



STUDY SESSION MEMORANDUM

TO: Mayor and Members of City Council

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DATE: December 11, 2018

SUBJECT: Study Session for December 11, 2018
Discussion on Prairie Dog Working Group Phase 2 Recommendations

EXECUTIVE SUMMARY

This Memorandum presents the Prairie Dog Working Group's (PDWG) Phase 2 Recommendations (Attachment A), information on recommendations that can be implemented in the near term, and a proposed strategy that staff will bring back to council at a later date with a more detailed assessment of longer-term recommendations, and a phased implementation that considers the fiscal, staffing, timing and other resource trade-offs that are necessary for best supporting the recommendations.

At the request of City Council, the city manager formed the PDWG in 2016 to suggest adaptable and innovative prairie dog management practices that balance city goals and provide a forum for conversation. An initial phase of work (Phase 1) completed in 2017 resulted in recommendations that are being implemented under existing plans. The Phase 1 Report was shared with council in February 2018 and staff undertook efforts in 2017 and 2018 to implement many of those recommendations. The full Phase 1 report can be viewed at <https://bouldercolorado.gov/osmp/prairie-dog-working-group>. Phase 2 was completed in July 2018 focusing on consensus-based plan and policy change recommendations to the city's prairie dog management approach. The working group included a cover letter (**Attachment A**) with their

Phase 2 report that has critical factors that they wanted to emphasize in the consideration of the recommendations.

Sincere gratitude has been expressed to all PDWG participants for their long hours, thoughtful contributions and overall dedication to the project.

The PDWG recommended an overarching goal as well as objectives, strategies and milestones for prairie dog management under three sub-goals in the categories of ecological, social coexistence and economic. This memo aims to distill all the components of the Phase 2 recommendations to help move the working group's efforts into implementation.

Overarching Prairie Dog Conservation Goal: Sustainably conserve prairie dogs in the Boulder region by implementing the following ecological, social, and economic goals, objectives, and strategies.

Goal 1 - Ecological: Update and implement the city's prairie dog management plans to ensure the creation and maintenance of one or more large prairie dog-occupied ecosystem areas that will secure viable plague-resistant prairie dog populations and high-integrity grassland habitat.

Goal 2 - Social Coexistence: Support proactive and innovative non-lethal strategies to minimize conflicts associated with prairie dogs and competing land uses. Increase public awareness of the prairie dog's role in Boulder's Grassland and Urban ecosystems through community outreach.

Goal 3 - Economic: Implement sustainable processes that provide resources and capacity to secure prairie dog conservation associated with the City of Boulder.

An initial staff analysis of the PDWG recommendations (**Attachment B**) provides preliminary information on resource, economic, ecological, social and other impacts of the suite of associated objectives, strategies and milestones the PDWG identified for each of the goals above. Initial analysis also includes preliminary information pertaining to departmental leads, relative costs, and suggested timing for the milestones.

The city currently allocates approximately 2.6 full time employees (FTEs) and \$27,000- \$300,000 annually toward prairie dog management. Staff estimates that implementation of the full package of PDWG recommendations would cost between \$680,000 and \$4.25 million beyond current appropriations in a combination of operating and capital expenditures over a general implementation period of four years, as proposed by the PDWG, and with some costs ongoing. Additionally, initial estimates of new (additional) required personnel time are between 2.2- 7.5 FTEs.

Given the potential impact to city funding, work plans, and resource protection goals, the city manager has requested that staff return to the city manager and City Council with a written report on their further assessment and analysis for a phased implementation that considers the fiscal, staffing, timing and other resource trade-offs that are necessary for best supporting the PDWG recommendations. Staff is expected to return to council with this report in late Spring 2019.

QUESTION FOR COUNCIL

Does council have feedback on important considerations or information to include in the next step: additional analysis and recommendations on trade-offs, proposed processes and phasing for implementation of Phase 2 Recommendations?

COMMUNITY SUSTAINABILITY ASSESSMENTS AND IMPACTS

Economic: Full implementation of these recommendations would require an enhanced level of resource allocation including staff time as well as operating and capital budgets. Longer-term changes to practices, plans and policy recommendations would potentially cost between \$680,000 and \$4.25 million beyond current appropriations and would require work plan assignments for Open Space and Mountain Parks (OSMP), Planning (PHS) Parks and Recreation (PR), the City Attorney's Office and the Finance Department. If the recommendations are fully implemented initial estimates of new (additional) required personnel time is between 2.2 and 7.5 FTEs over a general implementation period of four years, with some recommendations continuing after that period. The city currently allocates approximately 2.6 full time employees (FTEs) and \$27,000- \$300,000 annually toward prairie dog management. The combined projected staffing needs and budget expenditures to fully implement the recommendations would be 4.7 – 10 FTE and \$788,000 – \$5.45 million (over the initial 4 years). Other economic costs include: prairie dogs occupying irrigated lands may reduce agricultural lease revenues or reduce the value of city water rights used to irrigate these lands. Prairie dogs encroaching upon state-mandated areas such as detention ponds or assets such as ball fields could result in fines, or lost revenue.

Environmental: City policy has been to strike a balance between protecting and maintaining healthy, thriving prairie dog populations and protecting natural communities and soils. Increased focus on prairie dog conservation may reduce the ability to protect and manage other natural community types and species that do not thrive with prairie dog occupation (e.g. tallgrass prairie, rare and imperiled butterflies and skippers, tallgrass prairie birds, etc.). A further consideration is the potential impact to soil conditions and their ability to sequester carbon across the landscape. The magnitude of these challenges depends on how and to what extent the recommendations are implemented. As a result, the exact outcomes and impacts are currently uncertain.

Social: Benefits to the community of implementing the recommendations include intentional inclusion of key stakeholders when implementing prairie dog management practices and updating or revising related plans and policies. Key stakeholders include, but are not limited to, private landowners, neighbors, agricultural operators, prairie dog advocates, people who are sensitive to pesticides, soil health experts, grassland ecosystem experts and advocates, prairie dog relocators, city staff and government agencies. The working group recommendations are intended to reduce the number of conflict areas within those groups related to prairie dog populations, including conflicts with maintaining irrigated agricultural land and impacts to neighboring landowners.

BOARD AND COMMISSION FEEDBACK

In August, staff presented the Phase 2 final report outcomes and a summary analysis overview to three relevant city boards – Environmental Advisory Board (EAB), Open Space Board of Trustees (OSBT) and Parks and Recreation Advisory Board (PRAB). Staff sought the general thoughts and considerations of the boards to be shared with the city manager and city council.

Questions asked of the boards were:

1. Does the board generally support the direction of the recommendations? Does the board have overarching concerns on economic, environmental or social impacts of the recommendations that they would like the city manager and city council to be aware of?
2. Are there other concerns the city manager and City Council should be made aware of?

Key themes among the boards' responses include:

- Appreciation for the working group's effort to develop thoughtful recommendations;
- Concern for the city's funding and staffing capabilities given other city priorities, programs and initiatives and the need for understanding trade-offs before broad implementation;
- The need to understand better the feasibility of implementing the full set of recommendations and the impact to a broader base of constituents; and
- The need for a greater assessment of impacts to other resource, environmental and ecosystem components before the boards could consider supporting the recommendations

Feedback from all three boards is detailed in **Attachment C**.

BACKGROUND

Formation of the PDWG

The City of Boulder's prairie dog management practices affect numerous stakeholders who are concerned about a wide variety of impacts including those to prairie dogs, grassland ecosystems, human health, and private and public lands. Prairie dog relocations have been a long-standing city practice to limit lethal control, remove colonies from conflict areas, and to populate grassland areas where prairie dogs are a conservation target. The city relocations that occurred between the years of 2009-2015 moved prairie dogs from city owned properties where the presence of prairie dog colonies conflicted with other land uses, to city owned properties where prairie dogs are a conservation target. The city prioritized removing prairie dogs from city owned land due to the 600+ acres of prairie dog colonies designated for removal on city land and limited available receiving sites.

At the Aug. 16, 2016 City Council meeting, staff presented prairie dog management policies, annual relocation priorities and requested council guidance on long-term management direction. Some council members expressed the sentiment of prioritizing prairie dog relocations when a colony was subject to lethal control regardless of whether the colony was on private or public property. This shifted the priorities for 2016 to focus on private property. Recognizing the complexity of prairie dog management in our community, council members suggested the city manager form a working group that could suggest, based on a broad understanding of the full range of community perspectives, prairie dog management practices to be implemented under existing policy, as well as possible longer-term policy changes. The working group was to provide a forum for conversation. It was also tasked to help develop innovative ideas to best balance city goals, such as managing diverse grassland ecosystems, park amenities and agricultural management while providing for healthy, sustainable prairie dog populations and addressing neighbor relations.

The City of Boulder sought participants for a working group to make adaptive management practice recommendations to the city manager. Eighteen members were appointed in 2016 to the PDWG, based on prospective participants' ability and willingness to meet expectations, including having demonstrated a willingness to be collaborative, innovative and respectful, and to represent

broad interests and community perspectives. The working group consisted of twelve community members, including both Boulder residents and non-residents, representing broad interests and perspectives. Five City of Boulder staff members from OSMP, PR and PHS served on the working group and a staff member from Colorado Parks and Wildlife also participated.

The City of Boulder committed to consider and incorporate participant advice and recommendations into staff management decisions to the greatest extent possible. The City of Boulder also has expressed sincere gratitude to all participants for their dedication to the project.

Heather Bergman and Sam Haas from Peak Facilitation Group, a private contractor, facilitated meetings of the working group. Working group members were expected to:

- Understand the city's broad range of management goals and constraints for prairie dog management.
- Develop holistic adaptive management recommendations that provide a community-wide benefit rather than a singular benefit.
- Recommend practices that can be implemented under the existing policy. (Phases 1 and 2)
- Recommend longer-term ideas that may need further exploration or more substantial changes to policy. (Phase 2)
- Serve as a model for the city in terms of collaboration, innovation, and respect.

Meetings were open to the public with a portion of the meeting reserved for public comment. Information has been available and kept updated [online](#) which includes background data, meeting agendas and summary notes (including public comments), reference documents, and other related materials.

Current Prairie Dog Management

Three city departments have significant roles in prairie dog management and were involved with the PDWG: Parks and Recreation (PR), Planning (PHS) and Open Space and Mountain Parks (OSMP) departments. A map of active prairie dog colonies on OSMP and PR is included as **Attachment E**. The map also includes areas where there have been active colonies over the past 20 years.

The PR Department manages about 250 acres of grassland habitat that is fully occupied by prairie dogs and about another 200 acres of current or future park development sites which have prairie dogs that are identified for removal in the Urban Wildlife Management Plan. Within the PR Department, prairie dog management activities involve the Natural Lands Program Coordinator (.25 FTE) and field crew staff time (.40 FTE) to monitor, count, map, maintain barriers, manage passive and active relocations, undertake planning, conduct community engagement and manage conflict mitigation actions. Non-personnel budget implications of prairie dog management for these tasks total range between \$10,000 - \$150,000 per year. This amount is largely dependent upon relocation projects and barrier installations which vary year- to-year. PR currently has nearly six miles of prairie dog barriers to maintain with an estimated asset replacement value of over \$825,000. The barriers have been installed to minimize conflicts between existing prairie dog colonies and park assets or areas identified in the Urban Wildlife Management Plan as removal areas. The most effective barrier that staff commonly uses is a sheet metal barrier trenched approximately three feet below ground, extending at least 3.5 feet above ground and stabilized by posts. Chicken wire is often added horizontally on the ground to deter burrowing immediately at the base of the barriers. One example is the buffer zone between the conservation areas and the Boulder Reservoir dams which are mandated by the state to be kept free of burrowing animals.

Many of these barriers will need refurbishment or replacement in the coming years.

In the PHS Department, approximately 0.20 FTE of the Urban Wildlife Conservation Coordinator position is dedicated to prairie dog-related management including non-lethal mitigation plan development, permit development and application review, education, providing technical advice and assistance on conflict mitigation to private landowners and city departments. The PHS department reviews all proposed development, construction, and public improvement projects within, or near prairie dog colonies. For projects on city managed non- OSMP or non-PR properties, contractors are hired annually for non-lethal prairie dog mitigation in the form of passive relocation that allows for temporary ground disturbance without harming prairie dogs. An average of approximately \$6,500 is spent annually on passive relocation, and urban population survey contracts overseen by PHS.

The OSMP Department manages approximately 24,000 acres of grassland habitat including a variety of grassland communities and agricultural landscapes. Within this, 6,575 acres of grassland on OSMP have had prairie dog occupation at some point since comprehensive system-wide mapping began in 1996. Current occupation (fall 2018 mapping) on OSMP properties is 4153 acres. Of these acres, approximately 959 acres are designated for removal, mostly due to overlap with irrigable agricultural land. Currently, four OSMP wildlife ecology staff spend approximately 20% of their time (0.8 FTE total) dedicated to prairie dog related management including relocation, non-lethal mitigation and project planning, mapping, monitoring, conflict management, education, and providing technical advice to private landowners. Three OSMP agricultural staff spend approximately 1% of their time and an 18- month temporary employee spends up to 75% of time addressing prairie dog conflicts on agricultural properties. Other OSMP workgroups spending time on prairie dog conservation and management include OSMP Rangers, Geographic Information Systems staff, Signs, Public Outreach, Plant Ecology, Research and Monitoring, and Community Relations. Budget expenditures for prairie dog management at OSMP range between \$10,000- \$150,000 per year, with most expenditure related to relocation of prairie dogs and annual variation based on whether relocations include prairie dogs from OSMP property, or other City or private property.

Although in the past OSMP installed many miles of vinyl prairie dog barriers, most have fallen into disrepair and at this time, more than four and one-half miles of barrier fencing are still on the landscape but would require a replacement to be effective at a cost of over \$650,000. Neighboring landowners have installed an additional one and one-half miles of barriers at their expense valued at approximately \$330,000.

Implementing the PDWG Phase 1 Recommendations

The following six consensus-based recommendations that are being implemented under existing plans and policies were made by the PDWG in Phase 1 (see <https://bouldercolorado.gov/osmp/prairie-dog-working-group> for more information):

- Recommendation #1 – Create guidelines and criteria for prioritizing relocation/take sites on both public and private land.
- Recommendation #2 – Create guidelines and criteria for prioritizing receiving sites on public lands within existing plans and develop recommendations for making receiving sites more feasible.
- Recommendation #3 – On approved receiving sites, ensure that the number of prairie dogs to be relocated have adequate accommodations.
- Recommendation #4 – Define successful prairie dog relocation, including evaluation

- criteria and processes.
- Recommendation #5 – Develop a research proposal for the use of the sylvatic plague vaccine on the southern grasslands in 2018 and beyond.
- Recommendation #6 – Create a subgroup to work with staff to further develop the above recommendations.

To begin implementing Phase 1 recommendations in 2017 and 2018, OSMP, PHS, and PR staff prioritized work and allocated their time accordingly. This displaced some time planned for other projects such as site planning for implementation of the North Trail Study Area (NTSA), integration of agricultural management with protection of federally protected species (e.g. Bald Eagle nests), public outreach on potential prairie dog relocation sites, natural lands planning and management for various park sites and other species of concern, and education and outreach for the implementation of the Bear Protection Ordinance.

In 2017, staff priorities included addressing the following two prairie dog management related projects: a) work on city manager-approved 2017 PDWG Phase I recommendations (**Attachment B**) and b) relocate over 200 prairie dogs from private properties and approximately 40 prairie dogs from Foothills Community Park Area onto public land managed by OSMP. Implementation of Phase I focused on administrative tasks associated with receiving prairie dogs on city land from private property where colonies were in imminent threat of lethal control and ensuring the relocated prairie dogs had adequate infrastructure at the receiving site of the relocation. The 2017 relocation process was successfully conducted in a way that was consistent with the working group recommendations under existing plans and policies, including the [Administrative Rule for the Relocation of Prairie Dogs – 6-1-37.A \(02\)](#). Full implementation of some Phase I recommendations were deferred to allow staff time to participate in Phase 2 of the PDWG, including a variety of strategies to increase the feasibility of using some OSMP colonies as receiving sites in 2018 and future years, and defining a “successful” relocation. These items will be incorporated into work planning for 2019 and 2020.

This year, staff relocated approximately 400 prairie dogs from OSMP-managed irrigated agricultural lands as well as prairie dogs that have recolonized the OSMP and PR Foothills Community Park Area and private property (4750 N. Broadway) onto approximately 40 acres of Grassland Preserve designated OSMP-managed lands in the Southern Grasslands. Relocations are occurring consistent with the Phase I recommendations including prioritization of prairie dogs facing lethal control over other priorities for relocation, use of sylvatic plague vaccine for relocated prairie dogs and resident prairie dogs in the Southern Grasslands, installation of artificial burrows to house relocated prairie dogs, and consideration of criteria to measure success of relocation.

In summary, staff continues to work collaboratively to carry out the approved recommendations from Phase 1 that have helped address some of the challenges and circumstances with how prairie dog management was occurring three years ago that contributed to Council’s recommendation to convene a working group. Examples of actions that staff now undertake because of implementing Phase 1 recommendations along with improved coordination with prairie dog relocation include:

- Having clear guidelines and prioritization for relocation and removal sites
- Prioritizing relocations that would otherwise result in lethal control
- Use of artificial nest boxes to relocate prairie dogs into areas that did not formerly have natural burrows

- Using sylvatic plague vaccine to better manage plague in the OSMP Southern Grasslands and prairie dogs being relocated.

ANALYSIS

The Phase 2 prairie dog management recommendations are framed by three main goals 1) Environmental, 2) Social Coexistence, and 3) Economic. Each goal has associated objectives, strategies and milestones to provide clear explanation of the intent of the PDWG which are described in **Attachment A**.

In Phase 2, the working group met from January- June 2018 and identified recommendations and methodologies under existing plans and policies that can be used in 2018 and beyond. The working group also identified longer-term ideas that need further exploration, require changes to city plans and policies, or involve the implementation of new practices.

With the package of recommendations, there are key themes that the recommendations are trying to achieve: 1) conservation of large-blocks of prairie dog habitat, 2) non-lethal control and plague management, 3) conflict management, and 4) funding. The following is a staff generated summary of PDWG desired outcomes within these four themes:

- *large-block prairie dog habitat* — manage for large, self-sustaining, prairie-dog occupied ecosystems
 - acquire land to benefit prairie dog management
 - modify the OSMP Grassland Ecosystem Management Plan to increase focus on maximizing prairie dog occupation levels
 - introduce black-footed ferrets with regional partners
 - manage with the goal to prevent plague in OSMP's Southern Grasslands
- *non-lethal control and plague management* —
 - focus on prairie dogs citywide
 - increase use of plague management tools, potentially including Delta Dust (deltamethrin flea insecticide) and prairie dog vaccination
- *conflict management* —
 - reduce internal city land management and neighbors' conflicts with prairie dogs
 - build barriers to reduce conflicts
 - increase relocation of prairie dogs by modifying criteria that prevent prairie dogs from being relocated into degraded vegetation communities.
 - create more public awareness around prairie dogs and associated species
 - model community collaboration on city engagement spectrum
- *funding-*
 - need more resources and staff capacity for prairie dog management
 - create conservation fund (through administrative fees paid by developers and donations by philanthropists)
 - increase city funding/budget for managing prairie dogs

The PDWG did not prioritize or assess the relative importance of their Phase 2 recommendations because they felt the recommendations worked best as a collective package of actions. The PDWG included with their recommendations overarching thoughts on how to

implement their recommendations. These include:

- The package of recommendations works best together;
- Implementation is key;
- There is a proposed 4-year timeframe starting in 2018 with some items ongoing;
- There are implications for existing plans and policies; and
- Changes should come quickly.

The recommendations from Phase 2 of the working group need to be carefully considered for potential implications to budget, staffing resources, work plans, other city priorities, grassland management objectives and planned improvements that involve prairie dog management strategies.

A preliminary staff analysis of the task-oriented outcomes from the Phase 2 recommendations is found in **Attachment B**. This initial staff analysis includes:

- A summary of the recommendations and analysis
- Estimated scope impacts to staff, the public, boards and council;
- Preliminary information on economic, ecological and social impacts and assessments; and
- Estimated start dates, durations and department leads should the recommended package from the PDWG be adopted and fully funded over the next several years.

The analysis table in **Attachment B** also demonstrates how the ecological, social and economic goals are inter-related through a “Related Topics” column.

Staff have also completed a preliminary grouping of recommendations into four categories:

1. Actions that are consistent with current city plans and policy and do not require additional funding or staff capacity
2. Actions that are consistent with current city plans and policy but will require additional funding or staff capacity (2a is the category for short-term, and 2b for long-term)
3. Actions that are not consistent with current city plans and policy, or may have trade-offs with other city priorities and can be accomplished without additional funding or staff capacity
4. Actions that are not consistent with current city plans and policy or may have trade-offs with other city priorities but will require additional funding or staff capacity.

The preliminary grouping of recommendations into these four categories can be found in **Attachment D**.

Items that have been grouped within category 1 will be included in work planning for 2019 or 2020. Items in category 2a will be evaluated for feasibility in 2020 or 2021 and will appear in budget requests for those years. Items in category 2b, or those from 2a that could not be accomplished by 2021 will be included in future years funding requests and work planning.

For items appearing in Category 3 and 4, as would be the case with taking on any new management and policy recommendations, potential implementation obstacles, management trade-offs, and policy conflicts are important to thoroughly assess. Some of the initial implementation issues that may need further assessment by staff to understand the implications of potential policy shifts include the following:

- Shift to further focus on maintaining and increasing prairie dog dominated ecosystems,

potentially at the expense of other grassland communities, soil health and ecosystems that do not thrive with prairie dogs

- Secondary impacts of plague management (e.g. insecticide use in high quality grasslands) to arthropods and other species (e.g. rare butterflies/skippers, ground nesting native bees, burrowing owls, etc.)
- Defining black footed ferret reintroduction as an objective may require additional pesticide use or shifts in management of city land that may be more detrimental than the benefit of ferrets
- Time and funding required to fully implement recommendations will further focus substantial resources on this effort and shift resources away from important work that city staff do to maintain and enhance other aspects of the city's natural ecosystems, park assets and the infrastructure necessary to support local agricultural operations.
- Fragmentation of landscape weed infestation and impediments to other wildlife movement resulting from extensive barrier fence installation
- Disturbance to intact grassland communities from increasing relocations and installation of required (from Phase I) structures (often artificial burrows)
- Barriers are a deterrent not a preventative, so are not 100% effective. Therefore, prairie dogs may continue to occupy sites that currently cause conflict with neighboring landowners or city owned agricultural lands. (High investment and high expectation, with potential limits in effectiveness and therefore disappointment)
- The ability to implement without adding processes that are too restrictive internally and externally such as increasing the budget and length of time for projects or limiting a department's ability to manage lands (such as park development)
- While these and similar considerations are a concern, there may also be significant and substantial positive benefits from the potential policy shifts, and these can also be evaluated with further analysis and public process.

NEXT STEPS AND QUESTION FOR CITY COUNCIL

The city manager has reviewed the Phase 2 recommendations and has asked staff to return to City Council with a written report on their further assessment and analysis for a phased implementation that considers the fiscal, staffing, timing and other resource trade-offs that are necessary for best supporting the PDWG recommendations. Staff is expected to return to council with this report in late Spring 2019.

Question for City Council:

- Does council have feedback on important considerations or information to include in the next step: additional analysis and recommendations on trade-offs, proposed processes and phasing for implementation of Phase 2 Recommendations?

ATTACHMENTS:

- Attachment A: Phase 2 Report and Cover Letter
- Attachment B: PDWG Phase 2: Staff Summary of Recommendations & Initial Analysis Table
- Attachment C: PDWG Phase 2: Boards Responses – Detailed
- Attachment D: Initial groupings of Recommendations into Categories for Analysis and Implementation
- Attachment E: Prairie Dog Colony Map

**Prairie Dog Working Group:
Phase 2 Cover Page
July 2018**

PDWG members encourage the City Manager and City Council members to consider the following factors when reviewing the attached recommendations:

- **Implementation is key.** The PDWG members feel strongly that the goals, objectives, strategies, and milestones outlined in the final package be implemented to help achieve the stated three goals.
- **Additional capacity may be needed.** The PDWG understands that such impactful implementation in some areas will most likely require additional resources including budget allocations, staff time and work plan capacity; any funding for this additional capacity is critical to accomplishing the goals and objectives. The economic goal includes an objective that presents some potential sources of funding for these additional needs.
- **This is a package of recommendations that work best together.** The PDWG recognizes that some of the objectives, strategies, and milestones in one goal are dependent upon the completion and concurrent implementation of other objectives, strategies, and milestones detailed in another goal. For this reason, the PDWG encourages the City Manager and City Council to look at the ecological, social, and economic goals as a complete package, rather than as a list of individual ideas. The group appreciates that some items may be easier to accomplish than others, but that those items may not necessarily be the most urgent. The PDWG believes that all the items should be implemented to reach the stated goals. Because the challenges related to prairie dog management on City lands have ecological, social, and economic components, the group views each recommendation for each goal as integral to a comprehensive and effective program.
- **There are implications for existing plans and policies, and changes should come quickly.** The PDWG understands that this suite of recommendations has substantial implications for existing plans and policies and feels strongly that needed changes be identified and made quickly. The group did not spend time itemizing the specific changes that are needed to all the existing documents related to prairie dog management but recommends that recommended changes be implemented through action by the City Manager and/or City Council or through amendments to existing plans and policies. The group recognizes that not everything they have recommended can be implemented simultaneously and recommends the use of a phased implementation approach with the City goal of implementation of all recommendations.
- **The PDWG is interested in learning about the implementation progress towards the stated goals on an ongoing basis.** The PDWG recommends that, no more frequently than twice a year but no less frequently than once year, staff should invite members of the PDWG and the community to learn about the implementation progress, ensuring the opportunity for meaningful participation from members of the PDWG about the updates.
- **The goals and objectives reflect PDWG consideration of public comments.** Since the PDWG was convened, there have been ten minutes allotted at the

beginning of each meeting to hear both written and verbal public comments. The content of these comments has varied widely. Some community members advocated for prairie dog conservation, the creation of a large block of prairie dog habitat, and an effective plague management strategy. Other community members spoke about the damage that prairie dogs who have migrated from City of Boulder lands have caused on their properties, specifically the impact that prairie dog occupation has had on irrigated agriculture properties. Some community members articulated the need for cross-boundary and cross-agency solutions/collaboration. Others expressed concern about the soil erosion that has occurred in Boulder due to prairie dog occupation.

- **The PDWG discussed the use of Delta Dust and whether/how it should be applied on OSMP lands.** Some in the group feel strongly that use of Delta Dust in burrows at both take sites (where they come from) and receiving sites (where they go) is critical to the survival of prairie dogs being relocated. Others expressed concerns about the potential impacts of Delta Dust on non-target species. Due to the variety of perspectives on this issue, the PDWG did not come to an agreement about use of Delta Dust on *receiving sites* and recommended that staff develop a formal plague management plan by the end of 2019. The City already anticipates using Delta Dust on the *take sites*, and in 2018, relocated prairie dogs are being treated with vaccine before and after relocation which may protect prairie dogs from sylvatic plague.
- **One member disagreed with five specific components of the package of recommendations.** That member's specific points of view are detailed in the Phase 2 Final Report.

The PDWG members greatly appreciate the time and consideration the City Manager and Council have invested in them to engage in this discussion and to review these thoughtfully established and carefully written recommendations. Additional supporting documents are available on the PDWG webpage: <https://bouldercolorado.gov/osmp/prairie-dog-working-group>.

Humbly and respectfully,

Members of the PDWG: Dan Brandemuehl, Kristin Cannon, Pat Comer, Aaron Cook, Elle Cushman, Jeff Edson, Deborah Jones, Keri Konold, Amber Largent, Amy Masching, Joy Master, Val Matheson, Andy Pelster, Carse Pustmueller, Eric Sims, Jr., Lindsey Sterling Krank, Heather Swanson, and John Vickery

Prairie Dog Working Group Final Report Phase 2 June 2018

Formation and Objectives of the Prairie Dog Working Group

This document is the third of three process summary reports outlining the efforts of the Prairie Dog Working Group (PDWG). The May 2017 and January 2018 reports explain the formation and process of the PDWG and the final recommendations from Phase 1. To summarize, the PDWG was established after City Council provided direction to staff to do so at their meeting on August 16, 2016. Council's recommendation came out of conflicts and issues that were raised during the effort to relocate the Armory colony. At this meeting, Council suggested that the City Manager appoint an advisory working group of resident and non-resident members who demonstrate City values and who can recommend, based on a broad understanding of the full range of community perspectives, adaptable management practices that be implemented under existing policy as well as possible longer-term policy changes. The City Manager's Office identified 3 priorities for the Working Group to address:

1. Identify relocation methodologies under existing plans and policies that can be used in 2017.
2. Identify relocation methodologies under existing plans and policies that can be used in 2018 and beyond.
3. Identify longer-term ideas that might need further exploration or require changes to City plans and policies.

Taking this direction from Council and the City Manager, Open Space and Mountain Parks (OSMP) staff worked with staff from Planning, Housing, and Sustainability, and Parks and Recreation to develop and distribute an application for membership on the Working Group. More than 30 people submitted applications; most but not all were residents of Boulder or Boulder County. OSMP staff and the facilitator evaluated each application and selected 12 applicants to be members of the Working Group. Applicants were selected based on their knowledge of the issues at hand (prairie dogs, ecology, grasslands, etc.); demonstrated ability to be respectful, innovative, and collaborative; and ability to attend all six scheduled meetings. In addition to these 12 community members, the Working Group also included one representative from Colorado Parks and Wildlife, as well as five members of City staff.

The May 2017 and January 2018 reports (both attached) provide details about the process and recommendations resulting from Phase 1, which accomplished the first priority of identifying relocation methodologies under existing plans and policies that can be used in 2017. Below is a summary of the PDWG's process for Phase 2, which accomplished the second and third priorities identified by City Council.

Phase 2 Working Group Process

During Phase 2 of work, the PDWG reached agreement on guiding principles and values for future prairie dog management goals, agreed on overall prairie dog management goals for ecological, social, and economic components of prairie dog management, and explored changes to plans and policies that may be needed to reach the agreed-upon goals. Phase 2 consisted of 6 meetings (December 2017 – June 2018), with necessary substantial subgroup work outside the full PDWG.

PDWG members began Phase 2 by brainstorming, discussing, and agreeing on values and guiding principles that would frame their discussion of the prairie dog management goals and objectives. Below are the guiding principles agreed upon by the group:

1. Secure greater ecological sustainability of prairie dog habitat and viable populations so prairie dogs can provide their keystone function.
2. Implement creative and innovative solutions to achieve greater prairie dog conservation.
3. Protect, improve and restore native biological diversity and consider all native ecosystems that may be impacted by prairie dogs.
4. Use a system wide approach to land use allocation that includes multiple measurable goals and objectives that allow different priorities and policies to occur on different land parcels.
5. Increase public awareness and acceptance of the role of prairie dogs in native ecosystems and the complexity of their management.
6. Use humane treatment and minimize lethal control of prairie dogs.
7. Apply science-based decision making, utilizing documented knowledge, field experience and adaptive techniques and gathering information from a multitude of sources.
8. Be transparent, fair and consistent in group deliberations and in any final recommendations.
9. Seek feasible solutions, while acknowledging the social, economic and ecological components of sustainability.
10. Abide by existing federal and state laws and the city charter, but as needed, make practical proposals for changes.
11. Think big and outside the box of existing policies and procedures.

PDWG members then proposed and discussed new management goals. The group agreed to organize their final recommendations into ecological, social, and economic goals with associated objectives, strategies, and milestones. Over the course of 5 full PDWG meetings and many sub- group meetings, the group discussed the issues and tried to get to recommendations that all members could support.

The full PDWG provided guidance and suggestions for refinement, and sub-groups specific to each goal (open to any PDWG member) met outside of scheduled meeting time to revise the goals according to the group's guidance. Each goal and its associated objectives, strategies, and milestones are intended to be "SMART" (specific, measurable, attainable, realistic, and timely).

The document below reflects strong collaborative effort by all members of the PDWG.

This report also includes the following: List of PDWG members; Phase 1 final report; May 2017 Report of Progress; Application for membership on the PDWG; Summaries of all Phase 2 PDWG meetings

Overall Prairie Dog Conservation Goal: Sustainably conserve prairie dogs in Boulder Region by implementing the following ecological, social, and economic goals, objectives, and strategies.

Goal 1 - Ecological: Update and implement the City's prairie dog management plans to ensure the creation and maintenance of one or more large prairie dog-occupied ecosystem areas that will secure viable plague-resistant prairie dog populations and high-integrity grassland habitat.

Objective 1: In collaboration with county, federal, and private partners, secure **one or more interconnected networks of high-integrity grasslands** containing viable populations of plague-resistant prairie dog colonies naturally limited by native predators.

- **Strategy 1:** Collaborate with county, federal, and private partners to prioritize acquisitions, easements, and management agreements to **consolidate prairie dog grassland parcels**, and as feasible, *secure connectivity and linkages* among colonies.
 - **Milestone 1:** By 2019, pilot application of a habitat quantification tool with parcels being proposed for new acquisitions or easements related to prairie dog conservation.
- **Strategy 2: Amend prairie dog-related components of the Grassland Management Plan by considering the entire grassland-dominated landscape in the Boulder Region** and implement the updated plan with an aim to increase the number of receiving sites for prairie dogs.
 - **Milestone 1:** By 2019, work with local experts to review modeling method and inputs to provide an *updated prairie dog habitat suitability model* and GMAP *target viability criteria* to map current conditions for the mixed grass prairie mosaic and prairie dog colonies across the relevant grassland landscape to serve as guidance for plan updates.
 - **Milestone 2:** By 2019, based on milestone 1, work with local experts to *update and implement GMAP goals* relevant to prairie dogs along with receiving site location criteria (I-1) to fully utilize existing grassland receiving sites and to allow additional qualified grassland receiving sites.
- **Strategy 3:** Manage prairie dog colonies for plague resistance.
 - **Milestone 1:** Prior to implementing the plan under Milestone 2, all translocated prairie dogs will receive plague abatement.
 - **Milestone 2:** By 2019, complete and implement a **plague-management and monitoring plan** using proven-effective state-of-the-art plague management techniques to secure sustainable and plague-resistant prairie dog colonies.
 - **Milestone 3:** By 2019, work with Integrated Pest Management to ensure implementation of an acceptable policy that may limit the use of insecticides

but allows such use on large prairie dog ecosystem colonies as necessary.

- **Strategy 4:** Complete and implement a **plan for the reintroduction of the black-footed ferret into large prairie dog occupied areas** as a key native predator.
 - **Milestone 1:** By 2020, work with adjacent landowners, including the County of Boulder and adjacent counties, US Fish & Wildlife Service, other federal partners, and private landowners in the Grassland Preserves to create and implement a black-footed ferret recovery plan for the southern Boulder Region.
- **Strategy 5:** Apply the mitigation hierarchy (avoid, minimize, mitigate) regarding **adverse impacts to at-risk species** known to be vulnerable to habitat-altering land management practices associated with prairie dog conservation.
 - **Milestone 1:** Based on identified prairie dog occupied and relocation sites, updated inventory and monitoring data for at-risk species associated with the Mixed grass prairie mosaic and xeric tallgrass prairie.
 - **Milestone 2:** Document relative compatibilities of relevant land use and management options applicable to prairie dog relocation sites and occupied colonies (e.g., use of insecticides relative to rare insect species, density of prairie dogs relative to rare plant species).

Objective 2: *Secure and implement a suite of **non-lethal methods for managing prairie dog populations** in lands where their proximity to urban and agricultural land use, and other natural values, are in conflict. (The PDWG recognizes the similarities between this objective and the social goal and would like to emphasize that implementation of this objective should not detract from implementation of other ecological objectives.)*

- **Strategy 1:** Collaborate with county, federal, and private partners to implement non-lethal prairie dog relocations.
 - **Milestone 1:** In the near term, due to high occupancy of conflict areas, there is an increase in the number of successful translocations across the Boulder region.
- **Strategy 2:** Invest in creating buffer zones on key prairie dog colonies in conflict.
 - **Milestone 1:** Pilot by 2021 one property that has prairie dog colonies with managed buffer zones.
- **Strategy 3:** Collaborate with the research community to advance testing of new and emerging tools for managing prairie dog population (such as oral contraception agents).
 - **Milestone 1:** Recruit researchers from USGS, CSU, etc. to secure funding and implement a research plan.

Objective 3: *Amend as necessary and keep all existing **prairie dog plans and policies** (including but not limited to the Admin Rule, IPM, UWMP, GMP, Wildlife Protection Ordinance) **current as needed** to ensure they are mutually compatible with Goal 1 and its objectives and strategies.*

- **Strategy 1:** Review interdependency among policies and identify needed changes; establish a priority amongst current policies; and establish and implement a timeline for plans and policies that need to be updated.
 - **Milestone 1:** By 2020 complete policy review and initiate processes for necessary amendments.

Goal 2 - Social Coexistence: Support proactive and innovative non-lethal strategies to minimize conflicts associated with prairie dogs and competing land uses. Increase public awareness of the prairie dog's role in Boulder's Grassland and Urban ecosystems through community outreach.

Objective 1: Identify and map areas of conflict that can be quantified and tracked annually. Note: Areas of conflict are not to be defined only by these categories and that the map should expand on other new areas of conflict as they arise and are identified.

- Conflict categories such as:
 - **Agriculture (leased/private):** Encroachment of prairie dogs onto existing agricultural lands.
 - **Public and Private adjacent land owners:** Encroachment of prairie dogs onto adjoining properties.
 - **Land developers:** Within City of Boulder, city process for prairie dog removal (time delays/costs).
 - **Communication and protocols:** Clarity and inclusiveness with community.
 - **Relocation demands exceed receiving sites:** Delays in timely relocation of prairie dogs due to lack of receiving sites.

➤ **Milestone 1:** By 2019 identify and map conflict areas annually and make it easily available to the public.

Objective 2: Identify and implement innovative proactive non-lethal strategies to address conflicts in each defined category (Some categories the group has identified):

- **Agriculture (leased/private):** Evaluate/Provide barriers or other exclusion/mitigation methods.
- **Private and adjacent land owners:**
 - Evaluate/Provide barriers on City of Boulder land adjoining high-conflict areas.
 - Add additional criteria to definition of future PCAs in the Grassland Management Plan to consider the level of conflict with adjoining properties
- **Land Developers:** Follow newly proposed protocol for relocations.
- **Communication & Protocols:**
 - Have clear and consistent communication among all agencies.
 - Review protocols and update as necessary.
- **Relocation demands exceed Receiving site:**
 - Explore additional opportunities for relocations in Southern Grasslands by evaluating current relocation criteria, in conjunction with Goal 1 efforts, to alleviate conflicts in other areas.
 - Work towards the reintroduction of the black-footed ferret (as stated in goal 1) by using connecting parcels from the public/private sector to achieve this goal as a non-lethal strategy in PD management.
 - Collaborate with community partners (ex: Prairie Dog Coalition or Defenders of Wildlife) to implement conflict prevention strategy

➤ **Milestone 1:** By end of 2019, initiate a pilot program to implement a conflict prevention strategy in at least two adjoining conflict locations (properties that are next to or connected to each other).

➤ **Milestone 2:** By 2022 proactively address 10% of defined conflict areas annually.

Objective 3: Review mechanisms for communication and update as required to ensure prairie dog management conflicts and concerns are addressed in an effective and timely manner.

- **Strategy 1:** Establish who to call when conflicts with illegal activity arise and when animal control cannot be reached.

Objective 4: Develop a campaign to engage Boulder area residents to expand their appreciation of the role of prairie dogs in native grasslands in Boulder County and the complex nature of their management.

- **Strategy 1:**
 - Create surveys to gauge public awareness and concerns based on historical efforts.
 - Campaign for more public awareness, engage the public through technology, Boulder newsletters and community outreach programs. Presentations at local libraries, schools, Boy/Girl Scout troops and 4-H groups are ways to reach out to the community.
 - Provide Boulder residents opportunities to contribute to PD conservation through assistance with environmental monitoring and outreach programs.
 - Better educate public about plague and update informational sites.

Objective 5: Develop annual assessment feedback mechanisms.

- **Strategy 1:** Reevaluation of adaptive management practices.

Objective 6: Secure modifications to state regulations to facilitate the transfer of prairie dogs across county lines.

- **Strategy 1:** Lobby neighboring county commissioners and state legislators to advocate for these adjustments, providing protocols and language for legislation.

Goal 3 - Economic: Implement sustainable processes that provide resources and capacity to secure prairie dog conservation associated with the City of Boulder.

Objective 1: Apply principles of **Net Positive Impact**¹ (avoid, minimize, mitigate, seek net positive gain) on prairie dog conservation activities, including relocation projects, associated with the City of Boulder.

- **Strategy 1:** Utilize a habitat quantification tool to score sites (removal and receiving), to help offset on-site impact of development and to determine net-positive impact.
 - **Milestone 1:** By 2020, pilot the use of the adapted habitat quantification tool developed to determine Net Positive Impact in one or more scenarios within the city.

Objective 2: Establish a **grassland conservation fund** that augments operating budgets for meeting prairie dog management and is used for expenditures including but not limited to acquisition (fee title and/or easements), relocations, and stewardship.

- **Strategy 1:** Establish inflow and outflows of monies into and out of the grassland conservation fund.
 - **Milestone 1:** By 2019, create and implement a required fee structure for private landowners relocating prairie dogs to city land.
 - **Milestone 2:** Work with Boulder's philanthropic community (e.g., *Community Foundation of Boulder County*²) to identify opportunities to provide sustainable support to Prairie Dog conservation in the Boulder region.
 - **Milestone 3:** By 2020, work with conservation entities to identify conservation

practices, programs, and funding mechanisms that could support grassland restoration and the mitigation of conflicts on agricultural land. (Example entities include Natural Resource Conservation Service and Great Outdoors Colorado. An example of funding which could be explored includes conservation leases.)

- **Strategy 2:** No less frequently than once, but no more frequently than twice a year, there will be a publicly-noticed meeting that includes invitations to members of the PDWG with an opportunity for the members to discuss progress on the ecological, social, and economic goals and strategies and contribute to the adaptive management process.
 - **Milestone 1:** By December 2019 staff will provide an annual report on the inflows and outflows.
 - **Milestone 2:** By 2019 staff will provide their respective department board or commission with annual updates on the status of the goals and objectives as well as a review of, and advisement on, inflows and outflows of the grassland's conservation fund.

Objective 3: *Support sufficient budgets for city staff to fulfill their roles in achieving the approved PDWG goals, objectives, and strategies as well as recommended changes to plans, policies and practices.*

- **Strategy 1:** Revisit and amend department budget allocations (including a line item for prairie dog management), and annual work plan objectives for staff to ensure they are compatible with, and can accomplish, the PDWG goals and objectives.
 - **Milestone 1:** Recommend departmental operating budget line items for prairie dog management in the 2020 budget.
 - **Milestone 2:** Annually ensure each relevant department has sufficient budget and staffing and/or consultants to meet the prairie dog management goals and objectives.
- **Strategy 2:** Maximize in-kind contributions to assist with addressing prairie dog management.
 - **Milestone 1:** By 2019, create a pilot project with at least two outside organizations to help fulfill the PDWG goals and objectives by maximizing in-kind contributions (i.e., donation of nest boxes or fence/barrier materials or installation).
 - **Milestone 2:** Track in-kind contributions on an annual basis and make data available for other funding opportunities.

¹ http://cmsdata.iucn.org/downloads/npi_conservation_01_2016_1.pdf

² <http://www.commfund.org/blog/tags/animals-environment>

Ultimately, one member of the PDWG stated that she was unable to agree with five components of the recommendation package. These areas of disagreement are detailed below.

- *Goal 1, Objective 1, Strategy 1, Milestone 1.* In the pilot development and application of an updated prairie dog habitat quantification tool, stored carbon and soil health should be included as data inputs.
- *Goal 1, Objective 1, Strategy 4.* The Boulder region does not provide suitable habitat for the re-introduction of the black footed ferret; Rachel Caldwell's paper concludes that: "although two Grassland Preserves on open space land may be large enough to support a population of black-footed ferrets, neither preserve can certainly support prairie dog colonies large enough to maintain a black-footed ferret population. With insufficient available habitat that can be permanently occupied, black-footed ferrets cannot establish in the area."¹
- *Goal 1, Objective 1, Strategy 4, milestone 1.* Given the circumstances at Rocky Flats, there should not be a recommendation to create a management plan for a large, prairie dog-occupied ecosystem within the Southern Grasslands.
- *Goal 1, Objective 2, Strategy 1.* The use of Delta Dust may be required to carry out this recommendation. Though this may present suitable relocation conditions for some land uses, it would not be suitable for use in a relocation situation where surface water is present, as this product is extremely toxic to fish (i.e.; irrigated pasture or crops.)
- *Goal 3, Objective 2, Milestone 3.* Exploring conservation funding through any lease mechanism on Open Space and Mountain Parks properties could potentially drive leasing rates out of range for the current legacy farmers and ranchers who manage these agricultural properties.

ATTACHMENTS

- **Attachment 1: List of all Prairie Dog Working Group Members**
- **Attachment 2: Phase 1 Final Report (January 2018)**
- **Attachment 3: Prairie Dog Working Group Application for Membership**

¹ "ECOLOGICAL STATUS OF BLACK-TAILED PRAIRIE DOGS ON BOULDER, COLO DO OPEN SPACE AND MOUNTAIN PARKS LAND: AN ANALYSIS OF SELECT INDICATORS" (2015). Graduate Student Theses, Dissertations, & Professional Papers. 4462.
<https://scholarworks.umn.edu/etd/4462>

Attachment 1:

List of Prairie Dog Working Group Members

The Prairie Dog Working Group consists of the following people:

Dan Brandemuehl
Kristin Cannon (Colorado Parks and Wildlife)
Patrick Comer
Aaron Cook Elle
Cushman Jeff
Edson Deborah
Jones
Keri Konold (staff, OSMP)
Lindsay Sterling Krank
Amber Largent
Amy Masching
Joy Master (staff, Parks and Recreation)
Valerie Matheson (staff, Planning and Development Services)
Andy Pelster (staff, OSMP)
Carse Pustmueller
Eric Sims, Jr.
Heather Swanson (staff, OSMP)
John Vickery

Attachment 2: Phase 1 Final Report

Prairie Dog Working Group Final Report on Phase 1 January 2018

Formation and Objectives of the Prairie Dog Working Group

This document provides information about the Phase 1 process of the PDWG. The May 2017 Report on Process to Date and 2017 Recommendations provides a deeper explanation of the formation and process of the Prairie Dog Working Group (PDWG). That report is included in this report as Attachment 2. To summarize, the PDWG was established after City Council provided direction to staff to do so in August 2016. The Prairie Dog Working Group is comprised of 12 resident and non-resident members who demonstrate City values and who can recommend, based on a broad understanding of the full range of community perspectives, practices that can be implemented under existing policy as well as possible longer-term policy changes. The City Manager's Office identified 3 priorities for the Working Group to address:

1. Identify relocation methodologies under existing plans and policies that can be used in 2017.
2. Identify relocation methodologies under existing plans and policies that can be used in 2018 and beyond.
3. Identify longer-term ideas that might need further exploration or require changes to City plans and policies.

Phase 1 Process

The PDWG met six times between February and May to develop, discuss, and agree to recommendations that accomplished the first priority of identifying relocation methodologies under existing plans and policies that can be used in 2017. The Working Group recommended 46 distinct ideas that fell into the following categories: immediate actions, 2017 relocation pilot projects, relocation pilot programs to implement starting in 2018 or future years, policy changes, research and study projects, process and guideline suggestions, and changes to current plans.

PDWG members evaluated 29 of the 46 ideas they believed could be implemented in 2017 under current plans and policies, using criteria identified by the PDWG and rating each proposed recommendation on a scale of one to three for each criterion. They then discussed the five highest-ranked ideas that resulted in a consensus on six recommendations for action in 2017. They are:

- **Recommendation #1:** Create guidelines and criteria for prioritizing relocation/take sites on both public and private lands.
- **Recommendation #2:** Create guidelines and criteria for prioritizing receiving sites on public lands within existing plans and develop recommendations for making receiving sites more feasible; develop recommendations for increasing landowner and stakeholder acceptance of the use of receiving sites.
- **Recommendation #3:** On approved receiving sites, ensure that the number of prairie dogs to be relocated have adequate accommodations, utilizing existing or artificial burrows (including nest boxes) and taking into consideration existing native vegetation.
- **Recommendation #4:** Define successful prairie dog relocation; this includes continual evaluation of new or different relocation methods, ongoing opportunities for stakeholder engagement, and short-term, mid-term and long-term evaluation of success.
- **Recommendation #5:** Collaboratively prepare, with Colorado Parks and Wildlife, a research proposal for US Department of Agriculture approval for the use of the sylvatic plague vaccine (SPV) on the southern grasslands in 2018 and beyond.

Recommendation #6: A subgroup comprised of four Working Group members (Dan Brandemuehl, Pat Comer, Elle Cushman, and Lindsey Sterling Krank) should work with staff to flesh out details of the recommended items.

Each of these recommendations was assigned to a PDWG Boulder City staff member to develop further. During the summer of 2017, staff created draft documents of the recommendations, which were then presented to a subgroup of PDWG members in August who made suggestions for revision. The revised built-out recommendations were discussed by the full PDWG during two meetings (one in September and one in October). The full group agreed that a subgroup of volunteer PDWG members could finalize the recommendations. The subgroup met on Friday, December 15 and offered their final suggestions for revision.

PDWG members' discussion of recommendation #1 generally focused on the potential scenario of multiple sites with equal imminence. They agreed that the City Manager would have the ultimate decision-making authority within the context of the priority guidelines. There was robust discussion of recommendation #2, especially the evaluation matrix in the supplemental material, which PDWG members emphasized should be used to prioritize available sites, not restrict or decrease site availability. Discussion of recommendation #3 generally focused on the risks and benefits associated with nest box installation within native vegetation areas. During the discussion of recommendation #4, PDWG members wrestled with the challenge of defining criteria for successful relocation. When the PDWG discussed the recommendation #5, which is about the potential for a collaboratively prepared research proposal to use sylvatic plague vaccine (SPV), they emphasized their preference for a longer-term, multi-year study, pending the approval of Colorado Parks and Wildlife.

Next Steps

The PDWG is entering Phase Two during which they will identify relocation methodologies under existing plans and policies that can be used in 2018 and beyond and identify longer-term ideas that might need further exploration or require changes to City plans and policies.

The PDWG will meet to agree on an overall prairie dog management goal(s) for the City of Boulder that reflect agreed upon guiding principles to identify changes to plans and policies needed to help achieve the management goal(s), and to recommend goal(s)-associated changes to plans and policies to the City Manager. These objectives will be reached over six meetings (December 2017 – May 2018), with subgroup work outside the full PDWG when necessary. The meeting dates are listed below; all meetings will take place at the OSMP Annex at 7315 Red Deer Drive from 5 pm to 9 pm:

- March 5
- April 2
- May 7

To complete the first task, PDWG members will:

- Brainstorm, discuss, and agree on values or guiding principles that will frame discussions of what the overall prairie dog management goal(s) should be
- Review existing goal statements in the city's plans/policies
- Propose and discuss new management goals and agree to one or more overarching goals. Explore and agree to a package of needed changes to plans and policies that reflect agreed upon goal(s) to recommend to the City Manager.

Recommendation 1: Create guidelines and criteria for prioritizing relocation/take sites on both public and private land to City land.

Proposal

Priorities for relocation from public and private lands to City property are as follows:

- First priority is given to public or private lands upon which construction and/or development is imminent; prairie dogs are causing immediate damage to a public facility or utility infrastructure; there is an immediate threat to public safety; or prairie dogs have re-colonized an area where they had been lawfully removed.
 - o Imminent construction/development is defined in this context as demonstration to a high degree of probability that the land will be developed within 15 months.
- Second priority is given to lands owned by city departments upon which development plans are approved (i.e. Valmont Park) or there are unmanageable conflicts with the existing or planned land use (including areas identified in the Urban Wildlife Management Plan and Grassland Ecosystem Management Plan), or relocation has been directed by the city manager. This includes but is not limited to conflicts with irrigated agricultural use. Examples of development plans include development identified in City Master plans, for which a timing/phasing plan has been developed for construction, or the property has an approved Site Review or Use Review plan.
- Third priority is given to city owned lands that are designated for removal of prairie dogs and adjacent neighbor conflicts with prairie dogs are ongoing, resulting in sustained lethal control of prairie dogs on the private property portions of a colony.
- Fourth priority is given to lands where the landowner or city department's desired future use of the land conflicts with the presence of prairie dogs.
 - Fifth priority is given to lands not within the city limits or owned by the City of Boulder

The city manager has discretion to make determinations of prioritization within the context of these guidelines.

Recommendation #2: Create guidelines and criteria for prioritizing receiving sites on public lands within existing plans and develop recommendations for making receiving sites more feasible; develop recommendations for increasing landowner and stakeholder acceptance of the use of receiving sites.

Prioritization of receiving sites on OSMP managed land:

Following evaluation of colonies in Prairie Dog Conservation Areas (PCAs) and Grassland Preserves with Grassland Plan relocation criteria it may be necessary to prioritize efforts if more than one colony is available in any given year. As a result, criteria to prioritize **(not to decide if a colony will be pursued for relocation, just which would be pursued first)** between colonies have been developed and are included in the supplemental information. Criteria include scale of potential challenges associated with private or other adjacent property for which there may be objections to a relocation, or a risk for impacts of prairie dogs to neighboring lands; vegetation and habitat suitability; access and infrastructure for the relocation; and any other constraints to relocations or timing. These criteria can help staff determine in which order they should pursue permitting on available sites. Lower scoring properties are less suitable and face higher challenges to obtaining a relocation permit and successfully implementing a relocation and thus would be ranked last in priority for pursuing a relocation permit as compared to other sites with fewer challenges.

Prioritization of receiving sites on other city managed land:

Areas on non-OSMP City properties that are identified for long-term protection (primarily Parks and Recreation properties) will be considered for receiving sites on a case by case basis. These sites will provide generally for receiving relocated prairie dogs as described for PCAs, and generally following guidance contained within the administrative rule for prairie dog relocation, unless sensitive species are identified in the area, or other land use conflicts have arisen. Future evaluation of non-OSMP properties may lead to specific criteria being developed for these sites.

Mitigation of conflicts with adjacent landowners:

Staff will develop and implement strategies for engagement with neighbors of PCAs (or Grassland Preserve colonies near neighbors) ahead of making decisions regarding pursuing relocation permits for a site.

Strategies could include:

- Planned consultative stakeholder engagement (at a minimum- potentially higher-level engagement)
- consultative stakeholder engagement means that staff will inform, listen to and acknowledge the concerns of related publics and will relay how the publics' input influenced decisions
- Stakeholders may be encouraged to provide suggestions on management ideas
- Proactive partnerships and community level engagement to foster understanding and support for prairie dogs and prairie dog ecosystems within the community
- Resources (staffing, funding, contractors, etc.) should be adequately planned and allocated by city departments to be able to undertake the engagement process with sufficient time to be completed before relocation decisions need to be made.

After community engagement, decisions related to whether to pursue relocation to a site will be based on assessment of neighbor support, likelihood of success and feasibility of agreed upon mitigation methods, relocation need and capacity to pursue a relocation to the site with associated mitigation

Thorough engagement with stakeholders and neighbors should be initiated well in advance of the timeframe of decision to move forward with relocation to a site. As a result, it is possible that public engagement could lengthen the timeframe between identification of a site as a possible receiving location, and application to the state for a relocation permit. However, this is likely to increase the long-term success of relocation and meeting the city's goals around sustainable prairie dog conservation and management.

Mitigation:

The mitigation required at each site will be unique depending on -

- Adjacent landowner viewpoints
- Topography
- Vegetation
- Layout of receiving site in relation to adjacent properties
- Size of relocation site
- History of prairie dog occupation patterns
- History of coexistence or conflict between adjacent landowners and prairie dogs

- Other site-specific characteristics

Specific mitigation methods to be used on a site will be decided along with adjacent landowners through consultative stakeholder engagement. However, options that may be considered include:

- Barriers
 - Vinyl, metal, wooden
 - Straw
 - Vegetative
 - Chicken wire
- Reducing size of relocation (fewer animals than site could ecologically accommodate)
- Marking prairie dogs and retrieving from private property if relocated prairie dogs move off the relocation site
- Plans with neighboring landowners to discourage prairie dog movement onto their property (landscaping, etc.)
- Including prairie dogs from adjacent private properties in the relocation to provide them relief from prairie dog occupation

Strategies to increase the feasibility of receiving sites in Grassland Preserves:

To decrease time required for unoccupied colonies to meet vegetation criteria, OSMP will work on a site by site basis with tools such as seeding, other restoration, shifts to grazing, etc. to encourage faster vegetation recovery

Recommendation #2 – Supplemental Information

Current practices for prioritizing relocation sites:

Site evaluation OSMP managed land - Occupancy is evaluated in the fall when system wide mapping is completed. Colonies are included for further evaluation if they:

1. Are in a Grassland Preserve and the Grassland Preserve is at less than 10% occupancy
2. They are a Prairie Dog Conservation Area and are at low occupancy (no set threshold, but generally less than 50% occupied)

These colonies are then further evaluated. For PCAs, informal evaluation of numbers of adjacent neighbors, numbers of complaints received in the past related to prairie dogs, etc. are considered. Sites with fewer neighbors and fewer complaints are prioritized higher than ones for which there are more potential neighbor issues. For Grassland Preserves, initial assessment of vegetation (not quantitative), presence of wildlife closures (burrowing owl, bald eagle, etc.) which might influence timing requirements for relocations, or other issues are considered. For those colonies where the initial vegetation assessment suggests that the colony may pass the vegetation thresholds and other circumstances (access, etc.) suggest that the site might be an appropriate relocation site, measurement of vegetation is undertaken using an established vegetation survey design. Vegetation surveys were designed to capture the full range of variability within a colony and are stratified by vegetation type. Surveys are done in summer (typically late July or early fall, when plant phenology is most appropriate for measurement). If the colony passes the thresholds, it is put on the list as a potential receiving site for the next summer (to allow time for planning, permitting, etc.).

Prioritization of potential receiving sites:

As detailed above, a process of evaluating OSMP sites to see if they meet established criteria from the Grassland Ecosystem Management Plan is already in place. These evaluations provide sufficient data to determine if a site *could* serve as an appropriate receiving site. However, no formal process has existed for Parks and Recreation sites and no process exists to prioritize among potential sites to determine which sites would be used first.

Recommended further evaluation process and criteria to be formally applied to prioritize sites

Following the above evaluations, and once this list is compiled, the below criteria will be used to further prioritize possible relocation sites based on their suitability- including neighbor, stakeholder and community support, and relative ease for permitting and relocation. This score will be used to prioritize which colonies to pursue permits on first, not whether to pursue a permit for a certain site. These are criteria for sites with the highest ecological suitability. These scores will be updated on a rolling basis, as new information is provided.

Criteria for Grassland Preserves:

1. Ecological suitability of colony (based on Grassland Plan Habitat suitability model which considers ecological suitability for meeting prairie dog *and* other grassland community conservation targets)
 - a. 80-100% Good or Very Good = High
 - b. 50-80% Good or Very Good = Medium
 - c. Less than 50% = Low
2. Ease of access (Good = High, Fair = Medium, Poor = Low)
3. Existing infrastructure, either artificial burrows or natural burrows (Extensive = High, Some burrows = Medium, None = Low)
4. Other (rare plant communities, timing constraints due to sensitive wildlife, etc.)
(No issues= High, Few issues = Medium, Many issues = Low)

Criteria for Prairie Dog Conservation Areas and Grassland Preserves (in addition to criteria above)

1. Adjacent neighbors with concerns over relocation or conflict (directly adjacent to the property or colony) (None = High, Few = Medium, Many = Low)
2. Adjacent neighbors that support relocation and/or prairie dog occupancy on the site (Many = High, few = Medium, None = Low)
3. Sufficient vegetation to support prairie dogs (Plenty = High, Marginal = Medium, Poor = Low)

Consistent with the Grassland Ecosystem Management Plan, evaluations will consider areas specifically to enhance prairie dog ecosystem conservation efforts, which will include large blocks of habitat.

Please see attached examples of criteria application at end of this recommendation document.

Site evaluation on non-OSMP managed city land - The primary "other" (non-OSMP) city lands

that have been suitable for prairie dog relocation are managed by Parks and Recreation (Parks) and include the Boulder Reservoir and Area III Planning Reserve (north of Jay Road and U.S. 36). Staff has explored the possibility of any other properties owned by the city that could be suitable for prairie dog relocation and the only other city owned property that was identified as a potential relocation site through this process is a two-acre parcel managed by the Public Works department at Foothills Parkway and Valmont road. This property is identified for Long-term protection in the Urban Wildlife Management plan. All three of these properties were occupied by prairie dogs in 2017.

Until additional evaluations of Parks and Recreation or other city properties can be completed, areas that are identified for long-term protection will be considered for receiving sites on a case by case basis.

Strategies to increase availability of receiving sites in Grassland Preserves:

The two limiting factors to availability of receiving sites in Grassland Preserves is high occupancy levels of colonies, and time required for vegetation to recover, especially after long term occupation.

The Grassland Plan includes criteria that determine which sites can be considered for relocation. One of these criteria is the existence of previous prairie dog occupation. This specific criterion is included for two reasons.

1. Prairie dogs have been allowed to self-select habitat within grassland preserves for at least 20 years. During that time, nearly 11 years was a period of expanding populations. As a result, prairie dogs had the opportunity to select the habitat that best suits their needs. These patterns of occupation are assumed to represent high quality habitat as selected by the prairie dogs as an indicator of good locations for prairie dog colonies to be placed.
2. An attempt to balance the needs of conserving a variety of grassland habitat, including those with prairie dog occupation, as well as those without. By not further expanding locations where prairie dog burrowing and grazing has been present by moving prairie dogs to areas they have not occupied (at least since mapping was begun in 1996), we better meet our needs to fulfill multiple Grassland Plan and OMSP preservation goals, including communities that do not thrive with prairie dog occupation, such as tallgrass prairie and associated species that are species of conservation concern such as very rare grassland skippers and grasshopper sparrows.

As a result, availability of relocation sites is tied directly to occupation levels. During times of low occupation (less than 10% of Grassland Preserve), opportunities exist for relocation. However, at times of high occupation (greater than 10% occupancy of Grassland Preserve), relocation of prairie dogs is inconsistent with the Grassland Plan conservation targets and viability measurements for prairie dog conservation and meeting multiple goals for grassland conservation on a system-wide basis.

To decrease time required for unoccupied colonies to meet vegetation criteria when occupation falls below 10% in Grassland Preserves, OSMP will work on site by site basis to determine what steps can be taken to encourage recovery of the vegetation community to meet relocation criteria as determined in the Grassland Plan. What tools are appropriate will depend on site conditions, including plant communities present, length of prairie dog occupation, slope, soils, etc. Tools that might be used include:

- Seeding
- Changes in cattle grazing intensity or timing
- Other restoration techniques to be determined

Considerations with expanding receiving site availability:

In addition to increasing availability of receiving sites through strategies described above to increase neighbor and stakeholder support or acceptance of relocations, funding and staff capacity increases will also be necessary to increase utilization of available receiving sites. Current staffing levels can support only 1-2 relocations per season (if relocation contractors are used to do the actual relocation) based on the permitting, contracting, coordination and support needed for each project. If additional relocations are possible and desired, additional capacity and funding will be needed. Staff are committed to exploring all feasible options to supplement staff capacity and funding.

Test application of prioritization criteria on a variety of colonies:

Grassland Preserves:

Damyanovich (Grassland Preserve- currently serving as relocation site)

GP criteria:

1. Medium (50-80% good or very good)
2. High (good access)
3. Medium (some natural burrows)
4. High- Medium (no rare plant or other wildlife issues within receiving portion of colony, 1 for colony as whole- xeric tallgrass community)

PCA + GP criteria:

1. High (no neighbors with concerns)
2. Low (no neighbors that support)
3. High (plenty of vegetation)

Overall = High (4)/Medium (2)

Waneka (Grassland Preserve currently serving as relocation site)

GP criteria:

1. Medium (50-80% good or very good)
 2. High (good access)
 3. High (existing artificial burrows)
 4. High (no other issues)
- PCA + GP criteria
1. Medium- federal neighbor concerns
 2. Medium- one public land neighbor support
 3. High- Plenty of vegetation

Overall = High (4)/Medium (3)

Kelsall (Grassland Preserve)

GP criteria:

1. High (80-100% good suitability)
 2. Low (access difficult, through rare plant communities)
 3. Medium (some natural burrows)
 4. Low (rare plant communities and nesting burrowing owls- implications for timing)
- PCA + GP criteria
1. Medium- federal neighbor concerns
 2. Medium- one public land neighbor support
 3. High- Plenty of vegetation

Overall = Medium

PCAs:

Richardson II (PCA where a State Permit was denied due to potential for conflict with neighbors)

1. Low (extensive neighbor objection)
2. Low (1 out of 36 neighbors supports)
3. High (plenty of vegetation)

Overall = Low

Aweida II

(PCA)

1. Medium/unknown (some complaints in past, but no comprehensive data)
2. Low/unknown (no support voiced, but no comprehensive data)
3. High (plenty of vegetation)

Overall = Unknown- additional neighbor outreach

required Ute (PCA)

1. Low- Medium/unknown (substantial complaints in past, but no current, comprehensive data)
2. Low/unknown (no support voiced, but no comprehensive data)
3. Medium (marginal vegetation, but sufficient in some areas)

Overall = Unknown- additional neighbor outreach required

RESULT:

If all the above colonies met relocation site criteria in a single year, based on the evaluation results, staff would pursue relocation permits in the following order:

1. Waneka (GP)- High- Medium
2. Damyanovich (GP)- High- Medium
3. Kelsall (GP)/Ute (PCA)/Aweida II (PCA)- Medium/Unknown pending further evaluation and neighbor outreach
4. Richardson II (PCA)- Low

Recommendation #3: On approved receiving sites, ensure that the number of prairie dogs to be relocated have adequate accommodations, utilizing existing or artificial burrows (including nest boxes) and taking into consideration existing native vegetation.

During prairie dog relocations onto City land, prairie dogs will be accommodated in natural burrows, or artificial burrows (including nest boxes). Further discussion of acceptable methods and infrastructure is included in the attached supplemental information.

Within Prairie Dog Conservation Areas (PCAs), infrastructure will be installed to accommodate prairie dogs as needed during relocation. This will include installation of artificial burrows as required to supplement existing natural burrows. PCAs are identified in the Grassland Ecosystem Management Plan on Open Space and Mountain Parks (OSMP) managed city land.

On non-OSMP managed city land (predominantly Parks and Recreation), that has been identified for long term prairie dog protection and approved for relocation, installation of infrastructure will be evaluated on a case-by-case basis, considering areas where sensitive species are identified in the area, or other land use conflicts have arisen, and conflicts cannot be resolved. Future evaluation of non-OSMP properties may lead to specific guidance for these sites.

Within Grassland Preserves (GPs), the goal of accommodating relocated prairie dogs will be balanced with preservation of intact native plant communities, which is also a priority in Grassland Preserve areas.

- Within relocation areas of non-native vegetation, or where the soil has been previously tilled or disturbed, artificial burrows will be installed to supplement natural burrows to fully accommodate the desired number of prairie dogs.
- Within areas of intact native vegetation that have not been tilled or previously disturbed, natural burrows can be used for receiving relocated prairie dogs and artificial burrow installation will be further evaluated to ensure balance of prairie dog relocation goals with preservation of best opportunity grassland areas. (See supporting information for discussion of options.)
- Within areas of rare plant communities (communities or species ranked by Colorado Natural Heritage Program as S1, S2 or S3) or directly adjacent to these communities if the associated disturbance is deemed to present a threat to conservation of the community, artificial burrows will not be installed. However, natural burrows can be used for receiving relocated prairie dogs.

Information is included in the supplemental information detailing the extent of each of these 3 categories in potential relocation sites.

When artificial burrows are installed, options (seeding, location, etc.) for minimizing and mitigating disturbance or encouraging recovery will be evaluated and encouraged.

Recommendation #3 – Supplemental Information

Background Information

Prairie dog relocation methodology:

In prairie dog relocations a variety of potential methods exist for accommodating prairie dogs on receiving sites. Based on information collected from relocators, and prairie dog relocation literature, these include:

- Natural burrows with an intact entrance and tunnel open to at least 36 inches in depth and at least 4 inches in width
- Natural burrows with an intact entrance and tunnel open to less than 36 inches and at least 4 inches in width that has been further opened with hand tools (auger or shovel) to be at least 36 inches deep
- Artificial burrows installed with heavy equipment. These include a tunnel structure (usually corrugated, flexible plastic piping) and an artificial below ground chamber (may be plastic, wood), which is buried at least 3 feet below the surface. The chamber connects to the tubing which is installed to provide access to the surface in one or two locations.
- Augured holes that are constructed entirely by machinery (auger) and consist of an angled hole approximately 4-6 inches in diameter reaching at least 36 inches below the surface and not corresponding to the location of an existing burrow or burrow mound. Prairie dogs will not be released into augured holes during relocations at this time (see page 15 for further explanation).

In addition to these underground accommodations, many relocators also use above ground cages (caps/retention pens) to protect the released prairie dogs from predation and restrict their ability to disperse from the site for a few days after release. Later stages of relocation may not include use of these cages once prairie dogs are established on the site and later captures are released.

Success of methodologies varies. Based on responses from relocators, experience by the City and published literature, success (as measured by retention of prairie dogs after release) is generally highest in natural burrows (either intact or re-opened), followed by artificial burrows, and success is lowest in augured holes. The degree of success of each of these methods depends on site specific conditions and how success is measured. It appears that availability of additional natural burrows (either partially intact or filled in, but still present- the prairie dogs can find them) helps to ensure retention of relocated prairie dogs on the release colony. In some cases, prairie dogs may not remain in the provided infrastructure (natural burrows, artificial burrows or augured holes), but will remain on site by re-opening previously occupied burrows or constructing new burrows. Measures of success vary from # prairie dogs remaining in the specific area of release, # prairie dogs remaining in the release site and surrounding colony area and # of prairie dogs remaining in the release site, colony area and surrounding landscape over time.

Balancing City Goals:

On Open Space and Mountain Parks properties, the City of Boulder preserves approximately 25,000

acres of grassland habitat. This area encompasses agricultural landscapes (irrigated hayfields, row crops), native grasslands, and plains riparian and wetland areas. Within this area, the Grassland Ecosystem Management Plan defined 8 conservation targets, including Black-tailed Prairie Dogs and their associated species. As part of planning for management and conservation of prairie dogs, areas where prairie dog's conservation was the main priority, or where occupation by prairie dogs was consistent with other management goals of the property were identified. Within these, Prairie Dog Conservation Areas and Grassland Preserves were included as sites where prairie dog relocations could release prairie dogs if relocation criteria were met. Prairie Dog Conservation Areas are properties where conservation of prairie dogs is the main goal, and potential conflicts between prairie dog occupancy and management of other OSMP charter goals are minimal (no ag, no rare plant communities, etc.). Grassland Preserves represent the best opportunity on OSMP lands to preserve large, intact grassland habitats with dynamic prairie dog colonies embedded in a larger landscape mosaic made up of high-quality native plant communities, prairie dog towns and areas without prairie dogs present. Because Grassland Preserves represent that best opportunity to meet conservation goals for a variety of resources, balancing the needs of each conservation target is necessary to ensure conservation of the full suite of native grassland ecosystems.

Within grassland preserves, many prairie dog colonies exist in areas of high-quality native grassland vegetation. Many of these areas represent the last remaining areas of untilled native grassland on OSMP and the region. Areas of prairie that were not previously tilled for agriculture represent the most intact, resilient native plant communities. Areas where the soil has been tilled or experienced other anthropogenic disturbance, native prairie grass sod is disrupted, creating communities easily invaded by non-native weeds and where native grasses are less resilient to grazing from either prairie dogs or cattle. Because tilling has converted large areas of grassland in the Boulder valley and across the Great Plains, areas of untilled or undisturbed grassland habitat are the best opportunities for grassland conservation on OSMP. Grassland preserves represent the largest blocks of habitat containing these intact grasslands. Prairie dog occupation is consistent with maintaining and conserving these grassland communities. Grassland Preserves are areas where prairie dog populations at reasonable occupancy levels (10-26% as defined in the Grassland Plan) can function in their role as a keystone species, shifting occupancy through time and space in a way that maintains and enhances the intact grassland mosaic of these large habitat blocks. Intact native plant communities have evolved with this type of prairie dog occupancy and with grazing by prairie dogs and do not show the level of degradation, soil loss, etc. often seen on more fragmented, tilled and disturbed sites at much higher occupation levels by prairie dogs.

When prairie dogs are relocated to Grassland Preserves, the relocation criteria included in the Grassland Ecosystem Management Plan ensure that plant communities are sufficiently resilient and healthy to support the prairie dogs in a robust and intact plant community and grassland ecosystem.

In prairie dog relocations, a variety of anthropogenic disturbances are introduced to the colony. Extensive access by vehicles can create impacts to plant communities. In addition, installation of additional infrastructure to accommodate the prairie dogs can impact native plant communities.

Techniques vary in their level of disturbance with use of natural burrows or burrows re-opened with hand tools creating the least disturbance. Installation of augured burrows with small equipment (skid steer) creates larger areas of soil and vegetation disturbance and installation of artificial burrows with heavy equipment creates larger areas of soil disturbance and removal of native vegetation. To meet conservation goals related to black-tailed prairie dogs and native plant communities, OSMP strives to accommodate prairie dog relocation to the largest degree possible while balancing and minimizing impacts to native plant communities associated with disturbance resulting from relocation activities.

City relocations:

OSMP Receiving Sites –

Based on the information gathered from relocators and the literature, the City of Boulder will define adequate accommodation to mean: sufficient burrows are available for the number of prairie dogs to be relocated. Burrows will be taken to mean natural burrows or artificially installed burrows (artificial burrows). This is based on currently available methods. Future emergence of new techniques for constructing burrows or accommodating relocated animals should be considered and explored. The City of Boulder will continue to work with relocation professionals to explore new and innovative ways to accomplish successful relocations, especially where new techniques can provide successful accommodation while limiting ground and vegetation disturbance. Although augured burrows will not be used for the release of prairie dogs during relocations, they can serve as supplemental starter burrows for prairie dogs choosing to use them. It is possible that augured holes could be used in the future for released animals if new, innovative, and humane techniques are created and then only with staff permission if soil conditions, and/or geographic conditions are adequate.

Within Prairie Dog Conservation Areas, infrastructure will be installed to accommodate prairie dogs as needed during relocation. This will include installation of artificial burrows as required to supplement existing natural burrows.

Within Grassland Preserves, the goal of accommodating relocated prairie dogs will be balanced with preservation of intact native plant communities.

- Within relocation areas of non-native vegetation, or where the soil has been previously tilled or disturbed, artificial burrows will be installed to supplement natural burrows to accommodate the desired number of prairie dogs.
- Within areas of intact native vegetation that have not been tilled or previously disturbed, artificial burrow installation to supplement natural burrows will be further evaluated to ensure balance of prairie dog relocation goals with preservation of best opportunity grassland areas. In these cases, options might include:
 - o clustering artificial burrows in areas of lower quality vegetation or in areas

- with easier access that avoids high quality communities
- o reduction in the number of prairie dogs to be relocated to reduce the need for supplemental artificial burrows
 - Exploration of options to maintain integrity of natural burrows following a reduction in occupation to increase the available intact natural burrows when relocation is begun, thus reducing the need for artificial burrows. This may include: Installation of plastic tubing or other contraption to maintain the integrity of the burrow
 - Periodic evaluation of conditions and use of hand-tools to maintain the integrity of the burrows
 - Other feasible options to be developed
- o completion of a "risk analysis" with an outside 3rd party (contractor) to evaluate the impact and significance of artificial burrow installation in these areas to better define the relationship between artificial burrow installation and long-term protection of intact native plant communities in our Grassland Preserves.
- Within areas of rare plant communities (communities or species ranked by Colorado Natural Heritage Program as S1, S2 or S3) or directly adjacent to these communities if the associated disturbance is deemed to present a threat to conservation of the community, artificial burrows will not be installed. However, existing natural burrows could still be used for relocation.
 - o Within these areas, OSMP will explore options to maintain integrity of natural burrows following a drop-in occupation that may lead to the site being a suitable receiving site in the future. This may include:
 - o Installation of plastic tubing or other contraption to maintain the integrity of the burrow
 - o Periodic evaluation of conditions and use of hand-tools to maintain the integrity of the burrows
 - o Other feasible options to be developed

Parks and Recreation and other non-OSMP City Property Receiving Sites -

On non-OSMP managed city land that has been identified for long term prairie dog protection and approved for relocation, installation of infrastructure will be evaluated on a case-by-case basis, considering areas where sensitive species are identified in the area, or other land use conflicts exist if conflicts cannot be resolved. Future evaluation of non-OSMP properties may lead to specific guidance for these sites.

Further detail on extent of rare plants, tilled/disturbed or non-native vegetation and intact native vegetation and the implication for artificial burrow installation as detailed in Recommendation #3

Total number of colonies in Grassland preserves-

37 North- 17

East- 3

South- 17

Total acres of p.dog occupancy in Grassland Preserves-

3294 North-2100

East- 351

South- 843

Total number of colonies in Prairie Dog Conservation Areas (PCA)- 10 (9 without Richardson-site where relocation permit was denied by the State)

Total number of potential relocation colonies = 47 (46 without

Richardson) Total acres of p.dog colony in PCAs- 589 (466 without

Richardson)

Total acres of potential relocation sites = 3883 (3760 without Richardson)

NO ARTIFICIAL BURROWS

TOTAL potential relocation site colonies that would NOT have any artificial burrow installation due to CNHP tracked rare plant communities, although natural burrows could still be used to receive relocated prairie dogs - criteria of exclusion applies to Grassland Preserves colonies only:

Total Colonies System Wide: $1/47$ (46) = **2%**

Total Acreage System Wide: $10/3883$ (3760) = **0.25% (0.26%)**

By Area:

South- 1 colony, 10 acres= 5.9% of colonies, 1.1% of acreage

North- 0 = 0% of colonies, 0% of acreage

East- 0= 0% of colonies, 0% of acreage

PCAs- 0= 0% of colonies, 0% of acreage

YES ARTIFICIAL BURROWS

TOTAL potential relocation site colonies with no vegetation-based limit to artificial burrow installation (tilled/disturbed/non-native Grassland Preserves + PCAs):

Total Colonies System Wide: $28/47$ (27/46) = **59% (59%)**

Total Acreage System Wide: $2675/3883$ (2552/3760) = **69% (68%)**

By Area:

South- 7 colonies, 476 acres= 41% of colonies, 56% of acreage

North- 8 colonies, 1260 acres = 47% of colonies, 60% of acreage

East- 3 colonies, 351 acres= 100% of colonies, 100% of acreage

PCAs- 10 colonies (9), 589 acres (466 acres) = 100% of colonies, 100% of acreage

**ARTIFICIAL BURROWS INSTALLED WITH CAREFUL PLANNING/
MINIMIZATION OF DISTURBANCE**

TOTAL potential relocation site colonies that would have to have decisions made about
artificial burrow installation to balance relocation need with protection of native plant
communities

Total Colonies System Wide: 18/47 (18/46) = **38% (39%)**

Total Acreage System Wide: 1197/3883 (1197/3760) = **31% (32%)**

By Area:

South- 9 colonies, 358 acres= 53% of colonies, 43% of acreage

North- 9 colonies, 840 acres = 53% of colonies, 40% of acreage

East- 0 colonies, 0 acres= 0% of colonies, 0% of acreage

PCAs- 0 colonies, 0 acres= 0% of colonies, 0% of acreage

*numbers in parenthesis represent colonies/acres with Richardson removed

Recommendation #4: Define successful prairie dog relocation, including continual evaluation of new or different relocation methods, ongoing opportunities for stakeholder engagement, and short-term, mid-term, and long-term evaluation of success.

The general principles used to guide development of this recommendation are that best intentions, and continued reevaluation are necessary. The goal of each prairie dog relocation should be:

- to exercise clear, situationally adaptive decision-making regarding relocation practices,
- to perform planned, consultative stakeholder engagement* to inform decisions,
- to evaluate the immediate and far-reaching outcomes of selected practices,
- to ensure relocations are conducted in a way that is humane,
- to mitigate conflicts with existing land uses at the take site and ensure that conservation is the driving goal,
- to support prairie dog conservation goals,
- to evaluate disease risks and the application of potential mitigation measures,
- to comply with all related federal, state and local laws, rules, regulations and guidelines,
- to minimize and mitigate disturbance to the land,
- to discourage prairie dog recolonization (a plan must be in place if, for some reason, all the prairie dogs cannot be removed from the take site),
- to plan for fiscally responsible projects, and
- to articulate a plan which defines success for the take and release sites,
- to provide adequate accommodation with existing or artificial burrows.

**Consultative stakeholder engagement means that staff will, at a minimum, inform, listen to and acknowledge the concerns of related publics and will relay how the publics' input influenced decisions. Stakeholders may be encouraged to provide suggestions on management ideas.*

The implementation of these goals looks at success of the project overall. The success of the relocation itself is a piece of the project.

In general, prairie dog relocations will be considered successful when best management practices (included in supplemental material) are followed and there is evidence of colony stability. Stability includes evidence of one or more of the following:

- a stable population or positive population growth (through reproduction or annual recruitment),
- colony retention or expansion,
- suitable vegetation to support the population, and
- presence of other wildlife such as:
 - o commensal species (defined in the OSMP Grassland Ecosystem Management Plan, also known as the GMAP) and
 - o predators

Criteria for good indicators (from The Nature Conservancy 2007) of stability should be measurable, precise & consistent, specific, sensitive, timely, technically feasible, cost effective, and publicly relevant. Stability should be evaluated on a short-term, mid-term and long-term basis. Evidence of stability may be evaluated in a variety of manners (mapping, population surveys, etc.) depending upon the level of evaluation needed to adequately evaluate each term.

Caveats: Relocations could still be considered generally successful if these conditions are not fully met, but these criteria outline the desired outcome and when not met should indicate that adaptation may be required. If goals are not met, then it should be determined if there were

controllable factors that could be altered to increase success or if this is typical. Thresholds should be further developed as research information becomes available. This includes researching typical relocation success rates immediately following relocation and average survival rates over longer periods of time.

Recommendation #4 – Supplemental Information

General Information:

The City of Boulder is one of many agencies in the Front Range that performs prairie dog relocations. We consulted with two local prairie dog relocation companies in addition to reading other local government agency plans, specifically the City of Fort Collins Wildlife Management Guidelines and Boulder County's Prairie Dog Habitat Element of the Grassland & Shrubland Management Policy. These plans integrate how to perform a relocation along with what success looks like. This document is based more upon what success looks like.

Best Management Practices:

This plan will need to take into consideration varying situations as best management practices are often site/case specific. BMP's that may be included are outlined below.

"Yes" answers indicate success:

1. Was the relocation done in compliance with all related federal, state and local laws, rules, regulations, guidelines and protocols regarding trespass, wildlife, transport, pesticides, etc.?
2. Were assessments performed utilizing recent data on numbers, acreage, etc.?
3. Were only humane practices utilized?
4. Unless performing experiments or research, were practices commonly known to be successful (with preference given in order of most to least successful) utilized?
5. Were practices prioritized based upon the safety of the relocators?
6. Were known negative influences minimized and mitigated as much as possible within existing policies/practices?
7. Was relocation performed into best opportunity areas prior to less suitable habitats?
 - a. This includes utilizing areas with less conflict potential first, areas where prairie dog communities can function without the threat of development or extermination due to conflicts with competing land uses, areas designated for prairie dog conservation. An example is the OSMP Grassland Ecosystem Management Plan (GMAP) designations (box at right)
8. Was disturbance to the land minimized and mitigated?
9. Were proactive measures taken to mitigate issues (mowing, feeding, acclimation cages, etc.)?
10. Was the project performed in a fiscally responsible manner?
11. Are removal sites being maintained in a manner to discourage ongoing issues?
 - a. Where appropriate, was management performed at the release site to discourage recolonization?
 - b. Is monitoring being performed?
12. Is an attempt being made to keep coterie together?
13. Is there a sufficient number of prairie dogs already at the site or being

GMAP Category	Management Focus
Grassland Preserve	Conservation of prairie dogs and their associated species in large and ecologically diverse grassland habitat blocks.
Multiple Objective Areas	Conservation of prairie dogs and their associated species is one of multiple management objectives.
Prairie Dog Conservation Areas	Conservation of the prairie dog is the primary management objective; associated species managed opportunistically.

- relocated to the site to establish a viable population?
14. Is monitoring, evaluation and adaptive management occurring by staff and/or by being included in the scope of work for the contractor?
15. Were our goals accomplished?

Measures of Success – Potential Methods:

- Evidence of stability may be evaluated in the following manner depending upon the level of evaluation needed to properly evaluate each term:
- A stable population or positive population growth
 - Performing visual surveys to determine the number and density of prairie dogs while considering the possibility that they may have moved outside of the original release site and adjusting to not count preexisting colonies.
- Colony retention or expansion
 - Map the extent of the release. Remap the area post relocation. This will allow you to better track expansion versus dispersal as prairie dogs will respond to food availability and other habitat conditions over time and may expand or contract their colonies accordingly and may move across the landscape to forage or find new colony sites.
- Suitable vegetation to support the population
 - Perform surveys to determine the type and density of vegetation taking into consideration the release site and potential colony movement.
- Presence of other wildlife
 - Performing scientific wildlife surveys pre- and post-relocation that would evaluate the presence of typical commensal and predatory species and changes in their population.

Evaluations should allow for typical dispersal, natural mortality factors (infanticide, predation and the inability to survive the winter) and uncontrollable environmental factors such as drought.

Success ratings should consider the location and season. For example, criteria on presence of bird species should be adjusted for urbanized areas (page 124 GMAP). Similarly, spring relocations would be expected to have much higher rates of mortality than relocations in the fall.

Mortality from enzootic disease outbreaks should be considered for evaluation of success Preventative measures should be further evaluated.

An adaptive management approach should be taken. Adaptive management generally refers to an ongoing process of:

- assessing conditions,
- developing a plan based on assumptions of ecosystem functions and objectives,
- implementing a plan,
- monitoring the changes,
- evaluating the results, and
- adjusting actions accordingly.

These processes will require planning by staff and allocating of resources well in advance of relocations. Resources (staff, funding, etc.) will need to be adequately planned and allocated by city departments to be able to implement and evaluate practices including providing contingencies for special circumstances. The responsibility for monitoring will be negotiated between the city and contractors on a case-by-case basis.

This framework of criteria and processes is often currently followed by staff. The guidance in this document is intended to increase consistency and transparency.

Other factors to consider include the successful ability for the relocated colony to coexist with the new, human neighbors for the first 2 years. Included in this, if barriers of any type were utilized, their effectiveness should be evaluated. Additionally, efficacy of burrow types can be evaluated by monitoring burrow use for the different types (existing but collapsed, existing and suitable, artificial nest boxes, etc.). This will help to determine how to increase success rates in the future.

An evaluation worksheet or tool to measure the effectiveness of practices selected would be beneficial. Once this document is complete the clear and defined procedural steps (from beginning to end) for how the city, as one organization, handles relocations should be made available online in a concise manner that might be illustrated by a flow-diagram w/contact information provided at each step.

The proposed approach is intended to balance overall ecosystem health and sustainability of prairie dogs and other natural values. Evaluations will be utilized to inform the adaptive management process.

Recommendation #5: Collaboratively prepare, with Colorado Parks and Wildlife, a research proposal for US Department of Agriculture approval for the use of the Yersinia pestis (plague) vaccine (previously known as sylvatic plague vaccine – SPV) on the Southern Grasslands in 2018 and beyond.

Summary:

The City of Boulder has developed plans for application of plague vaccine in the Southern Grasslands in collaboration with Colorado Parks and Wildlife (CPW).

Plague Management Goals: Maintain sufficient prairie dog populations in Grassland Preserves to meet Grassland Ecosystem Management Plan defined viability measures designed to ensure conservation of Black-tailed Prairie Dogs and their associate species on Open Space and Mountain Parks Lands.

2018 Pilot Project:

In 2018, OSMP will obtain sufficient *Yersinia pestis* vaccine to vaccinate all currently occupied acres in the Southern Grassland Preserve (90 acres in fall, 2017) during two time periods- summer and fall. OSMP will not couple dusting with delta dust with plague vaccine delivery due to concerns over secondary effects to native species within Grassland Preserves (which represent best opportunity conservation areas for all grassland species, not just prairie dogs). However, application of two doses of vaccine in 2018 will provide additional protection for the prairie dogs if plague were to be present in the system in 2018. City staff will apply vaccine according to recommended doses and application techniques from Colorado Parks and Wildlife.

Staff will monitor success of the vaccine through periodic monitoring for plague (techniques and frequency to be determined with CPW researchers).

City staff will evaluate relocation plans for 2018 and determine if application of plague vaccine prior to relocation is logistically feasible and desirable. Any plans to do so will be coordinated with Colorado Parks and Wildlife.

Recommendation #5- Supplemental Information

The Prairie Dog Working Group generally supports plague management beyond 2018 as described below.

Future beyond 2018 in Southern Grasslands

Following completion of the 2018 pilot project in Southern Grasslands, results will be evaluated, and a feasibility study (success, cost, resources required, etc.) will be completed to inform future plague management plans for Southern Grasslands.

Overall Framework- Future beyond 2018 system-wide

Following collection of data on success of the program in Southern Grasslands, plans will be completed for other grassland preserves on OSMP or other long-term protection areas on other City properties, including Parks and Recreation properties. These plans will consider any lessons learned in Southern Grasslands, and the system-wide goals for prairie dog conservation as included in the Grassland Ecosystem Management Plan and any other relevant city plans.

Considerations:

Based on the Grassland Plan, if acres occupied reach and are maintained at $\geq 10\%$ (NOTE: desired occupancy levels for prairie dogs in Grassland Preserves, as defined in the Grassland Plan are 10- 26%) within a Grassland Preserve, then relocation receiving sites will no longer be available in that Grassland Preserve

Note: recent changes have occurred in the status of the vaccine (including name change from Sylvatic plague vaccine to *Yersinia pestis* vaccine). Changes to licensing of the vaccine make full study design unnecessary for use in management on our properties. As a result, reference to study design and application to obtain the vaccine, included in earlier versions, have been removed from this recommendation and replaced with additional, specific details of application.

Evaluation Instructions: Using your best judgment based on what you know now, evaluate each proposed recommendation on a scale of 1 to 3 for each criterion at the top. Remember that these recommendations address our first task from Council, which is to identify relocation methodologies that can be implemented in 2017 under current plans and policies. The spreadsheet will automatically add up the total score for each item. Please complete your evaluation and send it to Heather Bergman by Wednesday, May 3, at 5 pm.	It minimizes the potential for a controversy or conflict	It meets Council's goal to be compatible with social, economic, and environmental values	It is measurably ecologically sustainable.	It complies with all the appropriate regulations	It is both directly and indirectly humane and non-lethal	It has the largest possible benefit to associate species	It protects biodiversity and the overall health of the natural system	It is based on the most recent and credible scientific data and assessment information	It uses effective plague mitigation methods	It supports OSMs ability to meet the goal of preservation and conservation of multiple	It focuses on long-term survival of colonies	It increases public understanding and trust	It encompasses broad City of Boulder values	It allows for flexibility	It has clarity in purpose, goal, and method	It does not prioritize one land use over another in multiple objective areas	It minimizes the potential for unanticipated or unknown consequences	It solves a problem	It avoids a repeat of Richardson or Armory relocations	It considers all stakeholders	TOTAL	Mean	Median	Min	Max
Create guidelines and criteria for prioritizing relocation sites.	44	45	41	46	45	39	38	38	32	40	41	45	41	40	43	40	42	45	40	42	827	52	53	36	60
Ensure that receiving site criteria includes a requirement to provide adequate accommodation for the number of prairie dogs that will be moved to the site.	46	42	42	42	46	40	41	40	31	38	44	44	42	38	40	39	41	40	37	34	807	50	53	32	60
Define successful relocation.	43	41	39	44	42	38	38	38	37	39	42	44	40	34	40	40	40	39	37	39	794	50	54	0	60
Prepare/submit to CPW and USDA proposal for plague management for use of sylvatic plague vaccine and Delta Dust in a focused way for 2017/2018 as part of a larger study to be completed later.	35	41	38	45	45	38	37	45	48	37	47	36	37	38	41	37	35	42	33	31	786	49	50	28	60
Evaluate sites that have had plague in the past, identify open burrows that could be used in the future, and act to keep burrows open.	41	40	40	45	47	42	39	34	30	38	41	34	37	38	39	34	40	42	34	35	770	48	48	38	60
Develop best management practices for relocations that minimize impacts to native grassland communities associated with relocation and analyze methods to minimize disturbance.	40	42	41	43	38	39	43	42	33	42	35	37	40	35	39	35	40	39	30	33	766	48	49	23	60
Create a conservation/mitigation fund to be used for acquisition of land for prairie dogs.	36	41	36	40	46	43	40	33	27	37	43	39	38	40	35	36	34	41	33	32	750	47	44	32	60
Continue to evaluate new or different relocation methods to increase success and/or reduce impacts of relocation.	43	42	36	45	41	37	36	41	27	38	40	38	39	39	36	37	37	37	26	33	748	47	50	21	60
Develop criteria for selecting relocation contractors.	44	43	32	39	40	38	32	32	29	34	39	44	41	32	40	35	42	37	39	31	743	46	48	25	60
Create a relocation policy that prioritizes colonies that are in imminent threat of lethal control, regardless of land ownership.	42	41	32	38	46	35	32	31	31	32	40	41	41	33	43	35	35	38	37	31	734	46	47	26	60
For relocations, prior to applying an insecticide that may impact bees, check the Field Watch registry and provide 72-hour notice to any hive managers within 6 miles.	42	40	36	38	38	36	34	34	36	32	31	44	38	31	40	34	41	37	24	37	723	45	47	26	60
Evaluation of the pros and implications of installing barriers at release sites	45	38	34	42	42	31	31	39	22	35	29	40	37	38	38	31	41	36	33	38	720	45	45	22	60
Create and update annually (based upon current information) detailed, minimum requirements for contractors to follow in the RFP on how the animals are to be treated and the relocation performed.	41	38	30	41	42	29	30	35	32	30	37	41	39	33	40	34	41	36	32	31	712	45	45	20	60
Review the Administrative Rule for the Relocation of Prairie Dogs to see what could be transferred to future recommendations.	40	40	30	38	39	32	33	32	29	31	36	36	38	38	38	34	39	37	35	33	708	44	51	0	60
Consider options that would allow Prairie Dog Conservation Areas to be used as relocation sites.	31	37	32	39	41	37	37	31	24	38	36	35	37	39	35	35	32	39	34	30	699	44	44	21	60
Relocate Foothills Area prairie dogs in 2017 if they can be relocated to a release site that has been dusted; if not, use temporary barriers so they remain onsite pending further evaluation or until 2018.	34	34	30	39	46	33	32	33	39	32	39	34	32	41	36	36	31	33	33	29	696	44	44	30	59
One-time application of Delta Dust in all receiving burrows for 2017 applications.	31	30	31	39	37	35	31	37	45	34	38	32	31	33	44	33	30	38	34	25	688	43	42	25	60
Install and maintain visual barrier fences at relocation sites adjacent to homes.	43	29	29	38	46	30	29	32	19	33	27	42	35	27	40	34	34	40	34	31	672	42	42	29	52
Create a process for stopping suspicious activity during the intervening period when City staff has not determined issues of legality.	37	36	29	36	42	29	31	27	21	31	31	41	37	31	38	31	39	36	35	32	670	42	45	0	59
One-time emergency application of Delta Dust at the Armory site.	34	29	30	35	37	33	29	36	45	31	35	32	31	31	38	30	32	39	33	27	667	41	40	24	60

Evaluation Instructions: Using your best judgment based on what you know now, evaluate each proposed recommendation on a scale of 1 to 3 for each criterion at the top. Remember that these recommendations address our first task from Council, which is to identify relocation methodologies that can be implemented in 2017 under current plans and policies. The spreadsheet will automatically add up the total score for each item. Please complete your evaluation and send it to Heather Bergman by Wednesday, May 3, at 5 pm.	It minimizes the potential for a controversy or conflict		It meets Council's goal to be compatible with social, economic, and environmental values	It is measurably ecologically sustainable.	It complies with all the appropriate regulations	It is both directly and indirectly humane and non-lethal	It has the largest possible benefit to associate species	It protects biodiversity and the overall health of the natural system	It is based on the most recent and credible scientific data and assessment information	It uses effective plague mitigation methods	It supports OSMs ability to meet the goal of preservation and conservation of multiple	It focuses on long-term survival of colonies	It increases public understanding and trust	It encompasses broad City of Boulder values	It allows for flexibility	It has clarity in purpose, goal, and method	It does not prioritize one land use over another in multiple objective areas	It minimizes the potential for unanticipated or unknown consequences	It solves a problem	It avoids a repeat of Richardson or Armory relocations	It considers all stakeholders	TOTAL	Mean	Median	Min	Max
Provide incentives for private landowners to offer their land as receiving sites.	35	37	30	38	41	36	32	28	24	31	35	33	34	37	30	38	25	39	30	30	663	41	42	23	60	
If CPW eventually requires use of an insecticide (such as Delta Dust) at release sites, analyze implications and check in with City Council for direction.	34	41	27	38	32	31	32	36	37	32	32	34	34	30	32	31	37	34	27	31	662	41	43	20	60	
Take sick or injured prairie dogs to a rehabilitation facility as a first response.	37	36	33	35	46	29	29	30	25	28	29	35	37	26	38	33	32	34	31	27	650	41	37	25	60	
Identify a list of preferred prairie dog relocation contractors.	34	37	29	34	35	34	31	28	26	31	36	36	33	26	31	33	34	34	34	27	643	40	39	20	60	
For 2017 relocations use existing burrows systems at the approved release site; when those are all utilized, install type/number of nest boxes determined to be appropriate per recommendation of PDC.	37	31	30	36	40	30	30	35	25	29	35	35	31	28	39	30	31	34	29	28	643	40	44	0	60	
Place a temporary moratorium on any relocation receiving sites until they have been dusted or until there is agreement that the receiving site will be dusted.	27	26	30	35	37	34	32	32	43	32	37	30	29	25	36	32	31	32	30	26	636	40	39	20	60	
Establish practices that encourage City staff to trust and implement the advice of prairie dog conservation experts.	35	33	24	34	40	31	29	33	36	29	38	31	33	31	28	30	31	30	28	24	628	39	41	0	59	
In 2017 require the one time use of Delta Dust in release site burrows where plague has been active within the last 3 years or at any site within 5 miles of a site that has been plagued within the last 3 years	32	31	32	31	37	29	27	33	43	32	33	30	29	25	40	29	28	36	28	23	628	39	42	22	54	
Leave the prairie dogs at Foothills Community Park.	23	27	27	35	45	38	38	28	23	34	34	29	31	26	28	28	26	26	33	22	601	38	34	20	60	

Attachment 3. Prairie Dog Working Group Application Form



City of Boulder
Open Space & Mountain Parks

Statement of Interest Form – Prairie Dog Working Group – January 2017

Applicant Name: _____

Applicant Address of Residency (Street Address, City): _____

Applicant Phone Number: _____

Applicant Email Address: _____

1. Commitment: The Prairie Dog Working Group will meet at least six times beginning in February 2017 on select Mondays from 5:30-8:30pm. Developing consensus-based recommendations to the City Manager is key therefore attendance is critical. Please check all meetings you can commit to attending should you be selected.

☐ February 13

☐ March 6

☐ March 20

☐ April 10

☐ April 24

☐ May 8

2. Perspectives: On August 16, 2016 City Council suggested that the following perspectives might be useful to exploring adaptive management practices – biodiversity experts, conservation lease agreement experts, government agency staff, pending development site owners, pesticide experts, prairie dog advocates, private property owners, and relocation experts. In detail, please describe how your knowledge and experience (personal and/or professional) with prairie dogs can bring one or more of these or other perspectives to the working group conversation.
3. Values: The City of Boulder's organizational values include collaboration, innovation and respect. How will you personally demonstrate these values as a member of the working group? Or, how have you demonstrated these in previous interactions with city projects or representatives?

Prairie Dog Working Group (PDWG) Phase Two Recommendations

Staff Analysis

The Prairie Dog Working Group (PDWG) made prairie dog management recommendations to the city manager in the form of goals, objectives, strategies and milestones. This document is a staff summary and analysis of the three goals, 12 objectives, 18 strategies, and 26 milestones provided by the PDWG. The Staff Summary provides a condensed version of the recommendations organized by Goals, Objectives, Strategies (S), and Milestones (M), and includes departmental leads, relative costs, staff suggesting timing for the milestones.

Staff Summary

Goal 1: ECOLOGICAL - Ensure large prairie dog-occupied ecosystem area	Dept. Lead(s)	Cost	Short-term	Medium-term	Long-term
* Objective 1: Secure networks of high-integrity grasslands with plague-resistant prairie dog colonies.					
S1: Consolidate grassland parcels, and linkages among colonies.					
M1: By 2019, pilot habitat quantification tool.	OSMP	\$			
* S2: Amend Grassland Management Plan to increase receiving sites.					
M1: By 2019, provide an updated prairie dog habitat suitability model.	OSMP	\$\$			
M2: By 2019, update and implement GMAP goals with receiving site location criteria	OSMP	\$			
* S3: Manage prairie dog colonies for plague resistance.					
M1: translocated prairie dogs will receive plague abatement.	OSMP, P&R, PH&S	\$			
M2: By 2019, complete and implement a plague-management and monitoring plan.	OSMP, P&R, PH&S	\$\$			
M3: By 2019, implement policy that allows insecticides as necessary.	PH&S	\$			
* S4: Plan for the reintroduction of the black-footed ferret					
M1: By 2020, create and implement a black-footed ferret recovery plan.	OSMP	\$\$			
S5: Apply the mitigation hierarchy (avoid, minimize, mitigate) to prairie dog conservation.					
M1: Update inventory and monitoring data for at-risk species	OSMP, P&R	\$\$\$			
M2: Document relative compatibilities of relevant management options to prairie dog site	OSMP, P&R, PH&S	\$\$\$			
Objective 2: Implement a suite of non-lethal methods for managing prairie dog populations.					
S1: Implement non-lethal prairie dog relocations.					
M1: Increase the number of successful translocations.	OSMP, P&R, PH&S	\$\$\$\$			
* S2: Create buffer zones on key prairie dog colonies in conflict.					
M1: Pilot by 2021 one property that has prairie dog colonies with managed buffer zones.	OSMP	\$\$\$\$			
S3: Advance testing of new and emerging tools such as oral contraception agents.					
M1: Recruit researchers to implement a research plan.	TBD	\$\$\$			
* Objective 3: Amend and keep plans and policies for compatibility with Goal 1.					
S1: Review policies and timeline for updates.					
M1: By 2020 complete policy review and initiate processes for policy amendments.	OSMP, P&R, PH&S	\$			

* policy change may be required

Staff Summary (cont.)

Goal 2: SOCIAL - Support non-lethal strategies to minimize conflicts and increase public awareness.		Dept. Lead(s)	Cost	Short-term	Medium-term	Long-term
	Objective 1: Identify and map areas of conflict.					
	M1: By 2019 identify and map conflict areas annually and make it easily available to the public.	OSMP, P&R, PH&S	\$\$			
	Objective 2: Identify and implement innovative proactive non-lethal strategies to address conflicts					
*	M1: By end of 2019, implement a conflict prevention strategy in two conflict locations	OSMP	\$\$\$			
*	M2: By 2022 proactively address 10% of defined conflict areas annually.	OSMP, P&R, PH&S	\$\$\$\$			
	Objective 3: Review mechanisms for communication, ensure conflicts are addressed.					
	S1: Establish who to call when conflicts with illegal activity arise					
	Objective 4: Develop a campaign to expand appreciation of the role of prairie dogs					
	S1: Gauge public awareness, engage thorough outreach and education programs					
	Objective 5: Develop annual assessment feedback mechanisms.					
	S1: Develop annual assessment feedback mechanisms.					
	Objective 6: Secure modifications to state regulations to transfer of prairie dogs across county lines.					
	S1: Lobby legislators to advocate for adjustments, providing protocols and language for legislation.					
Goal 3: ECONOMIC - Implement sustainable processes that provide resources and capacity		Dept. Lead(s)	Cost	Short-term	Medium-term	Long-term
*	Objective 1: Apply principles of Net Positive Impact (avoid, minimize, mitigate, seek net positive gain).					
*	S1: Utilize habitat quantification tool (removal and receiving), to determine net-positive impact.					
	M1: By 2020, pilot the use of the adapted habitat quantification tool	OSMP	\$\$			
*	Objective 2: Establish a grassland conservation fund that augments operating budgets					
*	S1: Establish inflow and outflows of monies into and out of the grassland conservation fund.					
*	M1: By 2019, create a fee structure for private landowners relocating prairie dogs to city land.	PH&S	\$\$			
*	M2: Work with Boulder's philanthropic community to provide sustainable support.	TBD	\$			
*	M3: By 2020, work with conservation entities for grassland restoration and conflict mitigation	TBD	\$			
	S2: Hold publicly-noticed meetings to discuss progress on PDWG recommendations					
	M1: By December 2019 staff will provide an annual report on the inflows and outflows.	TBD	\$			
	M2: By 2019 provide boards with annual updates on implementation status	OSMP, P&R, PH&S	\$			
*	Objective 3: Support sufficient budgets to achieve approved PDWG goals, objectives, and strategies					
*	S1: Revisit and amend department budget allocations and annual work plan objectives					
	M1: Recommend departmental operating budget line items in the 2020 budget.	OSMP, P&R, PH&S	\$\$\$			
	M2: Annually ensure sufficient budgets, staffing and/or consultants to meet goals and objective	OSMP, P&R, PH&S	\$\$\$\$			
*	S2: Maximize in-kind contributions to assist with addressing prairie dog management.					
	M1: By 2019, create a pilot project for in-kind contributions (i.e., donation of nest boxes).	OSMP, P&R, PH&S	\$\$\$			
	M2: Track in-kind contributions on an annual basis and make data available.	PH&S	\$			

Legend: L – low effort / time commitment M – medium effort / time commitment H – high effort / time commitment OB = Objective S - Strategy M - Milestone	Scope / Time Estimates			Assessments & Impacts			If 100% approved with funding to implement			Related Themes
	Staff	Public Engagement	Council / Boards	Economic (e.g., estimated implementation cost, CIP or operating expense)	Environmental (e.g., natural resources)	Social (e.g., facilities, work plan, existing plans & policies)	Staff Suggested Timing	Approximate Duration of Task	Department Lead(s)	

Recommendations by Goal Category

M1	By 2019, work with local experts to review modeling method and data inputs to provide an updated prairie dog habitat suitability model and GMAP target viability criteria to map current conditions for the mixed grass prairie mosaic and prairie dog colonies across the relevant grassland landscape to serve as guidance for plan updates.	H	M	L	\$\$ (consultant and experts), operating	Outcome may reduce ability to manage for and protect non-prairie dog community types and species (e.g. xeric tallgrass prairie, grasshopper sparrows, rare skippers and butterflies)	Will require update to many related GMAP conservation targets that would be impacted by shifts to goals and viability targets for prairie dogs Will require extensive staff time and lead to other projects being given a lower priority or being delayed/removed from workplan (e.g. integration of natural resources with agricultural management, monitoring and protecting rare and declining wildlife species)	2020- after completion of OSMP Master Plan	1 year	OSMP	
M2	By 2019, based on milestone 1, work with local experts to update and implement GMAP goals relevant to prairie dogs along with receiving site location criteria (I-1) to fully utilize existing grassland receiving sites andto allow additional qualified grassland receiving sites.	M	M	L	\$	Moderate updates to vegetation criteria- no significant impact. Extensive modifications leading to less vegetation recovery time prior to relocation for unoccupied colonies, or identifying additional relocation sites beyond where prairie dogs have previously been mapped limit the ability to manage and protect other non-prairie dog communities and species (e.g. rare plant communities and imperiled butterfly/skipper species)	Public process surrounding mofication would require other workplan priorities to be displaced or delayed (e.g. ecological staff support for new trail planning or trail restoration/maintenance)	2021- needs to follow completion of updated suitability modeling	3 months+ 2 years to monitor colonies for vegetation conditions with modified criteria	OSMP	

Legend: L – low effort / time commitment M – medium effort / time commitment H – high effort / time commitment OB = Objective S - Strategy M - Milestone	Scope / Time Estimates			Assessments & Impacts			If 100% approved with funding to implement			Related Themes
	Staff	Public Engagement	Council / Boards	Economic (e.g., estimated implementation cost, CIP or operating expense)	Environmental (e.g., natural resources)	Social (e.g., facilities, work plan, existing plans & policies)	Staff Suggested Timing	Approximate Duration of Task	Department Lead(s)	

Recommendations by Goal Category

S3	Manage prairie dog colonies for plague resistance.										
M1	Prior to implementing the plan under Milestone 2, all translocated prairie dogs will receive plague abatement.	L	L	L	\$	If restricted to sylvatic plague vaccine (planned for 2018), then believed to be limited. If includes additional use of broad-spectrum insecticide, impacts to other aspects of the ecosystem likely- evaluation needed	Minimal- requires 1-2 days of staff time to deploy vaccine	2018- already planned	2 months (vaccine order time + waiting time after vaccination for animals' immune systems to respond	OSMP for OSMP sites PH&S for private sites P&R for P&R sites	

Legend: L – low effort / time commitment M – medium effort / time commitment H – high effort / time commitment OB = Objective S - Strategy M - Milestone	Scope / Time Estimates			Assessments & Impacts			If 100% approved with funding to implement			Related Themes
	Staff	Public Engagement	Council / Boards	Economic (e.g., estimated implementation cost, CIP or operating expense)	Environmental (e.g., natural resources)	Social (e.g., facilities, work plan, existing plans & policies)	Staff Suggested Timing	Approximate Duration of Task	Department Lead(s)	

Recommendations by Goal Category

[illegible]

Legend: L – low effort / time commitment M – medium effort / time commitment H – high effort / time commitment OB = Objective S - Strategy M - Milestone	Scope / Time Estimates			Assessments & Impacts			If 100% approved with funding to implement			Related Themes
	Staff	Public Engagement	Council / Boards	Economic (e.g., estimated implementation cost, CIP or operating expense)	Environmental (e.g., natural resources)	Social (e.g., facilities, work plan, existing plans & policies)	Staff Suggested Timing	Approximate Duration of Task	Department Lead(s)	

Recommendations by Goal Category

M1	By 2020, work with adjacent landowners, including the County of Boulder and adjacent counties, US Fish & Wildlife Service, other federal partners, and private landowners in the Grassland Preserves to create and implement a black-footed ferret recovery plan for the southern Boulder Region.	H	M	M	\$-\$\$ (may require consultants)	No impacts for plan creation. Implementation: restoring native extirpated predator that will also contribute to sustainable prairie dog populations. Potential impacts of management for ferrets (including plague control, sufficiently high prairie dog populations, etc.) to impact conservation and management of other natural resources	Creations of plan- no impacts. Implementation: potential implications for visitor use, agricultural lease management, good educational opportunity	2020	6 months	OSMP	
S5	Apply the mitigation hierarchy (avoid, minimize, mitigate) regarding adverse impacts to at-risk species known to be vulnerable to habitat-altering land management practices associated with prairie dog conservation.										
M1	Based on identified prairie dog occupied and relocation sites, update inventory and monitoring data for at-risk species associated with the Mixed grass prairie mosaic and xerictallgrass prairie.	H	L	L	\$\$\$- will require contractor/researcher assistance	Inventory data would be beneficial to natural resource management	Inventory and Monitoring, including contractor identification and management would displace other wildlife monitoring priorities already in the workplan including those likely to be identified in the new OSMP Master Plan	2020	3 years- monitoring is seasonal, variable year-to-year and needs repeated periodically	OSMP, P&R	
M2	Document relative compatibilities of relevant land use and management options applicable to prairie dog relocation sites and occupied colonies (e.g., use of insecticides relative to rare insect species, density of prairie dogs relative to rare plant species).	M	M	L	\$\$\$- will require contractor/researcher assistance	Beneficial to identify interface between p.dog mgmt. actions and impacts to sensitive species to help in mitigating negative impacts	Work with contractors, researchers will take staff time otherwise allocated for other wildlife management or IPM projects (e.g. mosquito management, monitoring of rare/sensitive species)	2022- wait for preliminary data from monitoring to inform	9 months	OSMP, P&R, PH&S	

Legend: L – low effort / time commitment M – medium effort / time commitment H – high effort / time commitment OB = Objective S - Strategy M - Milestone		Scope / Time Estimates			Assessments & Impacts			If 100% approved with funding to implement			Related Themes
		Staff	Public Engagement	Council / Boards	Economic (e.g., estimated implementation cost, CIP or operating expense)	Environmental (e.g., natural resources)	Social (e.g., facilities, work plan, existing plans & policies)	Staff Suggested Timing	Approximate Duration of Task	Department Lead(s)	
Recommendations by Goal Category											
OB 2	Secure and implement a suite of non-lethal methods for managing prairie dog populations in lands where their proximity to urban and agricultural land use, and other natural values, are in conflict. (The PDWG recognizes the similarities between this objective and the social goal and would like to ensure that implementation of this objective should not detract from other ecological objectives.)										
S1	Collaborate with county, federal, and private partners to implement non-lethal prairie dog relocations.										
M1	In the near term, due to high occupancy of conflict areas, there is an increase in the number of successful translocations across the Boulder region.	H	L	L	\$\$-\$\$\$\$ (depending on source of p. dogs- City or private)	Requires installation of artificial nest boxes for most or all p. dogs- impacts to invasive species vulnerability, disruption of intact native plant communities	Work with contractors. Increased ability to address conflict situations, limit lethal control. Staff time required for permitting, mitigation of neighbor concerns, coordination of contractors. During relocation season, displaces other projects such as wildlife staff support for habitat restoration, trail and other infrastructure project planning, support for volunteers and coordination of protection for rare/sensitive species	2019- 2018 relocations are already underway	1 year to begin to show increase, continue evaluation each year after	OSMP, PHS, P&R depending on sending and receiving sites	
S2	Invest in creating buffer zones on key prairie dog colonies in conflict.										
M1	Pilot by 2021 one property that has prairie dog colonies with managed buffer zones.	H	M	L	\$\$\$\$	Barriers & their installation can have negative impacts on multiple species	May increase release site potential/mitigate conflict. Every new initiative/item means something else must go.	2020	6 mo's to plan 12 months to implement/evaluate	OSMP	
S3	Collaborate with the research community to advance testing of new and emerging tools for managing prairie dog population (such as oral contraception agents).										
M1	Recruit researchers from USGS, CSU, etc. to secure funding and implement a research plan.	M	L	L	\$-\$\$\$ (depending on funding for research)	Potential impacts of field research to non-target species	Potential to help advance tools for mitigation of social conflicts with p. dogs. Other workplan priorities displaced	2019	ongoing	TBD	
OB 3	Amend as necessary and keep all existing prairie dog plans and policies (including but not limited to the Admin Rule, IPM, UWMP, GMP, Wildlife Protection Ordinance) current as needed to ensure they are mutually compatible with Goal 1 and its objectives and strategies.										

Legend: L – low effort / time commitment M – medium effort / time commitment H – high effort / time commitment OB = Objective S - Strategy M - Milestone		Scope / Time Estimates			Assessments & Impacts			If 100% approved with funding to implement			Related Themes
		Staff	Public Engagement	Council / Boards	Economic (e.g., estimated implementation cost, CIP or operating expense)	Environmental (e.g., natural resources)	Social (e.g., facilities, work plan, existing plans & policies)	Staff Suggested Timing	Approximate Duration of Task	Department Lead(s)	
Recommendations by Goal Category											
S1	Review interdependency among policies and identify needed changes; establish a priority amongst current policies; and establish and implement a timeline for plans and policies that need to be updated.										
M1	By 2020 complete policy review and initiate processes for policy amendments.	H	M	M	\$	Impacts to other plan initiatives and goals	Will require staff time from multiple depts displacing other workplan priorities	2020	9 months	OSMP, PH&S, P&R	
SOCIAL COEXISTENCE - Support proactive and innovative non-lethal strategies to minimize conflicts associated with prairie dogs and competing land uses. Increase public awareness of the prairie dog's role in Boulder's Grassland and Urban ecosystems through community outreach.											
OB 1	Identify and map areas of conflict that can be quantified and tracked annually. Note: Areas of conflict are not to be defined only by these categories and that the map should expand on other new areas of conflict as they arise and are identified. o Conflict categories such as: ▪ Agriculture (leased/private): Encroachment of prairie dogs onto existing agricultural lands. ▪ Public and Private adjacent land owners: Encroachment of prairie dogs onto adjoining properties. ▪ Land developers: Within City of Boulder, city process for prairie dog removal (time delays/costs). ▪ Communication and protocols: Clarity and inclusiveness with community. ▪ Relocation demands exceed receiving sites: Delays in timely relocation of prairie dogs due to lack of receiving sites.										
M1	By 2019 identify and map conflict areas annually and make it easily available to the public.	H	L	M	\$-\$\$	Unknown	Beneficial to know conflict areas and shows willingness to work with neighbors. Strategy and method for determining and mapping conflict will need to be developed and implemented requiring staff time including GIS staff, wildlife staff, outreach staff and agricultural staff from OSMP, PHS, PR displacing other workplan priorities such as monitoring of rare/sensitive species, coordination of bear protection, non-native species control,	2020- staff unavailable until after completion of OSMP Master Plan	6 months- 1 year depending on strategy	OSMP, PHS, P&R	
OB 2	Identify and implement innovative proactive non-lethal strategies to address conflicts in each defined category (Some categories the group has identified):										

Legend: L – low effort / time commitment M – medium effort / time commitment H – high effort / time commitment OB = Objective S - Strategy M - Milestone	Scope / Time Estimates			Assessments & Impacts			If 100% approved with funding to implement			Related Themes
	Staff	Public Engagement	Council / Boards	Economic (e.g., estimated implementation cost, CIP or operating expense)	Environmental (e.g., natural resources)	Social (e.g., facilities, work plan, existing plans & policies)	Staff Suggested Timing	Approximate Duration of Task	Department Lead(s)	

Recommendations by Goal Category

	▪ Agriculture (leased/private): Evaluate/Provide barriers or other exclusion/mitigation methods. ▪ Private and adjacent land owners: ○ Evaluate/Provide barriers on City of Boulder land adjoining high-conflict areas. ○ Add additional criteria to definition of future PCAs in the Grassland Management Plan to consider the level of conflict with adjoining properties ▪ Land Developers: Follow newly proposed protocol for relocations. ▪ Communication & Protocols: ○ Have clear and consistent communication among all agencies. ○ Review protocols and update as necessary. ▪ Relocation demands exceed Receiving site: ○ Explore additional opportunities for relocations in Southern Grasslands by evaluating current relocation criteria, in conjunction with Goal 1 efforts, to alleviate conflicts in other areas. ○ Work towards the reintroduction of the black-footed ferret (as stated in goal 1) using connecting parcels from the public/private sector to achieve this goal as a natural strategy in PD management. ○ Collaborate with community partners (ex: Prairie Dog Coalition or Defenders of Wildlife) to implement conflict prevention strategy	H	M	M	\$\$\$\$-\$\$\$\$	Unknown	Effective barriers are expensive to construct and maintain throughout their intended life cycle. City owned properties have many miles of shared boundary with private property or irrigated agricultural fields. A cursory GIS analysis of OSMP prairie dog colonies and irrigated agricultural fields alone indicates that more than 100 irrigated fields currently intersect occupied prairie dog colonies. Providing effective barriers for neighboring property owners who have recently (within last 6 months) reported conflicts would require an investment of more than \$1 million if each were selected for barrier installation. Passive relocation techniques would likely require contracted services or the addition of staffing resources. Changes to the existing Grassland Management Plan would require a public process and board and council approvals.	Staff could begin or continue to implement barrier fencing construction projects on a limited basis in 2019, however, significant expenditures of staff time or CIP funds (>\$10,000) would require a reallocation of departmental resources and/or proposed work plan. Changes to the Grassland Ecosystem Management Plan would likely need to be developed after the completion of the OSMP Master Plan.	18-24 months for priority barrier fencing construction projects, infrastructure maintenance activities and passive mitigation techniques would be ongoing activities as long as individual colonies are occupied. Modifying the Grassland Ecosystem Management Plan could take up to 24 months once the process is initiated.	OSMP, P&R, PH&S	
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Legend: L – low effort / time commitment M – medium effort / time commitment H – high effort / time commitment OB = Objective S - Strategy M - Milestone		Scope / Time Estimates			Assessments & Impacts			If 100% approved with funding to implement			Related Themes
		Staff	Public Engagement	Council / Boards	Economic (e.g., estimated implementation cost, CIP or operating expense)	Environmental (e.g., natural resources)	Social (e.g., facilities, work plan, existing plans & policies)	Staff Suggested Timing	Approximate Duration of Task	Department Lead(s)	
Recommendations by Goal Category											
M1	By end of 2019, initiate a pilot program to implement a conflict prevention strategy in at least two adjoining conflict locations (properties that are next to or connected to each other).	M	L	L	\$-\$\$\$ operating	Dependent on strategy- if includes barriers potential for impacts to other wildlife movement, weed invasion	Community implications involved in selecting properties- advantageous for selected properties and shows willingness to work with neighbors, but potentially contentious for others not selected. Selection process will need to be developed. Conflict prevention will require initial staff time and ongoing staff time for maintenance of any infrastructure involved	2019	1 year	OSMP	
M2	By 2022 proactively address 10% of defined conflict areas annually.	H	L	L	\$-\$\$\$\$\$ operating	Dependent on strategy- if includes barriers potential for impacts to other wildlife movement, weed invasion	Community implications involved in selecting properties- advantageous for selected properties and shows willingness to work with neighbors, but potentially contentious for others not selected. Selection process will need to be developed. Conflict prevention will require initial staff time and ongoing staff time for maintenance of any infrastructure involved	2020	2 years for initial, then ongoing	OSMP, PH&S, PR	
OB 3	Review mechanisms for communication and update as required to ensure prairie dog management conflicts and concerns are addressed in an effective and timely manner.										
S1	Establish who to call when conflicts with illegal activity arise and when animal control cannot be reached.	L	L	L	\$	N/A	H: PHS 320 hours	2018	Completed	PH&S	
OB 4	Develop a campaign to engage Boulder area residents to expand their appreciation of the role of prairie dogs in native grasslands in Boulder County and the complex nature of their management.										

Legend: L – low effort / time commitment M – medium effort / time commitment H – high effort / time commitment OB = Objective S - Strategy M - Milestone	Scope / Time Estimates			Assessments & Impacts			If 100% approved with funding to implement			Related Themes
	Staff	Public Engagement	Council / Boards	Economic (e.g., estimated implementation cost, CIP or operating expense)	Environmental (e.g., natural resources)	Social (e.g., facilities, work plan, existing plans & policies)	Staff Suggested Timing	Approximate Duration of Task	Department Lead(s)	

Recommendations by Goal Category

S1	- Create surveys to gauge public awareness and concerns based on historical efforts. - Campaign for more public awareness, engage the public through technology, Boulder newsletters and community outreach programs. Presentations at local libraries, schools, Boy/Girl Scout troops and 4-H groups are ways to reach out to the community. - Provide Boulder residents opportunities to contribute to PD conservation through assistance with environmental monitoring and outreach programs. - Better educate public about plague and update informational sites.	H	M	L	\$\$, operating, consultant/professional services provider	-	Increased community engagement. Campaign to engage Boulder area residents to expand their appreciation of the role of prairie dogs in native grasslands in Boulder County and the complex nature of their management; conducting education programs requires staff to redirect their current program priorities/topics	2020	12 months to launch, then on-going	TBD	
OB 5	Develop annual assessment feedback mechanisms.										
S1	Reevaluation of adaptive management practices.	L	L	L	\$, operating	-	Work plans need to allow timing for staff to conduct this process of reevaluation	2020	On-going	OSMP PH&S P&R	-
Ob 6	Secure modifications to state regulations to facilitate the transfer of prairie dogs across county lines.										
S1	Lobby neighboring county commissioners and state legislators to advocate for these adjustments, providing protocols and language for legislation.	L	L	M	\$, lobbying		Council would need to include this as a priority for the 2019 Legislative Agenda.	2019	6 months for Legislative Agenda evaluation	PH&S	

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	Staff	Public Engagement	Council / Boards	Economic (e.g., estimated implementation cost, CIP or operating expense)	Environmental (e.g., natural resources)	Social (e.g., facilities, work plan, existing plans & policies)	Staff Suggested Timing	Approximate Duration of Task	Department Lead(s)	

Recommendations by Goal Category

ECONOMIC - Implement sustainable processes that provide resources and capacity to secure prairie dog conservation associated with the City of Boulder.											
OB 1	Apply principles of Net Positive Impact (avoid, minimize, mitigate, seek net positive gain) on prairie dog conservation activities, including relocation projects, associated with the City of Boulder.										
S1	Utilize habitat quantification tool to score sites (removal and receiving), to help offset on-site impact of development and to determine net-positive impact.										
M1	By 2020, pilot the use of the adapted habitat quantification tool developed to determine Net Positive Impact in one or more scenarios within the city.	M	L	L	\$\$, operating	there is no direct impact to resources by using the tool itself; any impacts may occur from the results of using the tool	staff will need to dedicate hours to determine the right tool components and to utilize the tool to score one or more sites	2020	12 months to have a full year of evaluation	OSMP	
OB 2	Establish a grassland conservation fund that augments operating budgets for meeting prairie dog management and is used for expenditures including but not limited to acquisition (fee title and/or easements), relocations and stewardship										
S1	Establish inflow and outflows of monies into and out of the grassland conservation fund.										
M1	By 2019, create and implement a required fee structure for private landowners relocating prairie dogs to city land.	H	M	M	\$\$	A fee structure would help absorb associated costs of environmental impacts	Requires an ordinance and will affect Finance and City Attorney's Office staff work plans	2019	12-18 months	PH&S	
M2	Work with Boulder’s philanthropic community (e.g., Community Foundation of Boulder County) to identify opportunities to provide sustainable support to Prairie Dog conservation in the Boulder region.	M	M	L	\$	-	-	2019	ongoing	TBD	

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	Staff	Public Engagement	Council / Boards	Economic (e.g., estimated implementation cost, CIP or operating expense)	Environmental (e.g., natural resources)	Social (e.g., facilities, work plan, existing plans & policies)	Staff Suggested Timing	Approximate Duration of Task	Department Lead(s)	

Recommendations by Goal Category

M3	By 2020, work with conservation entities to identify conservation practices, programs and funding mechanisms that could support grassland restoration and the mitigation of conflicts on agricultural land. (Example entities include Natural Resource Conservation Service and Great Outdoors Colorado. An example of funding which could be explored includes conservation leases.)	M	L	L	\$, operating	Time directed toward administrative tasks rather than implementation and field tasks but may increase capacity in the future.	Demonstrates city’s partnership initiative; staff would need to adjust work plans to allow for this administrative work	2020	On-going	TBD	
S2	No less frequently than once, but no more frequently than twice a year, there will be a publicly-noticedmeeting that includes invitations to members of the PDWG with an opportunity for the members to discuss progress on the ecological, social, and economic goals and strategies and contribute to the adaptive management process.	L	M	L	\$, operating	Time directed toward meeting & preparation rather than implementation and field tasks	Meetings support transparency and build trust; may not be necessary long-term but are important in the near-term for demonstrating accountability and effectiveness of approved actions. Increased community engagement. Maintain relationships built.	2019	On-going for the near-term	TBD	
M1	By December 2019 staff will provide an annual report on the inflows and outflows.	L	M	L	\$, operating	Time directed toward meeting & preparation rather than field tasks	Financial staff needed to support report development. Evaluation of progress and recalibration.	2019	On-going	TBD	

Legend: L – low effort / time commitment M – medium effort / time commitment H – high effort / time commitment OB = Objective S - Strategy M - Milestone	Scope / Time Estimates			Assessments & Impacts			If 100% approved with funding to implement			Related Themes
	Staff	Public Engagement	Council / Boards	Economic (e.g., estimated implementation cost, CIP or operating expense)	Environmental (e.g., natural resources)	Social (e.g., facilities, work plan, existing plans & policies)	Staff Suggested Timing	Approximate Duration of Task	Department Lead(s)	

Recommendations by Goal Category

M2	By 2019 staff will provide their respective department board or commission with annual updates on the status of the goals and objectives as well as a review of, and advisement on, inflows and outflows of the grassland’s conservation fund.	L	M	M	\$, operating	Time directed toward reporting & preparation rather than field tasks	Accountability. Working group members are likely to be highly interested in attending meetings where updates will be provided; other members of the public who expressed concerns during the working group are also likely to attend. Adaptive Management in action.	2019	On-going	OSMP PH&S P&R	-
OB 3	Support sufficient budgets for city staff to fulfill their roles in achieving the approved PDWG goals, objectives, and strategies as well as recommended changes to plans, policies and practices.										
S1	Revisit and amend department budget allocations (including a line item for prairie dog management), and annual work plan objectives for staff to ensure they are compatible with, and can accomplish, the PDWG goals and objectives.										
M1	Recommend departmental operating budget line items for prairie dog management in the 2020 budget.	L	L	M	\$\$\$ - (varies by dept and year), operating	Other management objectives (i.e., protecting rare/sensitive species) will receive a lower priority or will not be addressed	Directing funding to pdog mgmt, will naturally alter a department’s ability to address other services	2019 (for 2020)	On-going	OSMP PH&S P&R	
M2	Annually ensure each relevant department has sufficient budgets, staffing and/or consultants to meet the prairie dog management goals and objectives.	M	-	M	\$\$\$-\$\$\$\$\$ - (varies by dept and year), operating & CIP	Other management objectives (i.e., bear protection) will receive a lower priority or will not be addressed	Directing funding to pdog mgmt, will naturally alter a department’s ability to address other services	2019 (for 2020)	On-going	OSMP PH&S P&R	
S2	Maximize in-kind contributions to assist with addressing prairie dog management.										
M1	By 2019, create a pilot project with at least two outside organizations to help fulfill the PDWG goals and objectives by maximizing in-kind contributions (i.e., donation of nest boxes or fence/barrier materials or installation).	M	L	L	\$\$\$ - operating or CIP (TBD)	May offset the financial costs of PDWG goal implementation.	Demonstrates ability to partner on implementation of goals and objectives and positive relationship development; opportunity to story tell about the role of prairie dogs in the ecosystem	2020	12 months	OSMP P&HS P&R	

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	Staff	Public Engagement	Council / Boards	Economic (e.g., estimated implementation cost, CIP or operating expense)	Environmental (e.g., natural resources)	Social (e.g., facilities, work plan, existing plans & policies)	Staff Suggested Timing	Approximate Duration of Task	Department Lead(s)	

Recommendations by Goal Category

M2	Track in-kind contributions on an annual basis and make data available for other funding opportunities.	L	-	-	\$, operating	-	Impact to finance divisional staff, reported information would be available online	2020	On-going	PH&S	
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Key to Related Themes

=

conflict management

=

funding

=

large-block habitat

=

plague management

Key to Staff Scope (Estimated Hours)

L = 0-.05 FTE

M = .05-0.1 FTE

H = 0.1 -0.5 FTE

Key to Estimated Implementation Costs

\$ = less than \$10,000

\$\$ = \$10,000 - \$49,999

\$\$\$ = \$50,000 - \$99,999

\$\$\$\$ = \$100,000 – \$499,999

\$\$\$\$\$ = \$500,000+

Attachment C: Summary of Board Feedback

As of Oct. 1, 2018, all board responses are considered drafts and have not been formally approved as written.

Environmental Advisory Board, August 1, 2018:

The board stated concern about the financial impact of the recommendations and suggested prioritizing ideas in order to narrow down the range of budget needs.

They questioned from where the money would come.

The board suggested it could be an iterative process where once initial stages are accomplished, the group could move forward with implementing additional steps.

They suggested including a process to assess relocation efforts and whether there would be a negative impact on soil health.

The board posed the question of whether there was discussion about monitoring high integrity grasslands.

They felt the large financial range made it difficult to assess environmental or social impacts.

Parks and Recreation Advisory Board, August 27, 2018:

1. Does the board generally support the direction of the recommendations?

- A. The board was split.
 - Yes = Support the current recommendations because they are very broad and thoughtful. And the direction is to develop a framework in which the city can operate more consistently.
 - No = see concerns below.

2. Does the board have overarching concerns on economic, environmental or social impacts of the recommendations that they would like council to be aware of?

- A. It seems a lot to take on and there was concern about where the resources (\$ and staff) would come from and how this fit with other city priorities, projects, programs.
- B. There were some concerns about environmental/ecosystem health especially for the prairie dogs, the land and in relation to the plague management plan.
- C. Concerned about the challenges associated with implementing the plan and wanted more information on what that looked like and the feasibility.
- D. The board wanted more information on how these recommendations would impact P&R directly.

3. What other concerns should the city manager and city council be made aware of?

While the board understood the inherent conflicts that led to the need for the plan and that prairie dogs serve an important role in the ecosystem and agreed that lethal control should be minimized...

- A. The city shouldn't be taking on such a plan to benefit developers or development. Developers should have to pay. Maybe not so much should be developed.
- B. How can we allot so much money to single species management when there are city initiatives coming that protect and manage habitat systems that we have not considered yet?
- C. Recommendation: as we consider feasibility, involve the Boulder County Health Department
- D. Recommendation: prairie dogs should not be moved to a site they might need to be moved from again later on

Open Space Board of Trustees, September 12, 2018:

First, the OSBT wishes to thank the Prairie Dog Working Group (PDWG) for the long and difficult work they have undertaken to address this critical issue. We commend especially their recommendations on relocation of prairie dogs which will enable essential relocations to proceed in ways more acceptable to the broad community and more likely to succeed for the prairie dog colonies.

For the PDWG Phase II efforts, we commend their willingness to look at the breadth and scope of the issues with a long-term vision. We believe that there are many aspects within their Phase II package of recommendations that will be critical to the management of prairie dogs on OSMP lands. However, we cannot endorse the recommendations as a whole at this time, as the group requested, for the following reasons:

1. Does the board generally support the direction of the recommendations?

OSBT does not have the budget or staff resources to implement the recommendations. The recommended actions would impact directly many aspects of OSMP operations, our lessees, and our neighbors, as well as many of our critical grasslands and agricultural lands.

2. Does the board have overarching concerns on economic, environmental or social impacts of the recommendations that they would like council to be aware of?

Such a broad program, before endorsement, would require substantial budgetary and staff planning, consultation with numerous constituents, and integration with, or revision of, several existing resource management plans as well as inclusion in the ongoing Master Plan process.

3. What other concerns should the city manager and city council be made aware of?

We lack ability to forecast the impacts of the program plan on our natural resources, or even to know what land resources would be necessary to ensure success. It seems clear that such a plan could not be implemented successfully just on OSMP lands.

Because Prairie Dogs are a keystone species and an integral part of the Open Space system, OSBT would like to continue discussions about the PDWG recommendations with associated staff to determine what initial steps could be undertaken within the constraints of our finances, staff, and natural resources as we proceed with the Master Plan development and implementation.

Attachment D: Initial grouping of Recommendations into Buckets for Analysis and Implementation

Milestone Description	Bucket 1= Existing staff, existing resources, consistent with plans/policies 2= Additional staff or additional resources, consistent with plans, policies (2a- short term; 2b - longer term or dependent on completion of another milestone first) 3= Existing staff, existing resources, not consistent with existing plans or policies 4= Additional staff, additional resources, not consistent with existing plans and policies, may have significant trade-offs or reprioritization implications
Prior to implementing the plan under Milestone 2, all translocated prairie dogs will receive plague abatement.	1
By 2019, work with Integrated Pest Management (IPM) to ensure implementation of an acceptable policy that may limit the use of insecticides but allows such use on large prairie dog ecosystem colonies as necessary.	1
Recruit researchers from USGS, CSU, etc. to secure funding and implement a research plan.	1
Land Developers: Follow newly proposed protocol for relocations.	1
Communication & Protocols: Have clear and consistent communication among all agencies.	1
Communication & Protocols: Review protocols and update as necessary.	1
Establish who to call when conflicts with illegal activity arise and when animal control cannot be reached.	1

Lobby neighboring county commissioners and state legislators to advocate for these adjustments, providing protocols and language for legislation.	1
No less frequently than once, but no more frequently than twice a year, there will be a publicly-noticed meeting that includes invitations to members of the PDWG with an opportunity for the members to discuss progress on the ecological, social, and economic goals and strategies and contribute to the adaptive management process.	1
Recommend departmental operating budget line items for prairie dog management in the 2020 budget.	1
In the near term, due to high occupancy of conflict areas, there is an increase in the number of successful translocations across the Boulder region.	2a
Pilot by 2021 one property that has prairie dog colonies with managed buffer zones.	2a
By 2020 complete policy review and initiate processes for policy amendments.	2a
By 2019 identify and map conflict areas annually and make it easily available to the public.	2a
Agriculture (leased/private): Evaluate/Provide barriers or other exclusion/mitigation methods.	2a
Create surveys to gauge public awareness and concerns based on historical efforts.	2a
Campaign for more public awareness, engage the public through technology, Boulder newsletters and community outreach programs. Presentations at local libraries, schools, Boy/Girl Scout troops and 4-H groups are ways to reach out to the community.	2a

Provide Boulder residents opportunities to contribute to PD conservation through assistance with environmental monitoring and outreach programs.	2a
Better educate public about plague and update informational sites.	2a
Reevaluation of adaptive management practices.	2a
By 2019, create and implement a required fee structure for private landowners relocating prairie dogs to city land.	2a
By 2020, work with conservation entities to identify conservation practices, programs and funding mechanisms that could support grassland restoration and the mitigation of conflicts on agricultural land. (Example entities include Natural Resource Conservation Service and Great Outdoors Colorado. An example of funding which could be explored includes conservation leases.)	2a
Annually ensure each relevant department has sufficient budgets, staffing and/or consultants to meet the prairie dog management goals and objectives.	2a
By 2019, create a pilot project with at least two outside organizations to help fulfill the PDWG goals and objectives by maximizing in-kind contributions (i.e., donation of nest boxes or fence/barrier materials or installation).	2a
By 2019, pilot application of a habitat quantification tool with parcels being proposed for new acquisitions or easements related to prairie dog conservation.	2b
Based on identified prairie dog occupied and relocation sites, update inventory and monitoring data for at-risk species associated with the Mixed grass prairie mosaic and xeric tallgrass prairie.	2b

Document relative compatibilities of relevant land use and management options applicable to prairie dog relocation sites and occupied colonies (e.g., use of insecticides relative to rare insect species, density of prairie dogs relative to rare plant species).	2b
Private and adjacent land owners: Evaluate/Provide barriers on City of Boulder land adjoining high-conflict areas.	2b
Relocation demands exceed Receiving site: Collaborate with community partners (ex: Prairie Dog Coalition or Defenders of Wildlife) to implement conflict prevention strategy	2b
By end of 2019, initiate a pilot program to implement a conflict prevention strategy in at least two adjoining conflict locations (properties that are next to or connected to each other).	2b
By 2022 proactively address 10% of defined conflict areas annually.	2b
By 2020, pilot the use of the adapted habitat quantification tool developed to determine Net Positive Impact in one or more scenarios within the city.	2b
Work with Boulder's philanthropic community (e.g., Community Foundation of Boulder County) to identify opportunities to provide sustainable support to Prairie Dog conservation in the Boulder region.	2b
By December 2019 staff will provide an annual report on the inflows and outflows.	2b
By 2019 staff will provide their respective department board or commission with annual updates on the status of the goals and objectives as well as a review of, and advisement on, inflows and outflows of the grasslands conservation fund.	2b

Track in-kind contributions on an annual basis and make data available for other funding opportunities.	2b
By 2019, complete and implement a plague-management and monitoring plan using proven-effective state-of-the-art plague management techniques to secure sustainable and plague-resistant prairie dog colonies.	3
Private and adjacent land owners: Add additional criteria to definition of future PCAs in the Grassland Management Plan to consider the level of conflict with adjoining properties	3
By 2019, work with local experts to review modeling method and data inputs to provide an updated prairie dog habitat suitability model and GMAP target viability criteria to map current conditions for the mixed grass prairie mosaic and prairie dog colonies across the relevant grassland landscape to serve as guidance for plan updates.	4
By 2019, based on milestone 1, work with local experts to update and implement GMAP goals relevant to prairie dogs along with receiving site location criteria (I-1) to fully utilize existing grassland receiving sites and to allow additional qualified grassland receiving sites.	4
By 2020, work with adjacent landowners, including the County of Boulder and adjacent counties, US Fish & Wildlife Service, other federal partners, and private landowners in the Grassland Preserves to create and implement a black-footed ferret recovery plan for the southern Boulder Region.	4

Relocation demands exceed Receiving site: Explore additional opportunities for relocations in Southern Grasslands by evaluating current relocation criteria, in conjunction with Goal 1 efforts, to alleviate conflicts in other areas.	4
Relocation demands exceed Receiving site: Work towards the reintroduction of the black-footed ferret (as stated in goal 1) using connecting parcels from the public/private sector to achieve this goal as a natural strategy in PD management.	4

