of the public services and utilities from the proposed developments.** The developments are anticipated to minimally increase visitation and traffic above the levels of No Action.	**Minor,** related to growing population and visitation use at reservoir sites.
Socioeconomics	Expected increase in population growth and associated visitation of the reservoir areas may mean benefit to local businesses and Larimer County revenues.	Negligible short-term beneficial impacts to socioeconomics related to construction employment and minor long-term adverse impacts related to increased visitation.	**Negligible,** related to growing population and visitation use at reservoir sites in addition to other planned projects

Resource Topic	Alternative A No Action	Alternative B Proposed Action	Cumulative Impacts
Cultural and Heritage Resources	No direct disturbance of cultural resources would occur. Existing access control and visitor management practices would continue. Expected increase in population growth and associated visitation of the reservoir areas may mean increased risk of disturbance of cultural sites.	No known NRHP cultural resources would be impacted. Additional field survey would be needed prior to construction activities. Existing access control and visitor management practices would continue. Expected increase in population growth and associated visitation of the reservoir areas may mean increased risk of disturbance of cultural sites.	**Negligible,** related to growing population and visitation use at reservoir sites.
Paleontological Resources	No foreseeable impacts to paleontological resources would occur.	No known paleontological resources would be impacted. Additional field survey would be needed prior to construction activities. Existing access control and visitor management practices would continue. Expected increase in population growth and associated visitation of the reservoir areas may mean increased risk of disturbance of cultural sites.	**None expected.**
Other Resources	No impacts to air quality, environmental justice, Indian Trust Assets, wilderness, wild and scenic rivers, and national landmarks.	Same as No Action.	**None expected.**

Environment commitments would be implemented by Larimer County. See Appendix B (attached) for detailed list.

CONSULTATION AND COORDINATION

In addition to an extensive public involvement program, a planning team, committees, and stakeholder groups were involved with the development of the RMP. Detailed lists of members are included in the RMP (Appendix A, Chapter 6.1). The SHPO was consulted per Section 106 of

NHPA in January 2018. Consultation with tribal interests is on-going and results of these consultations will be incorporated into the FONSI.

Scoping Process and Public Comment

The issues and opportunities that were identified through several methods, including consultation and internal scoping with individuals and agency representatives, public meetings, and formation of Planning Team and Technical Advisory and Stakeholder Committees. Internal scoping activities were completed by in-person interviews with all Committees, concessionaries, user groups (fisherman, climbers, boaters, campers, etc.), and government organizations to collect input concerning management of the four reservoir areas. A list of Planning Team members, agencies, partners, stakeholder groups and other involved persons is provided in the RMP (Appendix A, Chapter 6).

The public was asked for input during three phases of the planning process: public scoping, alternatives development; and review of the draft RMP and associated analysis. Each phase involved multiple meetings with the public along with Stakeholder and Technical Advisory Committee meetings, and meetings with other key stakeholders.

The Reclamation website provided project updates, meeting notifications and meeting materials. Larimer County also hosted a website with project information.The public was notified of meetings through both Reclamation and Larimer County press releases, direct mailings, and Larimer County's e-newsletter and social media pages.

The timeline of planning activities included:

- Issue Identification/Public Scoping June – September 2016
- Alternative Development/Analysis – Fall 2016
- Draft RMP – Winter 2017
- Public Review Period – Spring 2017
- Final RMP – Summer 2018
- Final EA – Fall 2018

The scoping process extended over a 45-day period (July 7 - September 9, 2016) and provided an opportunity for the public to identify issues, opportunities, constraints, and ideas for managing resources and recreation use at the four reservoirs. Three meetings were held: one at Horsetooth Reservoir (South Bay Group Pavilion), one near Carter Lake (Larimer County Natural Resources Administration Offices), and one at The Ranch Events Complex (near I-25 and Crossroads Boulevard). In total, over 140 people attended the meetings.

Each meeting was conducted in an open-house format that included a series of exhibits about the RMP and associated analysis process, along with a summary of input received to date on each reservoir. Meeting participants were encouraged to discuss their issues and questions with representatives from Reclamation and Larimer County. Larimer County also administered an online questionnaire during the scoping period.

A complete summary of public input from scoping is documented in the "Public Scoping Report" for the Larimer County Parks Master Plan and Resource Management Plan/Environmental Assessment (Reclamation 2016) of which a copy can be provided upon request to Reclamation.

Following initial public and stakeholder input, concepts were developed for improvements to several recreation areas at the four reservoirs. The concepts were reviewed by the public during a 30-day review period (November 4 - December 3, 2016) and public meetings were held in Fort Collins and Loveland. A total of 93 participants attended the public meetings on alternatives. Hard copy and online questionnaires were provided that requested the public to review the alternative concepts and provide feedback on facilities provided, site layouts, and other content. A total of 744 people responded to the questionnaire. A summary is provided in the RMP, (Appendix A, Exhibit C- Alternative Concepts Open House/Questionnaire Summary).

Key resource issues identified included: hydrology, water quality, fishery health, wildlife/plant habitat, weed control, ANS, recreation/safety, facility availability, and over-crowding. Because of the extent of the comments received through public meetings and online content, the RMP document summarizes the comments by reservoir in the RMP (Appendix A, Chapter 2, Tables 2.1-2.4).

The comment period on the draft RMP and associated analysis extended over a 60-day review period (May 26 – July 25, 2017) after the documents were made available by publication on Reclamation's website. During the comment period two meetings were held in Loveland and Fort Collins. Comments were collected online, via e-mail, and writing at the public meetings. A total of 117 written comments from 39 individuals were collected. Substantive comments received during the review period were reviewed and where appropriate, addressed in this final document. A summary of the comments received and Reclamation's responses are attached as Appendix C.

Agency Coordination

The following local, state, and federal agencies were contacted and coordinated with during the development of the proposed RMP revision and EA.

Federal Agencies
Bureau of Indian Affairs, Concho Agency
Bureau of Indian Affairs, Anadarko Agency
Bureau of Indian Affairs, Wind River Agency
Bureau of Indian Affairs, Northern Cheyenne Agency
Bureau of Indian Affairs, Fort Peck Agency
U.S. Fish and Wildlife Service

Tribal
Cheyenne and Arapaho Tribes of Oklahoma
Comanche Nation
Kiowa Tribe of Oklahoma
Northern Arapaho Tribe
Northern Cheyenne Tribe
Southern Ute Indian Tribe
Ute Indian Tribe (Uintah & Ouray Reservation)
Ute Mountain Ute Tribe

State Agencies
Colorado State Historic Preservation Office
Northern Water
Colorado Parks and Wildlife
Colorado State Forest Service
Colorado State University Research Foundation, Real Estate
Colorado Natural Heritage Program

Local Agencies and Organizations
City of Fort Collins Natural Areas Department
Larimer County Community Development Department
Larimer County Sheriff's Department
Local Fire and EMS Providers
City of Fort Collins Utilities Department

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