

**FINAL
LINCOLN MEADOWS
DOUGLAS COUNTY, PARKER, COLORADO**

**ENVIRONMENTAL ASSESSMENT AND
HABITAT CONSERVATION PLAN FOR THE
ISSUANCE OF AN INCIDENTAL TAKE PERMIT FOR THE
PREBLE'S MEADOW JUMPING MOUSE UNDER SECTION 10(a)(1)(B) OF
THE ENDANGERED SPECIES ACT**

**Prepared by: Savage and Savage, Inc.
464 West Sumac Court
Louisville, CO 80027
(303) 666-7372 telephone
(303) 665-6808 fax**

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TITLE PAGE

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Applicant: Strawberry Tierra, Inc.
5613 DTC Parkway, Suite 170
Englewood, Colorado 80111
303-694-3876

Prepared by: Savage and Savage, Inc.
464 West Sumac Court
Louisville, Colorado 80027
303-666-7372

Responsible Official: LeRoy Carlson
U.S. Fish and Wildlife Service
Colorado Field Office
755 Parfet Street, Suite 361
Lakewood, Colorado 80215
303-275-2370

Contact: Kathleen Linder
U.S. Fish and Wildlife Service
Colorado Field Office
755 Parfet Street, Suite 361
Lakewood, Colorado 80215
303-275-2370

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INTRODUCTION

Savage and Savage has prepared an Environmental Assessment (EA) and Habitat Conservation Plan (HCP) to allow the incidental take of the Preble's meadow jumping mouse (*Zapus hudsonius preblei*) on behalf of Strawberry Tierra, Inc. for the Lincoln Meadows development site in Parker, Colorado. The issuance of the incidental take permit is authorized under Section 10(a)(1)(B) of the Endangered Species Act of 1973, as amended. (Appendix 1.) The incidental take of the Preble's meadow jumping mouse could occur as the result of development of the site. A mouse trapping survey was conducted according to U.S. Fish and Wildlife Service guidelines (USFWS, 1999) in August 2000 and no individuals were found to be present along the Cherry Creek floodplain within the area of interest. Based on an on-site visit by Peter Plage of the U.S. Fish and Wildlife Service he concluded that potential habitat existed along Cherry Creek. Individual Preble's meadow jumping mice were trapped two miles south along Cherry Creek (upstream) as well as one mile north along Cherry Creek (downstream). Since the mouse was found along Cherry Creek within the area, U.S. Fish and Wildlife Service suggested that an Incidental Take Permit be obtained for development of this site. No other threatened or endangered species are known to occur within the area of development. (Appendix 2.)

The property contains approximately 106 acres located south of Lincoln Avenue and west of Dransfeldt Road, in Parker, Colorado. The site is located east of the Cherry Creek floodplain. The average width of the floodplain east of Cherry Creek adjacent to the property varies from 150 to 675 feet. The center of the property is located at 39°32'00"N and 104°46'43"W. The property is located within the NE¼ of Section 16 and NW¼ of Section 15, T6S R66W, Parker, Douglas County, Colorado. (Figure 1.)

This HCP is being prepared and implemented as required by Section 10 of the Endangered Species Act and the EA is being conducted according to the National Environmental Policy Act. With this information it is the intent of Strawberry Tierra, Inc. to minimize impacts to the mouse and mitigate any potential disturbance to existing mouse habitat and add substantial mouse habitat acreage. Savage and Savage will prepare and submit a report to the U.S. Fish and Wildlife Service annually based on on-site observations, monitoring, and sampling that will discuss the progress of the mitigation efforts.

BACKGROUND

The site consists of approximately 106 acres located adjacent to the Cherry Creek floodplain. The property purchased originally included an additional 27 acres of the adjacent Cherry Creek floodplain that has subsequently been dedicated as open space to the Town of Parker, Colorado. Norris Dullea Company designed a conceptual site development plan for the Lincoln Meadows site (Figure 2.). As part of the development plan the proponent proposes to construct two shallowly sloped stormwater detention basins and ancillary outfalls located along the west edge of the site. These basins will be developed and vegetated as additional acreage for mouse habitat and will be the first site

improvements constructed. The remaining site will be developed as commercially zoned retail and office improvements. There are no residential uses permitted on the site.

PURPOSE AND NEED

The purpose of the EA is to describe the site, identify the alternatives, and assess the potential and actual environmental consequences of each alternative. The purpose of the HCP is to devise a plan that will minimize impacts to the mouse and mitigate any potential disturbance to mouse habitat. The EA is conducted in accordance with the National Environmental Policy Act. The HCP is required under Section 10 of the Endangered Species Act in support of the Incidental Take Permit application.

ENVIRONMENTAL ASSESSMENT

DESCRIPTION OF THE AFFECTED ENVIRONMENT

The Lincoln Meadows site consists of approximately 106 acres in Parker, Colorado. The site consists of a mesic secondary terrace above the primary alluvial floodplain of Cherry Creek. A relatively steep rise of approximately 25 feet separates the development site from the primary alluvial floodplain of Cherry Creek.

Vegetation

The Lincoln Meadows site contains an old agricultural field that is dominated by musk thistle (*Carduus nutans*) and other ruderal species.

Vegetation along the adjacent Cherry Creek floodplain, which was dedicated by this development as open space to the Town of Parker, differs significantly from that of the property where development will occur. Vegetation within the floodplain area is divided into distinctly different communities, based on the location of the vegetation relative to the Cherry Creek channel and floodplain. Upland areas, within the primary alluvial terrace, but still ten feet above the channel of Cherry Creek, are dominated by weedy species found in pasture areas ((leafy spurge (*Euphorbia esula*) and rubber rabbitbrush (*Chrysothamnus nauseosus*)). The edges of the alluvial terrace down to the channel banks along both sides of Cherry Creek contain intermittent large trees. The tree species include plains cottonwood (*Populus deltoids*), peach-leaf willow (*Salix amygdaloides*), and Russian olive (*Elaeagnus angustifolia*) individuals. Coyote willow (*Salix exigua*) was present in thick, intermittent patches along the edge of the channel and on sand bars in the channel. The trees do not form a continuous linear riparian corridor along Cherry Creek, but are found in small copses along the bank. Interspersed between the willows is a diverse assemblage of grasses, grass-like plants, and forbs. Dominant grasses include reed canarygrass (*Phalaris arundinacea*), reedtop (*Agrostis alba*), foxtail barley (*Hordeum jubatum*), and orchardgrass (*Dactylis glomerata*). Several of the dominant forb species included curly dock (*Rumex crispus*), knotweed (*Polygonum argyrocoleon*), and field mint (*Mentha arvensis*).

Wildlife

No significant wildlife resources or wildlife habitat is located within the Lincoln Meadows site. An abandoned prairie dog colony is located on the site. Several horses are allowed to graze within the Lincoln Meadows site.

Wildlife habitat is located adjacent to the site within the Cherry Creek floodplain that has been dedicated to the Town of Parker. Two species of rodents were captured during the mouse trapping survey conducted by Savage and Savage in August 2000; prairie vole (*Microtus ochrogaster haydeni*), and deer mouse (*Peromyscus maniculatus rufinus*).

In addition to those species trapped, three additional mammal species were detected through sign or observation during and subsequent to the trapping survey. A muskrat (*Ondatra zibethicus*) was observed along the edge of the creek adjacent to the trapline. Deer (*Odocoileus sp.*) were also observed along the banks. Coyote scat was observed along the rise above the floodplain and a coyote (*Canis latrans*) was sighted within the floodplain.

Several bird species were observed within the riparian corridor and adjacent to the survey area. These included great horned owl (*Bubo virginianus*), Swainson's hawk (*Buteo swainsoni*), magpies (*Pica pica*), song sparrows (*Melospiza melodia*), meadowlarks (*Sturnella neglecta*), warblers, and several species of blackbirds.

Threatened and Endangered Species

The Preble's meadow jumping mouse is found in Colorado at sites below 7600 feet elevation in Boulder, Douglas, El Paso, Elbert, and Jefferson Counties (Colorado), the South Platte River 100 year floodplain, tributaries, and associated wet meadow complexes (from the Front Range to Ft. Morgan, Colorado) in Elbert, Larimer, and Weld counties. The U.S. Fish and Wildlife Service has described the characteristic habitat of the mouse as areas with the following features; low undergrowth with grasses and forbs, in open wet meadows and riparian corridors or where tall shrubs and low trees provide cover. The mouse prefers mesic to hydric lowlands, and has been found in agricultural and native landscapes, along irrigation canals, and natural drainages, as well as areas dominated by both introduced and native plant species.

Preble's meadow jumping mouse individuals were trapped approximately two miles south along Cherry Creek (upstream) and one mile north along Cherry Creek (downstream). Even though Preble's meadow jumping mice were not trapped during the trapping survey conducted by Savage and Savage in August 2000, it is the opinion of the U.S. Fish and Wildlife Service that the floodplain along Cherry Creek, adjacent to the proposed development site, may be a dispersal corridor for the mouse.

Wetlands and Waters of the United States

There are no wetlands or Waters of the United States on the Lincoln Meadows site.

Geology and Soils

The area of interest is a relatively flat site that slopes very gently to the west. The significant geologic feature on the site is the 25' high slope along the terrace edge that separates the property from the Cherry Creek floodplain. According to the Soil Survey of Castle Rock Area, Colorado (1974), soils within the Lincoln Meadows site include Bresser sandy loam and Sampson loam on the north half of the site and Englewood clay loam on the south half and along the terrace along the west edge of the site.

The Bresser series is comprised of a surface layer approximately 5" thick that is composed of a grayish-brown sandy loam. The subsoil, that is about 25" thick, is a dark grayish-brown sandy loam and light olive-brown and brown sandy clay loam. The underlying material to approximately 60" is light yellowish-brown loamy sand.

The Sampson series representative profile consists of a 5" surface layer that is dark grayish-brown loam. The subsoil is dark grayish-brown and grayish-brown clay loam about 23" thick. The underlying material is composed of light brownish-gray loam and silt loam that extends to a depth of 60".

The Englewood series is comprised of three layers. The first layer is composed of a grayish-brown clay loam approximately 6" thick. The second layer is approximately 23" and is comprised of a thick grayish-brown and dark grayish-brown clay. The underlying material is light brownish-gray and grayish-brown clay that contains some soft calcium carbonate concretions and extends to approximately 60" in depth.

Land Use

Historic and current land use for the site includes agriculture and grazing. An old railroad grade used to cross the property that went to the Parker Railroad Station. Historic and current land uses of the adjacent area have included agriculture, grazing, commercial development, residential, and open space.

Cultural Resources

No structures or other cultural resources exist within the 106-acre Lincoln Meadows site.

ALTERNATIVES CONSIDERED

Three project alternatives were considered and include; 1) the preferred alternative is to develop Lincoln Meadows as planned by the proponent, 2) find an alternate site location for the Lincoln Meadows development, and 3) a no action alternative. Each of the alternatives is described below.

Alternative 1 - Preferred Alternative

The preferred alternative includes developing the property as planned by Strawberry Tierra, Inc. The proposed plan includes development of a retail area that includes structures, roads, utilities, and two detention basins with associated outfalls. Subsequent to infrastructure construction, the proponent will develop the commercial property in parcels. This alternative also includes securing an incidental take permit under the Endangered Species Act Section 10(a)(1)(B).

Although the terrace on which construction is proposed is within 300 feet of the 100-year floodplain it is not characteristic of high quality habitat for the mouse. Further, with the

average width of the Cherry Creek floodplain east of the channel adjacent to the property being 500 feet in this location, the likelihood of the mouse being on the terrace is minimal. This alternative largely avoids the likely mouse habitat within the Cherry Creek 100-year floodplain, thereby minimizing impacts to the mouse, and creates additional habitat for the mouse in an area buffering the habitat on the 100-year floodplain and secondary terrace through planting and seeding native grasses, forbs, shrubs, and trees along the boundaries of the area to be developed. This alternative meets the needs of the development plan for this project as well as protecting existing mouse habitat and creating additional mouse habitat where low quality habitat existed before.

Alternative 2 - Alternative Site Location

This alternative would involve development of a new undetermined site. Strawberry Tierra, Inc. owns no other properties within the Parker area. Additionally, sites of this size are not commonly available in the area. Development of another site would presume relocation to another less desirable site, compromising the location and development potential for the proponent.

Alternative 3 - No Action Alternative

No action on the part of the proponent would preclude development of the property. No incidental take permit would be secured. Future development of the property would be in question and none of the mitigation measures beneficial to the mouse would be undertaken. At this point, the property has already been purchased, is currently zoned for commercial development, development plans have already been initiated, and the Town of Parker has expressed a desire for the development to proceed.

ENVIRONMENTAL CONSEQUENCES

Alternative 1 - Preferred Alternative

Vegetation

Implementation of the preferred alternative will result in permanent disturbance with loss of habitat of approximately 0.10 acres of ruderal and weedy vegetation along the terrace slope above and within the east edge of the Cherry Creek 100-year floodplain. An additional 5.37 acres of temporary disturbance will result from construction of two detention basins, other infrastructure, and grading. This disturbance will be mitigated through reseeding and planting to the native species identified in the HCP. Resulting vegetation will be of native origin and higher utility and wildlife value than that currently present.

The HCP proposes creation and enhancement of mouse habitat on 2.06 additional acres for a total of 7.53 acres of mitigation within and adjacent to the detention basins on the north and south boundaries of the site. The plan calls for planting of native shrubs and trees, in addition to the establishment of a vigorous herbaceous understory. This addition

of native plants will create wildlife habitat on the site that is not currently present and create a buffer between the development and the open space.

Wildlife

There is no significant habitat currently located within the Lincoln Meadows site. As such, no significant impact to existing wildlife resources is anticipated from the proposed development. Permanent disturbance of 0.1 acres along the terrace slope at the edge of the 100-year floodplain represents 0.37 percent of the area dedicated as open space between the Lincoln Meadows site and the Cherry Creek drainage, and as such is concluded to have negligible impact to wildlife resources. Mitigation measures result in a net increase of 2.06 acres of habitat, expanding the dedicated open space area by 7.63 percent. As the proposed project is commercial-only development, there will be no significant impact in terms of predation or competition for resources from domestic pets. The nature of the development is to provide building envelopes along a central corridor with parking and landscaping along the peripheral areas, including those adjacent to the detention basins and 100-year floodplain. With the open design of the proposed development, maintenance of the open space buffer, and the enhancement and creation of an additional 2.06 acres of wildlife habitat within and adjacent to the detention basins, the preferred alternative improves wildlife habitat in the project location. These factors compensate for the very small loss of wildlife habitat.

Threatened and Endangered Species

There is potential habitat on the Lincoln Meadows site for the Preble's meadow jumping mouse, however higher quality habitat is found immediately west of the site within the Cherry Creek floodplain. Preble's meadow jumping mouse individuals were found approximately two miles south and one mile north of the site within the Cherry Creek drainage. With this find, the U.S. Fish and Wildlife Service determined that the area along Cherry Creek in the vicinity of the Lincoln Meadows project site could serve as a dispersal corridor for the mouse and concluded that measures should be undertaken to ensure maintenance of suitable habitat in this locale (Plage, 2000).

The Preble's meadow jumping mouse is found in Colorado at sites below 7600 feet elevation in Boulder, Douglas, El Paso, Elbert, and Jefferson Counties (Colorado), the South Platte River 100 year floodplain, tributaries, and associated wet meadow complexes (from the Front Range to Ft. Morgan, Colorado) in Elbert, Larimer, and Weld counties. The U.S. Fish and Wildlife Service has described the characteristic habitat of the mouse as areas with the following features; low undergrowth with grasses and forbs, in open wet meadows and riparian corridors or where tall shrubs and low trees provide cover. The mouse prefers mesic to hydric lowlands, and has been found in agricultural and native landscapes, along irrigation canals, and natural drainages, as well as areas dominated by both introduced and native plant species.

No other threatened or endangered species will be affected by the proposed action.

Wetlands and Waters of the United States

There are no wetlands or Waters of the United States on the Lincoln Meadows site, therefore no impacts to wetlands will occur as a result of the preferred alternative.

Geology and Soils

Modifications to the site from the proposed development will include excavating of the incised detention basins and overlot grading for infrastructure and buildings. No significant impacts to the existing geology or soils are anticipated to result from the project.

Land Use

The project site is currently zoned for commercial development by the town of Parker, Colorado. The proposed alternative is consistent with this land use zoning and will not change land uses in the area. Presently a housing development is located west of the Cherry Creek drainage and a wastewater treatment plant is located immediately south of the property. The property to the north across Lincoln Avenue has been purchased and will likely be developed. The only area that is not developed or slated for development is a home and surrounding outbuildings near Dransfeldt Road. Development plans for the Lincoln Meadows site include retail businesses. Since the property east of Dransfeldt Road rises slightly to the east, and the site plan does not include high-rise buildings, there should be minimal obstruction of views for the property owners to the east.

Air Quality

The proposed Lincoln Meadows site is slated to be a commercial development. Short-term impacts to air quality include fugitive dust and increased noise from construction of the project. With completion of the construction and subsequent paving, seeding, and landscaping, elevated emissions will be minimized to those of the daily uses of the occupants of the buildings, including commuting, deliveries, and building emissions.

Traffic

The Lincoln Meadows site is situated immediately south of Lincoln Avenue and is a major roadway into the Parker area. Most of the areas surrounding the site have or will be developed in the near future. Portions of Lincoln Avenue have recently been widened in order to accommodate increased traffic in the area. Traffic along Lincoln Avenue is already high and the amount of extra traffic from the Lincoln Meadows site will not make an appreciable difference in traffic congestion. In fact, the Town of Parker has designated 20-mile road as a critical need to alleviate existing traffic congestion in the area.

Socioeconomic

Socioeconomic conditions relate to the combined social and economic impacts that will occur as a result of development of the Lincoln Meadows site. Parker is growing at a fast pace, as are many cities and towns along the I-25 corridor. In order to provide the goods and services needed by the residents of Parker, retail and business buildings must be constructed. The Lincoln Meadows site will provide such goods and services, as well as employment opportunities for residents within the Parker area. Without construction of the Lincoln Meadows project, commercial business will be displaced further from the center of Parker, contributing to urban sprawl, increased traffic and other dispersal impacts.

Water Resources and Water Quality

There are no surface water resources on the Lincoln Meadows site. The closest significant water resource is the Cherry Creek channel and associated floodplain. The Cherry Creek channel averages 500 feet wide west of the property. During construction, temporary increases in the amount of surface runoff may occur in response to increases in durable surfaces, however this runoff is contained by the detention basins, and released to the environment in such a manner so as to minimize peak flow impacts. Stormwater runoff quality may be temporarily degraded during construction activities through increases in suspended sediments, however, these waters will be detained within the detention basins where suspended sediment release will be minimized through retention.

Prior to and during construction, best management practices, identified in the construction surface water management plan issued by the Colorado Department of Public Health and Environment and regulations of the Cherry Creek Basin Water Authority, will be employed to minimize water quality and quantity impacts. Structural methods of controlling sediment in moving water include but are not limited to sediment traps/basins, installing straw bales, straw bale filters, straw bale drop structures, filter fence installation, gravel filters, and rock check structures. Non-structural methods to be employed may include vegetation, mulching, soil binders, and erosion control blankets.

Cultural Resources

No structures or other cultural or historic resources exist within the 106-acre Lincoln Meadows site.

Recreation and Visual Resources

No recreation occurs on the project site currently, therefore there will be no loss of existing or potential recreation areas. As public access to Parker open space along Cherry Creek is restricted to an existing trail along the west side of Cherry Creek, there is little likelihood for development of recreation opportunities within the 100-year floodplain adjacent to the Lincoln Meadows site. The Lincoln Meadows development

will be visible from the surrounding properties, however there is no existing unique or scenic viewshed that will be impacted by the development. Existing development or permanent open space surrounds the Lincoln Meadows project site. To minimize pedestrian access to the habitat areas, a visual barrier fence, with "no access" signage will be installed by the developer.

Cumulative Effects

South of the proposed Lincoln Meadows project is a wastewater treatment plant. West of the proposed project site, across Cherry Creek, is a housing development. The commercial property immediately north of Lincoln Avenue will likely be developed in the near future. These projects have been or will be constructed on the secondary terrace above the wide floodplain of Cherry Creek. The cumulative effect from all of the adjoining projects and the addition of the Lincoln Meadows project is the loss of some potential upland mouse habitat. However, this project contributed substantial acreage in the Cherry Creek floodplain to open space habitat north and south of Lincoln Avenue and, as with the Lincoln Meadows project, steps will be taken to enhance the mouse habitat all along the secondary terrace. These steps include planting native vegetation and generally providing a more enhanced mouse habitat area.

The cumulative effect from all of the adjoining projects including Lincoln Meadows on the Cherry Creek waterway and floodplain is hard to quantify. The total width of the Cherry Creek floodplain in this area is as much as 1300 feet. One or more outfall structures are likely to be associated with each project. These structures allow water to flow from the secondary terrace into the floodplain and eventually into Cherry Creek. The cumulative effect from this stormwater drainage could include an increase in certain elements such as phosphorus and nitrogen. Using regulations and guidelines of the Cherry Creek Basin Authority, the Lincoln Meadows project and future developments, it is assumed, will construct specific types of stormwater detention basins that will decrease the amount of phosphorus and nitrogen that enters the floodplain and eventually into Cherry Creek.

Indirect Effects

No indirect effects are anticipated to the mouse or its habitat. Standard best management practices and reclamation techniques as described in the construction surface water management plan, HCP, and project construction specifications will be employed to minimize any potential for negative impacts to the 100-year floodplain or the Cherry Creek drainage.

Alternative 2 - Alternative Site Location

Strawberry Tierra, Inc. purchased the property with the intention to construct a commercial development on the property consistent with zoning. While the proponent could develop another parcel of property, this would entail finding another suitable parcel of the same size with the same desirable location. As parcels of this size are rare in the

area, there is a question whether a suitable parcel exists, and at a reasonable price. Such a parcel would likely contain potential habitat for the mouse as well. Further, the proponent has already invested significant resources in planning and securing the necessary approvals for the project, including dedication of 27 acres of the property as open space. For these reasons, this alternative was considered unfeasible.

Alternative 3 – No Action Alternative

This alternative would not result in development of the site, with no attendant disturbance or potential take of the mouse. This alternative was not considered practical or feasible, as the proponent currently owns the property with the express intention of completing development. Absent the ability to develop the site consistent with town plans and zoning, the property is less valuable and the proponent would not have purchased the property or expended the effort in preparing development plans.

HABITAT CONSERVATION PLAN

DESCRIPTION OF CONSERVATION MEASURES

The HCP proposed below represents a significant effort on the part of the proponent in protecting, enhancing, and providing additional potential habitat for the Preble's meadow jumping mouse. Construction of the two detention basin outfall structures will be within potential high quality mouse habitat. Construction of the detention basins and ancillary infrastructure will occur within lower quality potential mouse habitat on the secondary terrace. As described below, Strawberry Tierra, Inc. has provided a significant open space buffer along Cherry Creek and proposes to create and enhance mouse habitat within the development. (Figures 3-17.)

The HCP contains elements to be implemented prior to, during, and after construction activities. The elements of the HCP are described below in the sequence in which they will occur. Active management of the HCP area will continue during the period of revegetation establishment and until the proponent receives concurrence of the success of the mitigation measures from the U.S. Fish and Wildlife Service. The mitigation area will remain as a natural area where enhancement of habitat will be conducted. Retention of the mitigation area as a natural area will occur through development restrictions contained in the Project Development Guide and in the Conditions, Covenants and Restrictions for the Development.

Existing Conservation Measures

Developers previously dedicated a parcel of property between the Lincoln Meadows development site and Cherry Creek to the Town of Parker, Colorado as permanent open space. This 27-acre parcel forms an effective wildlife habitat buffer between the proposed development and the Cherry Creek drainage corridor. The width of the buffer ranges from approximately 150 feet at the south boundary of the property to 675 feet at the center of the buffer. The buffer contains the 100-year floodplain for Cherry Creek, and will not be developed by the Town of Parker. As it exists, this parcel contains the braided drainage channel of Cherry Creek as well as a wide primary alluvial terrace dominated by scattered clumps of willows and herbaceous vegetation.

Proposed Conservation Measures

In addition to the above described preservation measures of potential mouse habitat through dedication of open space, Strawberry Tierra, Inc. proposes to construct mitigation areas on the Lincoln Meadows development site for enhancement of mouse habitat along the west boundary of the property. A post or rail fence will be installed along the edge of the parking area that is 50 feet from the west edge of the site. Signage will be attached to the fence to discourage pedestrians from crossing into mouse habitat.

The areas selected for mitigation and habitat enhancement include the two constructed detention basins, the areas surrounding the outfall structures, and a 50-foot wide strip between the terrace slope and developed areas. The two detention basins will be used to control peak flow surface water runoff and provide water quality control. The total surface area of the two detention basins and associated mitigation areas comprises 7.53 acres and is depicted on the attached overall site plan. (Table 1.)

It has come to the attention of the U.S. Fish and Wildlife Service that in the past there has been a fish kill within Cherry Creek that was directly attributed to high levels of phosphorus within the creek. Nitrogen entering the creek has also been of concern. In order to reduce the amount of these two elements entering into the floodplain and eventually into Cherry Creek, the two detention basins will be designed in order to retain, to the extent possible, phosphorus and nitrogen. The detention basins will have the dual role of controlling peak flow surface water runoff and enhancing stormwater quality. This will be accomplished through specific designing of the basins that will slow the flow of water through the detention basins and plantings of specific plants that will filter out unwanted elements.

The area within the 100-year floodplain that is considered potential mouse habitat that will be disturbed by construction of the detention basin outfalls comprises 0.10 acres. The total acreage proposed for use as mitigation area is 7.53 acres. The entire habitat area disturbed during detention basin construction as well as a small amount of undisturbed area is proposed for revegetation (with the exception of the actual outfall structure and ancillary rock riprap). In prior mouse mitigation plans, the U.S. Fish and Wildlife Service has agreed that acreage within detention structures can be applied to satisfy mitigation areas, as is proposed in this case.

Timing

Construction of the detention basins, drainage swales and outfall structures will occur as soon as the permit is received. Immediate construction of the detention basins is necessary prior to construction of the related infrastructure. Drainage and erosion control structures must be in place before any overlot grading and roadway construction can begin. Agreed upon mitigation measures will be implemented as soon as construction is completed. All construction within potential habitat areas will be completed prior to the commencement of the enhancement/mitigation work to avoid any adverse impact to such mitigation work.

The HCP will be implemented coincident with construction activities at the site. HCP activities will continue after construction of the detention basins with the planting of trees, shrubs, and seeding of herbaceous revegetation species. The 50-foot strip along the west edge of the site will be seeded and planted to vegetation that will enhance mouse habitat. Monitoring of the vegetation will continue for five growing seasons after initial planting or seeding.

Erosion Control and Habitat Preservation During Construction

Silt fence and temporary drainage control ditches will be installed along the construction site's western boundary, between the Cherry Creek drainage and construction activities. The silt fence and drainage control ditches will contain and direct surface water runoff at the construction site to the detention ponds, minimizing impacts from siltation to surrounding and downstream habitat. In order to minimize impacts within the entire construction site, any areas not slated for construction will be identified and access will be limited through use of construction fence or other visible barrier.

Enhancement of Potential Mouse Habitat

Based on conversations with U.S. Fish and Wildlife Service regarding mitigation on other sites for the mouse, replacement of the tree species and overstory was not the paramount concern. More important was the establishment of effective vegetation cover in the area that will provide a transition area from the hydric area along Cherry Creek to the more mesic upland areas. To this end, replacement of vegetation will focus on placement and establishment of shrub clumps, scattered trees, and a vigorous herbaceous understory within and adjacent to the detention basins. The 50-foot corridor along the west edge of the site will be vegetated in a manner that will enhance mouse habitat. This approach will significantly increase the quality and availability of Preble's meadow jumping mouse habitat in the project area and provide habitat areas along the 50-foot corridor at the west edge of the site and within the detention basins at the north and south boundaries of the property.

As depicted on the planting drawing, shrub clumps are positioned along all sides of the detention basins. The shrub clump locations have been selected to minimize inter-clump spacing, while forming a transitional vegetation community between the 100-year floodplain, the steep terrace slope, and the landscaped vegetation community above and to the east within the development. The shrub clumps have also been positioned to provide aesthetic screening of the detention basins from the developed areas to the east. Sizes and shapes of the shrub clumps are based on the existing topography and a desire to direct mouse activity away from the interior bottom of the detention basins.

To provide a varied structure and species composition to the shrub clumps, six woody shrub species were selected for planting within the shrub clumps. All species selected are native to Colorado, are found in the general vicinity of the project, and represent species adapted to a wide variety of environmental conditions. These species are also successfully used in the revegetation of disturbed lands. The following shrubs were selected for their proven ability as reclamation species and physiognomy that provides significant cover for wildlife. The species selected are skunkbush sumac (*Rhus trilobata*), Arkansas rose (*Rosa arkansana*), snowberry (*Symphoricarpos montanus*), buffaloberry (*Shepherdia Canadensis*), mountain mahogany (*Cercocarpus montanus*), and red osier dogwood (*Cornus stolonifera*). In general, skunkbush sumac, mountain mahogany, and buffaloberry will be selectively planted on the east sides of the detention basins, and along the terrace slopes where the outfall structures are sited, in areas that are

slightly drier or rockier. Snowberry and Arkansas rose will be planted immediately adjacent to the detention basins and within the upper reaches of the incised sides of the detention basins. Red osier dogwood is proposed to be planted in small clumps adjacent to the outfalls on the detention basin embankments.

To provide increased cover and structure, an overall density of 680 shrubs per acre is proposed, or an average of approximately one shrub every 8 linear feet within the shrub clumps. Shrub plantings within clumps will not be evenly spaced, but semi-randomly, to achieve a more natural appearance. Planting density will also vary by shrub species, with fewer of the larger spreading shrubs (skunkbush, snowberry) being planted compared to the more compact shrubs (Arkansas rose).

To further increase vegetation community structure and provide some aesthetic screening, a total of twenty trees are planned for planting in the immediate area of the corners of the detention basins. As mature trees cannot be successfully or feasibly replanted, the replacement trees will be of a maximum three-inch caliper. Tree species to be planted will include plains cottonwood (*Populus deltoides*), narrowleaf cottonwood (*Populus angustifolia*), and Saskatoon serviceberry (*Amelanchier alnifolia*). In order to establish a more native tree overstory and community, the majority of the trees planted will be cottonwoods. The trees will be planted in clumps or in association with shrub clumps to maximize overstory near the detention basins, provide screening of the development, and maximize survival through proximity to groundwater.

Herbaceous revegetation of the detention basins, outfalls, and areas disturbed by construction in the detention basin area is proposed to minimize impacts to the physical environment by reducing wind and surface water erosion, and impacts to the biologic community by providing food and shelter in the immediate area. Currently, the area slated for construction of the detention basins is dominated by weedy species, including thistles (*Carduus nutans*) and smooth brome (*Bromus inermis*). These species are generally not indicative of mesic or hydric conditions and would not be suitable for revegetation of the detention basin areas. The seed mix species and seeding rates were selected and developed for their proven reclamation characteristics and growth nature that provides significant cover for wildlife throughout the growing season. The seed mixes are found in Tables 2 and 3. The dry terrace seed mix will be seeded along the 50-foot corridor along the west edge of the site. The detention basin seed mix will be seeded within the bottom and side slopes of both detention basins.

The planted seed mixes will include representatives of both cool and warm season species to maximize cover and seed production throughout the summer months. The seeding rate is adequate using drill seeding methods (broadcast methods will employ twice the rate) to ensure placement of a minimum of 40 seeds per square foot, consistent with Natural Resource Conservation Service recommendations for reclamation of disturbed sites. Planting and seeding of vegetation will occur during the first normal planting season after completion of the detention basins and outfalls, and installation of the sewer line, but no later than November 15 in the year construction of these structures commences.

Monitoring

The success of planted and seeded vegetation will be monitored annually after initial planting and seeding. Monitoring will consist of qualitative and quantitative vegetation sampling techniques that measure the vegetation cover of the revegetated areas and the survival of planted vegetation stock. Revegetation seeding will be considered successful when there is no evidence of surficial erosion related to the construction and the total live vegetation cover equals forty percent. Total live vegetation cover will be measured by accepted vegetation techniques, through point or line intercept using ocular estimation or quadrats. Success of planted vegetation (shrubs and trees) will be based on survival. An annual count of the planted vegetation will be conducted. A report will be prepared and submitted based on on-site observations and sampling that discusses the condition of the replanted vegetation. The report will be submitted to the U.S. Fish and Wildlife Service by December 1 of each monitoring year for a minimum of five years. Monitoring will be discontinued when vegetation has been determined to be successfully established. If survival of planted shrubs and trees is less than 65 percent of the total initially planted, additional shrubs or trees will be planted to return the numbers to a level above the 65 percent total. Bare areas larger than 300 square feet will be reseeded. All replanting and reseeding will be undertaken between September 15 and November 15 of the year in which the need for reseeding or replanting was observed in order to minimize disturbance to the area and inhabitants.

Monitoring Compliance

Compliance monitoring verifies that the Applicant is carrying out the terms of the HCP and the permit. The Applicant will determine through compliance monitoring as described in "Monitoring" that they are in compliance with the HCP. As described in "Monitoring", effectiveness of the mitigation will be determined by the measurement of total live vegetation cover and mortality of planted shrubs and trees by accepted vegetation techniques. A report describing the outcome of the study will be submitted to the U.S. Fish and Wildlife Service by December 1 of each monitoring year for a minimum of five years.

Monitoring Effectiveness

Effectiveness monitoring evaluates the biological effects of the permitted action and determines whether the effectiveness of the operating conservation program of the HCP is consistent with the assumptions and predictions made when the HCP was developed and approved. The Applicant is primary responsible for ensuring that the HCP is working as planned. If subsequent to mitigation completion, assumptions in the HCP prove invalid, the HCP may be reexamined and modifications required if proved necessary.

Adaptive Management

Adaptive management is a method for examining alternative strategies for meeting measurable biological goals and objectives, and then, if necessary, adjusting future mitigation plans according to the condition of the mitigation at the time. The HCP proposed is consistent with accepted state-of-the-art reclamation and wildlife habitat creation and enhancement measures. Given the character of the site and the HCP measures proposed, there is little necessity for contingency planning for this site. Should conditions at the site change as a result of implementation of the HCP measures that result in devalued mouse habitat on site, the approved HCP measures will be reexamined and modifications will be implemented, with the approval of the USFWS.

Additional Conditions

All workers on-site will be informed by the proponent or authorized representative as to the reason for and importance of limiting disturbances and impacts to those identified areas outside any potential habitat.

Mitigation work on-site will be supervised at all times by an authorized representative of the Owner's contractor. Implementation of the HCP will be supervised by an entity experienced in reclamation or habitat restoration.

A report documenting pre-disturbance and post-construction conditions (including photographs) at the detention basin construction area will be prepared and submitted to the U.S. Fish and Wildlife Service at the completion of construction.

In the event a Preble's meadow jumping mouse is encountered (dead, hibernating, or injured) during construction, the Colorado Field Office of the U.S. Fish and Wildlife Service will be notified immediately.

UNFORESEEN OR EXTRAORDINARY CIRCUMSTANCES

In the event of a catastrophic occurrence that renders the mitigation plan unfeasible, the Applicant and the U.S. Fish and Wildlife Service may agree to implement an adaptive management plan. An unforeseen event includes but is not limited to fire, flood, vandalism, damage by herbivores, etc. If a catastrophic event occurs the Applicant and the U.S. Fish and Wildlife Service may agree to implement an adaptive management plan that enables appropriate mitigation measures to be enacted. The U.S. Fish and Wildlife Service shall not require the commitment of additional land or financial compensation beyond the level of mitigation otherwise provided in this HCP, recognizing that the mitigation provided herein is adequate to provide for the conservation of the Preble's mouse. If additional mitigation measures are subsequently deemed necessary to provide for the conservation of the Preble's mouse, the obligation for such measures shall not rest with the Applicant unless the Applicant consents to such measures.

This HCP does not authorize incidental take for any species other than the Preble's meadow jumping mouse. In the event any other currently listed species, or species that is listed in the future, is impacted by implementation of this HCP, the Applicant will consult with the U.S. Fish and Wildlife Service and take appropriate action, as necessary, to comply with the Endangered Species Act.

FUNDING AVAILABILITY

The Applicant will provide the funding necessary for the completion of the activities and conservation measures required under this HCP. Long-term funding assurances will be required. Funding assurances for habitat mitigation and monitoring will be met by the Applicant through overall project completion bonds or comparable securities required by and acceptable to the Town of Parker

ADDITIONAL MEASURES AND CONCERNS

There are no additional measures or conditions being proposed under this HCP.

REFERENCES

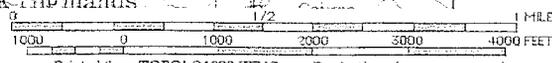
- Plage, Peter. 2000. Personal communication with Edith Savage,
- U.S. Department of Agriculture, Soil Conservation Service. 1974. Soil Survey of Castle Rock Area, Colorado.
- U.S. Fish and Wildlife Service. May 21, 1999. Preble's Meadow Jumping Mouse Trapping Survey Guidelines.

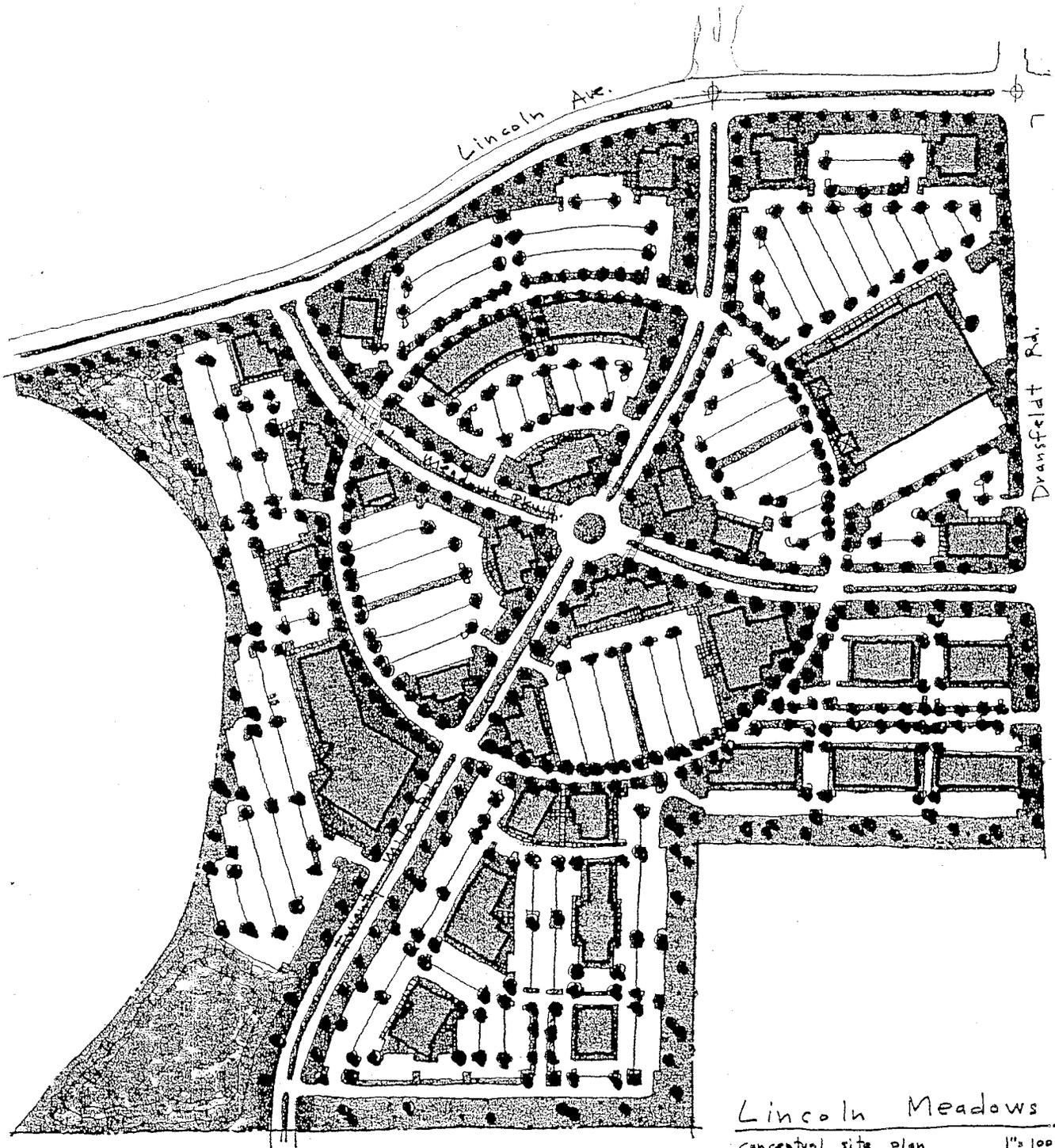
FIGURES



Lincoln Meadows General Location Map

MN
10 1/2"





Lincoln Meadows
conceptual site plan 1"=100'

↑
North

Navis Dillen Co.
S. 15. 01

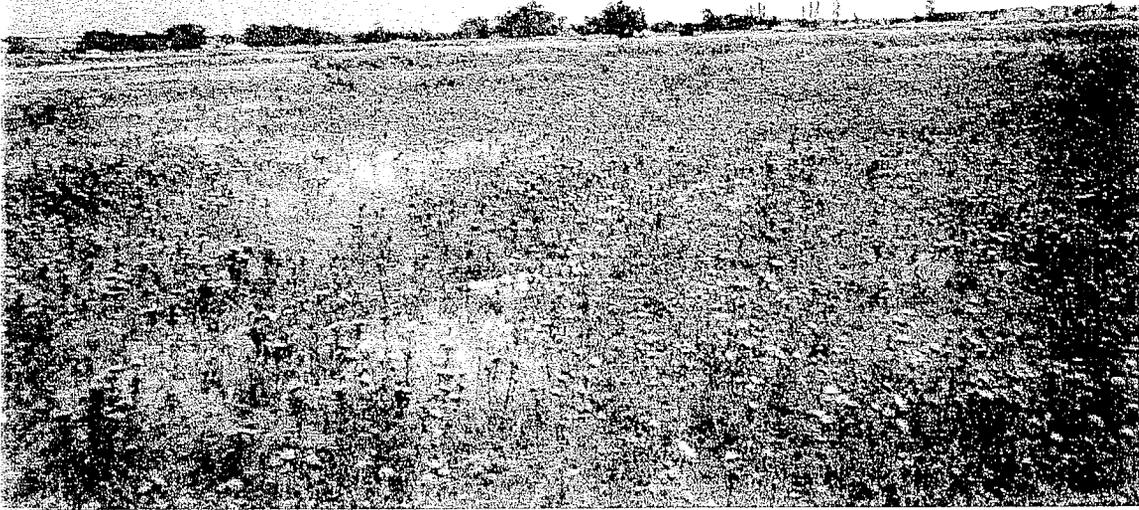


Figure 3. Lincoln Meadows Property
(looking north to Lincoln Avenue from center of property)

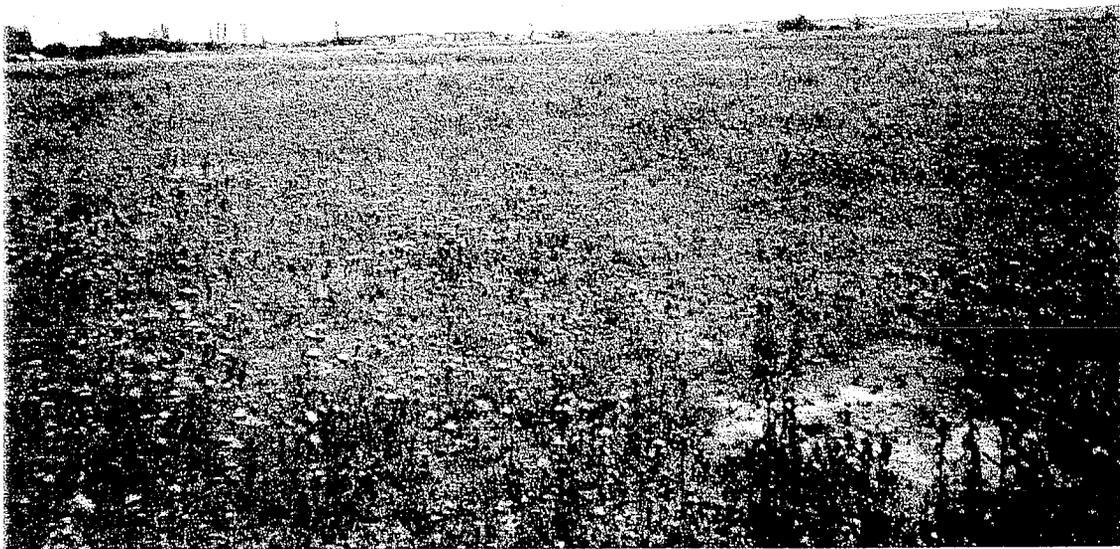


Figure 4. Lincoln Meadows Property
(looking east to Dransfeldt Road from center of property)

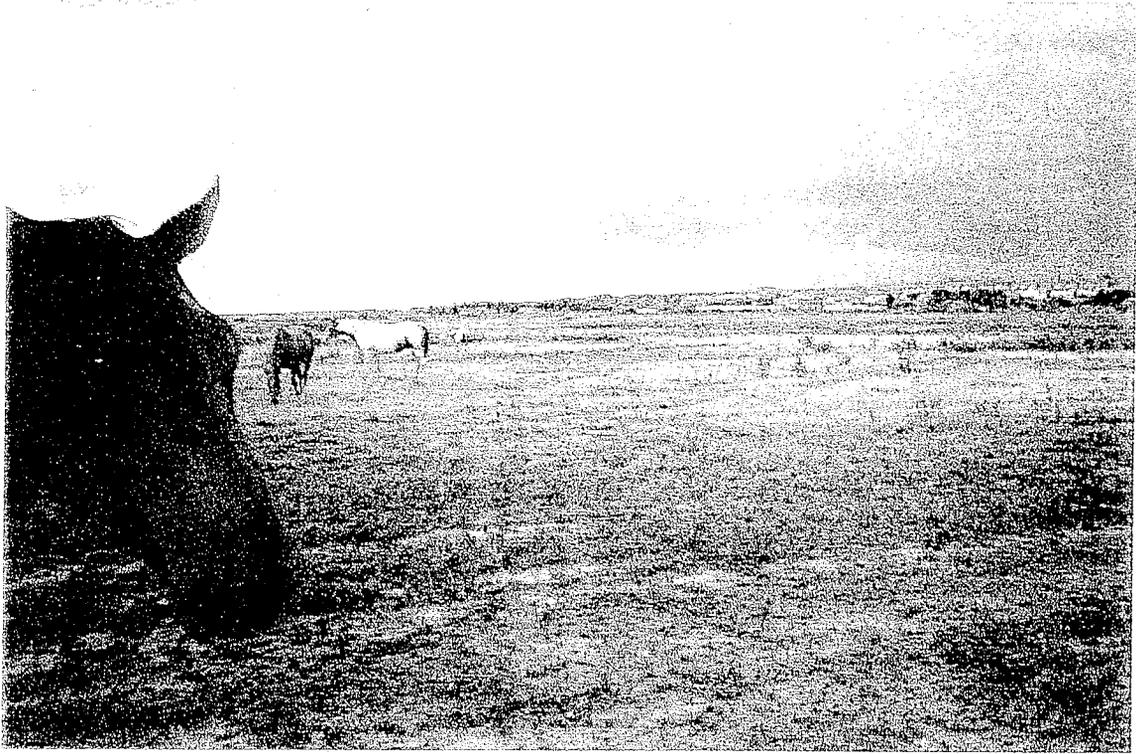


Figure 5. Lincoln Meadows Property (looking south from center of property)



Figure 6. Lincoln Meadows Property (looking west from center of property)



Figure 7. Cherry Creek Drainage 600 feet West of Lincoln Meadows Property



Figure 8. Cherry Creek Floodplain West of Lincoln Meadows Property



Figure 9. Proposed Location of Pond A (Detention Basin)
and Preble's Mitigation Area



Figure 10. Proposed Location of Pond B (Detention Basin)
and Preble's Mitigation Area

* Definition of
Preble's meadow
jumping mouse
habitat.

CHERRY CREEK
OPEN SPACE

DEDICATED TO TOWN OF PARKER

100-YEAR FLOOD LINE

1.86 Acres
POND A

NATURAL VEGETATION

LOT 3

EQUIVALENT SETBACK

LINCOLN MEADOW
PARKWAY

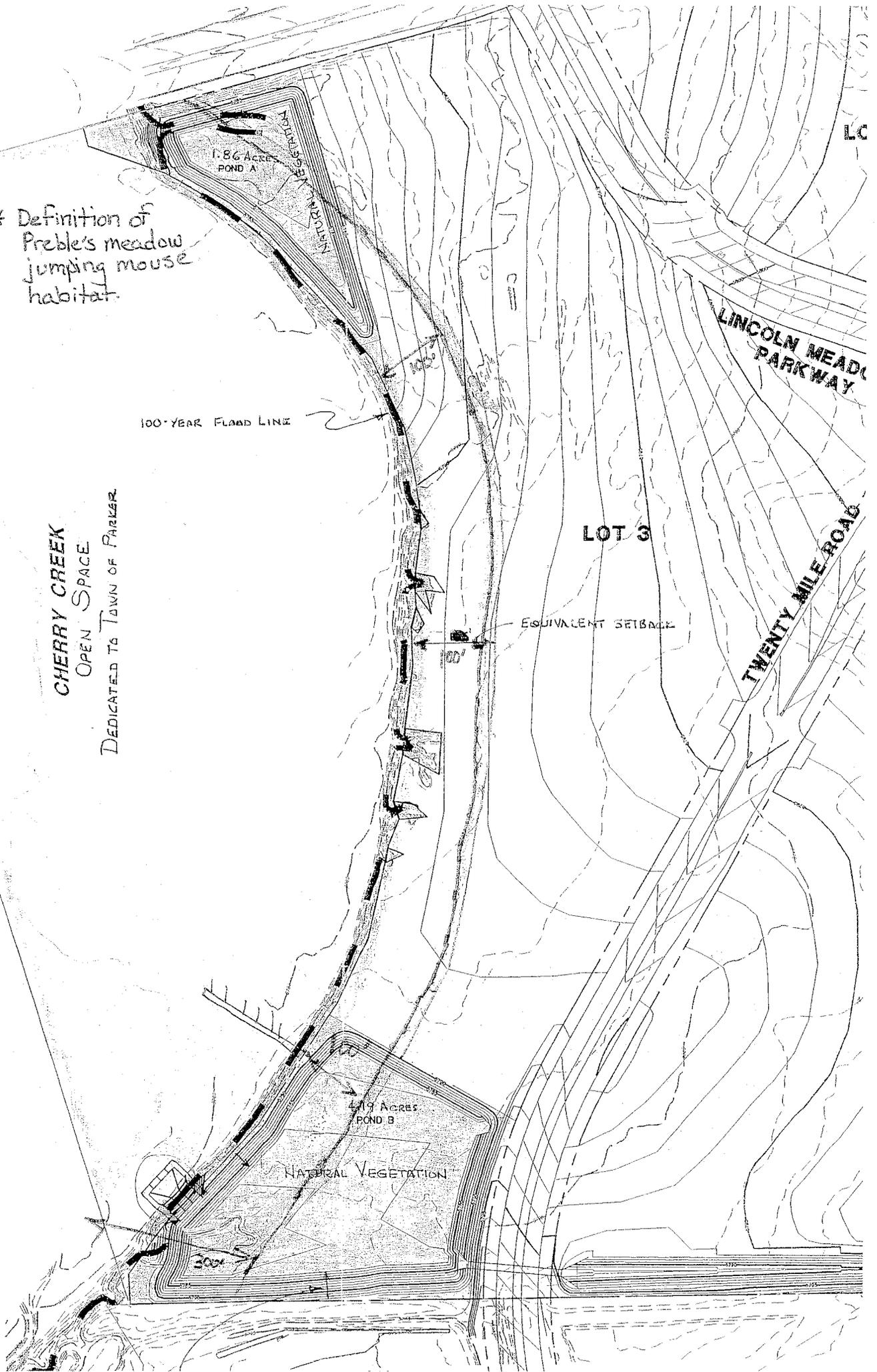
TWENTY MILE ROAD

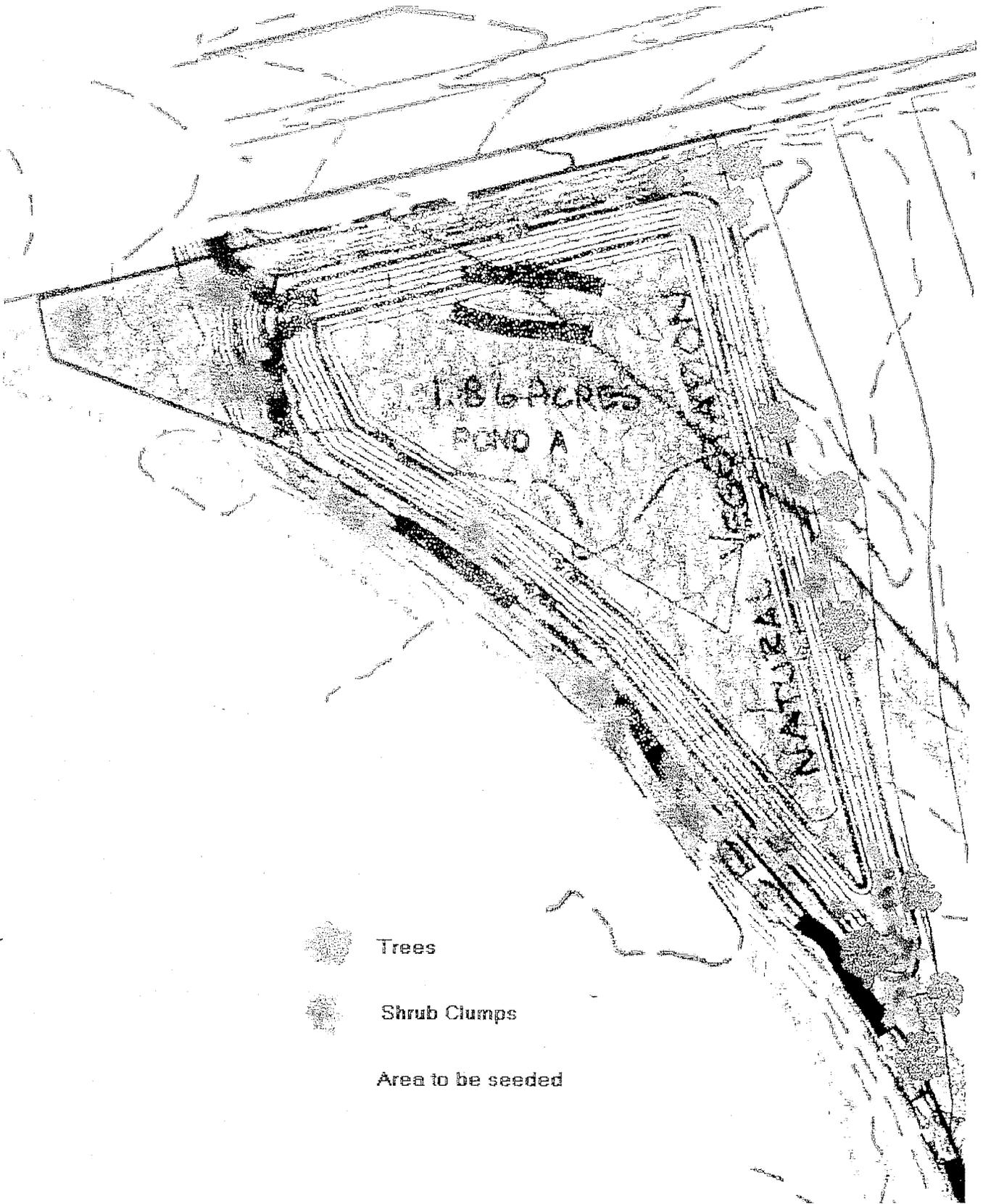
4.19 Acres
POND B

NATURAL VEGETATION

300'

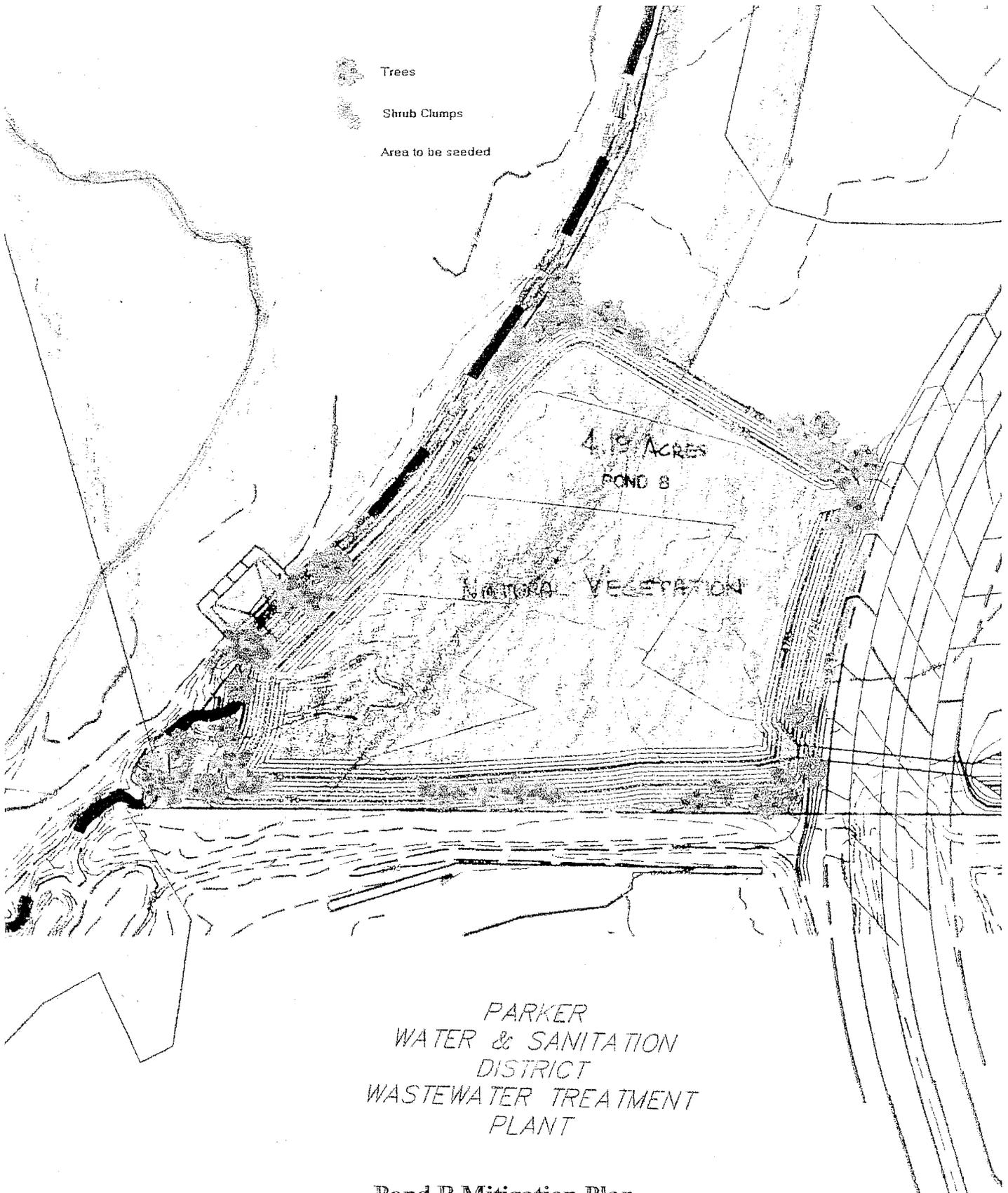
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Pond A Mitigation Plan

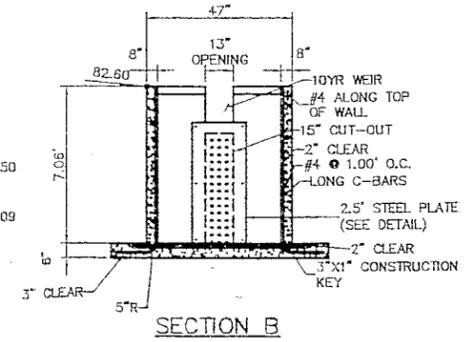
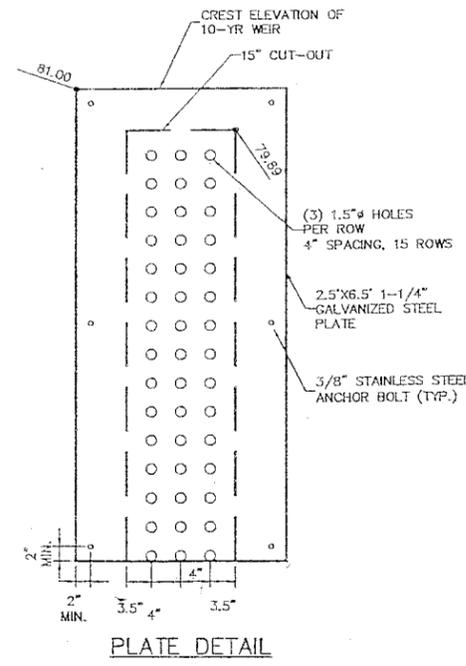
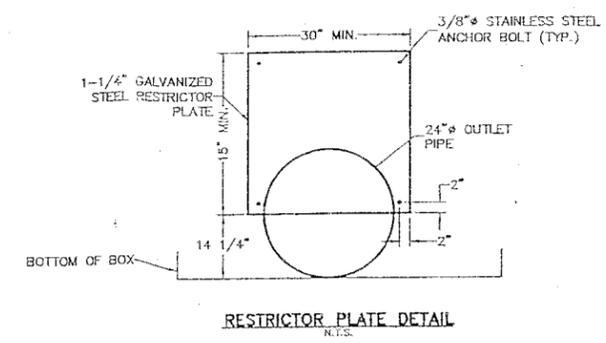
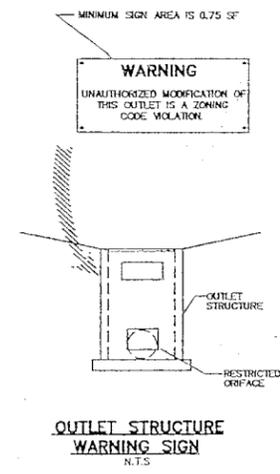
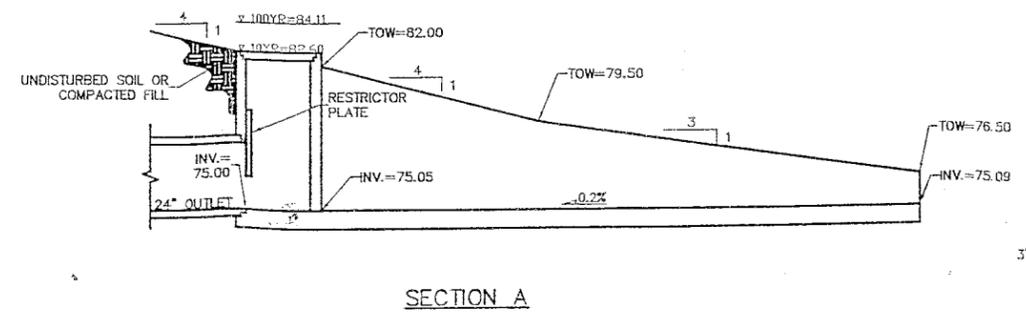
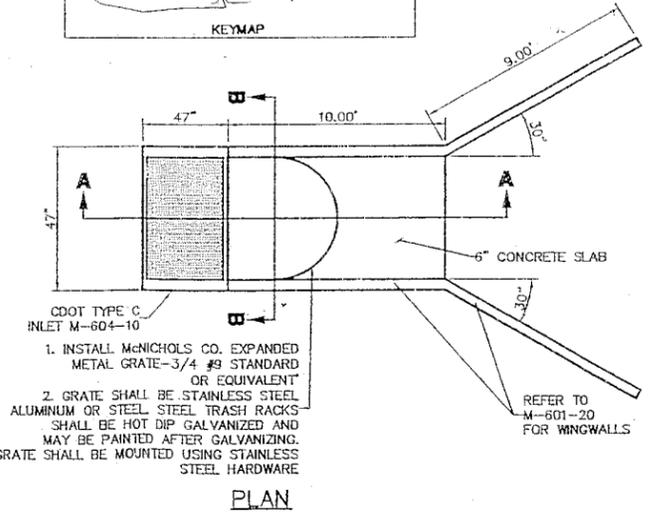
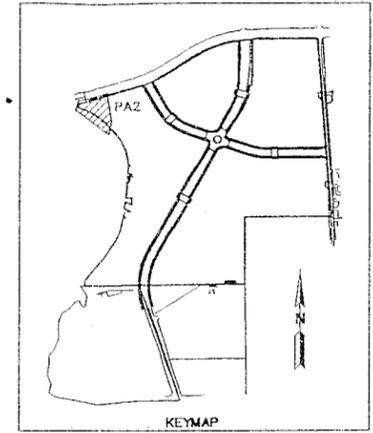
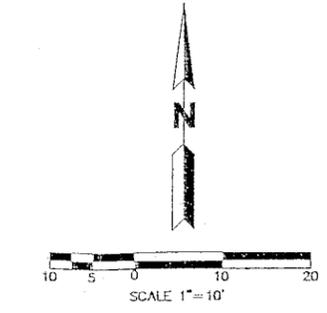
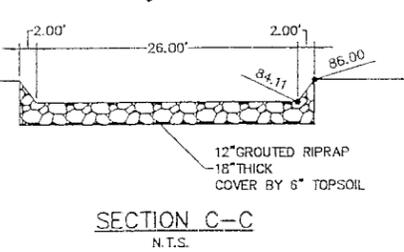
- Trees
- Shrub Clumps
- Area to be seeded



PARKER
WATER & SANITATION
DISTRICT
WASTEWATER TREATMENT
PLANT

Pond B Mitigation Plan

Job No. 100-100-0000
 Sheet No. PA-2
 Date: APRIL 20, 2001
 Job Number: 14535.C.01
 Design By: D. MASON
 Drawn By: S. LEWIS
 Checked By: D. JANSEN
 Reference: BASE BASE DWG
 DWG
 J. Hamel, P.O.



MARTIN / MARTIN
 CONSULTING ENGINEERS
 4251 Kipling
 P.O. Box 4001
 Weymouth, MA 01978
 508-431-1410
 FAX 508-431-4028

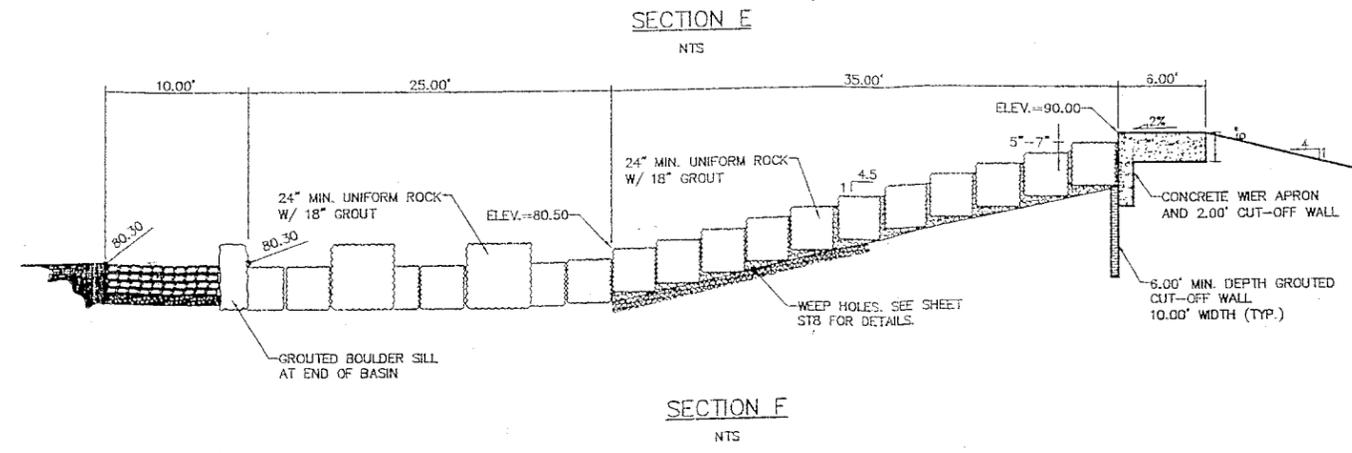
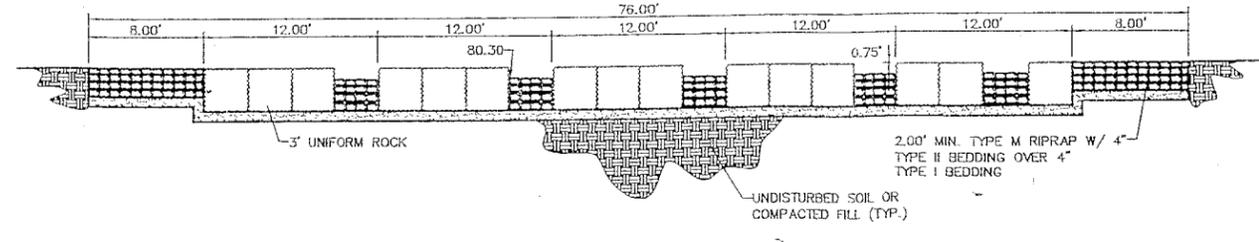
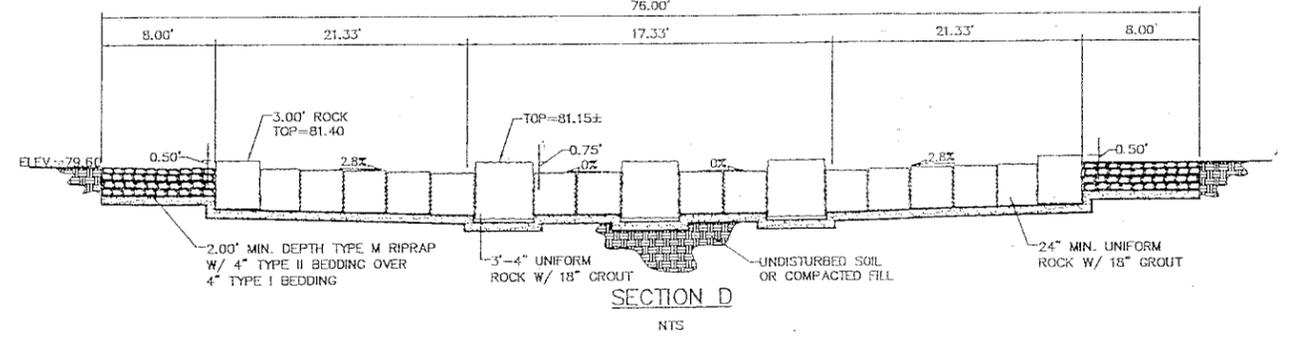
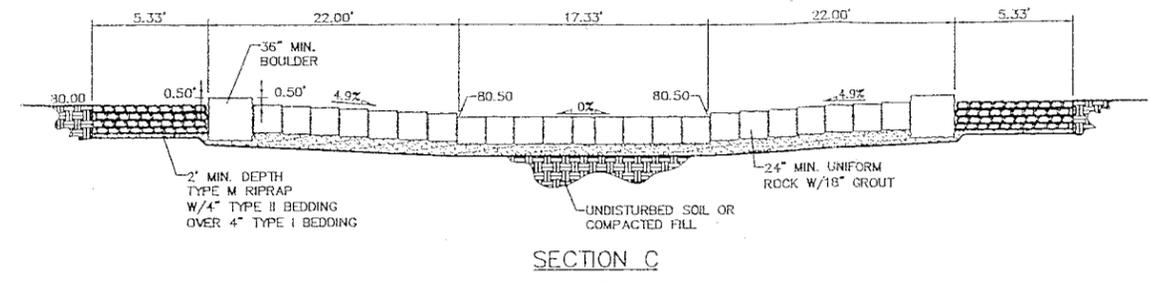
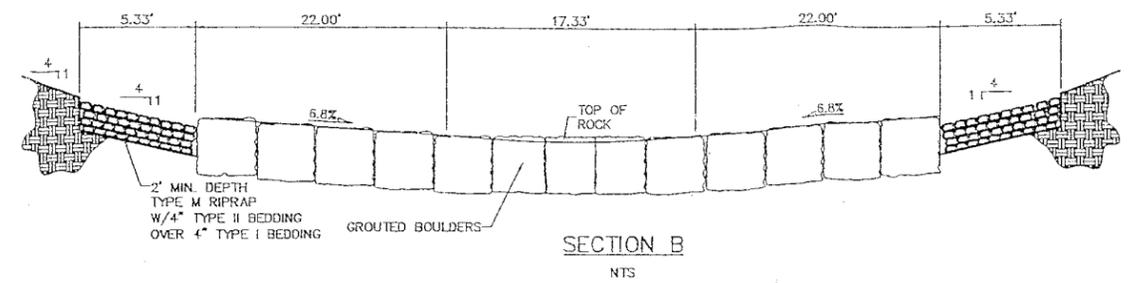
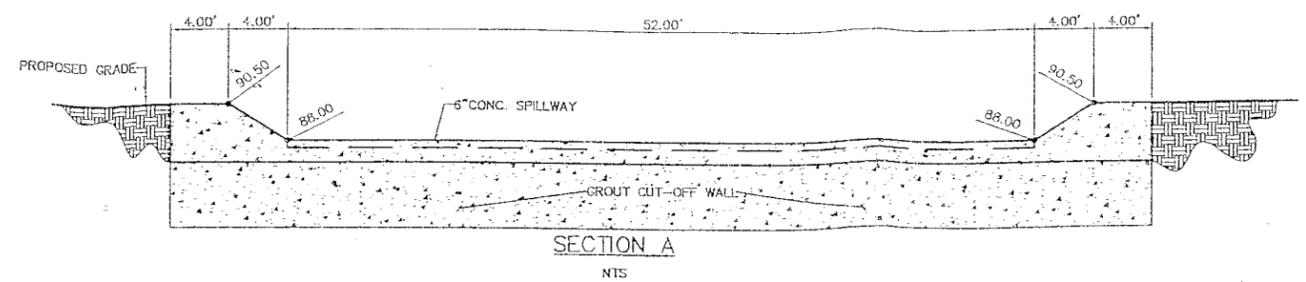
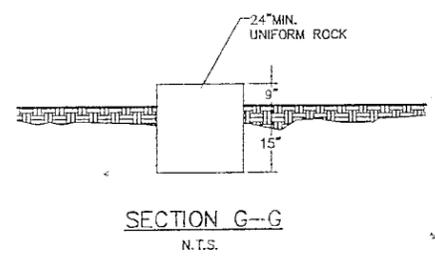
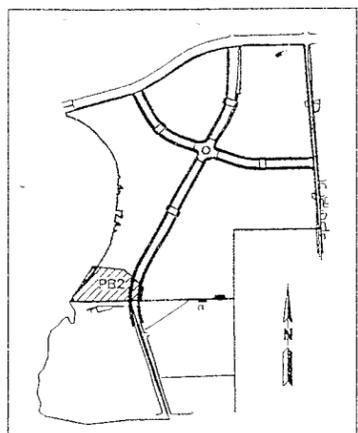
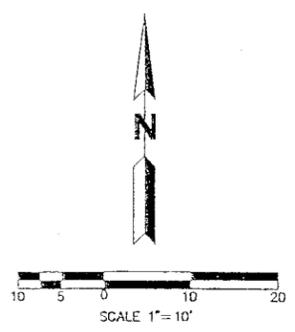
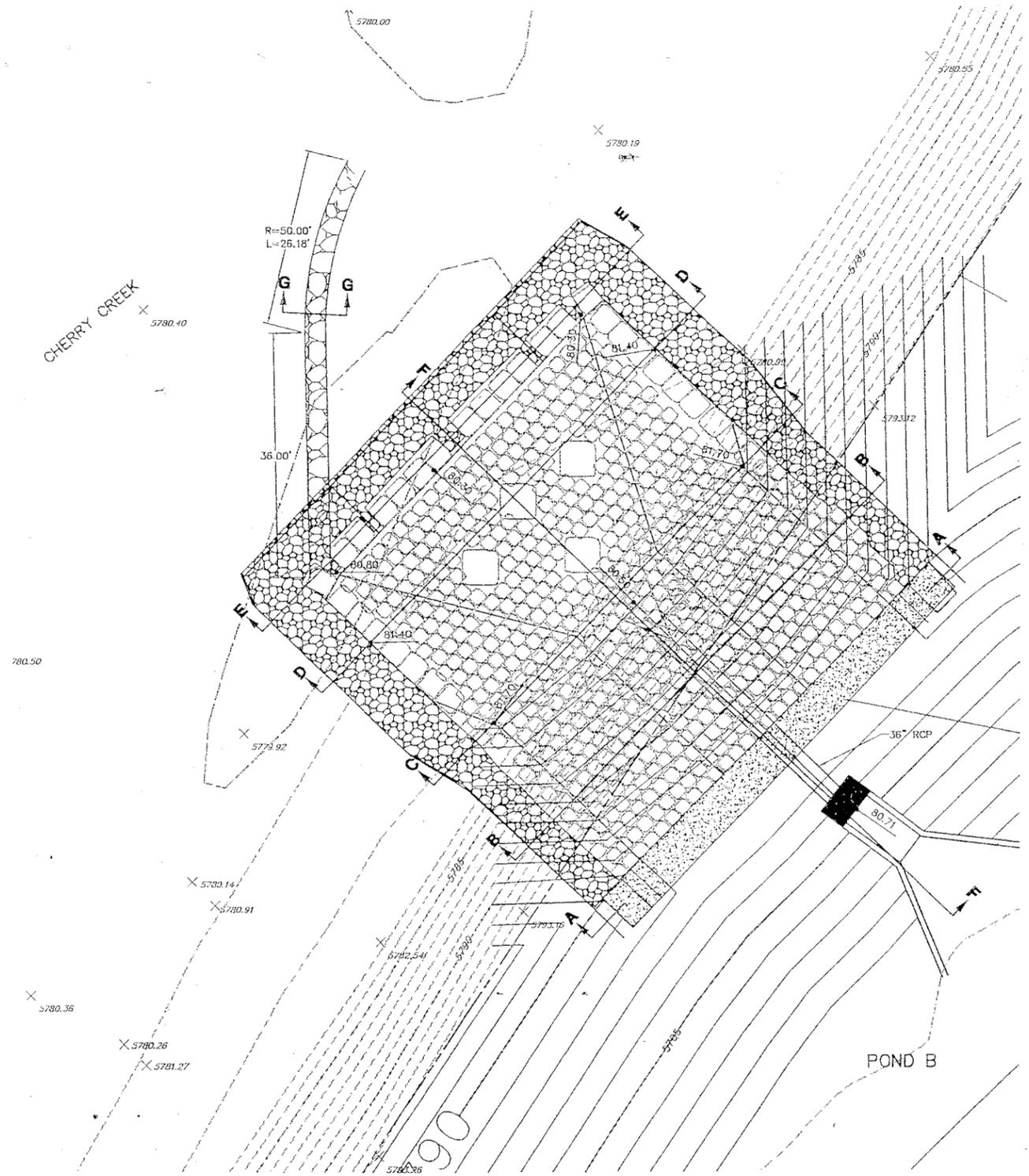
LINCOLN MEADOWS
POND A

No.	Description of Revisions	Date	Name
1	ISSUED FOR REVIEW	01/09/02	AHY
2	ISSUED FOR D.O.W. REVIEW	01/31/02	AHY

Date: APRIL 20, 2001
 Job Number: 14535.C.01
 Design By: D. MASON
 Drawn By: S. LEWIS
 Checked By: D. JANSEN

Sheet Number

PA2



MARTIN / MARTIN
 CONSULTING ENGINEERS
 41251 KAMAH
 P.O. BOX 4001
 WHEAT RIDGE, CO 80034
 303.431.5100
 FAX 303.431.4028

LINCOLN MEADOWS
POND B
OVERFLOW DESIGN

No.	Description of Revisions	Date	Name
1	ISSUED FOR REVIEW	05/04/01	DBV
2	ISSUED FOR REVIEW	07/09/02	AHN
3	REVISED OUTLET	01/22/02	AHN
4	ISSUED FOR D.O.M. REVIEW	01/31/02	AHN

Date: APRIL 20, 2001
 Job Number: 14535.C.01
 Design By: D.MASON
 Drawn By: S.LEWIS
 Checked By: D.JANSEN

APPENDICES



UNITED STATES DEPARTMENT OF THE INTERIOR
U.S. FISH AND WILDLIFE SERVICE

FEDERAL FISH AND WILDLIFE
LICENSE/PERMIT APPLICATION

3. APPLICANT. (Name, complete address and phone number of individual, business, agency, or institution for which permit is requested)

STRAWBERRY TIERRA, INC.
5613 DTC PARKWAY, SUITE 170
ENGLEWOOD, CO 80111
303 850 7770

1. APPLICATION FOR (Indicate only one)

IMPORT OR EXPORT LICENSE PERMIT

2. BRIEF DESCRIPTION OF ACTIVITY FOR WHICH REQUESTED LICENSE OR PERMIT IS NEEDED.

CONSTRUCTION AND DEVELOPMENT OF COMMERCIAL/RETAIL PROPERTY INCLUDING INFRASTRUCTURE AND BUILDINGS, AS WELL AS HCP MITIGATION MEASURES.

4. IF "APPLICANT" IS AN INDIVIDUAL, COMPLETE THE FOLLOWING:

<input type="checkbox"/> MR. <input type="checkbox"/> MRS. <input type="checkbox"/> MISS <input type="checkbox"/> MS.	HEIGHT	WEIGHT
DATE OF BIRTH	COLOR HAIR	COLOR EYES
PHONE NUMBER WHERE EMPLOYED	SOCIAL SECURITY NUMBER	
OCCUPATION		

ANY BUSINESS, AGENCY, OR INSTITUTIONAL AFFILIATION HAVING TO DO WITH THE WILDLIFE TO BE COVERED BY THIS LICENSE/PERMIT

NOT APPLICABLE

5. IF "APPLICANT" IS A BUSINESS, CORPORATION, PUBLIC AGENCY, OR INSTITUTION, COMPLETE THE FOLLOWING:

EXPLAIN TYPE OR KIND OF BUSINESS, AGENCY, OR INSTITUTION

PROPERTY OWNERSHIP AND LAND DEVELOPMENT

NAME, TITLE, AND PHONE NUMBER OF PRESIDENT, PRINCIPAL OFFICER, DIRECTOR, ETC.

303 850 7770
EDMUND LEO, VICE PRESIDENT

IF "APPLICANT" IS A CORPORATION, INDICATE STATE IN WHICH INCORPORATED

COLORADO

6. LOCATION WHERE PROPOSED ACTIVITY IS TO BE CONDUCTED

NW 1/4 SEC 15, NE 1/4 SEC 16
T55, R66W
PARKER
DOUGLAS COUNTY
COLORADO

7. DO YOU HOLD ANY CURRENTLY VALID FEDERAL FISH AND WILDLIFE LICENSE OR PERMIT? YES NO
(If yes, list license or permit numbers)

8. IF REQUIRED BY ANY STATE OR FOREIGN GOVERNMENT, DO YOU HAVE THEIR APPROVAL TO CONDUCT THE ACTIVITY YOU PROPOSE? YES NO
(If yes, list jurisdictions and type of documents)

NOT APPLICABLE

9. CERTIFIED CHECK OR MONEY ORDER (if applicable) PAYABLE TO THE U.S. FISH AND WILDLIFE SERVICE ENCLOSED IN AMOUNT OF

\$ 25.00

10. DESIRED EFFECTIVE DATE

MAY 15, 2002

11. DURATION NEEDED

FIVE YEARS

12. ATTACHMENTS. THE SPECIFIC INFORMATION REQUIRED FOR THE TYPE OF LICENSE/PERMIT REQUESTED (See 50 CFR 13.12(a)) MUST BE ATTACHED. IT CONSTITUTES AN INTEGRAL PART OF THIS APPLICATION. LIST SECTIONS OF 50 CFR UNDER WHICH ATTACHMENTS ARE PROVIDED. SEE LINCOLN MEADOWS DOUGLAS COUNTY PARKER, COLORADO ENVIRONMENTAL ASSESSMENT AND HABITAT CONSERVATION PLAN FOR THE ISSUANCE OF AN INCIDENTAL TAKE PERMIT FOR THE PREBLES MEADOW JUMPING MOUSE...

CERTIFICATION

I HEREBY CERTIFY THAT I HAVE READ AND AM FAMILIAR WITH THE REGULATIONS CONTAINED IN TITLE 50, PART 13, OF THE CODE OF FEDERAL REGULATIONS AND THE OTHER APPLICABLE PARTS IN SUBCHAPTER B OF CHAPTER 1 OF TITLE 50, AND I FURTHER CERTIFY THAT THE INFORMATION SUBMITTED IN THIS APPLICATION FOR A LICENSE/PERMIT IS COMPLETE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF. I UNDERSTAND THAT ANY FALSE STATEMENT HEREIN MAY SUBJECT ME TO THE CRIMINAL PENALTIES OF 18 U.S.C. 1001.

SIGNATURE (If individual)

Edmund Leo Projects Coordinator

DATE

02/20/02

**PREBLE'S MEADOW JUMPING MOUSE TRAPPING
SURVEY (August, 2000)**

**STRAWBERRY TIERRA
PARKER GATEWAY CENTER
DOUGLAS COUNTY, COLORADO
PREBLE'S MEADOW JUMPING MOUSE SURVEY REPORT
(*Zapus hudsonius preblei*)
Prepared by Savage and Savage
August 2000**

EXECUTIVE SUMMARY

Savage and Savage, Inc. conducted a trapping survey for the presence of the federally listed threatened Preble's Meadow Jumping Mouse (*Zapus hudsonius preblei*) adjacent to property slated for commercial development adjacent to Cherry Creek in Douglas County, Colorado from August 7 to 11, 2000. The survey was conducted in accordance with U.S. Fish and Wildlife Survey guidelines. No individuals of *Zapus hudsonius preblei* were found during the survey.

Name and Address of Surveyors

Michael S. and Edith A. Savage
Savage and Savage, Inc.
464 West Sumac Court
Louisville, Colorado 80027
(303) 666-7372

Project Description

Strawberry Tierra, Inc. has proposed commercial development on 117 acres in Parker, Colorado. The development has been called the Parker Gateway Center. Development on the property will entail excavation and construction on the secondary terrace above Cherry Creek which flows from south to north, an average of 350 feet west of the property boundary. These activities will entail temporary surface disturbance. After development of the property, little or no long term impact to the creek or habitat is anticipated given the distance from the development. Prior to the local review process and initiation of construction, Strawberry Tierra desired to identify any potentially critical Preble's habitat and survey such habitat for Preble's presence.

Savage and Savage conducted a preliminary environmental investigation of the property on July 17, 2000 and concluded that the site could not be disqualified as *Zapus hudsonius preblei* potentially critical habitat. This conclusion was corroborated by Peter Plage of the U.S. Fish and Wildlife Service. This trapping survey was undertaken in advance of development on the property to determine the presence of *Zapus hudsonius preblei* individuals or their critical habitat.

Site Location

The property contains approximately 10 acres located north of Lincoln Avenue and west of Dransfeldt Street and 107 acres located south of Lincoln Avenue and west of Dransfeldt Street, in Parker, Colorado. The center of the property is located at 39°32'00"N and 104°46'43"W. The property is located within the NE¼ of Section 16 and NW¼ of Section 15, T6S R66W, Parker, Douglas County, Colorado.

The trapping survey was conducted along the channel and primary alluvial terrace on the east side of Cherry Creek. The area surveyed extended along the length of Cherry Creek adjacent to the property from a point 500 feet northwest of the sewage treatment plant to a point approximately 700 feet north of Lincoln Avenue (see location map). UTM coordinates of the trapping survey area are 4375400mN 518900mE to 4376200mN 518740mE. Elevation of the area surveyed ranges from 5780 to 5790 feet. The survey area is accessed by driving east from I-25 on Lincoln Avenue to the property, 4.76 miles. The property is accessed from Lincoln Avenue. The property to be developed by Strawberry Tierra does not contain potential Preble's habitat, however, since Cherry Creek is adjacent to the property on the west, the potential habitat of the Cherry Creek corridor was the area trapped.

Survey Dates and Times

The survey was initiated on August 7, 2000 and concluded August 11, 2000. Two hundred traps were laid out and initially set August 7, 2000 from 1800 to 1930 hours MDT. Traps were checked each subsequent morning from 0530 to 0830 hours MDT, and reset from 1800 to 1930 hours each day. The survey ended August 11, 2000 at 0930 hours MDT with collection of the traps after documentation of trapped species.

One trapline was established at the site within the riparian vegetation community. The trapline consisted of two segments, one that extended adjacent to the southern property boundary north to within 200 feet of the Lincoln Avenue overpass, and a second segment commencing 150 feet north of the Lincoln Avenue overpass to the area adjacent to the north property boundary. Both segments were positioned within the riparian vegetation along the creek. The tree stratum of the riparian corridor is patchy and comprised of mature *Populus deltoides* (plains cottonwood), *Salix amygdaloides* (peach-leaf willow), and *Elaeagnus angustifolia* (Russian olive) individuals. *Salix exigua* (coyote willow) was present in thick, intermittent patches along the edge of the channel and on sand bars in the channel. A diverse assemblage of grasses, grass-like plants and forbs was present under the trees and between the shrub clumps. The total number of trap nights during the survey was 800.

Bait Type and Amount

Traps were baited with approximately one teaspoon of Manna Pro® Sweet 3-way Livestock feed. Traps were re-baited with fresh bait after each capture. Synthetic cosmetic puffs were placed in each trap for use as bedding by trapped animals.

Meteorological/Climatological Conditions

Meteorological conditions were favorable during the survey. Overnight low temperatures averaged fifteen degrees Celsius. Daytime high temperatures averaged 35 degrees Celsius. Skies were clear to partly overcast during the duration of the survey. No precipitation occurred during the survey.

Ecological and Site Features

Associated Animals

Two species of rodents were captured during the trapping survey; *Microtus ochrogaster haydenii* (prairie vole), and *Peromyscus maniculatus rufinus* (deer mouse). The species and number trapped per date are depicted below.

Species	8/8/00	8/9/00	8/10/00	8/11/00	Total
<i>Microtus ochrogaster haydenii</i>	0	0	0	2	2
<i>Peromyscus maniculatus rufinus</i>	20	22	31	29	102
Total Number of individuals	20	22	31	31	104

In addition to those species trapped, two additional mammal species were detected through sign or observation. An *Ondatra zibethicus* (muskrat) was observed along the edge of the creek adjacent to the trapline. Deer (*Odocoileus* species) were also observed along the banks. No trap vandalism by predators was detected during the course of the survey, and there was no evidence of *Procyon lotor* (raccoon) activity or sign along the trapline.

Several bird species were observed within the riparian corridor and adjacent to the survey area. These included *Bubo virginianus* (great horned owl), *Buteo swainsoni* (Swainson's hawk), *Pica pica* (magpies), and several warblers.

Plant Community

The property north of Lincoln Avenue is comprised of mowed smooth brome (*Bromus inermis*) to the east and relatively intact short grass prairie to the west closest to the Cherry Creek floodplain. A remnant irrigation ditch is also present north of Lincoln Avenue. The larger segment of the property south of Lincoln Avenue is old field that is

dominated by thistle (*Carduus sp.*) and other ruderal species. The vegetation of the creek corridor differs significantly from that of the property.

Vegetation within the trapline area is divided into distinctly different communities, based on the location of the vegetation relative to the Cherry Creek channel and floodplain (Figures 1 and 2). Upland areas, within the primary alluvial terrace, but still ten feet above the thalweg of Cherry Creek, are dominated by introduced weedy species found in pasture areas (*Euphorbia esula* and *Chrysothamnus nauseosus*). The edges of the alluvial terrace down to the channel banks along both sides of Cherry Creek contain intermittent large trees. The tree species include *Populus deltoides* (plains cottonwood), *Salix amygdaloides* (peach-leaf willow), and *Elaeagnus angustifolia* (Russian olive) individuals. *Salix exigua* (coyote willow) was present in thick, intermittent patches along the edge of the channel and on sand bars in the channel. The trees do not form a continuous linear riparian corridor along Cherry Creek, but are found in small copses along the bank. Interspersed between the willows is a diverse assemblage of grasses, grass-like plants, and forbs. Dominant grasses included *Phalaris arundinacea* (reed canarygrass), *Agrostis alba* (redtop), *Hordeum jubatum* (foxtail barley), and *Dactylis glomerata* (orchardgrass). Several of the dominant forb species included; *Rumex crispus* (curly dock), *Polygonum argyrocoleon* (knotweed), and *Mentha arvensis* (field mint).

Ecological Condition/Management History

The survey area is located adjacent to Cherry Creek which has not been significantly impacted by direct development in the survey area outside the immediate area of the Lincoln Avenue overpass. The Cherry Creek channel and floodplain area immediately adjacent to the overpass has been straightened and revegetated to introduced pasture grasses. There is no significant riparian vegetation in this area. Therefore trapping was not undertaken in this area. Historic land uses of the adjacent area have included agriculture, grazing, commercial development, residential, and open space.

The riparian area within the survey area shows little evidence of significant human impact. A pedestrian and equestrian trail follows the west side of Cherry Creek north of Lincoln Avenue adjacent to the trapping area, but is generally 15-30 meters from the Cherry Creek channel and outside the riparian corridor.

Proximity, Degree, and Type of Human Development

Development has been described above.

Other Site Features

The most prominent hydrologic feature within the construction area is Cherry Creek, a perennial stream that is tributary to the South Platte River. Within the survey area, Cherry Creek has a narrow (2-3 meter) channel with a low hydraulic gradient. During the survey

the flow of Cherry Creek was low, with the average depth of the flow being eight inches and the average total channel width, six feet. Evidence of recent high flows is present in new sand and silt deposits, bent and damaged vegetation, standing water in shallow backwaters, and siltation marks on trees.

Soils within the channel and primary alluvial terrace of the survey area consist of sorted sands, sandy clays, and clays over a base of alluvial gravels. According to the Soil Survey of Castle Rock Area, Colorado (1974), the soils in the survey area are described as sandy wet alluvial lands; characterized as linear soils, consisting of light-colored, stratified sand, loamy sand, and gravel. Soils above the flood plain are generally Englewood series clay loams, or Sampson loams, which are primarily used for grazing livestock (Englewood) with some irrigated cropland along Cherry Creek (Englewood and Sampson).

Results of the Trapping Survey

Trapping conducted over 800 trap nights between August 7 and August 11, 2000 yielded no individuals of *Zapus hudsonius preblei*. One hundred four individual rodents were captured and released during the trapping survey. Of those individuals captured, two were *Microtus ochrogaster haydenii* and 102 were *Peromyscus maniculatus rufinus*.

Conclusion

No *Zapus hudsonius preblei* individuals were found during 800 trap nights from August 7-11, 2000 at the Strawberry Tierra Parker Gateway Center site in Douglas County, Colorado. Based on these results, it was concluded that *Zapus hudsonius preblei* is not present in this location.

TABLES

Habitat Conservation Areas Tabulation - Lincoln Meadows Development

West Boundary Segment	West Boundary Length	100 Foot Zone	N & S End Disturb. Zones	Pond. Overflow Disturb. Zones	Perm. Disturbed Areas	Temp. Disturbed Areas	Weed Control Mitigation Areas	Required 1.5:1 Mitigation Area	Actual Provided Mitigation Area
L1	49.67	0	3,899	0	0	3,899	0	5,849	
L2	100.20	6,520	4,876	0	0	11,396	0	17,094	
L3	123.10	12,310	4,575	0	0	16,885	0	25,328	187,990
L4	94.05	9,405	2,680	0	0	12,085	0	18,128	
L5	233.18	23,318	1,795	5232	4307	26,038	0	45,518	
L6	117.04	11,704	0	0	0	11,704			
L7	126.56	12,656	0	0	0	12,656			
L7a	24.17	2,417	0	0	0	2,417			
L10	49.62	4,962	0	0	0	4,962			
L10a	32.03	3,203	0	0	0	3,203			
L14	76.91	7,691	0	0	0	7,691			
L14a	42.45	4,245	0	0	0	4,245			
L18	106.17	10,617	0	0	0	10,617	21,840	199,368	59,273
L19	62.07	6,207	0	0	0	6,207			
L19a	32.30	3,230	0	0	0	3,230			
L23	25.87	2,587	0	0	0	2,587			
L23a	30.41	3,041	0	0	0	3,041			
L29	70.47	7,047	0	0	0	7,047			
L29a	32.39	3,239	0	0	0	3,239			
L32	51.67	5,167	0	0	0	5,167			
L33	84.89	8,489	0	0	0	8,489			
L34	125.16	12,516	0	0	0	12,516			
L35	91.51	9,151	0	0	0	9,151			
L36	170.54	17,054	0	0	0	17,054			
L37	78.53	7,853	0	0	0	7,853			80,788
L38	116.70	11,670	0	0	0	11,670			
L39	132.42	13,242	0	0	75	9,023	4803	13,646	
L40	32.24	0	0	0	0	0	0	0	0
TOTALS	2,312.32	206,299	24,623	7,532	4,382	234,072	26,643	324,920	328,050
Acres					0.10	5.37		7.46	7.53
Net increase in habitat area acreage through mitigation									
2.06 Acres									

Tabulated from data provided by Martin/Martin Consulting Engineers 1/30/02

DRY TERRACE SEED MIX

**LINCOLN MEADOWS
PARKER, COLORADO**

COMMON NAME	SPECIES NAME	CHARACTER	SEEDS/LB	SEEDS/ SQFT	SEED RATE lbs (pls)/ac
Graminoids					
Thickspike Wheatgrass	<i>Agropyron dasystachyum</i>	perennial, native, cool-season, sod	150,000	4	1.16
Sideoats grama	<i>Bouteloua curtipendula</i>	perennial, native, warm-season, bunchgrass	145,000	8	
Mountain Brome	<i>Bromus marginatus</i>	perennial, native, cool-season, bunchgrass	75,000	4	2.32
Prairie Sandreed	<i>Calamovilfa longifolia</i>	perennial, native, warm-season, bunchgrass	275,000	6	0.95
Switchgrass	<i>Panicum virgatum</i>	perennial, native, warm-season, sod	390,000	6	0.67
Forbs					
Golden aster	<i>Heterotheca villosa</i>	perennial, native, warm-season, yellow flower	400,000	4	0.44
Rocky Mtn. Penstemon	<i>Penstemon strictus</i>	perennial, native, cool-season, pink flower	286,000	6	0.91
Lewis flax	<i>Linum lewisii</i>	perennial, native, cool-season, blue flower	285,000	2	0.31
Totals				40	6.76

note: rates proposed are for drill seeding, broadcast rate 2x

DETENTION BASIN SEED MIX

LINCOLN MEADOWS
PARKER, COLORADO

COMMON NAME	SPECIES NAME	CHARACTER	SEEDS/LB	SEEDS/ SQFT	SEED RATE lbs (pl)/ac
Graminoids					
Redtop	<i>Agrostis alba</i>	perennial, naturalized cool-season, sod	5,000,000	6	0.05
Canada Wildrye	<i>Elymus canadensis</i>	perennial, native, cool-season, bunchgrass	106,000	8	3.29
Switchgrass	<i>Panicum virgatum</i>	perennial, native, warm-season, sod	390,000	10	1.12
Reed Canarygrass	<i>Phalaris arundinacea</i>	perennial, native, cool-season, sod	540,000	4	0.32
Sand Dropseed	<i>Sporobolus cryptandrus</i>	perennial, native, warm-season, bunchgrass	5,300,000	6	0.05
Forbs					
Scarlet Globemallow	<i>Sphaeralcea coccinea</i>	perennial, native, warm-season, orange flower	500,000	6	0.52
Totals				40	5.35

note: rates proposed are for drill seeding, broadcast rate 2x