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Spring Creek

Aquatic Ecosystem Restoration Study

Colorado Springs, CO

Appendix M – Environmental

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US Army Corps
of Engineers
Albuquerque District



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1 Introduction

1.1 Description of Preferred Plan

The preferred plan or the Tentative Selected Plan (TSP) for the Spring Creek corridor restoration aims to revitalize this urban green space in Colorado Springs by implementing a range of restoration measures focused on slope stabilization, in-stream structures, and vegetation plantings. These efforts will improve stream-riparian zone function and enhance the ecological health of the area, benefiting both the surrounding communities and the greater Fountain Creek watershed system. The project is divided into three distinct reaches, each addressing unique challenges and opportunities. Reach 1, approximately 250 meters long, will focus on bank stabilization using boulders and vegetation plantings to prevent erosion, along with invasive species removal and the creation of a scenic sitting area with a picnic table. Reach 2, approximately 500 meters long, will include the construction of two rock riffle structures to address channel incision, as well as the creation of wetland areas through bank modifications and riparian replanting. Additionally, an incised former channel will be filled, and access paths will be established to facilitate both maintenance and public visitation. Reach 3, spanning about 150 meters, will see the west bank undergo significant modifications, including the removal of a concrete slab, slope adjustments, and the addition of riprap and plantings to stabilize the stream and enhance habitat. A constructed rock riffle and in-stream habitat boulders will also be installed to support ecological processes. Through these restoration measures, the project aims to enhance stream and riparian function within the Fountain Creek watershed, while providing valuable community benefits and fostering a space for public engagement with nature.

1.2 Project Purpose and Scope

As part of the planning process for all Continuing Authorities Program (CAP) projects, a feasibility study must be completed. This feasibility study was conducted in accordance with USACE's CAP engineering pamphlet (EP 1105-2-58), Policy for Conducting Civil Works Planning Studies Engineering Regulation (ER 1105-2-103), and Aquatic Ecosystem Restoration Civil Works Mission and Evaluation Procedures EP (EP 1105-2-70), and with consideration given to the scope and scale of the recommended solution.

The purpose of the Spring Creek Ecosystem Restoration feasibility study is to -

- evaluate significant aquatic ecosystem degradation within the study area along Spring Creek;
- to formulate, evaluate, and screen potential solutions to these problems; and
- to recommend a series of actions and solutions that have a Federal interest and are supported by a non-Federal sponsor willing to provide the necessary items of local cooperation.

Environmental degradation within the study area along Spring Creek includes a loss of natural ecosystem structures, functions, and processes necessary to support native fish and wildlife habitat.

2 Existing Conditions

2.1 Fish & Wildlife in the Project Area

Wildlife communities in Colorado Springs and the greater El Paso County are typical of those in the foothill grassland ecoregion habitats of eastern Colorado (Chapman et al. 2006). Spring Creek was historically an important source of water for the surrounding environment and provided vital habitat for wildlife. The greater Fountain Creek watershed has been highly developed, converting Spring Creek into a true “urban greenspace”, a remnant patch of natural landscape with some potential to support assemblages of flora & fauna. Wildlife resources expected within the study area are limited to generalist species that have the ability to tolerate disturbed habitats in highly developed areas.

The spread of urbanization has almost eliminated the presence of large mammals. However, several meso-predator species could use the vegetative corridor of Spring Creek at different times of the year. It is anticipated that medium size carnivore mammals such as bobcat (*Lynx rufus*), coyote (*Canis latrans*), red fox (*Vulpes vulpes*), Virginia opossum (*Didelphis virginiana*), racoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*) and mink (*Neovison vison*) utilize Spring Creek. Other mammalian species that can tolerate disturbed and fragmented habitats include muskrat (*Ondatra zibethicus*), porcupine (*Erethizon dorsatum*), fox squirrel (*Sciurus niger*), Mexican woodrat (*Neotoma mexicana*), meadow vole (*Microtus pennsylvanicus*), deer mouse (*Peromyscus maniculatus*) and several bat species such as the Big brown bat (*Eptesicus fuscus*) could occupy the study footprint.

Avian species noted during a site visit Species observed include American robin (*Turdus migratorius*), Canada goose (*Branta canadensis*), common Mallard (*Anas platyrhynchos*), red-tailed hawk (*Buteo jamaicensis*), Cooper’s hawk (*Accipiter cooperii*) and mourning dove (*Zenaida macroura*). Other avian species expected in the study area that could also be classified as habitat generalists include the Black-billed magpie (*Pica hudsonia*), Woodhouse’s Scrub-Jay (*Aphelocoma woodhouseii*), House finch (*Haemorphous mexicanus*), Dark-eyed junco (*Junco hyemalis*), Northern flicker (*Colaptes auratus*), American crow (*Corvus brachyrhynchos*), Western bluebird (*Sialia mexicana*), Great horned owl (*Bubo virginianus*) and a small number of visual-foraging wading birds species such as the Black-crowned night-heron (*Nycticorax nycticorax*) and the Great blue heron (*Ardea herodias*).

Herpetofauna species occurring throughout Colorado Springs and expected to be utilizing Spring Creek include the American bullfrog (*Rana catesbeiana*), Mexican Spadefoot toad (*Spea multiplicata*), Plains Spadefoot toad (*Spea bombifrons*), Woodhouse’s toad (*Anaxyrus*

woodhousii), Prairie lizard (*Sceloporus consobrinus*), Prairie ringneck snake (*Diadophis punctatus*), Western terrestrial garter snake (*Thamnophis elegans*), Gopher snake (*Pituophis catenifer*), Great plains rat snake (*Pantherophis emoryi*), Northern water snake (*Nerodia sipedon*) and the Prairie rattlesnake (*Crotalus viridis*).

Aquatic invertebrates are a vital component of freshwater systems. They process large amounts of organic material within the stream and transfer that energy to animals in higher trophic levels such as fish, frogs, bats, birds, and small mammals. The presence of water throughout Spring Creek supports a great arrangement of invertebrates, each with their own food habits and ecological role.

The majority of aquatic invertebrates can be classified as scavengers, feeding on bottom sediments or decayed plant material such as snails (*spp. Lymnaeidae*), aquatic and terrestrial earthworms (*spp. Lumbricoidea*) and chironomid insects (*spp. Chironomidae*). Others may filter small particles and microorganisms from the water column. Such organisms with this form of feeding habit include mosquito larvae (*spp. Culicidae*), black fly larvae (*spp. Simuliidae*) and caddisfly larvae (*spp. Hydropsychidae*). A small number of species feed on emergent vegetation such as field slugs (*spp. Agriolimacidae*), various grasshoppers (*spp. Acrididae*), as well as caterpillars during the larval stages of butterflies and moths (*spp. Lepidoptera*).

There are also predators, most notably the dragonflies (*spp. Gomphidae*) and damselflies (*spp. Calopterygidae*) that develop underwater during their immature stages. Other predators in the aquatic environment include water striders (*spp. Gerridae*), leeches (*spp. Glossiphoniidae*) and backswimmers (*spp. Notonectidae*). Various transient species may visit the aquatic environment along Spring Creek to drink or collect water for nest construction and maintenance. Some of these organisms include spiders (*spp. Araneae*), western honeybee (*Apis mellifera*), paper wasp (*Polistes dominula*) and European mantis (*Mantis religiosa*).

The land use/urbanization together with changes in hydrology have altered the system's ability to support wildlife use and complex trophic interactions. The presence of wildlife assemblages is typical of an urban condition, where in Reach 1 and Reach 3, the linear flow-ways have eliminated the potential for microhabitat development. The different flows along the various morphological features of the stream, could produce subtle conditions where key microhabitats develop within the larger stream. The lack of stream complexity in Reach 1 and Reach 3 currently restrict the potential for habitat complexity, eliminating the productivity of organisms and their participation in robust trophic interactions.

In Reach 2, the decrease in spatial extent of the riparian zone in combination with stressors from the surrounding urban environment (e. g. presence of non-native species, dispersal barriers, steep banks, channel armoring) have degraded conditions to support a diverse assemblage of species and communities. Although, some wetland characteristics continue to persist in Reach 2, the altered hydrologic regime restricts the potential for the establishment of aquatic fauna and other organisms associated with riparian communities.

The suitability and requirements for wildlife presence and survival along the Spring Creek corridor is greatly hindered, with barriers such as the surrounding urban setting (e. g., secondary and tertiary highways), pedestrian trails and other barriers that impede aquatic organisms in the stream itself (e. g., water control structures).

2.2 Species with Special Status

The Endangered Species Act (ESA) (7 U.S.C. § 136, 16U.S.C. § 1531 et seq.) states that all Federal departments and agencies shall ensure that any actions authorized, funded, or carried out by them do not jeopardize the continued existence of any threatened or endangered species and their habitats. Protected species are defined as those listed as threatened, endangered, or proposed or candidate for listing by the USFWS. The Colorado Dept. of Wildlife regulates State threatened and endangered species. Protected habitats include those areas designated by the USFWS as critical habitat under the ESA and sensitive ecological areas as designated by State or Federal rulings. Coordination letters with USFWS can be found in Appx J. Below, Table 1 outlines the Federally protected species, and the State listed species known in El Paso County, Colorado.

In Reach 2, the sensitive habitats could include plant communities that are limited in distribution and for seasonal use of areas for wildlife (e. g., migration routes, dispersal corridors, breeding, or summer/winter areas). No Federally listed species are known to be present in the Spring Creek project footprint, however the mobility of avian and insect species could allow for incidental or migratory occurrences of Federally listed species throughout the Spring Creek project footprint. The Eastern black rail (*Laterallus jamaicensis*), the Piping plover (*Charandrius melodus*), the Ute Ladies'tresses (*Spiranthes diluvialis*) are species federally listed as Threatened for the project footprint but have a low potential to occur. The Monarch butterfly (*Danaus plexippus*) and the Suckley's Cuckoo Bumble bee (*Bumbus suckleyi*) are proposed for listing by the USFWS and have the potential to occur at Spring Creek, however the project is not likely to jeopardize the continued existence of either species and would not require further discussion with the USFWS. Federal threatened and endangered species with potential to occur in the Spring Creek watershed, as identified by the USFWS's Information for Planning and Consultation (IPaC) database obtained February 2025, are listed in Table 1 (USFWS 2025). Full IPaC report found in Appendix J.

State listed species as Threatened include the Burrowing owl (*Athene cunicularia*), the Greenback cutthroat trout (*Oncorhynchus clarkii stomias*), the River otter (*Lontra canadensis*) and the Preble's Meadow jumping mouse (*Zapus hudsonius preblei*). State listed species as Endangered include the Kit fox (*Vulpes macrotis*).

Table 1. Federally and State Listed Species.

Federally Listed Species				
Common Name	Scientific name	Federal Status*	Habitat/Occurrence	Potential to occur in Spring Creek
Eastern Black Rail	<i>Laterallus jamaicensis</i> ssp. <i>jamaicensis</i>	T	This bird occurs in wetlands, require dense vegetative cover	No (no suitable wetland habitat on site)
Piping Plover	<i>Charadrius melodus</i>	T	This bird nests and feeds along rivers/lakes on sand and gravel beaches; in eastern CO, Arkansas and S. Platte River basins.	No (no suitable habitat)
Ute Ladies'-tresses	<i>Spiranthes diluvialis</i>	T	This flowering plant occurs along riparian edges, gravel bars, high flow channels, wetlands, seeps, and moist to wet meadows along perennial streams	No (no suitable habitat; site is too disturbed)
Monarch Butterfly	<i>Danaus plexippus</i>	C (Proposed T)	North American migratory populations of this insect are impacted by: loss and degradation of habitat (conversion of grasslands to agriculture, use of herbicides, incompatible management of overwintering sites, urban development), exposure to insecticides, effects of shifting climatic conditions.	Potential to occur since native wildflower nectar sources exist in upland portions of site. The project is not likely to jeopardize the continued existence of the species.
Suckley's Cuckoo Bumble Bee	<i>Bombus suckleyi</i>	C (Proposed E)	This insect is a generalist pollinator, inhabiting open meadows at a wide range of elevations. They rely on a wide range of flower species mostly in the Asteraceae family. Historic observations most often occur at higher elevation meadows within pine forest or sub-alpine zones. The presence of this species is entirely dependent on the presence of suitable host species, especially the western Bumble Bee (<i>Bombus occidentalis</i>).	Likelihood is low, due to low-quality foraging habitat and the effects of habitat fragmentation. Probability of presence increases if there is evidence of host species presence (<i>B. occidentalis</i>). The project is not likely to jeopardize the continued existence of the species.
*Status: T = threatened; E = endangered; C = candidate				

State Listed Species

Common Name	Scientific name	State Status*	Habitat/Occurrence	Potential to occur in Spring Creek
Burrowing owl	<i>Athene cunicularia</i>	T	This diurnal bird occupies dry, open areas with short grasses and no trees. They nest and live in underground burrows, often created by Prairie dogs, ground squirrels and badgers.	Low likelihood due to the lack of burrowing opportunities. Potential increases if prairie dog burrows are present.
Greenback Cutthroat Trout	<i>Oncorhynchus clarkii stomias</i>	T	Native to headwaters of the South Platte; require clear, cold, well oxygenated water; 2012 genetic work found only natural pure greenback population in Bear Creek SW of CO Springs; subsequently stocked and reproducing in S. Platte drainage.	No (no suitable habitat)
River otter	<i>Lontra canadensis</i>	T	Otters occupy riparian zones, with bank availability for dens and open water availability for foraging and playing. Their diet consists of aquatic animals like crayfish, frogs, fish and young beavers and muskrats.	Low likelihood due to the poor habitat characteristics, lack of large areas of open water and the lack of natural streambanks.
Kit fox	<i>Vulpes macrotis</i>	E	Kit foxes occupy sparsely covered, semi-desert shrublands, spending most of the day in dens and emerging at night to hunt.	Low likelihood due to the urban characteristics of the landscape
Preble's Meadow jumping mouse	<i>Zapus hudsonius preblei</i>	T	Small rodent occupying riparian shorelines with dense combination of grasses, forbs and shrubs with a taller tree canopy structure. Rarely found in upland areas that are adjacent to riparian corridors.	Low likelihood due to poor shoreline vegetation structure and low density of grasses and forbs.
*Status: T = threatened; E = endangered; C = candidate				

2.2.1 Federally Listed Species

- Eastern black rail (*Laterallus jamaicensis*)

The Eastern black rail is a Federally Threatened species that has a low potential to occur within the Spring Creek project footprint. This secretive marsh bird is typically found in densely vegetated wetlands, particularly those with shallow, intermittent water

sources (USFWS, 2020). Although there are no known records of the Eastern black rail in the Spring Creek corridor, its migratory and dispersal habits could potentially bring it through the area. The urbanization and altered hydrology within the Spring Creek watershed have limited the availability of suitable habitat for this species. The project area, particularly Reach 2, may contain some wetland characteristics, but the overall suitability for the Eastern black rail is considered low due to the degraded state of the riparian and wetland habitats. Restoration efforts aimed at enhancing wetland areas and vegetation could provide improved habitat conditions, but the presence of this species within the project footprint remains unlikely.

- Piping plover (*Charadrius melodus*)

The Piping plover, a Federally Threatened species, has a low potential to occur within the Spring Creek project footprint. This shorebird typically inhabits sandy or gravelly shores of lakes, rivers, and coastal areas with minimal vegetation (Melvin & Griffin, 1996). The Spring Creek corridor, being an urbanized stream with altered hydrology and limited sandy or gravelly habitats, does not currently provide suitable conditions for the Piping plover. The surrounding urbanization and human activity further reduce the likelihood of this species utilizing the area. Although the project footprint contains some wetland characteristics, these areas are unlikely to support the Piping plover's specific habitat requirements. Therefore, while the species may occasionally migrate through the broader Fountain Creek watershed, it is considered highly unlikely to occupy or use the Spring Creek project area as a regular habitat.

- Ute Ladies'tresses (*Spiranthes diluvialis*)

The Ute Ladies' tresses, a Federally Threatened species, has a low potential to occur within the Spring Creek project footprint. This perennial orchid is typically found in moist, alkaline soils along the margins of wetlands, streams, and riverbanks, often in areas that are seasonally inundated (USFWS, 2014). The Spring Creek corridor, though containing some wetland characteristics in Reach 2, does not currently support the specific habitat conditions required for the Ute Ladies' tresses. The altered hydrology, invasive species, and urbanization have degraded the riparian and wetland habitats, making them less suitable for this species. While the potential for occurrence is low, the restoration project's efforts to improve wetland conditions, stabilize banks, and restore native vegetation may create more favorable conditions for the Ute Ladies' tresses in the future, although the species is unlikely to be present in the area without significant habitat improvements.

- Monarch butterfly (*Danaus plexippus*)

The Monarch butterfly, which is proposed for Federal listing, has the potential to occur within the Spring Creek project footprint, particularly during migration. Monarchs rely on milkweed species as a host plant for their larvae and require diverse nectar sources during their migratory journey (Oberhauser & Neil, 2017). While the urbanized and altered conditions of the Spring Creek corridor currently limit habitat availability for the species, certain areas, particularly those with restored riparian vegetation and native plantings, could provide suitable conditions for Monarchs. The restoration project, which includes the replanting of native vegetation and removal of invasive species, may enhance habitat for the Monarch by increasing the availability of milkweed and nectar plants.

- Suckley's Cuckoo Bumble bee (*Bombus suckleyi*)

The Suckley's Cuckoo Bumblebee, which is proposed for Federal listing, has the potential to occur within the Spring Creek project footprint, particularly in areas where diverse floral resources are available. This bumblebee species relies on other bee species' nests, as it is a parasitic cuckoo bee (Round, 2022). While the current urbanized and altered conditions of the Spring Creek corridor may limit the availability of suitable nesting sites and forage plants, the restoration project's focus on replanting native vegetation could enhance the habitat for the Suckley's Cuckoo Bumblebee by increasing the abundance and diversity of nectar-rich plants. As the restored habitat becomes more conducive to pollinator populations, including native bees, there is potential for this species to utilize the area. However, the Suckley's Cuckoo Bumblebee would likely only visit the area during certain times of the year and may still be part of a broader network of habitat corridors, rather than establishing a permanent presence within the footprint.

2.2.2 State Listed Species

- Burrowing owl (*Athene cunicularia*)

The Burrowing owl, a state-listed Threatened species, has the potential to occur within the Spring Creek project footprint, particularly in the more open, sparsely vegetated areas suitable for nesting. This species typically inhabits grasslands, prairie habitats, and areas with loose, sandy soils where they can dig burrows, often utilizing abandoned burrows of other animals like prairie dogs (Vercaiteren et al. 2001). While the current urbanized conditions of the Spring Creek corridor may limit the availability of ideal nesting habitat, certain areas in Reach 2, with their broader riparian and open spaces,

could provide suitable conditions for the Burrowing owl, especially if restoration efforts lead to the creation of more open, less disturbed ground. Over time, if the landscape becomes less fragmented and more hospitable, this species may utilize the corridor for foraging and nesting, though its presence will depend on the continued success of habitat restoration and the availability of suitable nesting sites.

- Greenback cutthroat trout (*Oncorhynchus clarkii stomias*)

The Greenback cutthroat trout, a state-listed Threatened species, has a low potential to occur within the Spring Creek project footprint. This species is typically found in cold, clear streams and rivers with well-vegetated riparian zones and adequate water quality (Ma, 2022). While Spring Creek may have some intermittent flow and wetland features, the altered hydrology, warmer water temperatures, and the presence of urban infrastructure reduce the suitability of the creek for supporting Greenback cutthroat trout populations. The restoration project's focus on improving riparian vegetation and water quality could potentially create more favorable conditions for aquatic species like trout, but the project area lacks the consistent, cold-water environments required for this species. Therefore, while habitat improvements could indirectly benefit trout species in the broader watershed, the Greenback cutthroat trout is unlikely to establish a population within the Spring Creek project footprint.

- River otter (*Lontra canadensis*)

The River otter, a state-listed Threatened species, has a low potential to occur within the Spring Creek project footprint. River otters typically inhabit larger, slower-moving rivers and streams with abundant prey and suitable denning sites, such as hollow trees or burrows along the shoreline (Hanrahan et al. 2019). While the Spring Creek corridor provides some aquatic habitat, the urbanized and altered conditions, including reduced water quality, human disturbance, and fragmented riparian zones, make it less suitable for otters. The restoration project's efforts to improve riparian vegetation and water quality may enhance the creek's ability to support a broader range of aquatic species, but it is unlikely to provide the stable, high-quality habitat required for the otter's foraging and denning needs. Over time, the creek may offer occasional transient use by otters, but it is unlikely to support a permanent population unless significant changes to water quality and habitat structure are achieved beyond the scope of the current restoration efforts.

- Preble's Meadow jumping mouse (*Zapus hudsonius preblei*)

The Preble's meadow jumping mouse, a state-listed Threatened species, has a low potential to occur within the Spring Creek project footprint. This species typically inhabits riparian corridors, wet meadows, and areas with dense vegetation, particularly those with a stable water source and a mix of grasses, sedges, and shrubs for cover and food (Trainor et al. 2007). While some wetland features remain in Reach 2 of the Spring Creek corridor, the area's current urbanization, invasive species, and fragmented habitat reduce the suitability for the Preble's meadow jumping mouse. The restoration project's efforts to enhance riparian vegetation, improve wetland areas, and stabilize streambanks could create more favorable conditions for the species, especially if dense vegetative cover and suitable foraging habitat are restored. However, the species' presence would depend on the extent to which the project can restore the necessary habitat features and maintain a stable, undisturbed environment. In the long term, the restoration of a more continuous riparian zone could increase the potential for the Preble's meadow jumping mouse to use the area, but it is unlikely to establish a permanent population without further habitat improvements and connectivity with other suitable habitats in the region.

- Kit fox (*Vulpes macrotis*)

The Kit fox, a state-listed Endangered species, has a low potential to occur within the Spring Creek project footprint. This species typically inhabits open grasslands, shrublands, and arid habitats with low vegetation cover, where it can find small mammals and insects to prey on (Dunnum & Cook, 2024). The urbanized and altered conditions of the Spring Creek corridor, along with its fragmented habitat and lack of large, open, undisturbed areas, make it an unlikely habitat for the Kit fox. The project area, which consists of a mix of riparian zones and urban development, does not provide the type of open terrain and burrowing opportunities that the Kit fox requires. While the restoration project will improve habitat conditions for various species, including enhancing riparian vegetation and reducing invasive species, it is unlikely to create the expansive, low-vegetation habitats that the Kit fox needs for foraging and denning. As such, the Kit fox is expected to continue to avoid the Spring Creek corridor, with its presence being highly unlikely without significant changes to the surrounding land use and habitat structure.

2.3 Vegetation Communities

A robust riparian community characteristic of cottonwood forests with herbaceous wetlands and riparian grasslands have historically occupied the Spring Creek corridor (City of Colorado Springs, 1993). These long hydroperiod vegetation communities existed along the stream channel since at least the 1940's with the most mature occurring in Spring Creek's once expansive floodplains. The existing condition of the Spring Creek vegetation is typical of an

urban stream. Existing water courses have been greatly modified, via channelization and rerouting of drainage with widespread conversion of native vegetation to residential and commercial tracts. The complete industrialization and urbanization of the Fountain Creek watershed has been the main driver producing the existing conditions. Despite nutrient runoff from the surrounding urban area, the water quality of Spring Creek has been maintained at a reasonable and stable condition.

Riparian vegetation observed in the study area grows on the lower stream banks and in the channel where floodplain or low terraces exists. The riparian plant community consists of a mix of native cottonwood and willow including the introduced (non-native) Siberian elm and Russian olive trees. Saltcedar is a minor understory component following control efforts by the City. The introduced landscape plant Chinese privet is common in the understory as well. Sandbar willow and a variety of native and introduced grasses and forbs grow in the understory in these areas, but the herbaceous component of the riparian community is not very diverse. Species observed in the riparian zone are listed in Table 2.

Table 2. Riparian vegetation in the study area. Non-native species are highlighted in red.

Habit	Common Name	Scientific Name	Origin
Tree	Cottonwood	<i>Populus deltoides</i>	Native
Tree	Russian olive	<i>Elaeagnus angustifolia</i>	Introduced
Tree	Siberian elm	<i>Ulmus pumila</i>	Introduced
Shrub	Chinese privet	<i>Ligustrum sinense</i>	Introduced
Shrub	Sandbar willow, Coyote willow	<i>Salix exigua</i>	Native
Shrub	Saltcedar	<i>Tamarix chinensis</i>	Introduced
Forb	Cattail	<i>Typha latifolia</i>	Native
Forb	Horsetail	<i>Equisetum sp.</i>	Native
Forb	Showy milkweed	<i>Asclepias speciosa</i>	Native
Forb	Sunflower	<i>Helianthus annuus</i>	Native
Forb	Alfalfa	<i>Medicago sativa</i>	Introduced
Forb	Bitter dock	<i>Rumex obtusifolius</i>	Introduced
Forb	Western ragweed	<i>Ambrosia psilostachya</i>	Native
Forb	Teasel	<i>Dipsacus fullonum</i>	Introduced
Forb	Canada thistle	<i>Cirsium arvense</i>	Introduced
Grass	Smooth brome grass	<i>Bromus inermis</i>	Introduced

Upland vegetation in the study area grows away from the stream channel in relatively level high ground above the riparian zone or on the highest part of the stream bank where plants cannot readily access groundwater. Some mature cottonwood trees grow on the higher stream banks, but cottonwoods are not reproducing in the uplands.

The poor distribution of water in Reach 1 has significantly limited the stream’s connectivity with its floodplain and has almost eliminated the potential for a robust vegetation structure. The exchange of sediment and nutrients between stream and floodplain has resulted in a chemical

environment that supports a mix of native and exotic vegetation, composed of a dense canopy of trees with sparse patches of understory shrubs surrounded by grasses, all confined to a very steep bank. The upland area of Reach 1 on the west side of the Spring Creek channel is Wagner Park, a maintained and landscaped park with lawn grasses and planted landscape trees. The upland on the east side of Spring Creek in Reach 1 is wooded with a mix of native and non-native trees. This area is sloping from the creek grading into upland. Upland vegetation is listed in Table 3. Similar to Reach 1, the vegetation structure in Reach 3 is confined to a low terrace with limited width to support a complex riparian zone. The concrete channel armoring has been damaged at certain points affecting connectivity of the floodplain, and producing a degraded state characterized by a poor tree and shrub structure, a significant decrease in the spatial extent of herbaceous vegetation cover and an increase in the establishment of exotic vegetation.

Currently, the physical structure of the stream in Reach 2 experiences damaging erosion processes from periodic high-flow events that can cause erosion of the banks, and other natural substrate features. As a result, the riparian zone has decreased in spatial extent and has been confined to steep banks. Although Reach 2 has the highest potential for wetland establishment, the current condition of vegetation communities is characterized by monotypic and poor structure of tree, shrub and forb layers and a loss of vegetation mosaic along the stream.

Siberian elm and saltcedar are able to grow in the uplands, and saltcedar has been managed by the City in Reach 2. However, much of the upland area in Reach 2 and Reach 3 consists of open fields with scattered elm trees. This is an upland area that is predominantly open with herbaceous vegetation and scattered elm and cottonwood trees. Although these areas have considerable non-native and early successional “weeds” such as kochia and tumbleweed, there are also numerous species of forbs (wildflowers) that may provide nectar and foraging habitat for pollinators and other insects.

Table 3. Upland vegetation in the study area, and nonnative species are highlighted in red

Habit	Common Name	Scientific Name	Origin
Tree	Cottonwood	<i>Populus deltoides</i>	Native
Tree	Siberian elm	<i>Ulmus pumila</i> L.	Introduced
Tree	Juniper	<i>Juniperus monosperma</i> or <i>J. scopulorum</i>	Native
Tree	Russian olive	<i>Elaeagnus angustifolia</i>	Introduced
Cactus	Prickly pear cactus	<i>Opuntia</i> sp.	Native
Forb	Horse weed	<i>Conyza canadensis</i>	Native
For	Sunflower	<i>Helianthus annuus</i>	Native
For	Alfalfa	<i>Medicago sativa</i>	Introduced
For	Rocky mountain beeplant	<i>Cleome serrulata</i>	Native
For	Blackfoot daisy	<i>Melampodium cinereum</i>	Native
For	Russian thistle	<i>Salsola kali</i>	Introduced
For	Western ragweed	<i>Ambrosia psilostachya</i>	Native
For	Evening primrose	<i>Oenothera</i> spp.	Native

For	Milkvetch	<i>Astragalus sp.</i>	Native
Grass	Blue grama	<i>Bouteloua gracilis</i>	Native
Grass	Smooth brome grass	<i>Bromus inermis</i>	Introduced
Grass	Slender wheatgrass	<i>Elymus trachycaulus</i>	Native

2.4 Air Quality, Sound and Aesthetics

The Clean Air Act (CAA) regulates air emissions from stationary and mobile sources to ensure that air quality meets specific health-based standards. The CAA is enforced by the Environmental Protection Agency (EPA), which sets National Ambient Air Quality Standards (NAAQS) for six common air pollutants: particulate matter (PM10 and PM2.5), ground-level ozone (O3), nitrogen dioxide (NO2), sulfur dioxide (SO2), carbon monoxide (CO), and lead (Pb).

A non-attainment area is a geographic area that does not meet the minimum air quality standards set by the EPA for one or more of these pollutants. Non-attainment designations are made when air quality monitoring shows that pollutant concentrations exceed the NAAQS. These areas are subject to more stringent regulatory controls and enforcement to reduce pollution levels and work toward meeting the standards.

Colorado Springs, CO is designated by the EPA as a non-attainment area for any of the six criteria pollutants under the CAA. According to the Colorado Department of Public Health and Environment, all Colorado communities outside of the Front Range ozone non-attainment region are in attainment of NAAQS, therefore they meet the EPA’s thresholds for criteria pollutants and Colorado Springs is not included in the Front Range non-attainment designation. Since Colorado Springs is currently in attainment for the six criteria pollutants under the CAA, the project would likely not trigger significant additional air quality concerns. The design would ensure that the construction activities and any potential increases in air pollutants (such as particulate matter, dust, or vehicle emissions) are minimized during the restoration process to avoid violating air quality standards.

- Sound & Noise

The Occupational Safety and Health Administration (OSHA) noise standard limits noise levels to 90 dB(A) averaged over an eight-hour day (US Department of Labor OSHA 2017; 29 CFR 1910.95). The National Institute for Occupational Safety and Health (NIOSH) has recommended that all persons exposures to noise should be controlled below a level equivalent to 85 dB(A) for eight hours to minimize noise induced hearing loss. The majority of noise in Spring Creek originates from the surrounding traffic at the busy intersections that surround the project site. These conditions are not expected to be exceeded during construction by use of appropriate equipment.

- Aesthetics

Aesthetics include the presence and appearance of landforms, water surfaces, vegetation, and human created features relative to the surrounding and settings of the area. The aesthetics of Spring Creek could be considered as an ontology of mature strands of cottonwoods, with a robust native understory vegetation community, and with clean running water. Areas that have experienced severe vegetation thinning/clearing, illegal dumping or areas that have accrued litter are considered aesthetically poor.

3 Future Without Project

3.1 Fish & Wildlife in the Project Area

Without the proposed restoration project, the Spring Creek corridor would likely continue to decline in ecological function, further degrading the stream-riparian zone and limiting its potential to support wildlife and plant communities. In the next 50 years, the impacts of urbanization and surrounding development would persist, with the creek becoming increasingly confined by impervious surfaces and fragmented habitats. The lack of restoration efforts, such as bank stabilization, in-stream structures, and riparian plantings, would exacerbate erosion and sedimentation, leading to further loss of habitat for both aquatic and terrestrial species. The absence of interventions to remove invasive species and restore wetland areas would allow these species to spread uncontrollably, further hindering native biodiversity. Without these key restorative measures, the riparian corridor would struggle to provide the necessary conditions for the survival and reproduction of wildlife, particularly those species that rely on intact ecosystems for food, shelter, and breeding sites.

Over the next five decades, the ecological integrity of Spring Creek would continue to diminish, and its role as a critical habitat corridor would be further diminished. The stream would become increasingly channelized and simplified, reducing the habitat complexity necessary for species interactions and food webs. The fragmented riparian zone would result in even fewer opportunities for wildlife movement, with barriers such as urban infrastructure, steep banks, and water control structures restricting the natural flow of organisms and genetic diversity. Habitat availability for wildlife would be limited to only the most tolerant species, while the diversity and abundance of native plants and animals would further decline. As a result, the creek's value as an urban green space would also decrease, leaving it as a degraded remnant of its former ecological function, with limited recreational and educational opportunities for the local community. The loss of natural habitat complexity would ultimately reduce the overall

ecological resilience of the area, leaving it less capable of adapting to future environmental stressors such as climate change and increased urban pressures.

3.2 Species with Special Status

Conditions and habitat structure at Spring Creek are expected to degrade in the next 50 years in a FWOP scenario. The habitat availability for Federal and state protected species is expected to decrease in value and future alterations could progressively eliminate the suitability for the presence of protected species and sensitive habitats. The existing riparian zone would continue to shrink and degrade in vertical structure, decreasing the potential of habitat suitability and habitat use for Federally threatened and endangered species.

3.2.1 Federally Listed Species

- Eastern black rail (*Laterallus jamaicensis*)

Without the proposed restoration project, the conditions for the Eastern black rail in the Spring Creek corridor would remain unfavorable over the next 50 years. The continued urbanization and degradation of the riparian and wetland habitats would limit the availability of suitable habitat for this Federally Threatened species. The stream's altered hydrology, invasive species dominance, and loss of natural wetland features would prevent the development of the dense, shallow water habitats that Eastern black rails require for nesting and foraging. As a result, the likelihood of the species utilizing the area would remain extremely low. Over the next five decades, the lack of habitat restoration and the continued degradation of the creek and its surrounding environment would reduce any potential for this species to occupy the Spring Creek corridor, further diminishing the ecological value of the area for sensitive wildlife species. The absence of restorative measures would prevent the recovery of wetland habitats, hindering the potential for the Eastern black rail to return or thrive in the future.

- Piping plover (*Charadrius melodus*)

Without the proposed restoration project, the conditions for the Piping plover in the Spring Creek corridor would remain unsuitable over the next 50 years. The urbanization and altered hydrology of the stream, along with the lack of sandy or gravelly shorelines, would continue to prevent the development of the open, bare habitats that the Piping plover requires for nesting and foraging. As the surrounding environment remains heavily impacted by development, the absence of key habitat features such as natural shorelines and clean, undisturbed areas would further reduce the likelihood of this species using the creek for any purpose, whether for breeding or migration. Without habitat restoration, the Piping plover would likely remain absent from the area, as the degraded stream corridor would not provide the necessary conditions for this Federally Threatened species. Over the next five decades, the ongoing degradation of the creek's

natural functions would continue to limit the area's capacity to support such species, making it increasingly unlikely that the Piping plover would return or utilize the corridor in the future.

- Ute Ladies'tresses (*Spiranthes diluvialis*)

Without the proposed restoration project, the conditions for the Ute Ladies' tresses in the Spring Creek corridor would remain highly unfavorable over the next 50 years. The urbanization, altered hydrology, and degradation of riparian and wetland habitats would persist, preventing the establishment of the moist, alkaline soils and seasonally inundated areas that are crucial for this Federally Threatened species. The absence of wetland restoration and riparian improvements would continue to limit the availability of suitable habitat for the Ute Ladies' tresses, which requires specific soil and hydrological conditions for successful germination and growth. As invasive species dominate and the creek's natural flow regime remains disturbed, the chances of this species re-establishing itself in the area would remain minimal. Over the next five decades, the continued loss of wetland and riparian habitat would further reduce the potential for the Ute Ladies' tresses to inhabit the Spring Creek corridor, resulting in a high likelihood of its continued absence from the project footprint.

- Monarch butterfly (*Danaus plexippus*)

Without the proposed restoration project, the conditions for the Monarch butterfly in the Spring Creek corridor would remain suboptimal over the next 50 years. The urbanization, invasive species, and limited availability of native nectar plants would continue to reduce the habitat quality for Monarchs, which rely on milkweed species for larval development and a variety of nectar-rich plants during migration. The lack of restoration efforts to reintroduce native vegetation and improve habitat diversity would prevent the establishment of the necessary resources for Monarchs to use the area effectively, particularly during their migratory journey. Over time, without the restoration of critical habitat features, such as diverse wildflower meadows and milkweed stands, the Spring Creek corridor would remain unsuitable for supporting Monarch populations, limiting their potential to use the area for foraging and resting. As a result, the likelihood of Monarchs utilizing the area would remain low, with the species continuing to bypass the corridor in favor of more suitable habitats.

- Suckley's Cuckoo Bumble bee (*Bombus suckleyi*)

Without the proposed restoration project, the conditions for the Suckley's Cuckoo Bumblebee in the Spring Creek corridor would remain unfavorable over the next 50

years. The lack of native floral resources, particularly those that provide nectar and pollen, would continue to limit the availability of food sources for this parasitic bee species. Urbanization, invasive plant species, and fragmented habitats would prevent the establishment of diverse and abundant plant communities that are essential for supporting bumblebee populations. Without habitat restoration efforts to remove invasive species and replant native vegetation, the area would offer insufficient resources for the Suckley's Cuckoo Bumblebee, especially during critical times of the year when food sources are scarce. Over time, the lack of habitat improvements would reduce the potential for this species to utilize the Spring Creek corridor, making it unlikely that the area would support a healthy population of Suckley's Cuckoo Bumblebee in the future.

3.2.2 State Listed Species

- Burrowing owl (*Athene cunicularia*)

Without the proposed restoration project, the conditions for the Burrowing owl in the Spring Creek corridor would remain unsuitable over the next 50 years. The current urbanized environment, along with the fragmented riparian and upland habitats, would continue to limit the availability of suitable nesting sites and foraging areas for this species. Burrowing owls rely on open, sparsely vegetated landscapes with appropriate soil for burrowing and prey availability, but the Spring Creek corridor is largely characterized by disturbed and developed habitats that do not meet these needs. The lack of restoration efforts to reduce invasive species, improve vegetation structure, and create more open, undisturbed spaces would prevent the development of the habitat conditions required for the Burrowing owl to thrive. Over the next five decades, without significant habitat improvements, the area would remain unsuitable for nesting and foraging, and the Burrowing owl is unlikely to establish a presence in the Spring Creek corridor.

- Greenback cutthroat trout (*Oncorhynchus clarkii stomias*)

Without the proposed restoration project, the conditions for the Greenback cutthroat trout in the Spring Creek corridor would remain unfavorable over the next 50 years. The altered hydrology, warm water temperatures, and lack of appropriate riparian vegetation would continue to degrade the habitat required for this cold-water species. Greenback cutthroat trout depend on cold, clean streams with well-vegetated riparian zones and stable streambanks, but the current conditions in Spring Creek, including reduced water quality and the lack of consistent flow, do not support these requirements. The absence of restoration efforts to improve water quality, stabilize streambanks, and enhance

riparian vegetation would prevent the development of the complex, high-quality habitat needed for trout populations to thrive. Over time, without restoration, the creek would remain unsuitable for Greenback cutthroat trout, and it is unlikely the species would be able to establish or sustain itself in the project area.

- River otter (*Lontra canadensis*)

Without the proposed restoration project, the conditions for the River otter in the Spring Creek corridor would remain unsuitable over the next 50 years. The urbanization and altered hydrology of the creek, along with the lack of stable, clean aquatic habitats and suitable denning sites, would continue to limit the potential for River otters to utilize the area. River otters require large, undisturbed riparian corridors with access to abundant prey, such as fish and small aquatic animals, as well as appropriate den sites along the streambanks. The degraded water quality, fragmented habitats, and human disturbance in the project area would prevent the creek from providing the necessary resources for otters. Without the restoration efforts to improve water quality, stabilize streambanks, and enhance riparian vegetation, the likelihood of River otters using the Spring Creek corridor would remain low, and the area would continue to lack the habitat conditions essential for this species' survival and movement.

- Preble's Meadow jumping mouse (*Zapus hudsonius preblei*)

Without the proposed restoration project, the conditions for the Preble's meadow jumping mouse in the Spring Creek corridor would remain unsuitable over the next 50 years. This species relies on dense riparian vegetation, stable water sources, and areas with rich herbaceous cover for foraging and nesting. However, the current urbanization, altered hydrology, and degraded riparian habitats in the Spring Creek corridor limit the availability of these essential habitat features. The absence of restoration efforts to enhance native vegetation, reduce invasive species, and improve stream and wetland conditions would prevent the development of the dense, vegetated habitats required for the Preble's meadow jumping mouse. Over time, without these critical improvements, the area would continue to lack the connectivity and habitat quality necessary for this species to thrive, making it highly unlikely that the Preble's meadow jumping mouse would occupy or persist in the Spring Creek corridor in the future.

- Kit fox (*Vulpes macrotis*)

Without the proposed restoration project, the conditions for the Kit fox in the Spring Creek corridor would remain unfavorable over the next 50 years. This species typically requires open, sparsely vegetated areas such as grasslands and shrublands for hunting

and denning. However, the current urbanization, fragmented habitats, and lack of expansive, undisturbed terrain in the Spring Creek corridor make it an unlikely habitat for the Kit fox. The project area, characterized by riparian zones and urban development, does not provide the open spaces or appropriate denning sites that the Kit fox needs. The absence of restoration efforts to reduce invasive species, improve vegetation structure, and create more open areas would continue to limit the potential for the Kit fox to use the area for foraging or denning. Over the next 50 years, without significant habitat improvements, the Spring Creek corridor will remain unsuitable for this species, and the Kit fox is unlikely to establish a presence in the project area.

3.3 Vegetation Communities

Without the proposed restoration project, the conditions for vegetation in the Spring Creek corridor would likely remain degraded over the next 50 years. The riparian vegetation, which currently consists of a mix of native cottonwood and willow alongside invasive species such as Siberian elm, Russian olive, and Chinese privet, would continue to be dominated by non-native and invasive species. Efforts to control saltcedar may not be sustained, allowing this invasive species to spread in the understory. The herbaceous layer, composed of native and introduced grasses and forbs, would remain limited in diversity, further reducing the ecological function of the riparian zone. Upland vegetation would also remain restricted, with mature cottonwoods present on the higher stream banks, but without successful regeneration or the development of a diverse plant community due to poor water availability and limited access to groundwater. The lack of stream connectivity with the floodplain would continue to prevent the development of a robust vegetation structure, with steep, isolated patches of vegetation and minimal sediment and nutrient exchange between the stream and floodplain. Over the next five decades, the vegetation community would remain fragmented and degraded, with limited opportunities for native species to thrive and the continued dominance of invasive species that further impair habitat quality and ecosystem function.

3.4 Air Quality, Sound and Aesthetics

The air quality is expected to remain the same in a future without project scenario. Sounds and noise are also expected to remain the same, with vehicular traffic from the surrounding urban core accounting for most of the noise into Spring Creek. The aesthetics of Spring Creek is expected to degrade significantly and could shift from a natural area/former wetland towards conditions that are characteristic of an urban park. In a FWOP scenario the landscape features and the natural appearance of the riparian corridor could shrink, and accumulation of litter may continue to accrue from human-use.

4 Future With Project

4.1 Fish & Wildlife in the Project Area

In a Future With Project scenario, the Spring Creek corridor would undergo a significant ecological revitalization over the next 50 years. The restoration measures outlined in the preferred plan, including slope stabilization, in-stream structures, riparian vegetation plantings, and invasive species removal, would dramatically improve habitat quality and enhance biodiversity. The re-establishment of wetland areas and the creation of in-stream features like boulder clusters and rock riffles would restore critical aquatic habitats, providing a more diverse and stable environment for both aquatic and terrestrial wildlife. As the stream channel becomes more complex, it would support a wider range of species by creating microhabitats that enhance the food web and promote trophic interactions, including the development of more productive environments for invertebrates, fish, and amphibians.

Wildlife communities would respond positively to these improvements. The restored riparian vegetation and wetland areas would provide critical habitat for a variety of species, including migratory birds, small mammals, amphibians, and reptiles. Species such as the American bullfrog, red-tailed hawk, and Great blue heron would benefit from the increased diversity of plant and animal life in the restored environment. Larger carnivores like coyotes and bobcats could utilize the restored corridor for foraging and movement, while smaller mammals like muskrats and fox squirrels would find new opportunities for shelter and food. Over time, the creek's improved ecological health would foster more robust and resilient wildlife populations, and the area would likely see an increase in species diversity as natural habitats and corridors are reconnected.

Additionally, the restoration would enhance the area's value as an urban greenspace, encouraging more public visitation and recreation. The improved aesthetic value and habitat richness would not only benefit wildlife but also offer greater educational and recreational opportunities for local communities. Over the next 50 years, the Spring Creek corridor would transform into a thriving, biodiverse ecosystem that supports a wider array of species, fosters community engagement with nature, and serves as a model for urban conservation and ecological restoration.

4.2 Species with Special Status

In a Future with Project scenario, the effects of improvement in the stream's hydrologic regime over a wider and revamped floodplain, would produce benefits to the habitat structure that would benefit a wide array of flora and fauna, including special status species. Although the potential for the establishment of trophic interactions would increase, the presence of Threatened and Endangered remains highly unlikely. Spring Creek corridor would remain

isolated, almost like an “island” surrounded by an “ocean” of urban environment. Such disconnect from other natural areas is often a difficult stressor that limits the emigration, immigration and dispersal of wildlife, especially sensitive species such as the ones on **Table 17**.

Construction activities are expected to cause temporary disturbances to listed species that may be present, particularly species that rely on wetland and riparian habitats. The presence of heavy equipment, increased noise levels, and human activity may lead to the short-term displacement of wildlife from the immediate work zone footprint. Nesting, foraging, and movement patterns could be temporarily disrupted, especially for species sensitive to visual or auditory disturbance. Although these effects are expected to be localized and reversible, they may temporarily reduce habitat availability during key periods such as breeding or migration. However, the risk of wildlife injury, mortality or significant impairments would be considered low, provided that seasonal timing restrictions and pre-construction biological surveys are implemented prior to initiating work. Over the long term, however, the Action Alternatives are anticipated to be significant by enhance habitat quality and connectivity, supporting greater biodiversity and ecosystem function once construction is complete and vegetation is reestablished. Under the Action Alternatives, a No Effect determination is anticipated for Threatened and Endangered Species.

4.2.1 Federally Listed Species

- Eastern black rail (*Laterallus jamaicensis*)

With the implementation of the restoration project, the conditions for the Eastern black rail in the Spring Creek corridor would improve over the next 50 years. Restoration measures such as wetland creation, riparian vegetation plantings, and in-stream habitat enhancements would restore critical habitat features, including shallow, vegetated wetlands that are essential for the species. As the creek’s hydrology and habitat complexity improve, the area would provide more favorable conditions for the Eastern black rail, particularly during migration or seasonal use. While the species’ presence is still uncertain, the restored wetlands and riparian zones would increase the likelihood of its occurrence in the area, supporting a more diverse array of wildlife, including potential Federally Threatened species like the Eastern black rail. Over time, these improvements would help reestablish a functional ecosystem that could support a broader range of avian species, including those requiring high-quality wetland habitats.

- Piping plover (*Charandrius melodus*)

With the implementation of the restoration project, the conditions for the Piping plover in the Spring Creek corridor would improve over the next 50 years, although the species’ presence would remain unlikely. The restoration efforts, such as wetland creation,

riparian vegetation planting, and habitat enhancement, would help restore the natural hydrology and improve the quality of the stream's banks. However, the Piping plover's specific habitat needs, such as sandy or gravelly shorelines for nesting and minimal vegetative cover, are not typically found in the Spring Creek corridor. Despite these improvements, the area would still lack the expansive, bare habitats required for the species' nesting. Over time, however, the restored wetland and riparian habitats could support migratory stopover points for the Piping plover, offering limited foraging opportunities during migration. In 50 years, the Spring Creek corridor could serve as part of a broader migratory route, providing some benefits for the species, but it is unlikely to support a permanent population without further changes to habitat features and hydrology.

- Ute Ladies'tresses (*Spiranthes diluvialis*)

With the implementation of the restoration project, the conditions for the Ute Ladies' tresses in the Spring Creek corridor could improve over the next 50 years. The project's focus on wetland restoration, riparian vegetation plantings, and the removal of invasive species would help restore the type of moist, alkaline soils and seasonally inundated habitats that this Federally Threatened orchid requires. The enhancement of these habitat features would increase the potential for the Ute Ladies' tresses to establish in the area, especially in restored wetland zones where the species historically thrived. While the Ute Ladies' tresses is unlikely to appear immediately after restoration, the creation of suitable conditions for this species could make the Spring Creek corridor a potential site for re-establishment over time. In 50 years, with successful habitat restoration, the species could return to the area, contributing to a healthier and more biodiverse riparian ecosystem.

- Monarch butterfly (*Danaus plexippus*)

With the implementation of the restoration project, the conditions for the Monarch butterfly in the Spring Creek corridor would improve significantly over the next 50 years. The restoration efforts, including the replanting of native vegetation and the removal of invasive species, would enhance the availability of key resources for Monarchs, such as milkweed for larval development and nectar plants for adult foraging during migration. As the riparian and wetland areas are restored, the corridor would provide a more favorable habitat for Monarchs, supporting their migratory route through the region. Over time, the increased abundance of native plants would create ideal conditions for Monarchs to utilize the area for feeding and resting during their migration. In 50 years, the Spring Creek corridor could become an important stopover site for Monarch

butterflies, with the restored habitat supporting both larval and adult stages of the species, contributing to its recovery and migration success.

- Suckley's Cuckoo Bumble bee (*Bombus suckleyi*)

With the implementation of the restoration project, the conditions for the Suckley's Cuckoo Bumblebee in the Spring Creek corridor would improve over the next 50 years. The restoration efforts, including the replanting of native floral species and the removal of invasive plants, would increase the abundance and diversity of nectar-rich plants, providing critical resources for this parasitic bumblebee species. As native plantings flourish, the area would become more hospitable for pollinators like the Suckley's Cuckoo Bumblebee, offering a more stable and abundant food source throughout the growing season. Over the next five decades, these improvements could enhance habitat connectivity for this species, supporting both foraging and nesting opportunities. While Suckley's Cuckoo Bumblebee may not establish a permanent presence in the area, the restored habitat would provide favorable conditions for it to use the corridor, increasing the likelihood of its occurrence in the region during key seasonal periods.

4.2.2 State Listed Species

- Burrowing owl (*Athene cunicularia*)

With the implementation of the restoration project, the conditions for the Burrowing owl in the Spring Creek corridor would improve over the next 50 years. The restoration efforts, such as the removal of invasive species, the stabilization of streambanks, and the creation of more open, vegetated spaces, would help restore suitable foraging and nesting habitats. Burrowing owls require open, sparsely vegetated areas for hunting and need appropriate soil conditions for burrowing, often using abandoned burrows from other animals. As the riparian zone is restored and the surrounding habitat becomes less fragmented, these open areas would become more conducive to the Burrowing owl's needs, particularly in Reach 2 where more open space could be created. Over the next five decades, the project could enhance habitat connectivity, supporting the establishment of a small, but potentially stable, population of Burrowing owls in the area. The restored habitat would provide vital nesting and foraging opportunities, increasing the likelihood of the species utilizing the Spring Creek corridor for breeding and seasonal use.

- Greenback cutthroat trout (*Oncorhynchus clarkii stomias*)

With the implementation of the restoration project, the conditions for the Greenback cutthroat trout in the Spring Creek corridor would improve significantly over the next 50

years. Restoration efforts, such as improving water quality, stabilizing streambanks, and enhancing riparian vegetation, would help restore the cold, clean, and well-vegetated habitats that this species requires. The creation of in-stream structures like rock riffles would also improve habitat complexity and water flow, benefiting aquatic species like the Greenback cutthroat trout. As the creek's hydrology is restored and its riparian zones are enhanced, conditions would become more favorable for this cold-water fish species, potentially improving the habitat for spawning and foraging. In 50 years, the Spring Creek corridor could provide a more stable environment for Greenback cutthroat trout, supporting its population growth and enhancing the health of the local aquatic ecosystem. With the successful implementation of the restoration project, the creek could become a more viable habitat for this state-listed species, increasing its potential for long-term sustainability in the area.

- River otter (*Lontra canadensis*)

With the implementation of the restoration project, the conditions for the River otter in the Spring Creek corridor would improve over the next 50 years. Restoration efforts, such as enhancing water quality, stabilizing streambanks, and reintroducing riparian vegetation, would help create a more stable and healthy aquatic environment. These improvements would increase the abundance of prey species, such as fish and small aquatic animals, which are crucial for the otter's diet. The restoration of denning sites along the streambanks would also provide otters with the necessary habitats for resting and breeding. As the stream becomes more ecologically diverse and resilient, the Spring Creek corridor could offer favorable conditions for otters, supporting their foraging and movement. Over the next five decades, the restored habitat could attract occasional use by otters, with the potential for a more permanent presence if the creek continues to provide stable, high-quality habitats. The project would increase the likelihood of otters utilizing the area, helping to support the species' recovery and movement through the watershed.

- Preble's Meadow jumping mouse (*Zapus hudsonius preblei*)

With the implementation of the restoration project, the conditions for the Preble's meadow jumping mouse in the Spring Creek corridor would improve over the next 50 years. The restoration efforts, including the replanting of native riparian vegetation, the creation of wetlands, and the stabilization of streambanks, would help restore the dense, herbaceous cover and stable water sources that this species requires. Preble's meadow jumping mouse thrives in moist, vegetated areas along stream corridors, where it can find food and shelter. The restoration project would enhance the riparian zone, increasing the availability of suitable habitat for foraging and nesting. Over time,

as the habitat becomes more connected and less fragmented, the Spring Creek corridor could provide the necessary resources for the Preble's meadow jumping mouse to establish a stable population. In 50 years, the area could support a healthy population of this state-listed species, improving its chances of survival and contributing to its long-term recovery.

- Kit fox (*Vulpes macrotis*)

With the implementation of the restoration project, the conditions for the Kit fox in the Spring Creek corridor would improve over the next 50 years, although the species' presence would remain unlikely without significant changes to the surrounding landscape. The restoration efforts, including the replanting of native vegetation and the creation of more open, less disturbed areas, could create better foraging habitat by increasing prey availability. However, the urbanization and the limited extent of suitable open habitats in the immediate project area would still pose challenges for the Kit fox, which requires expansive grasslands and shrublands for hunting and denning. The restoration project might improve connectivity in the riparian corridor, potentially offering more space for movement and dispersal, but the Kit fox would still require larger, contiguous areas of low-vegetation habitat, which are scarce in the urbanized areas surrounding the project site. Over the next 50 years, the project could improve the overall ecological integrity of the Spring Creek corridor, but it is unlikely to provide the extensive open habitats that the Kit fox needs for survival and reproduction.

4.3 Vegetation Communities

With the implementation of the restoration project, the vegetation conditions in the Spring Creek corridor would improve significantly over the next 50 years. The restoration efforts, including streambank stabilization, invasive species removal, and the reintroduction of native riparian vegetation, would help restore a more diverse and functional plant community. Native cottonwood and willow populations would be enhanced, and non-native species such as Siberian elm, Russian olive, and Chinese privet would be progressively controlled and removed. The understory would become more diverse, with a wider variety of native grasses, forbs, and shrubs supporting a healthier and more resilient riparian zone. The restored connectivity between the stream and its floodplain would enable the exchange of sediment and nutrients, promoting the development of a more dynamic and productive ecosystem. With improved water distribution and habitat complexity, the riparian zone would expand, providing a more stable environment for plant regeneration, particularly cottonwoods and willows. Upland vegetation would also benefit from improved hydrology, with more diverse plant communities developing on the higher banks. Over the next five decades, the restoration project would help create a robust, self-sustaining vegetation structure, increasing biodiversity, supporting wildlife, and enhancing the ecological function of the Spring Creek corridor. The

area would become a more resilient, ecologically vibrant habitat, offering improved habitat for native plants and animals while reducing the dominance of invasive species.

4.4 Air Quality, Sound and Aesthetics

The Clean Air Act (CAA) requires the EPA to set standards for air quality, regulating pollutants that are considered harmful. Areas of the county where air pollution levels persistently exceed the NAAQS are designated as ‘non-attainment’ areas. The EPA sets de minimis threshold levels for six common air pollutants mentioned in 2.4. Areas that do not meet the minimum threshold levels are designated non-attainment areas. The project area is located in a non-attainment area.

Project emissions would not exceed EPA’s de minimis threshold rates and therefore would not cause or contribute to a violation of the NAAQS, nor would they interfere with attainment or maintenance of air quality standards. With implementation of standard dust-control and equipment-emissions BMPs, the Project would comply with the CAA. Construction emissions resulting from the project would be short-term (during active earthwork and planting), localized to the project footprint and relatively small to regional air emissions. During construction of the proposed project, temporary, minor adverse effects to air quality may occur due to emissions from construction vehicles and dust from operations. These impacts would be controlled using the following BMPs:

1. The contractor would be required to have emission control devices on all equipment.
2. To control dust and wind erosion, soils within the construction zone would be kept wet. Stockpiles of debris, soil, or other materials that could produce dust would be watered or covered. Materials transported on- or off-site by truck would be covered. The contractor would be required to comply with local sedimentation and erosion-control regulations.

The Spring Creek area is in attainment, meeting the National Ambient Air Quality Standards (NAAQS) for all pollutants. Because the project area is in attainment, the analysis will compare project-related emissions to the US Environmental Protection Agency’s (USEPA) thresholds (100 tons per year maximum). Once the project’s construction methods are developed and the construction equipment is identified, project emissions will be identified and compared to the USEPA’s threshold, likely indicating that the project-related emissions are well below the 100 tons per year threshold.

After construction is complete, there would be no further impacts to air quality from the proposed project. Plant cover would increase in the study area, possibly contributing to a minor long-term improvement in air quality by trapping dust and filtering pollutants.

- Sound and Noise

During construction of the proposed project, there would be a temporary, minor increase in noise in the immediate area from the operation of construction equipment. Noise impacts to residential areas outside the site would be minor and would be kept within the limits specified by the City of Colorado Springs noise control ordinances. Areas adjacent to the site in the east are primarily urban highway, where construction would take place. The construction contractor's work hours would be during daytime established construction hours so that evening and nighttime quiet hours would remain undisturbed.

Over the long term, the proposed project would have no effect on noise. Spring Creek would continue to provide a relatively quiet zone within this part of the city.

- Aesthetics

Under the a future with project scenario, areas that are currently sparsely vegetated with annual and disturbance species would be replaced by wetland, riparian, and native grassland plant communities. Vegetation changes are discussed in more detail in 2.3, but in summary, the quantity and diversity of native vegetation would increase within Spring Creek. This would be considered aesthetically beneficial. Short-term adverse impacts to aesthetics due to the presence of construction equipment and temporarily bare soil would be minor.

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