Best Opportunity Analysis for Diversified Vegetable Farms

Background and Purpose

Supporting local agricultural producers is a longstanding tradition at OSMP. Environmental constraints such as soil quality and water availability limit most of the agricultural production on OSMP lands to livestock or hay/forage production rather than diversified vegetable farming. However, the recent growing interest from both Boulder's city leaders and the general community to support a greater diversity of local foods has led OSMP staff to evaluate the suitability of OSMP lands for diversified vegetable production. The purpose of this Best Opportunity Analysis is to identify OSMP properties most appropriate to expand diversified vegetable farming, integrated vegetable and livestock farming[1] and/or for operating a pasture-based dairy.[2]

There are currently five properties on OSMP lands with 27 acres in diversified vegetable farming and no pasture-based dairies.

Methodology

The analysis first identified OSMP properties which have suitable soils, adequate water availability, and have or are nearby infrastructure necessary to support diversified vegetable farming[3]. (The evaluation criteria are described in more detail below.) The properties which met these essential agricultural characteristics were classified as candidates for further analysis.

The candidate properties were evaluated for compatibility with management area designations, pre-established resource management goals and other resources including sensitive species. (The evaluation criteria are described in more detail below.) Staff conducted a site-specific evaluation of the infrastructure at each candidate property to determine the type(s) of operation the existing infrastructure is best suited to support. Staff then identified and estimated the costs of infrastructure improvements and other needed management actions to convert and maintain the property as a diversified vegetable farm. Lastly, a recommendation for each of the candidate properties will be developed (TBD) and management strategies identified to provide additional direction to guide the conversion and management of properties identified for diversified vegetable farming.

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[1] Farmers commonly desire to keep pastured livestock in conjunction with a vegetable farm as it is both economical and a sustainable agricultural practice in that produce unfit to market or surplus product can be feed to the pastured livestock. Keeping pastured livestock provides the farmer with not only a way to get rid of unwanted products but also provides them with either a modest source of additional income (e.g. selling eggs) and/or food. The recommendations will distinguish between vegetable only farms and farms integrated with pasture-based livestock because of the different size (acres needed) and infrastructure requirements and identify the type(s) of operations the property can support and any differences in management actions.

[2] Pasture-based dairies are small micro-scale dairies. The number of animals permitted is typically based on the zoning designation and parcel size. For example, in areas zoned Agricultural, four animal units per acre are permitted. Pasture-based is distinctly different from feed yards, where feed is imported on the property to sustain a higher density of animal units on the parcel than otherwise permitted. Pasture-based dairies were included in this analysis because the infrastructure necessary for this type of operation exists on several OSMP properties. Only properties with the existing supporting infrastructure were considered. The recommendations will identify the type(s) of operations the property can support and any differences in management actions.

[3] All of the properties with the infrastructure to support micro-dairies are located on properties that meet the soil and water requirements.

Phase I Evaluation: Essential Agricultural Characteristics

Infrastructure

Diversified vegetable farming requires outbuildings suitable for prospective lessees/growers to process and store their products. It is also customary for growers to reside on the property, for reasons of convenience and efficiency, as evidenced by the existence of residences on all of the properties which have outbuildings. In addition, on-site housing is often necessary to attract qualified lessees. For this first phase of analysis staff identified all OSMP properties which have outbuildings and residence to support diversified vegetable farming. Staff also included properties within 0.5 miles from agricultural properties with the necessary infrastructure, including existing private farms and farms on other publicly owned lands currently leased for diversified vegetable farming, because those sites could be used to expand existing operations.

Soil Type

The ability to use a property to cultivate vegetables is dependent on having a suitable soil type. Suitable soil types have the right combination of physical and chemical characteristics such as texture, slope, pH and permeability. It is of equal importance that the soils are neither excessively erodible nor saturated with water for long periods of time, as annual vegetable fields are dominated by bare ground and therefore prone to erosion, and vegetable cultivation is not compatible with water-logged soils.

In order to identify OSMP properties with suitable soils, staff referenced a soil survey of the Boulder area conducted by the United States Department of Agriculture (USDA) in 1975.[4] The survey identifies the types and locations of soils found in eastern Boulder County, and groups soils into Capability Classes based upon their suitability for agricultural production. As the Capability Class increases, the greater the limitations are on the practical use of a soil type for agriculture. Appendix A lists the soils in the various Capability Classes and identifies the limiting factors for each soil type and Capability Class.

Staff determined properties comprised principally of soils in Capability Classes I through III were suitable, with appropriate conservation practices, for diversified vegetable farming. Properties dominated by soils in Capability Classes IV through VI pose severe cultivation limitations, such as being highly erodible, stony, or excessively wet and staff determined were not suitable for diversified vegetable farming. [5]

Water Availability

A reliable and adequate water supply is necessary to support diversified vegetable farming. Both the volume of water available and length of time the water is available were used to evaluate a property's potential for diversified vegetable farming.

All of the properties with the necessary infrastructure and appropriate soils were evaluated to determine which could be adequately watered with OSMP's water portfolio. Colorado State University

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[4] Soil survey of Boulder County Area, Colorado. United States Department of Agriculture Soil Conservation Service in cooperation with the Colorado Agricultural Experiment Station. January 1975.

[5] Capability classes VII and VIII exist, however none of the properties with the necessary infrastructure are comprised of soils in these classes. In addition soils in capability classes VII and VIII have such severe limitations they are unsuited to cultivation.

agronomists recommend at least 1.5 acre-feet of water per acre. All of the properties with appropriate infrastructure and soils met the minimum criterion for water volume. In addition, diversified vegetable farming requires less water than the current use, hay/forage operations; this is due to the differences in efficiency of flood irrigation used for hayfields versus the drip irrigation and overhead systems for diversified vegetables.[6]

In addition to requiring a minimum amount of water, diversified vegetable farming also requires a consistent source of irrigated water - typically longer than the current hay/forage operations. Staff identified those properties which in addition to having enough water, have a long enough average duration of irrigated water to support vegetable farming. Staff chose 100 consecutive days of water as the threshold based on the water requirement of tomatoes. Tomatoes are one of the most popular vegetables grown on diversified vegetable farms and take anywhere from 65 to 120 days to reach maturity which is representative or longer than the maturation time for most other types of vegetables grown in the area.

Findings

Twenty-four OSMP properties meet the above infrastructure, soils and water requirements necessary for diversified vegetable farming (Figure 1). The infrastructure, soils and water supply for each of the candidate properties are described in greater detail in the individual Property Assessments.

Phase II Evaluation Criteria

The following section describes the Phase II Evaluation Criteria.

Management Area Designations

The Visitor Master Plan (VMP) categorizes OSMP lands under one of four management area designations: Agricultural, Passive Recreation, Natural and Habitat Conservation. These designations provide the foundation for determining what types of opportunities/activities are allowed and the level of resource protection. The management area designation and corresponding goals (Appendix B) of the candidate property and adjacent areas were evaluated for compatibility with diversified vegetable farming.

While diversified vegetable farming may be a more obvious potential fit for properties designated as Agricultural Areas, properties with other management area designations were also evaluated to determine the potential to meet the resource management goals while also providing an opportunity for diversified vegetable farming.

Visitor Infrastructure/Resources

Existing OSMP trails and conceptual trails identified in the Boulder Valley Comprehensive Plan were considered, to the degree they went through or approached candidate sites. While visitor infrastructure or the associated activities may not preclude a property from being converted it may

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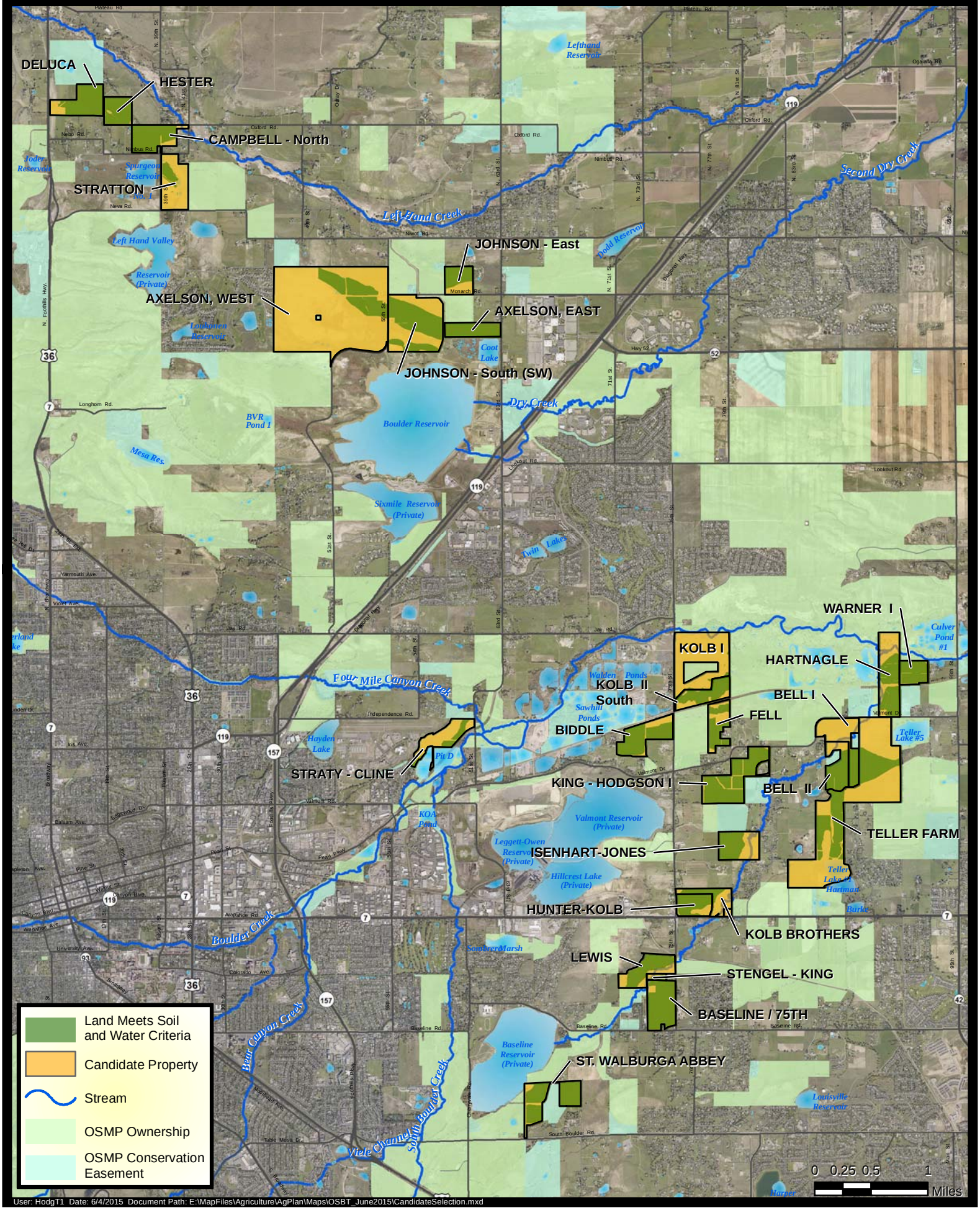
[6] Byelich, B, Cook J., and Rowley, C. Small Acreage Irrigation Guide. Colorado State University and USDA Natural Resources Conservation Service. June 2013.

City of Boulder Open Space and Mountain Parks
Agricultural Plan

Figure 1
Candidate Properties



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influence the area for consideration or management actions may be identified to mitigate any potential conflicts.

Prairie Dog Colony Management Designation and Occupation History

Prairie dog activity, such as burrowing and feeding, is incompatible with irrigated agricultural production and water management. Irrigation and related agricultural practices associated with diversified vegetable farming are likewise incompatible with the life requirements of prairie dogs.

The Grassland Plan identified management area designations for prairie dogs and associated species. The management area designations were determined by evaluating factors such as prairie dog habitat suitability (a prairie dog habitat suitability model and analysis were completed as part of the Grassland Plan), block size, urbanization, recreational activities, irrigated agriculture and adjacent land management goals. The management area designations are Grassland Preserves, Multiple Objective Areas, Prairie Dog Conservation Areas, Transition Areas and Removal Areas. The candidate properties were evaluated for compatibility with the management area designation of the property and surrounding lands. Appendix C describes the management objectives of the various prairie dog management area designations.

In addition to the prairie dog management area designation, historical (maximum extent) and current prairie dog occupation were also considered as prairie dogs will eventually attempt to re-colonize lands previously occupied. Where candidate properties or adjacent lands are or have been occupied, management costs and actions to prevent re-colonization were considered and included in the recommendations.

Bobolink Management Areas

All the candidate properties being considered for conversion to diversified vegetable farming are currently irrigated hayfields or pastures. By virtue of historic irrigation, mowing and grazing practices some of these semi-native hayfields and pastures support wildlife not commonly found elsewhere on OSMP lands such as bobolinks. Bobolinks are grassland songbirds thought to be undergoing a non-cyclical population decline due to a variety of factors including habitat destruction. Conservation of bobolink habitat has been part of OSMP's land management since the 1980s.

The Grassland Plan identified the goal of establishing or continuing agricultural management practices that support habitat for bobolinks by designating Bobolink Management Areas (Class A and Class B). Converting a candidate property to diversified vegetable farming would preclude managing that portion of the property for bobolink habitat as it would no longer be an irrigated hayfield or pasture. Several of the candidate properties were either designated as Class B Bobolink Management Areas or were identified as candidates for Class B designation in the Grassland Plan and others have recently been recognized as important bobolink habitat.

Other Sensitive Species

The presence of sensitive species and/or habitat on a candidate property was considered in determining the property's suitability for diversified vegetable farming. The sensitive species/habitats considered were:

- Northern leopard frog habitat
- Raptor nests
- Rare and state tracked plant communities (includes Ute ladies'-tresses orchid)
- Preble's meadow jumping mouse occupied habitat

Noxious Weeds

Like almost all other landowners in Colorado, OSMP is required to eradicate certain state "A-listed" weeds. Management may include the application of pesticides or herbicides. While the presence of state A-listed weeds may not preclude a property from being converted to vegetable farming it may affect the timeline for organic certification since in order to be certified, land must be pesticide free for at least three years.

Cultural Resources

Many of the candidate properties are comprised of historic structures or structures eligible for historical designation. Staff determined as long as any improvements to the structures are done in accordance with the applicable preservation policies and laws diversified vegetable farming is compatible with and in some cases may improve the condition of these cultural resources.

In addition to the structures, staff evaluated the candidate properties to determine if other cultural resources (prehistoric and historic archeological and paleontological) are present or known to exist on the candidate farms that would preclude the conversion of the property to a diversified vegetable farm. Staff determined that none were known to exist. However, some of the properties have not been adequately surveyed. For these properties the individual Property Assessments identify the need for a cultural resource survey. If the survey identifies significant cultural resources that would or could be adversely affected by the conversion of the property, the agricultural management of the property will need to be revaluated and the property may be removed from consideration.

Property Assessments

A property assessment was completed for all of the candidate properties. Some of the properties were grouped and evaluated together based on geographic proximity. The property assessments include the following:

- A description of Phase I: Essential Agricultural Characteristics (infrastructure, soils, and water).
- An evaluation of the property's compatibility with other resources and management goals (Phase II Evaluation Criteria).
- An evaluation of the infrastructure, management actions and costs associated with converting the property to a diversified vegetable farm.
- TBD - A recommendation on whether the property should be converted to a diversified vegetable farm, integrated vegetable and livestock farm and/or a pasture-based micro-dairy.

Axelson West

Essential Agricultural Characteristics

Infrastructure

There is a residence, one-small outbuilding/garage and grain bin on the southern portion of the property. On the northern building site, there is a Quonset hut, a two car garage, two loafing sheds, corrals and hay storage facilities.

Water

An adequate amount of irrigated water (≥ 1.5 acre-feet) from the Left Hand Ditch delivered via the Starr lateral is available April 1 to October 31, approximately 210 days. Fields 39 and 60 are not irrigated. There is a domestic well on the property[7].

Soils

Over eighty acres (80.9) across fields 40, 41, 48, 49, and a portion of 42 are primarily Valmont clay loam with 1-3% slopes, Capability Class III, suitable for diversified vegetable farming.

Compatibility with Other Resources and Management Goals[8]

Management area designation	Agricultural
Presence of visitor infrastructure	BVCP (and VMP) Conceptual Trail Alignment Alignment: Axelson Trail Alignment
Prairie dog colony management area designation	Grassland Preserve and Transition Area
Prairie dog occupation	Grassland Preserve is occupied and encroaching into Transition Area
Bobolink management area designation	TBD – Not identified as Class B or Class B candidate in the Grassland Plan.
Presence of sensitive species	• Seasonal Osprey closure. Closure does not extend into fields with suitable soils and water. • Rare and state-tracked plant communities are found on this property but do not intersect with agricultural fields that meet the soil and water criteria.
Presence of State A listed noxious weeds	Mediterranean sage

Management Actions and Cost Estimate for Conversion

- Clean up property[9]
  - Cost Estimate: $ 10,000
- Update outbuilding to accommodate a cooler and wash area.
  - Cost Estimate: $20,000
- Construct a livestock pole barn
  - Cost Estimate: $40,000

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[7] Colorado Water Laws allows domestic wells to be used for livestock water as well as for irrigation up to one acre of land.

[8] The tables provide summary information only. Please refer to the maps provided for each property for more detailed information on the locations of the resources.

[9] All properties will require a level of general clean up as all properties have dilapidated/abandoned infrastructure and/or equipment left from previous agricultural operations.

- Construct a small (1/10 acre-foot) irrigation pond near the headgate of the Starr lateral to facilitate the delivery of irrigation water to any planting beds.[10]
    - Cost Estimate: $5,000
- Construct a fence to separate fields 48 and 49 for diversified vegetable farming from the rest of the property which may be grazed.
    - Cost Estimate: $10,000
- Construct a prairie dog fence to separate prairie dog colonies from the portion of property suitable for vegetable farming.
    - Cost Estimate: $30,000
- Passive relocation of prairie dogs
    - Cost Estimate: $50,000
- Make efforts to ensure the fields are properly irrigated to avoid prairie dog encroachment from the adjoining Grassland Preserve.
    - Cost Estimate: ongoing/unknown

Total Cost Estimate: $165,000

Recommendation

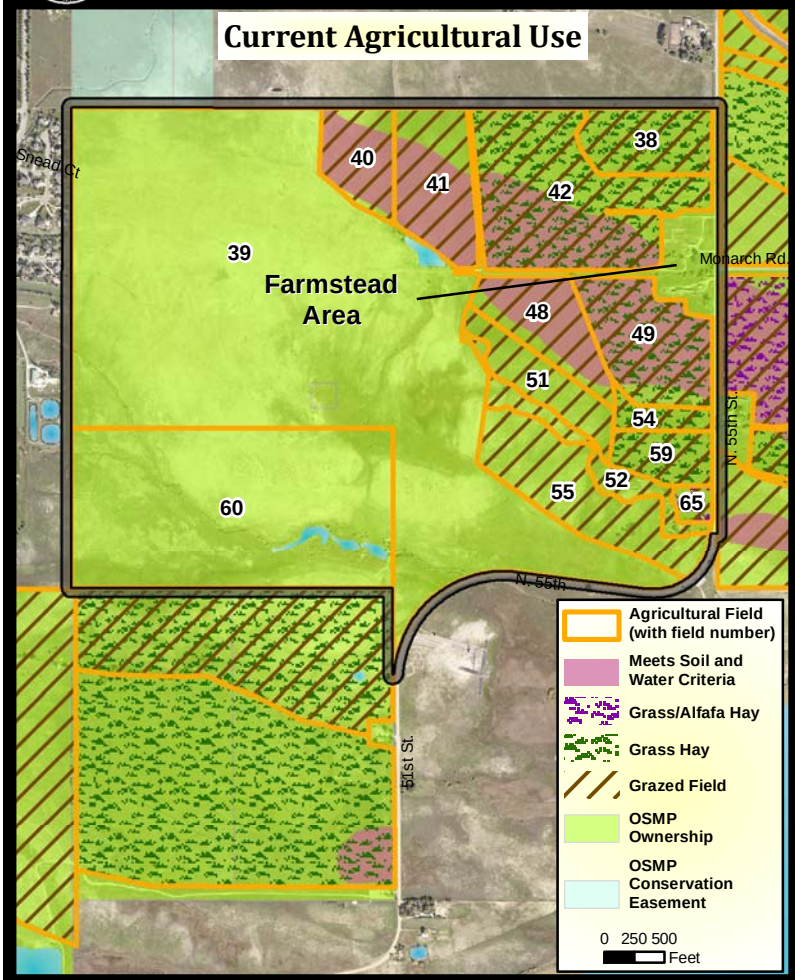
TBD

[10] Irrigation ponds are only to be used for the temporary storage, less than 72 hours, of water.

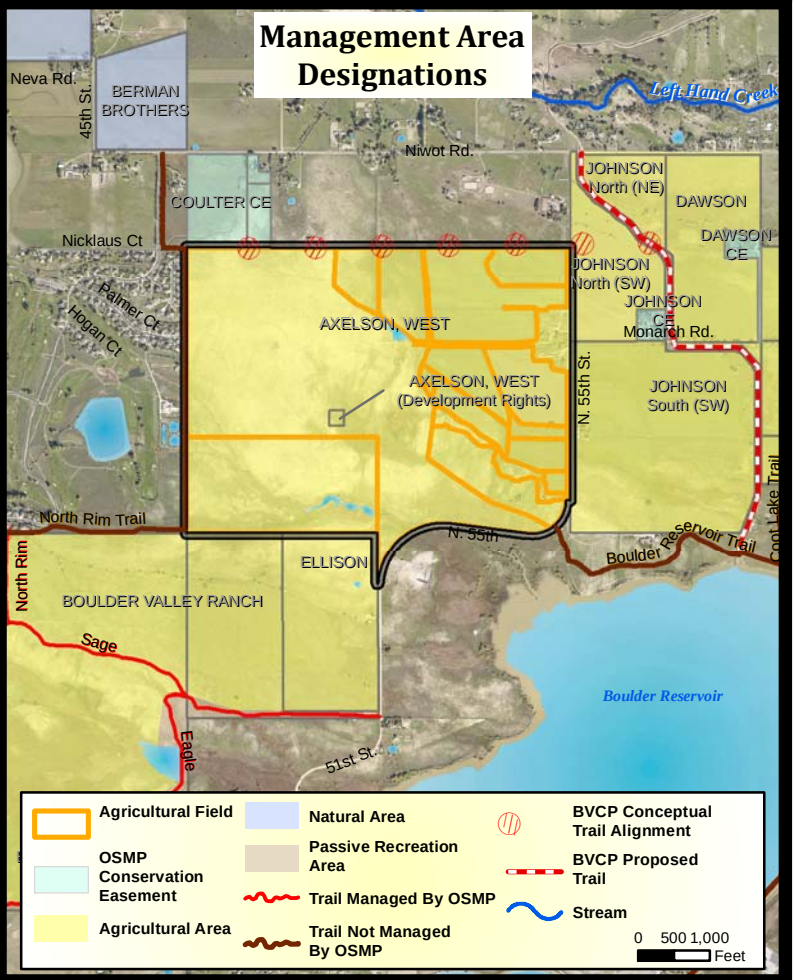
City of Boulder Open Space and Mountain Parks
Agricultural Plan

Axelson West

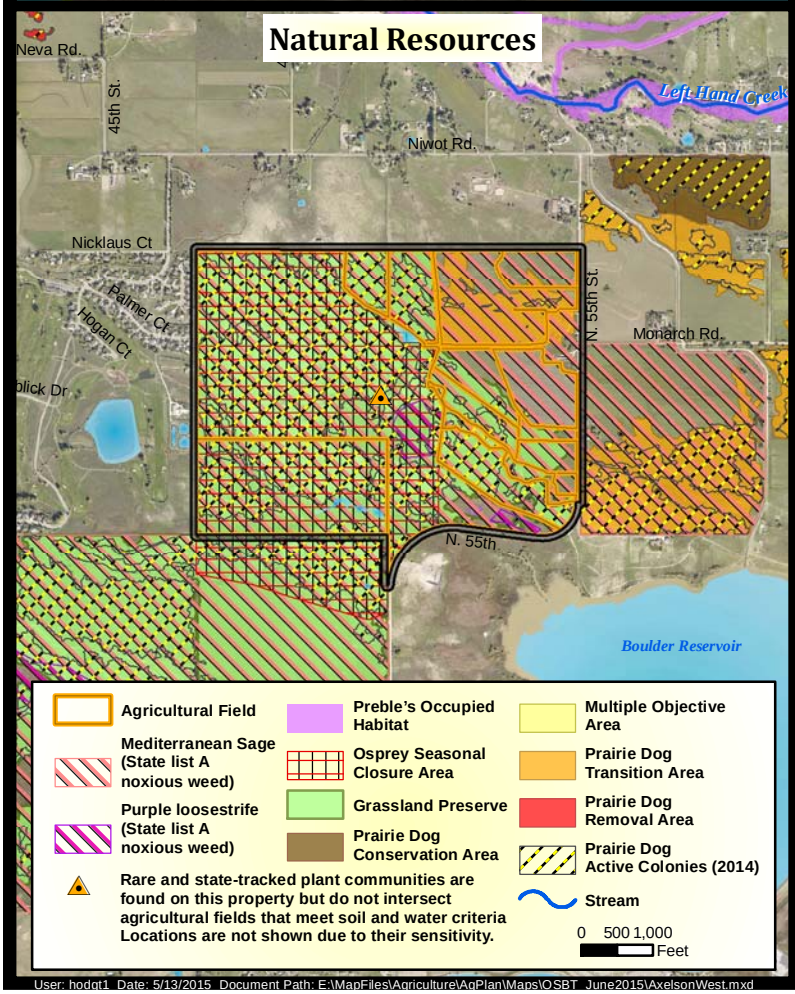
Current Agricultural Use



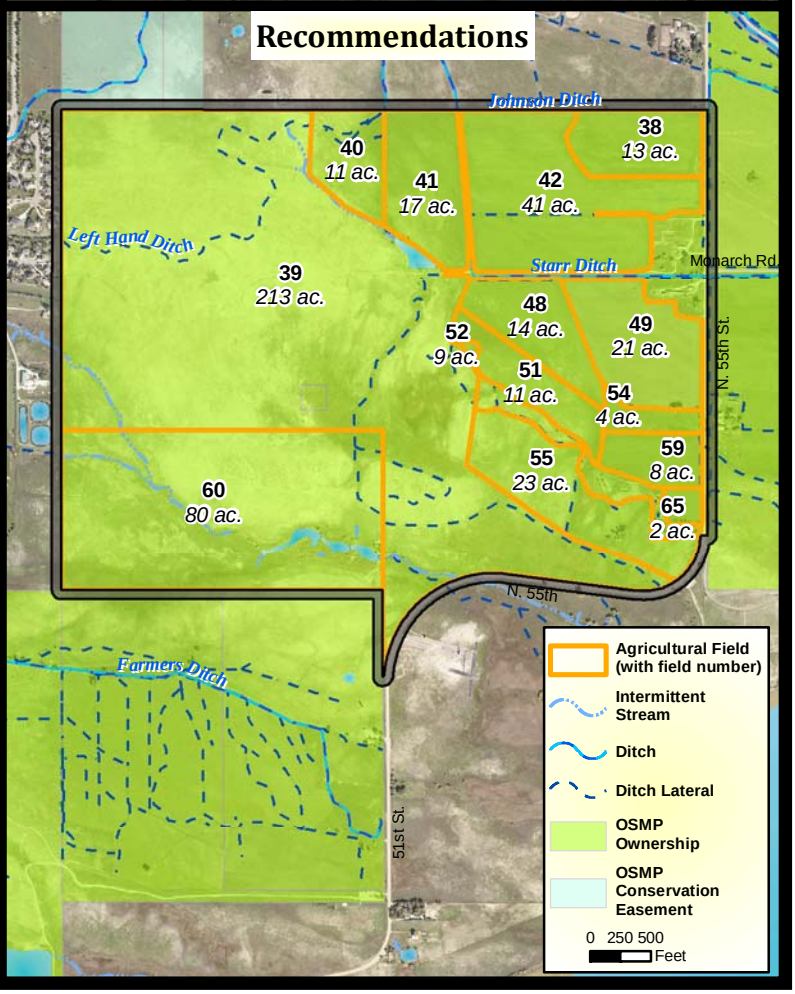
Management Area Designations



Natural Resources



Recommendations



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Lewis, Stengel-King, and Baseline & 75th

Essential Agricultural Characteristics

Infrastructure

There is a residence, a large barn (formerly used for milking and storage), a pole barn for covered hay storage, four sheds and a three bay garage on the Lewis property.

Water

For most of the Lewis property, an adequate amount of irrigated water (≥ 1.5 acre-feet per acre) is available from the Enterprise and Cottonwood #2 Ditches and is available May 16 to August 8 (84 days), and May 16 to September 12 (119 days), respectively. Field 262 is served solely by the Enterprise Ditch and therefore lacks 100 days of irrigation water and field 53 is not irrigated.

On all but one field on the Stengel-King and Baseline & 75th properties, there is an adequate amount of irrigated water (≥1.5 acre-feet per acre) available from the McGinn Ditch, which runs April 29 to October 10, approximately 164 days. Field 271 on the Baseline & 75th property is not irrigated.

Soils

Approximately 40 acres on the Lewis property are suitable for diversified vegetable production. Field 245, 3.7 acres, is comprised entirely of Nunn Sandy clay loam with 1-3% slopes, Capability Class II. Fields 244, 251, and 256 (36 acres), are comprised of a combination of Nunn sandy clay loam with 1-3% slopes and Ascalon-Otero Complex with 3-5% slopes, Capability Class III.

Approximately 4 acres on the Stengel-King property are suitable for diversified vegetable production. Field 442 is comprised primarily of Ascalon sandy loam with 1-3% slopes, Capability Class II.

Sixty-one acres on the Baseline & 75thproperty are suitable for diversified vegetable production. Fields 267, 280, 283, and 285 (51.5 acres) are comprised of Ascalon sandy loam with 1-3% slopes, Capability Class II. Field 265 (9.5 acres) is comprised of Ascalon sandy loam with 1-3% slopes and Ascalon-Otero Complex with 3-5% slopes, Capability Classes II and III, respectively.

Compatibility with Other Resources and Management Goals

Management area designation	Agricultural
Presence of visitor infrastructure	BVCP Conceptual Trail Alignment: Dry Creek Trail
Prairie dog colony management area designation	N/A
Prairie dog occupation	N/A – not occupied
Bobolink management area designation	TBD
Presence of sensitive species	Rare and state-tracked plant communities are found on all three properties and intersect with agricultural fields that meet the soil and water criteria.
Presence of State A listed noxious weeds	No

Management Actions and Cost Estimate for Conversion

- Clean up properties
  - Cost Estimate: $15,000
  - Perform a historic structures assessment on the house, barn, and outbuildings on the Lewis property.

    - Cost Estimate: $15,000
- Rehabilitate residence
    - Cost Estimate: $400,000
- Rehabilitate barn and other outbuildings
    - Cost Estimate: $100,000
- Update outbuilding to accommodate a cooler and wash area.
    - Cost Estimate: $30,000
- Construct two small (1/10 acre-foot) irrigation ponds, one on Baseline & 75th, one on Lewis, near the vegetable cropping areas to facilitate the delivery of irrigation water to any planting beds.
    - Cost Estimate: $10,000
- Cultural resource survey for Stengel-King

Total Cost Estimate: $570,000

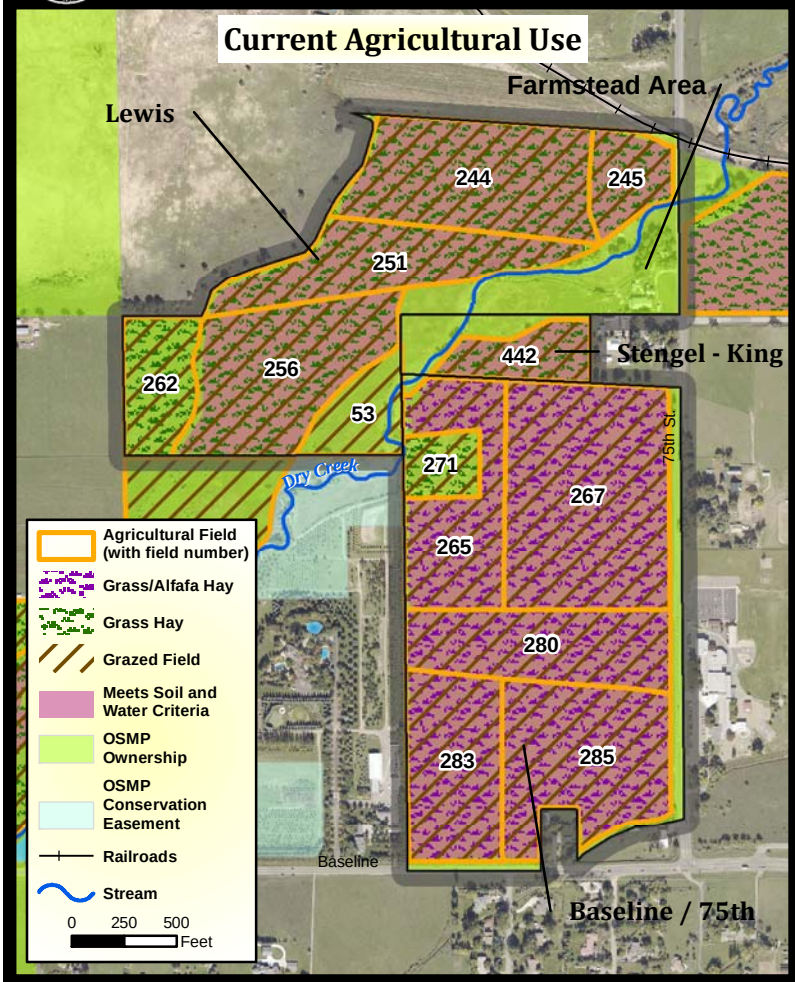
Recommendation

TBD

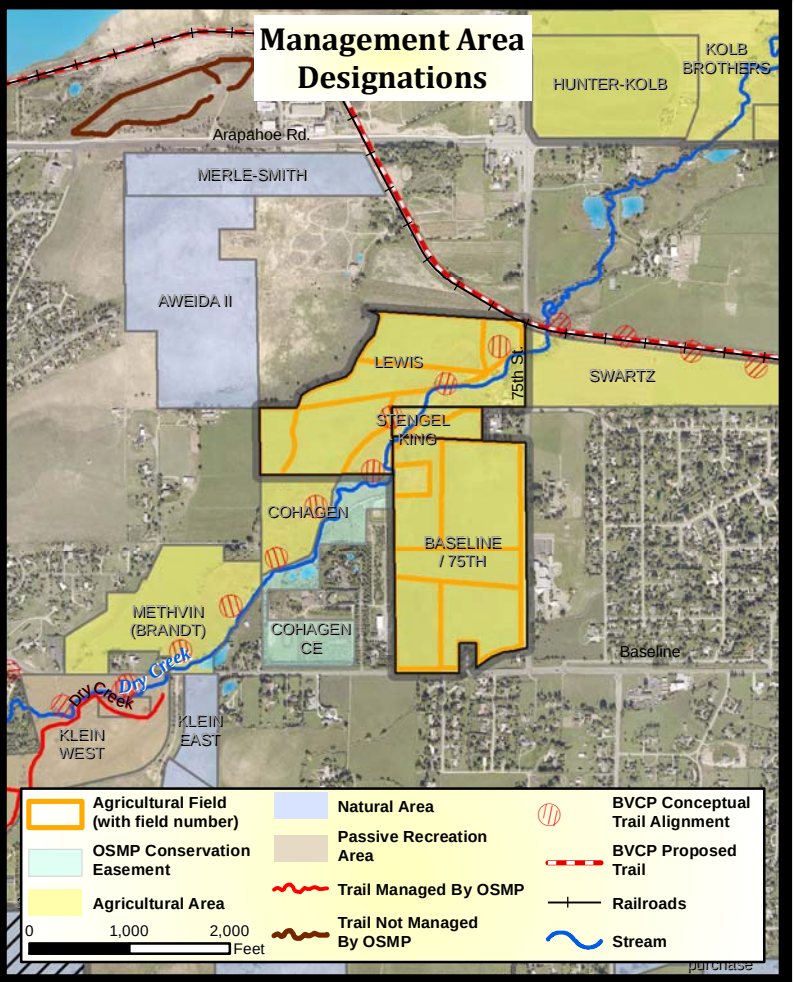
City of Boulder Open Space and Mountain Parks
Agricultural Plan

Lewis, Stengel - King, Baseline / 75th

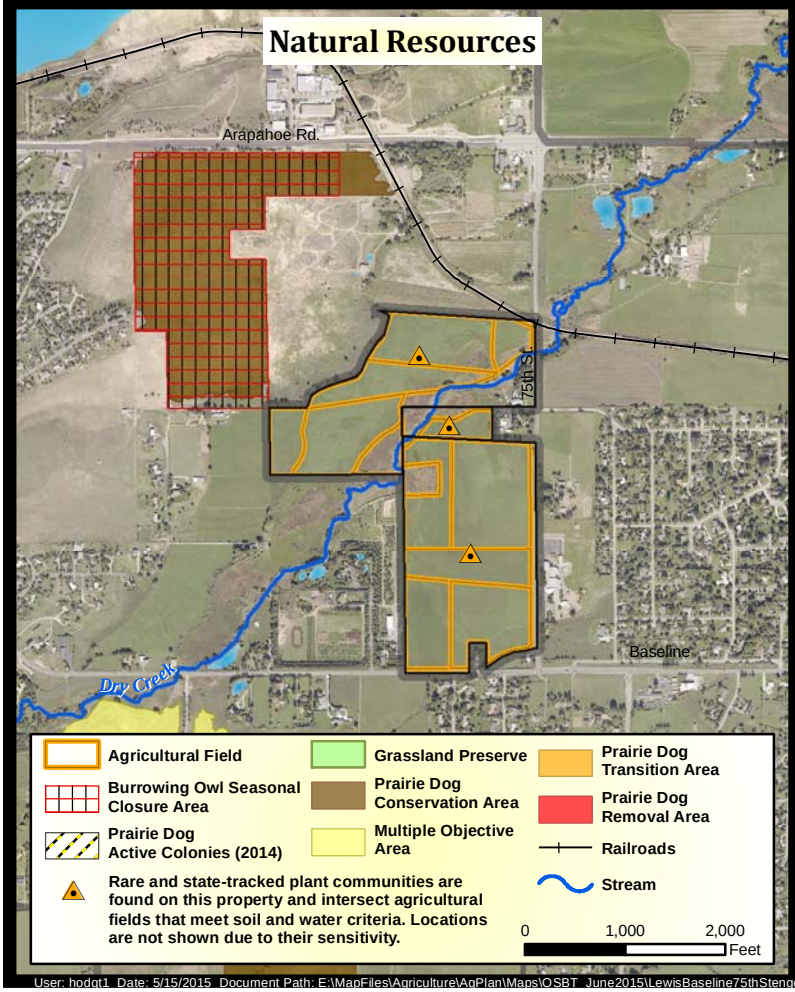
Current Agricultural Use



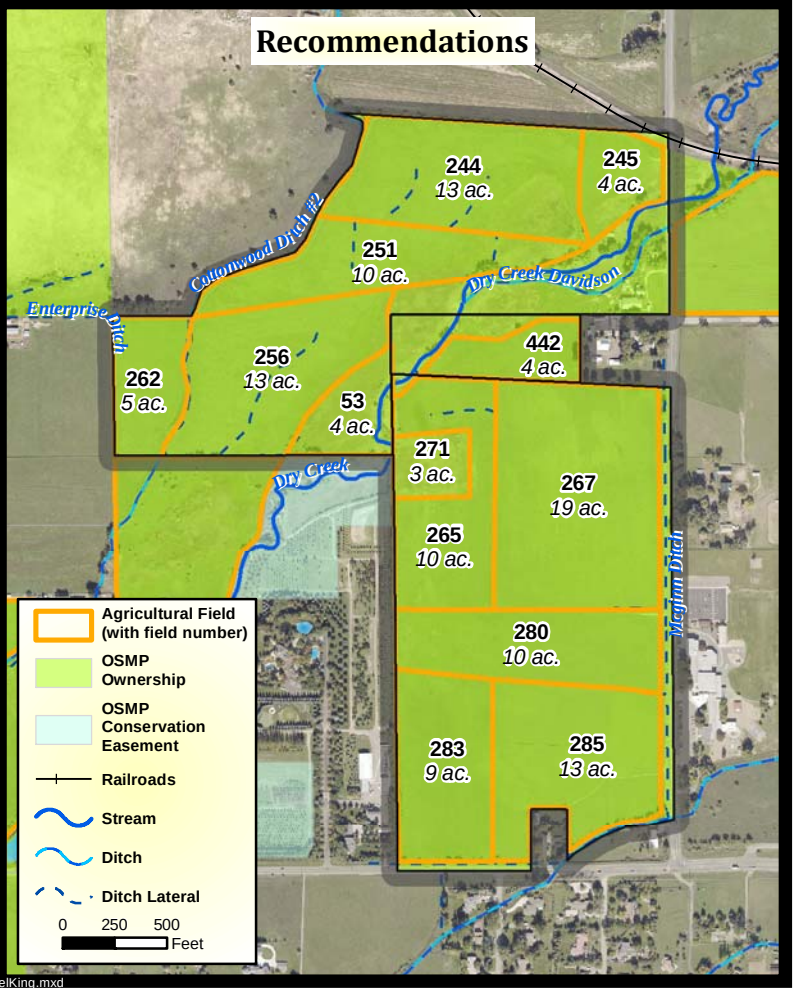
Management Area Designations



Natural Resources



Recommendations



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Hartnagle and Warner

Essential Agricultural Characteristics

Infrastructure

There is a historic residence on the Hartnagle property and seven outbuildings including a large barn that was used for hay storage, milking and shelter. Livestock shelter is available on the property.

Water

For the portion of the Hartnagle property south of the Boulder Creek, an adequate amount of irrigated water (≥ 1.5 acre- feet per acre) from the Dry Creek Davidson Ditch is available May 21 to Sept 1, approximately 103 days. Field 435 is not irrigated. There is a domestic well on the property.

For the Warner property, an adequate amount of irrigated water (≥ 1.5 acre-feet per acre) from the Leyner Cottonwood #2 Ditch is available from May 2 to September 18, approximately 139 days.

Both properties have a third of the interest in the storage water rights to Teller Lake #5. However, due to the junior status of these rights, it is not a reliable water source in dry years.

Soils

All of the property, approximately 54 acres on the Hartnagle property is suitable for diversified vegetable production. Fields 167, 173 and 175 (21.6 acres) are primarily Manter sandy loam with 1-3% slopes, Capability Class III. Fields 169 and 176 (5.3 acres) are primarily Ascalon sandy loam with 1-3% slopes, Capability Class II. Fields 154, 159, 161 and 163 (27 acres) are comprised of Ascalon sandy loam with 0-1% slopes, Capability Class I.

Thirty-three acres on the Warner property are suitable for diversified vegetable production. Fields 157 and 162 are comprised of Ascalon sandy loam, 0-1% slopes, Capability Class I.

Compatibility with Other Resources and Management Goals

Management area designation	Habitat Conservation Area
Presence of visitor infrastructure	OSMP managed East Boulder - White Rocks Trail
Prairie dog colony management area designation	Prairie Dog Removal Area
Prairie dog occupation	Currently active
Bobolink management area designation	TBD
Presence of sensitive species	• Rare and state-tracked plant communities are found on the Hartnagle property but do not intersect with agricultural fields that meet the soil and water criteria. • Leopard frog habitat
Presence of State A listed noxious weeds	No

Management Actions and Cost Estimate for Conversion

- Clean up of Hartnagle property
  - Cost Estimate: $10,000
- Rehabilitate the deteriorating residence which is currently uninhabitable.

    - Cost Estimate: $300,000 – $500,000[11]
- Assess the historic outbuildings to determine if they are historically significant.
- Rehabilitate the deteriorating outbuildings/or construct new and accommodate a cooler and wash area
    - Cost Estimate: $80,000
- Construct two small (1/10 acre-foot) irrigation ponds on each property adjacent to vegetable cultivation areas to facilitate delivery of irrigation water to any planting beds.
    - Cost Estimate: $10,000
- Remove prairie dogs
    - Cost Estimate: $40,000
- Construct a prairie dog fence along western boundary
    - Cost Estimate: $40,000
- Renovate the milking barn to be brought up to code.[12] (The necessity of this management action is dependent on what type of operation is proposed for the property, i.e. pasture-based cow or goat dairy)
    - Cost Estimate: $40,000

Total Cost Estimate: $480,000-$720,000.

Recommendation

TBD

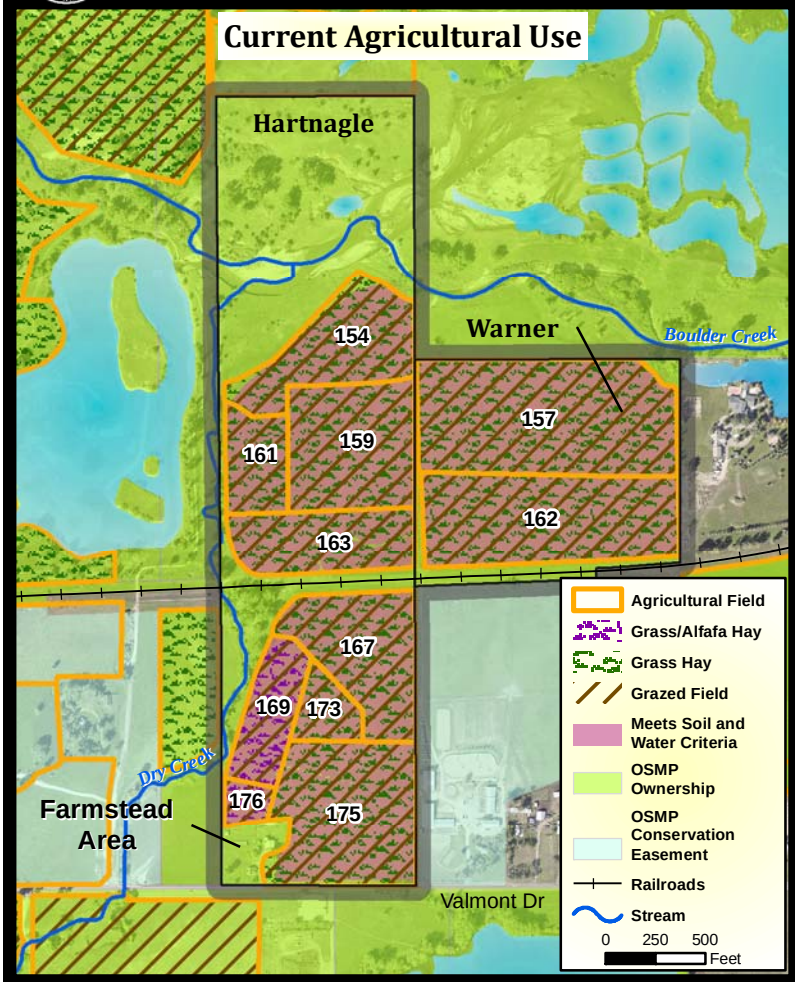
[11] An historic structures assessment is underway, which will provide a more accurate estimate.

[12] Subject to local, state and federal oversight via Boulder County Public Health, Colorado Department of Agriculture and the U.S. Food and Drug Administration

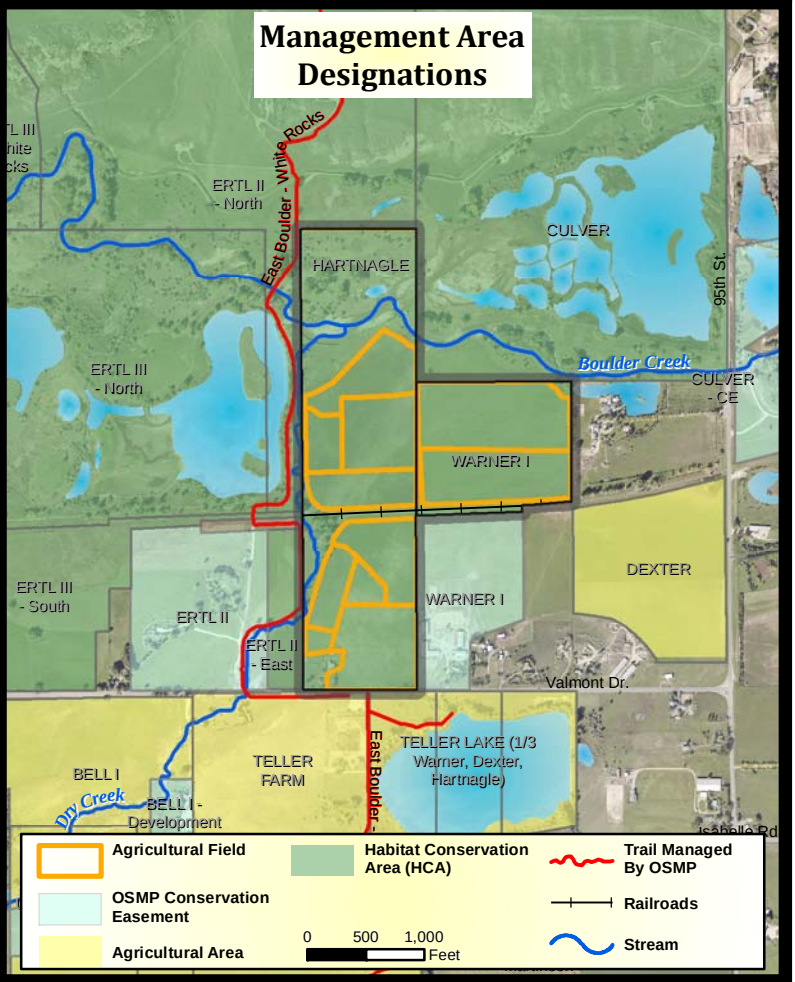
City of Boulder Open Space and Mountain Parks
Agricultural Plan

Hartnagle, Warner

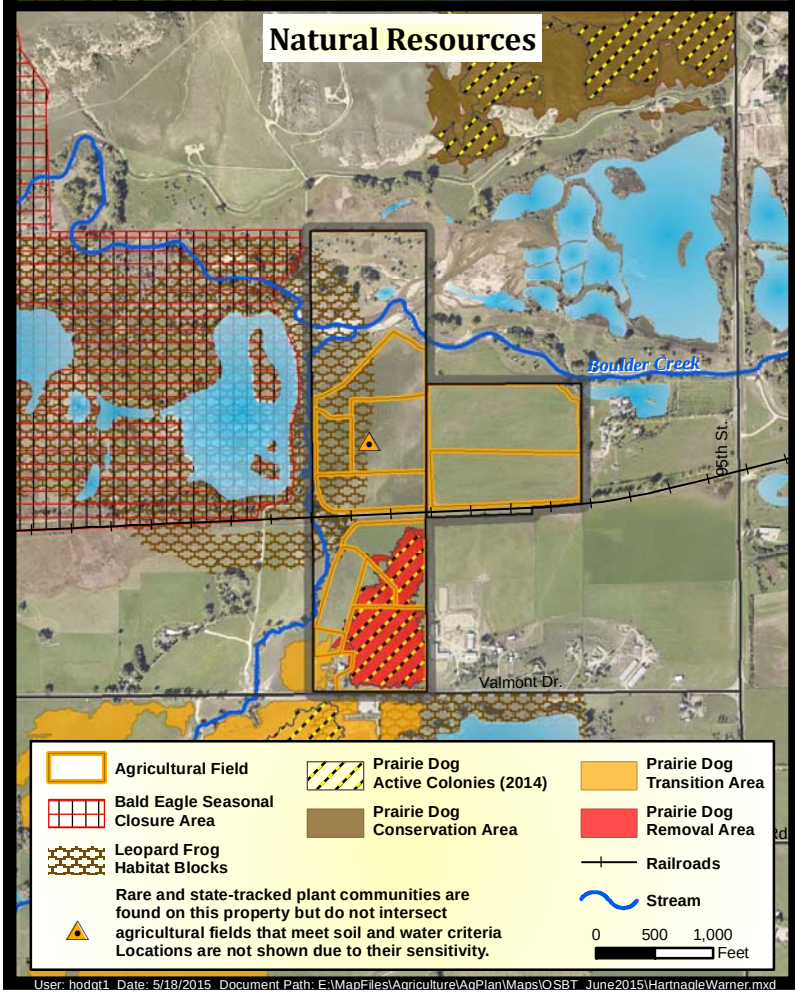
Current Agricultural Use



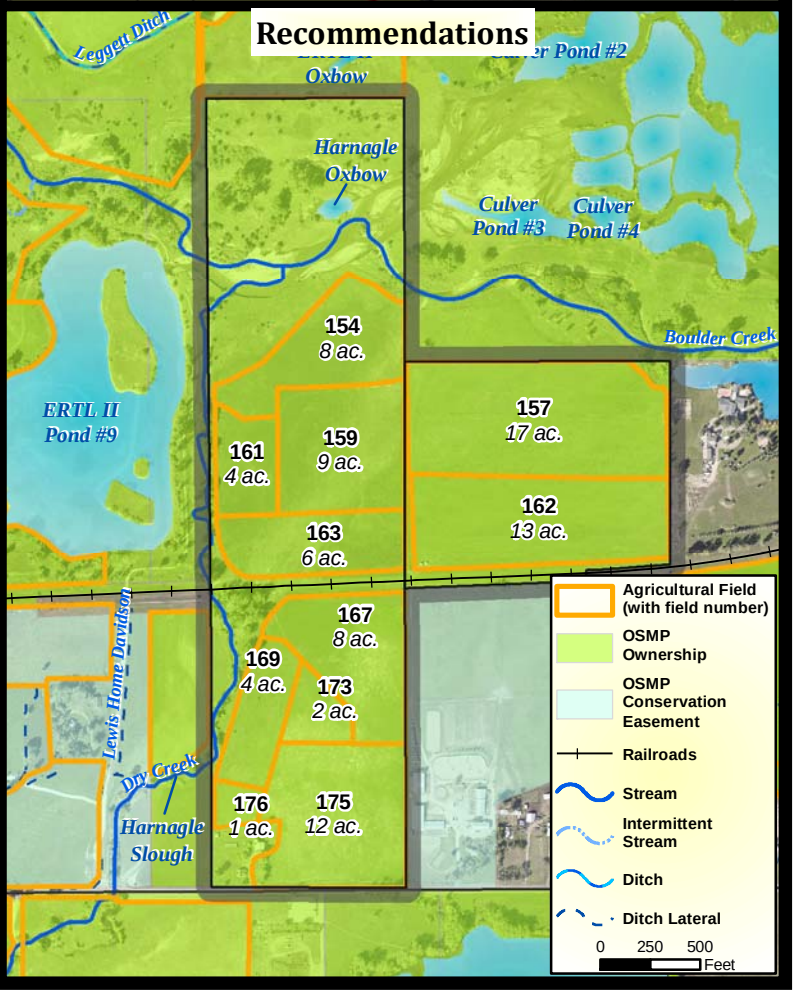
Management Area Designations



Natural Resources



Recommendations



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Hunter-Kolb and Kolb Brothers

Essential Agricultural Characteristics

Infrastructure

There is a historic residence and eight outbuildings including a milking barn, loafing shed, a tower silo and grain bin. Livestock shelter is available on the property.

Water

An adequate amount of irrigated water (≥ 1.5 acre-feet per acre) is available from the Enterprise and Cottonwood #2 Ditches and is available May 16 to August 8, 84 days, and May 16 to September 12, 119 days, respectively. There are two domestic wells on the property.

Soils

Approximately 51 acres are suitable for diversified vegetable farming. Fields 445, 446, 447, and 448 (51.2 acres) are comprised primarily of Ascalon sandy loam with 1-3% slopes, Capability Class II.

Compatibility with Other Resources and Management Goals

Management area designation	Agricultural
Presence of visitor infrastructure	No
Prairie dog colony management area designation	N/A
Prairie dog occupation	N/A – not occupied
Bobolink management area designation	TBD
Presence of sensitive species	Rare and state-tracked plant communities are found on the Kolb Brothers property but do not intersect with agricultural fields that meet the soil and water criteria.
Presence of State A listed noxious weeds	No

Management Actions and Cost Estimate for Conversion

- Clean up property
  - Cost Estimate: $10,000
- Rehabilitate residence
  - Cost Estimate: $300,000[13]
- Assess the historic outbuildings to determine if they are historically significant
  - Cost Estimate: $5,000
- Rehabilitate the deteriorating outbuildings/or construct new and accommodate a cooler and wash area
  - Cost Estimate: $80,000
- Construct a small (1/10 acre-foot) irrigation pond near the Cottonwood #2 headgate to facilitate the delivery of irrigation water to any planting beds
  - Cost Estimate: $5,000
- Construct interior fence to separate vegetable fields from grazing areas
  - Cost Estimate: $10,000

[13] This estimate was provided by The University of Colorado Denver's Center of Preservation Research, part of the College of Architecture and Planning who performed an historic structures assessment on the residence May 2014.

- Renovate the milking barn to be brought up to code. (The necessity of this management action is dependent on what type of operation is proposed for the property, i.e. pasture-based cow or goat dairy.)
    - Cost Estimate: $50,000

Total Cost Estimate: $410,000 - $460,000

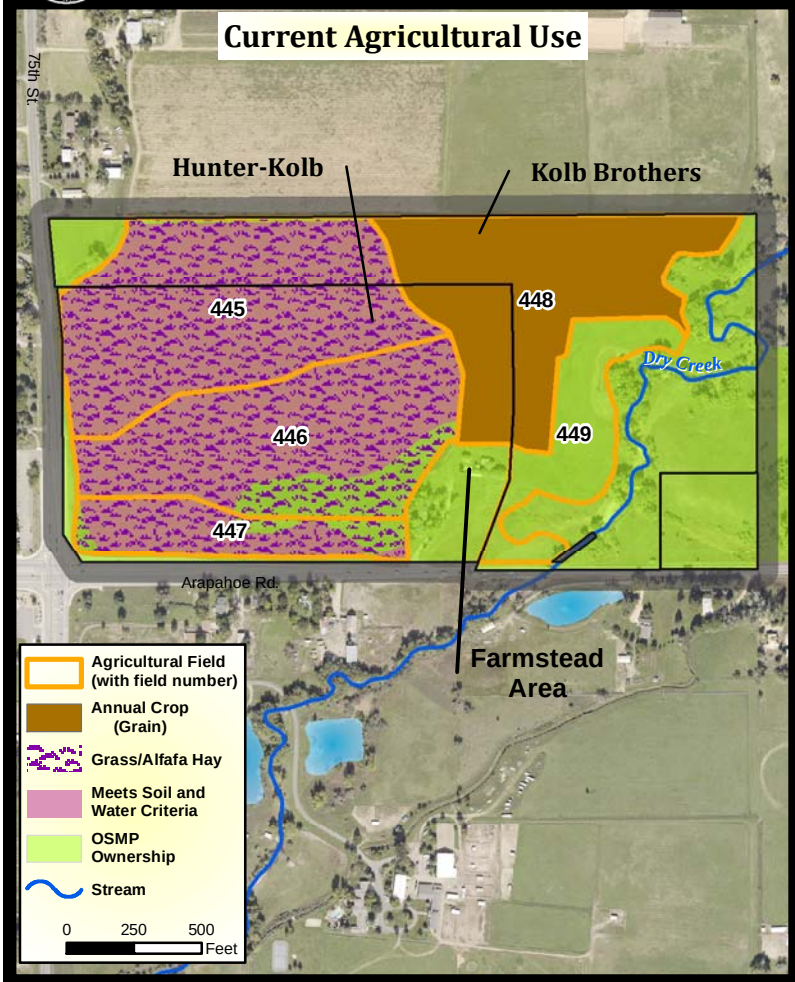
Recommendation

TBD

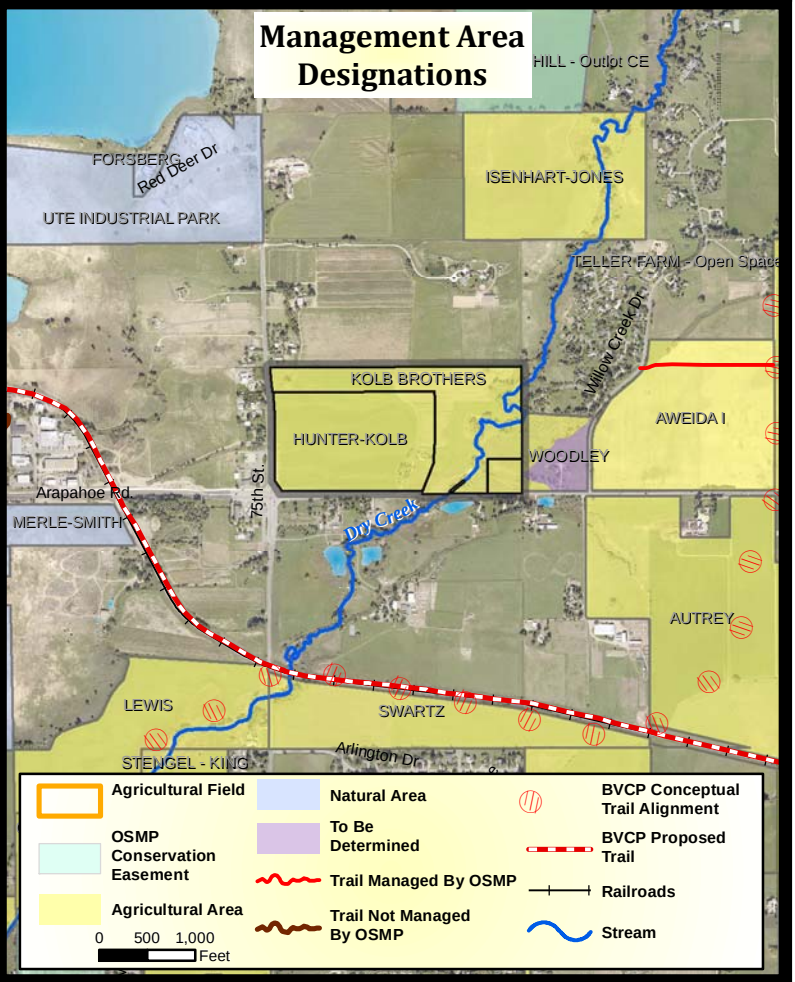
City of Boulder Open Space and Mountain Parks
Agricultural Plan

Hunter-Kolb, Kolb Brothers

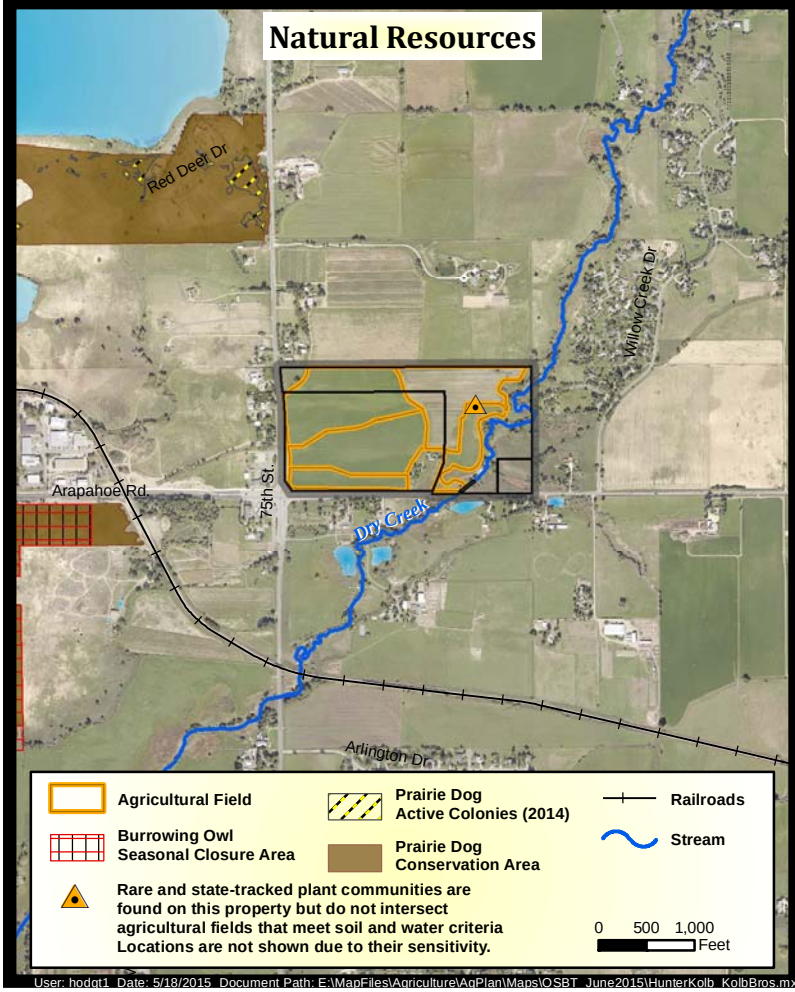
Current Agricultural Use



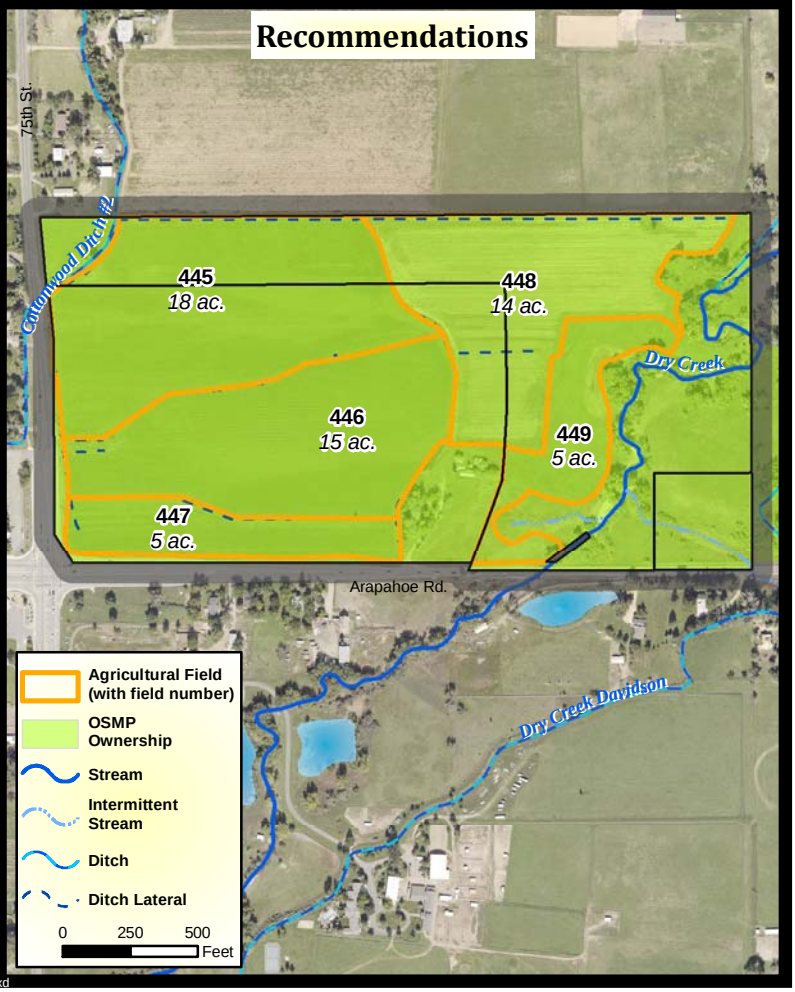
Management Area Designations



Natural Resources



Recommendations



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Deluca, Campbell, Hester, and Stratton

Essential Agricultural Characteristics

Infrastructure

There is a residence and two outbuildings, an attached garage and small storage shed on the Deluca property. There are no loafing sheds or barns on the DeLuca property. There are two small barns on the northeastern edge of the Campbell property.

Water

Most of the fields on the DeLuca, Campbell Hester and Stratton properties have an adequate amount of irrigated water (≥ 1.5 acre-feet per acre) available from the Left Hand Ditch, from April 1 to October 31, approximately 210 days. Portions of fields 457 and 458 on the Stratton property are not irrigated.

Soils

Approximately 70 acres on the DeLuca property are suitable for diversified vegetable farming. Fields 14 and 19 (44.4 acres) are comprised of a mixture of Valmont clay loam, 1-3 % and 3-5% slopes, both Capability Class III. Portions of field 13 (25.8 acres) is comprised of Valmont clay loam, with 1-3 and 3-5% slopes, Capability Class III.

The entirety of the Hester property, 39 acres on fields 17 and 18, is comprised of Valmont clay loam with 1-3% slopes, Capability Class III, suitable for diversified vegetable production.

Approximately 50 acres of the Campbell property are suitable for diversified vegetable production. Fields 21, 23 and 459, and the northern portion of field 24 are comprised of Valmont clay loam with 1-3% slopes, Capability Class III.

Approximately 10 acres on the Stratton property are suitable for diversified vegetable production. A portion of field 457 is comprised of Valmont clay loam with 1-3% slopes, Capability Class III.

Compatibility with Other Resources and Management Goals

Management area designation	Natural Area
Presence of visitor infrastructure	No
Prairie dog colony management area designation	Stratton - Removal Area Campbell – Transition Area Deluca & Hester – N/A
Prairie dog occupation	Stratton – Occupied Campbell – Not occupied Deluca & Hester – N/A
Bobolink management area designation	TBD
Presence of sensitive species	Rare and state-tracked plant communities are found on the Deluca, Campbell and Stratton properties and intersect with agricultural fields that meet the soil and water criteria.
Presence of State A listed noxious weeds	No

Management Actions and Cost Estimate for Conversion

- Clean up property
  - Cost Estimate: $15,000
- Construct new outbuildings to accommodate equipment storage, a cooler and wash area
  - Cost Estimate: $100,000
- Construct a series of small (1/10 acre-foot) irrigation ponds on each property adjacent to vegetable cultivation areas to facilitate delivery of irrigation water to planting beds
  - Cost Estimate $5,000 each
- Construct interior fence to separate vegetable fields from grazing areas
  - Cost Estimate: $10,000
- Cultural Resource survey for Deluca

Total Cost Estimate: $130,000-$145,000

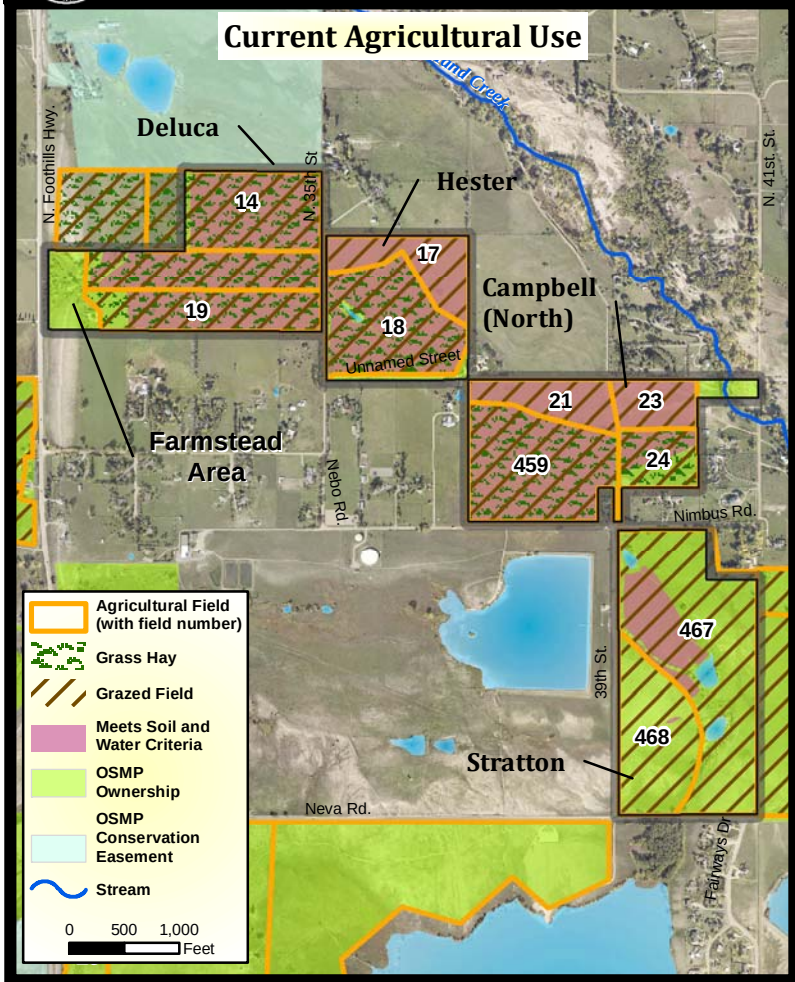
Recommendation

TBD

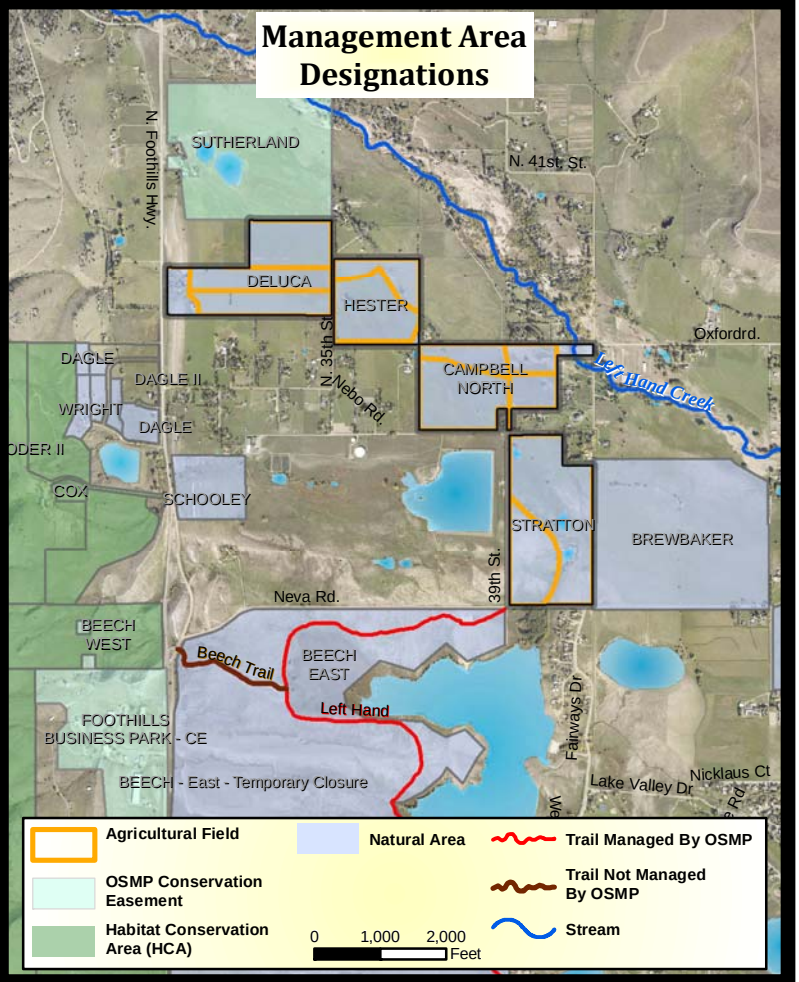
City of Boulder Open Space and Mountain Parks
Agricultural Plan

Deluca, Campbell, Hestor, Stratton

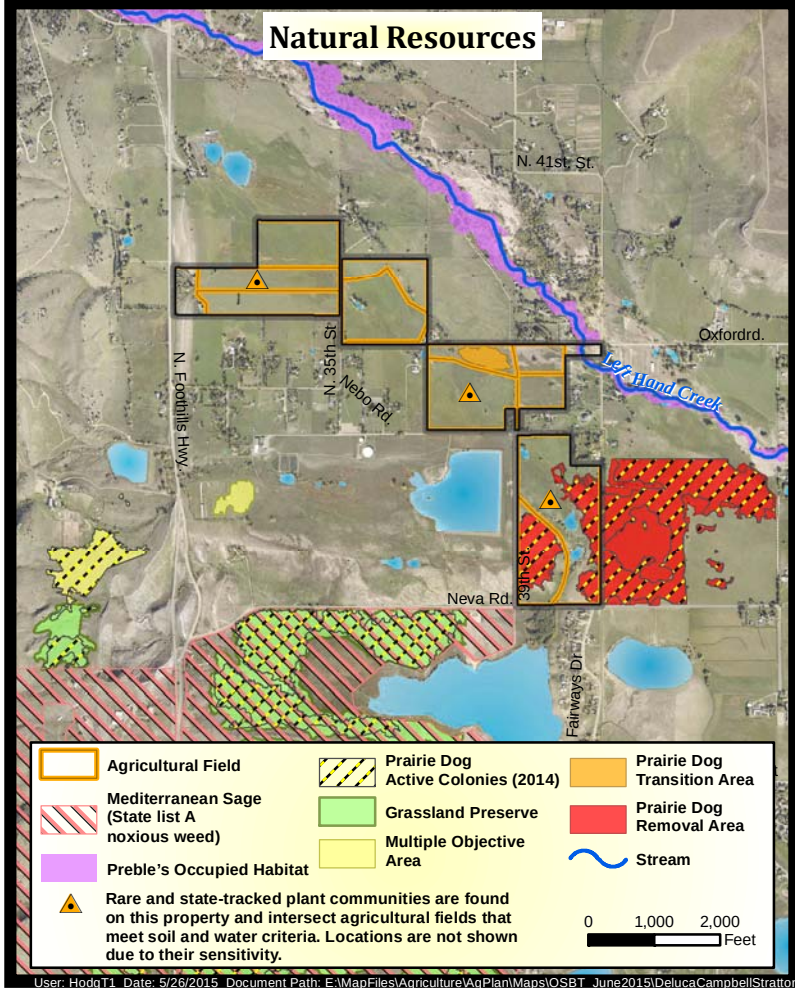
Current Agricultural Use



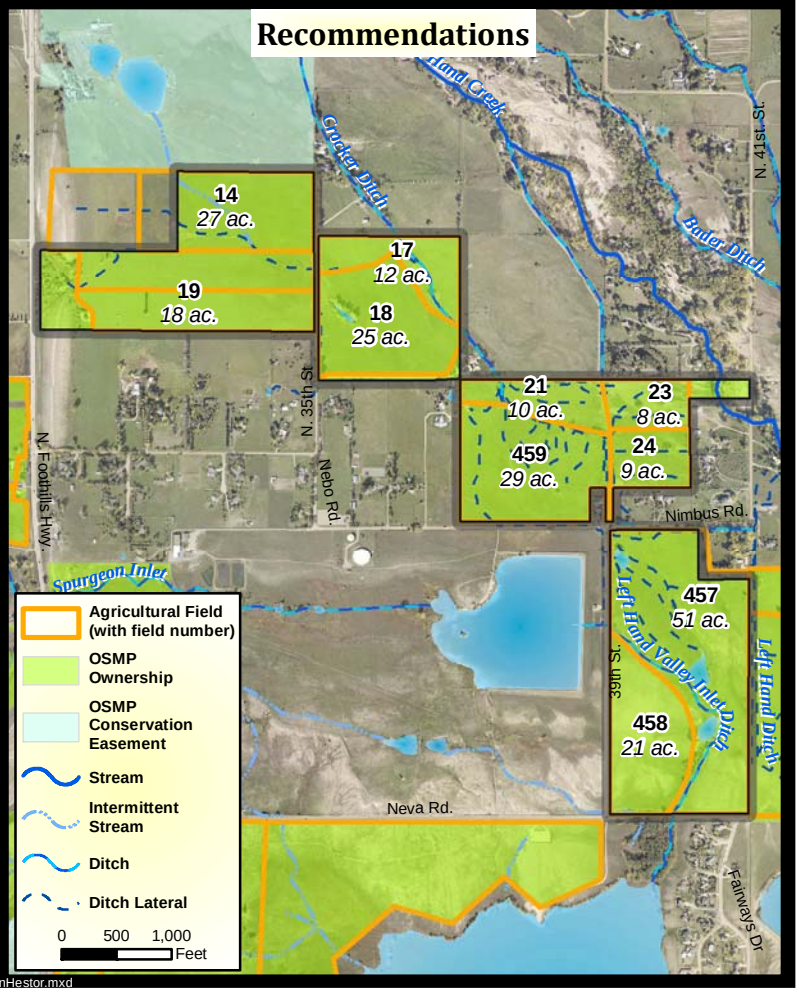
Management Area Designations



Natural Resources



Recommendations



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Johnson and Axelson East

Essential Agricultural Characteristics

Infrastructure

There is a residence and a milking barn on the Johnson property.

Water

An adequate amount of irrigated water (≥ 1.5 acre-feet per acre) is available from the Left Hand Ditch and delivered via the Star lateral from April 1 to October 31, approximately 210 days, for both the Johnson and Axelson properties with the exception of a 5.38-acre portion in the southwest corner of field 62 that is unirrigable.

Soils

125.2 acres on the Johnson property are suitable for diversified vegetable farming. A portion of fields 36 and 37, 43.6 acres north of Monarch Road, are comprised of Valmont clay loam with 1-3% slopes, Capability Class III. South of Monarch Road, there are 81.6 acres spread over fields 46, 47, 57, 58, 62, 64 and 66 comprised primarily of Valmont clay loam with 1-3% slopes, Capability Class III, but there is a 9-acre portion of field 66 that is comprised of Nunn clay loam with 1-3% slopes, Capability Class II.

The entirety of the 38-acre Axelson East property, fields 56 and 61, are comprised of Valmont clay loam, 1-3% slopes, Capability Class III, suitable for diversified vegetable production.

Compatibility with Other Resources and Management Goals

Management area designation	Agricultural
Presence of visitor infrastructure	BVCP proposed trail
Prairie dog colony management area designation	Transition Area
Prairie dog occupation	Occupied
Bobolink management area designation	TBD
Presence of sensitive species	Rare and state-tracked plant communities are found on the Johnson property and intersect with agricultural fields that meet the soil and water criteria.
Presence of State A listed noxious weeds	Johnson Property - Mediterranean sage

Management Actions and Cost Estimate for Conversion

- Clean up property
  - Cost Estimate: $10,000
- Assess the historic residence and outbuildings to determine if they are historically significant
  - Cost Estimate: $10,000
- Rehabilitate residence
  - Cost Estimate: $500,000
- Update outbuilding to accommodate a cooler and wash area
  - Cost Estimate: $30,000
- Construct a livestock pole barn
  - Cost Estimate: $15,000

- Construct a small (1/10 acre-foot) irrigation pond near the vegetable cropping area to facilitate the delivery of irrigation water to any planting beds
    - Cost Estimate: $5,000 per pond
- Construct a fence to separate fields 46, 47, 58 and 64 for diversified vegetable farming from the rest of the property which may be grazed
    - Cost Estimate: $15,000
- Construct a prairie dog fence to separate prairie dog colonies from cropping area on Johnson
    - Cost Estimate: $25,000
- Passive Relocation of prairie dogs off of fields 46, 47, 58 and 64

  Cost Estimate: $50,000
- Renovate the milking barn to be brought up to code (The necessity of this management action is dependent on what type of operation is proposed for the property, i.e. cow or goat dairy.)
    - Cost Estimate: $50,000

Total Cost Estimate: $660,000-$710,000

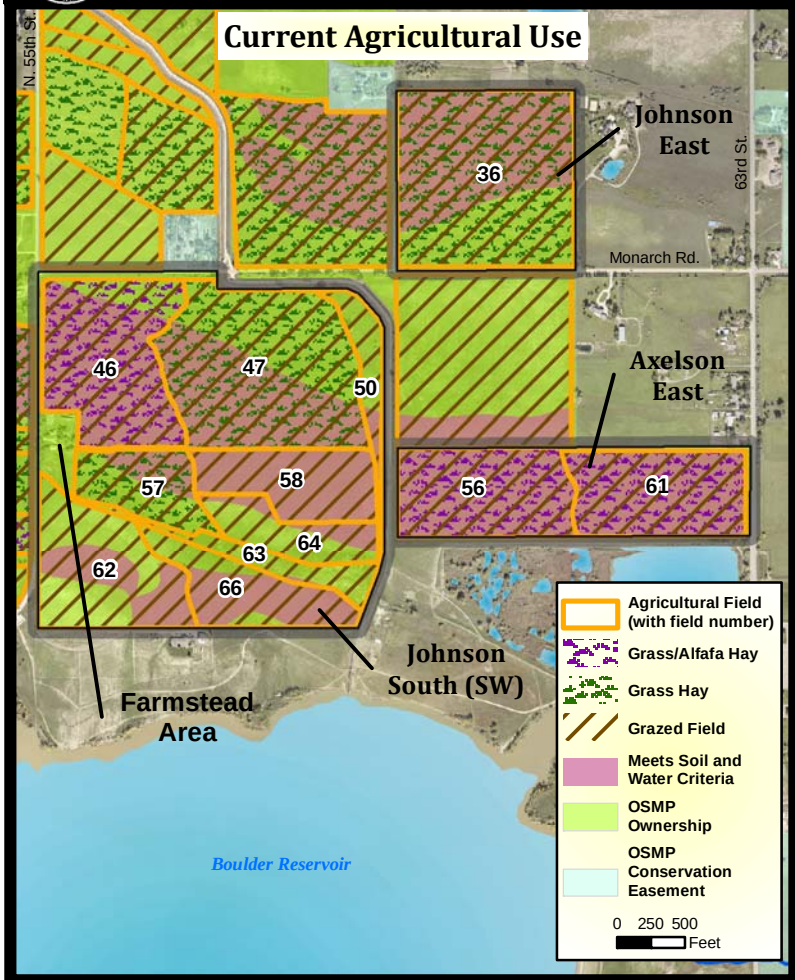
Recommendation

TBD

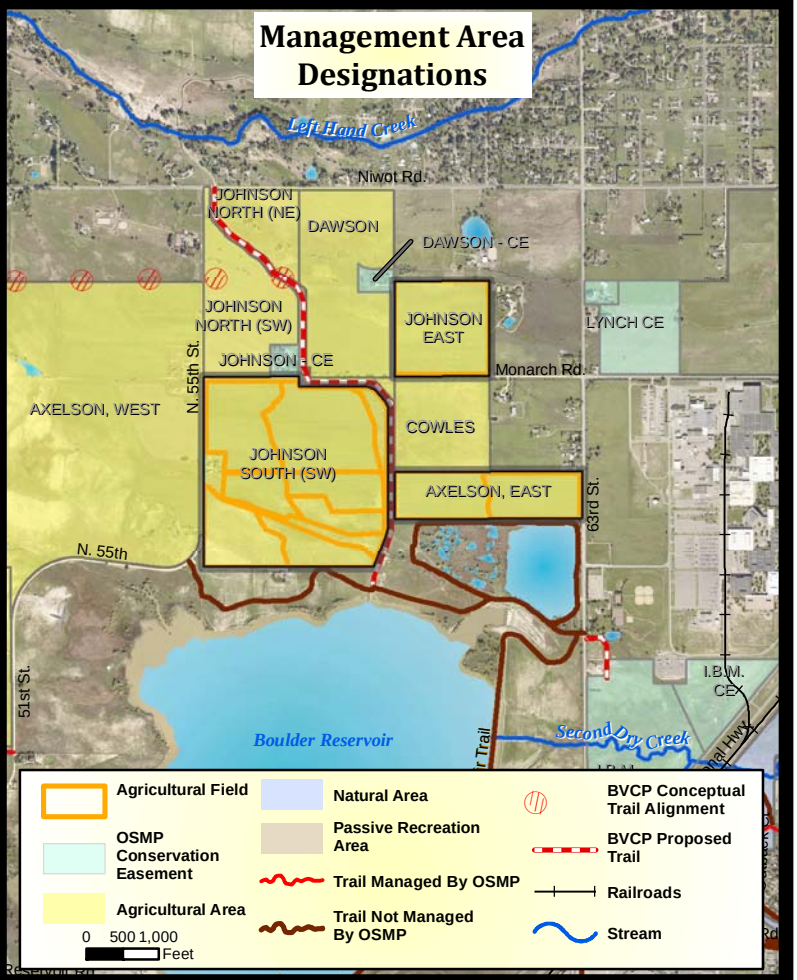
City of Boulder Open Space and Mountain Parks
Agricultural Plan

Johnson, Axelson East

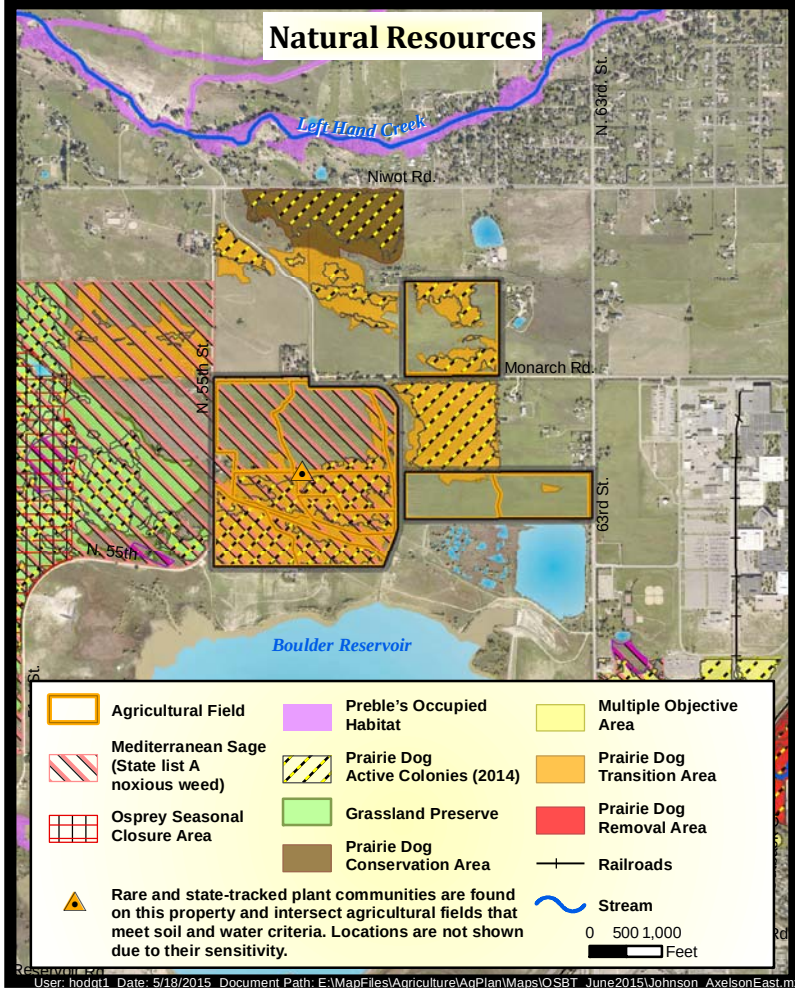
Current Agricultural Use



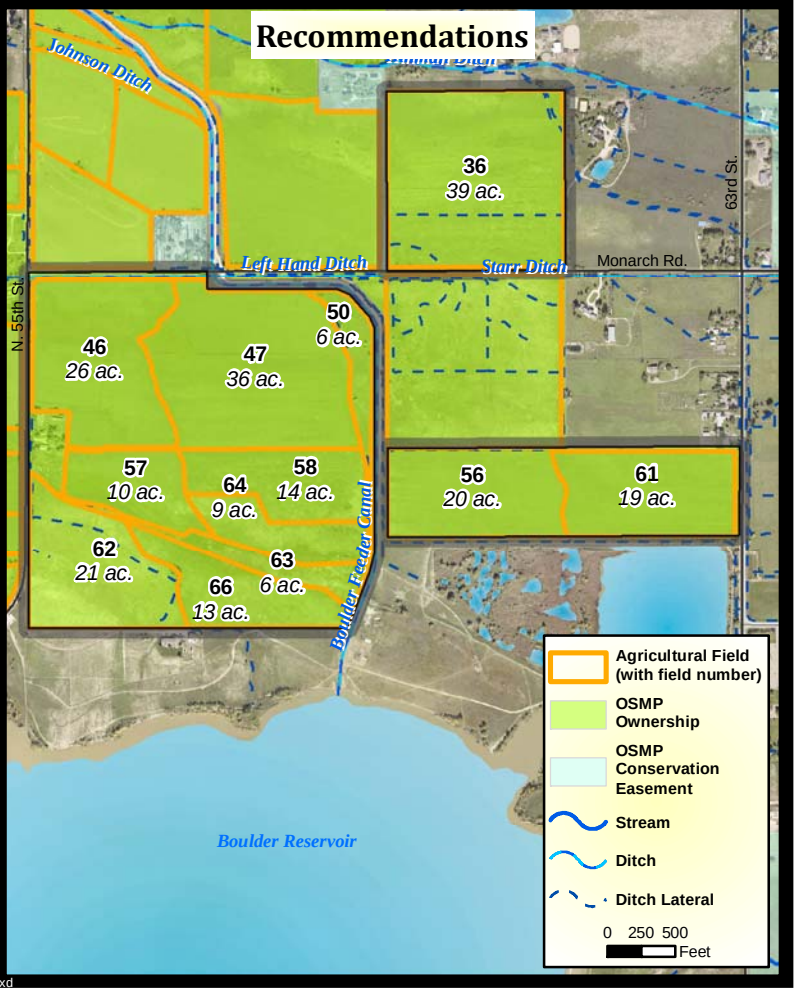
Management Area Designations



Natural Resources



Recommendations



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Kolb

Essential Agricultural Characteristics

Infrastructure

There is a residence, a large barn formerly used for milking and storage, a shed and two pole barns on the property.

Water

An adequate amount of irrigated water (≥ 1.5 acre-feet per acre) is available from the Green Ditch, Butte Irrigation and Milling Ditch and the Jones and Donnelly Ditch. Collectively, these ditches run from May 6 to October 28, 175 days. There is also a domestic well on the property, which has gone dry during past droughts.

Soils

Approximately 40 acres of field 160 is comprised of soils suitable for diversified vegetable production: Loveland soils, Capability Class III.

Compatibility with Other Resources and Management Goals

Management area designation	Habitat Conservation Area
Presence of visitor infrastructure	No
Prairie dog colony management area designation	Transition Area
Prairie dog occupation	Not occupied
Bobolink management area designation	TBD
Presence of sensitive species	• Bald eagle nesting area (Closed to human activity Nov. 1- July 31) • Northern leopard frog habitat • Rare and state-tracked plant communities are found on the property and intersect with agricultural fields that meet the soil and water criteria.
Presence of State A listed noxious weeds	No

Management Actions and Cost Estimate for Conversion

- Clean up property
  - Cost Estimate: $10,000
- Assess the historic residence and outbuildings to determine if they are historically significant
  - Cost Estimate: $10,000
- Rehabilitate residence
  - Cost Estimate: $150,000
- Rehabilitate existing barns and outbuildings
  - Cost Estimate: $100,000
- Update outbuilding to accommodate a cooler and wash area
  - Cost Estimate: $30,000
- Construct a small (1/10 acre-foot) irrigation pond near the vegetable cropping area to facilitate the delivery of irrigation water to any planting beds
- Cost Estimate: $5,000

- Renovate the milking barn to be brought up to code (The necessity of this management action is dependent on what type of operation is proposed for the property, i.e. pasture-based cow or goat dairy.)
    - Cost Estimate: $ 50,000

Total Cost Estimate: $305,000-$355,000

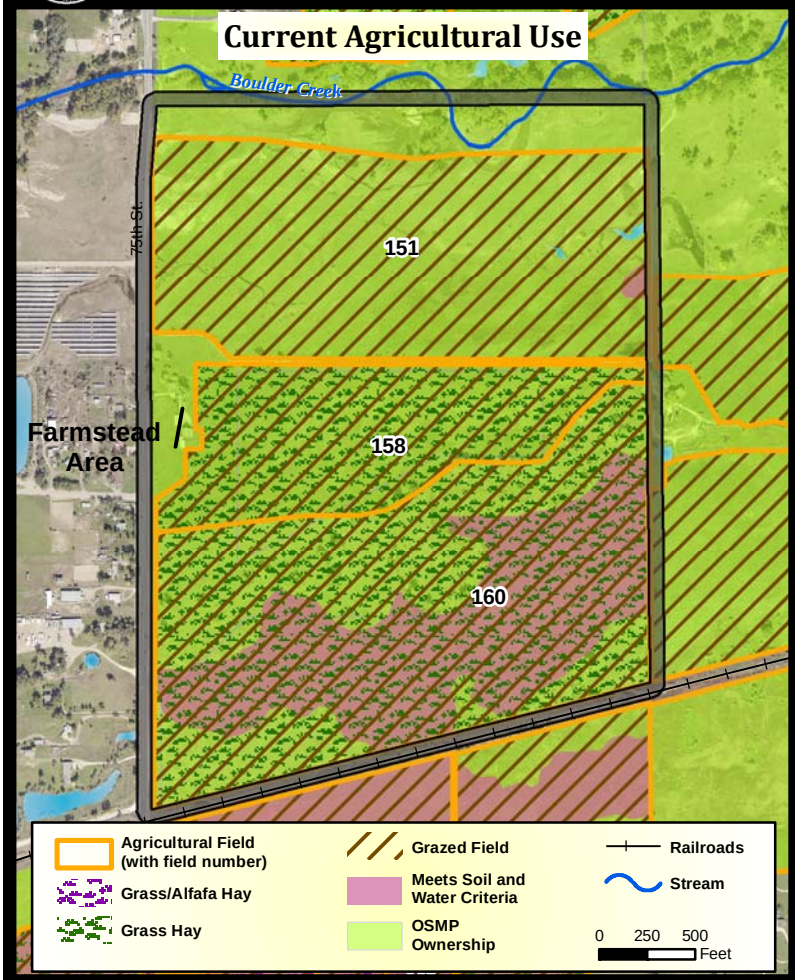
Recommendation

TBD

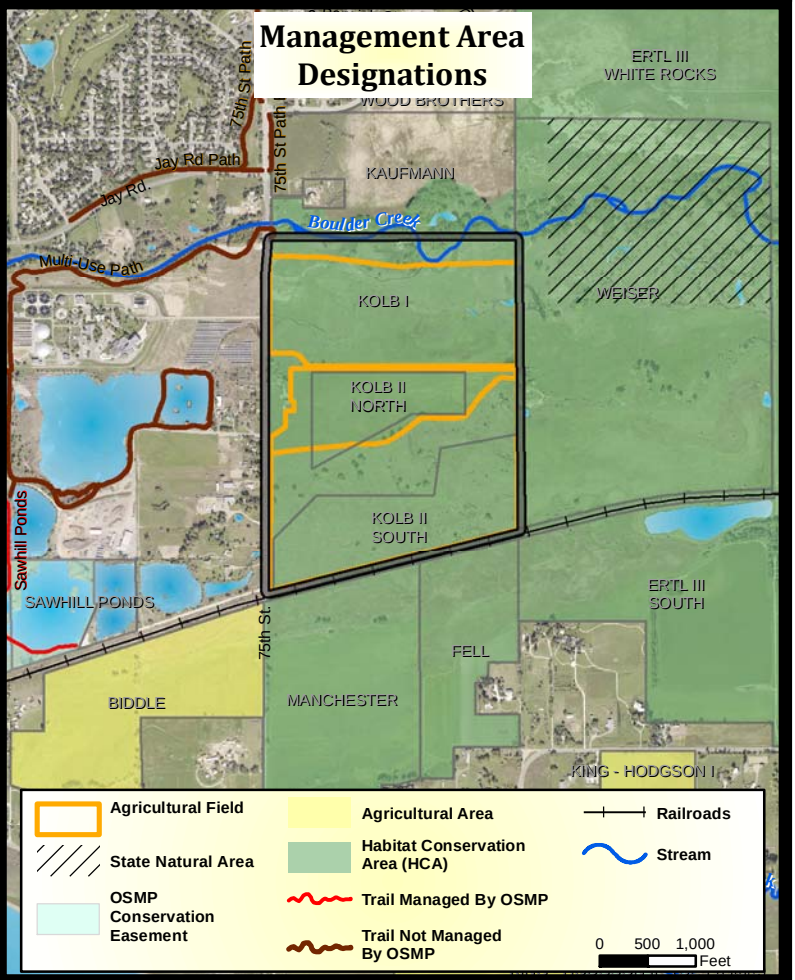
City of Boulder Open Space and Mountain Parks
Agricultural Plan

Kolb

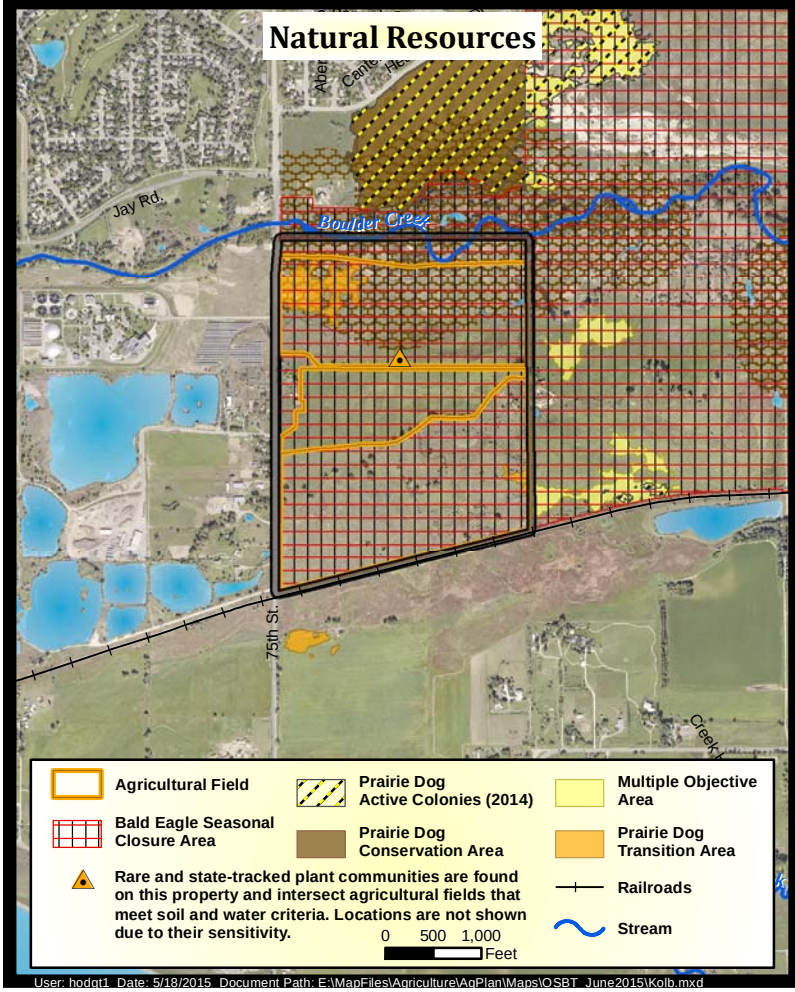
Current Agricultural Use



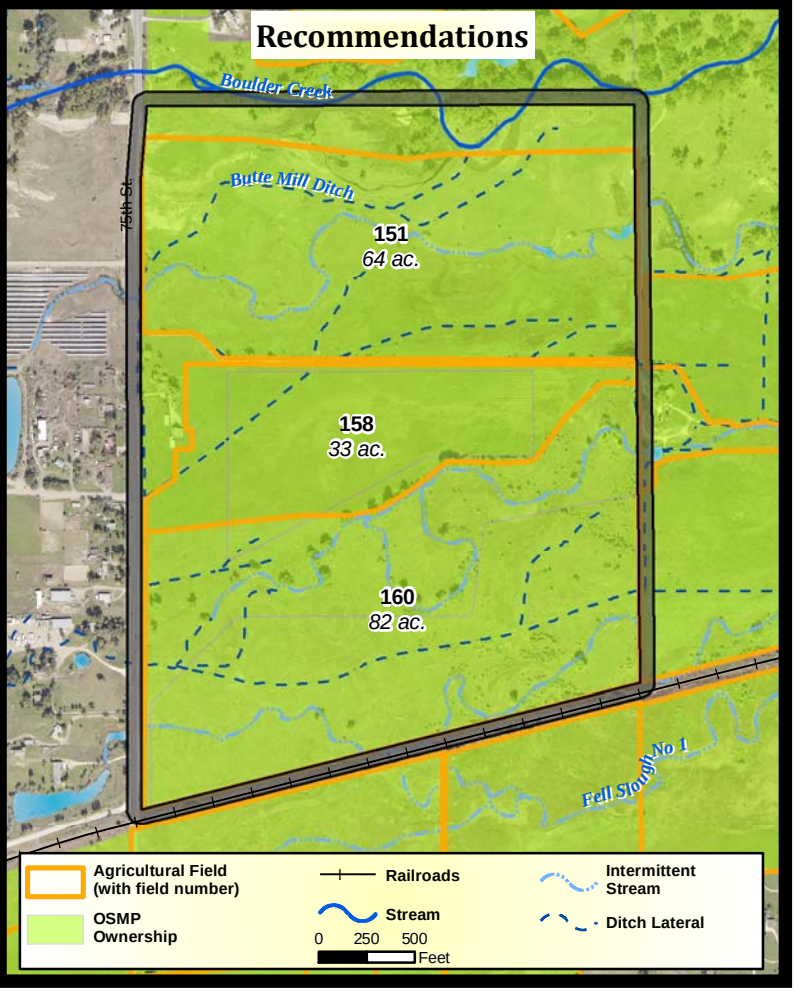
Management Area Designations



Natural Resources



Recommendations



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Bell I, Bell II and Teller

Essential Agricultural Characteristics

Infrastructure

No infrastructure is present on the property.

Water

For the Teller property, an adequate amount of irrigated water (≥ 1.5 acre-feet per acre) from the Leyner Cottonwood, Marshallville and Dry Creek ditches. Collectively, these ditches run from May 16 to September 12, approximately 119 days. The entirety of fields 178, 204 and 206 as well as portions of 205 and 406 are non-irrigable.

For the Bell I and II properties, an adequate amount of irrigated water (≥ 1.5 acre-feet per acre) from the Leyner Cottonwood and Cottonwood #2 Ditch is available, both run from May 6 to September 12, approximately 119 days. Field 184 (24.6 acres) is not irrigated, and fields 179 and 180 (28.9 acres) are irrigated by the Andrews-Farwell ditch, which only has irrigation water for 52 days a season.

Soils

On the Teller property there are 124.3 acres suited for diversified vegetable production spread over fields 186, 187, 200, 205, 207, 210 and 406. The soils are a mixture of Manter sandy loam with 1-3% slopes, Capability Class III, Manter sandy loam with 3-9% slopes, Capability Class III, Hargreave fine sandy loam with 1-3% slopes, Capability Class III, Ascalon sandy loam with 0-1% slopes, Capability Class I, Ascalon sandy loam with 1-3% slopes, Capability Class II, and Ascalon sandy loam with 3-5% slopes, Capability Class III.

Eighteen acres on the Bell I property are suited for diversified vegetable production. Field 189 is comprised of a mixture of Manter sandy loam with 1-3% slopes, Capability Class III, Manter sandy loam with 3-9% slopes, Capability Class III, and Ascalon sandy loam with 1-3% slopes, Capability Class II.

On the Bell II property, 33.5 acres are suitable for diversified vegetable production. Fields 190 and 193 are comprised of Manter sandy loam with 1-3% slopes, Manter sandy loam with 3-9% slopes, Ascalon sandy loam with 3-5% slopes, all Capability Class III and Ascalon sandy loam with 1-3% slopes, Capability Class II.

Compatibility with Other Resources and Management Goals

Management area designation	Agricultural
Presence of visitor infrastructure	• OSMP East Boulder/Teller Farm Trail • BVCP conceptual trail: East Boulder Trail
Prairie dog colony management area designation	Transition Area
Prairie dog occupation	Subset occupied
Bobolink management area designation	TBD
Presence of sensitive species	• Teller property – northern leopard frog habitat • Rare and state-tracked plant communities are found on the Teller property and intersect with agricultural fields that meet the soil and water criteria.
Presence of State A listed noxious weeds	No

Management Actions and Cost Estimate for Conversion

- Clean up property
  - Cost Estimate: $5,000
- Construct a small (1/10 acre-foot) irrigation pond near the vegetable cropping area to facilitate the delivery of irrigation water to any planting beds. There are several cropping areas on each property
  - Cost Estimate: $5,000 per pond
- Construct a fence to separate the cropping area of a diversified vegetable farming operation from the rest of the property which may be hayed/ grazed
  - Cost Estimate: $ 25,000

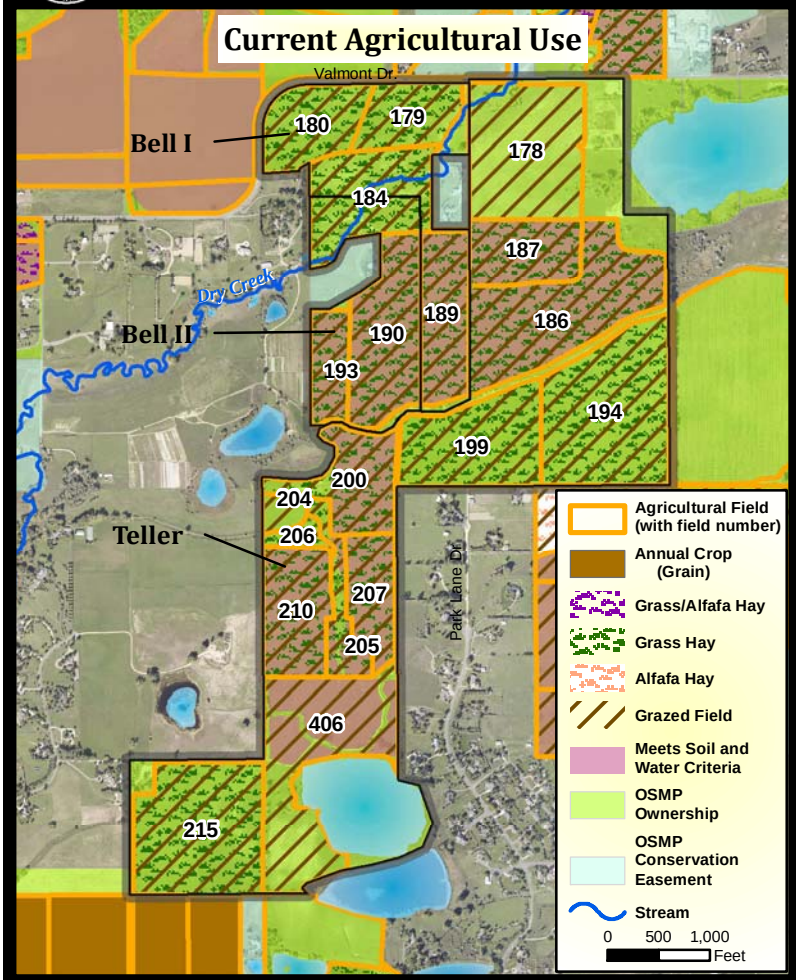
Total Cost Estimate: $35,000-$50,000

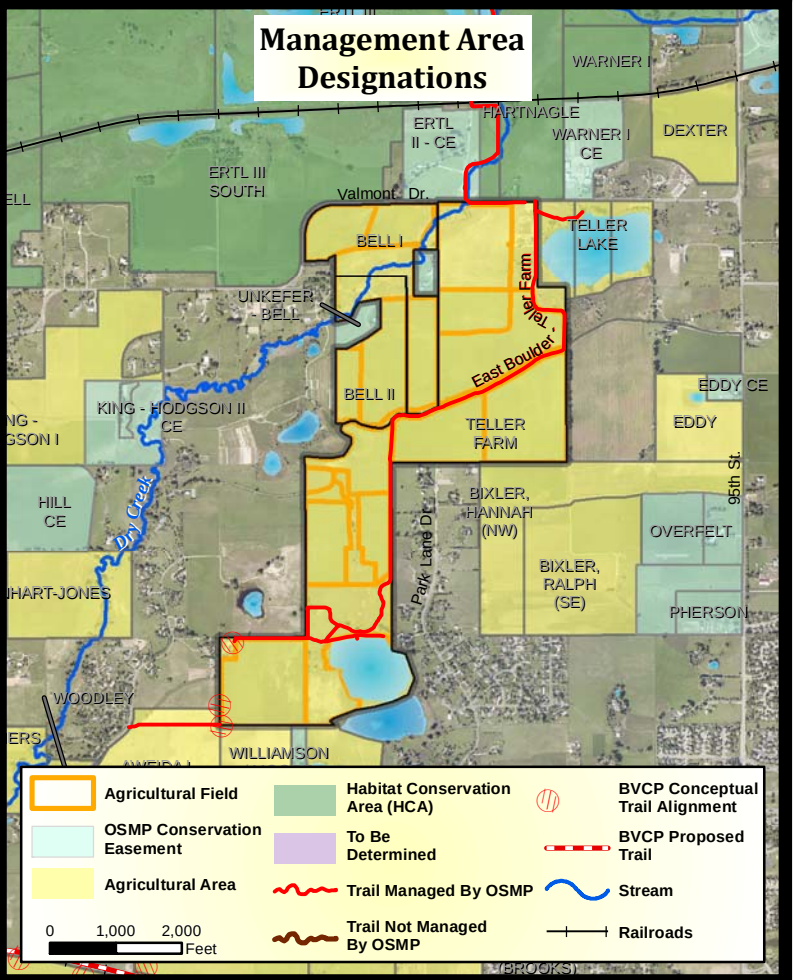
Recommendation

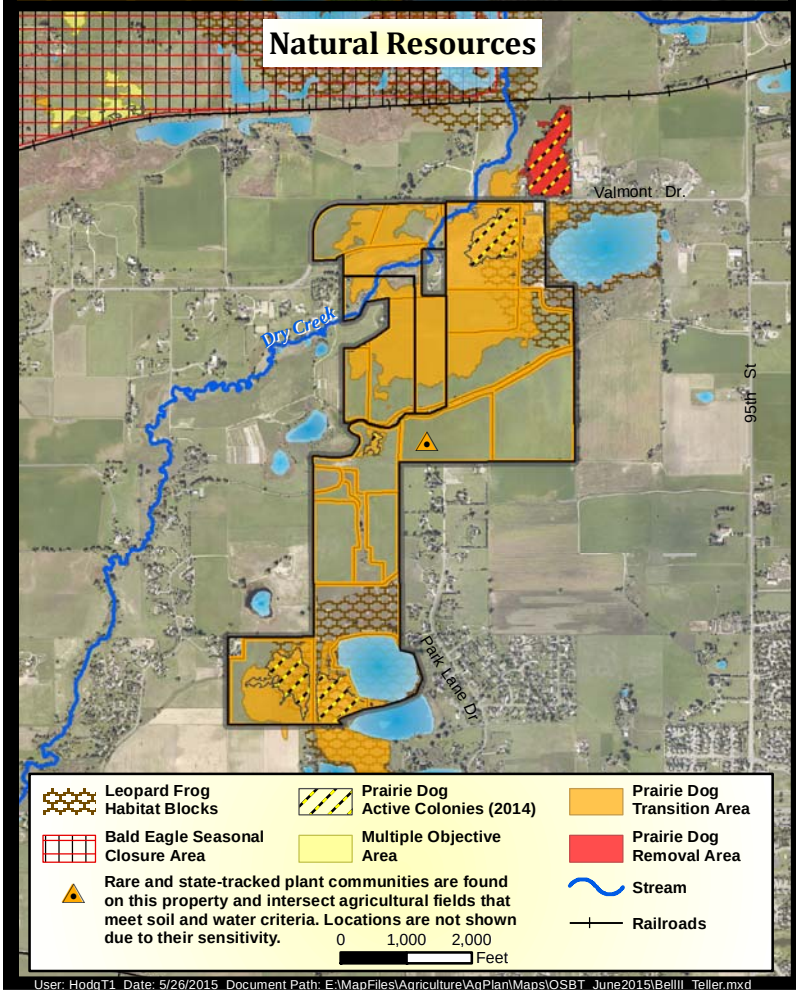
TBD

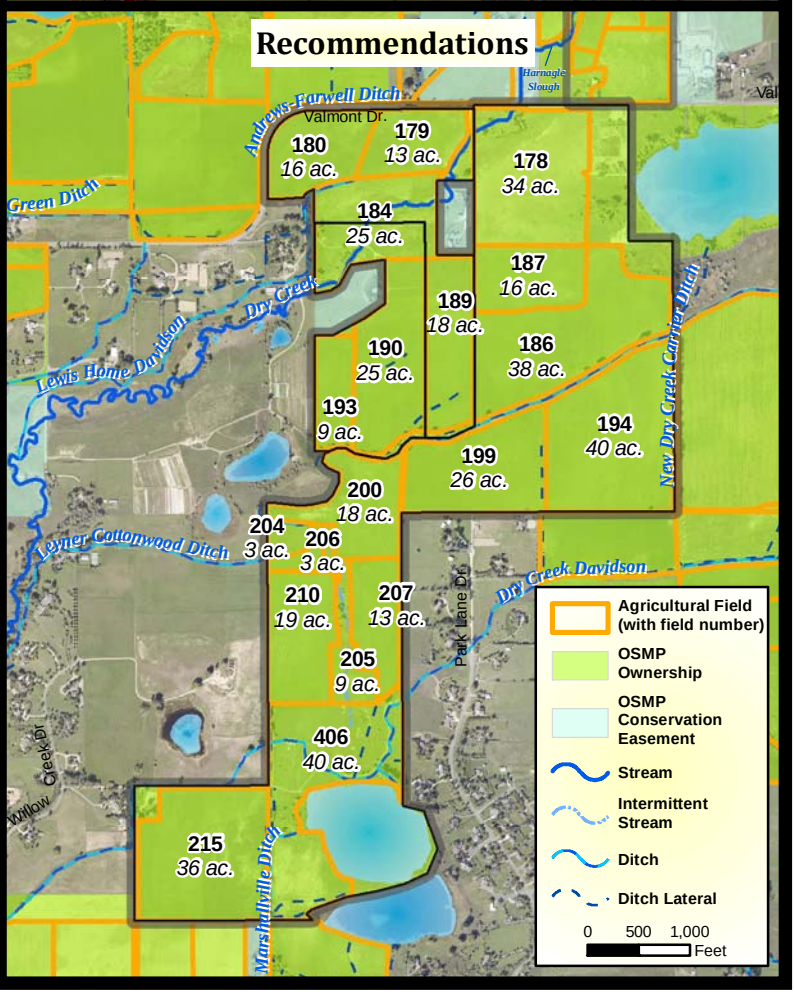
City of Boulder Open Space and Mountain Parks
Agricultural Plan

Bell, Teller Farm









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King Hodgson I

Essential Agricultural Characteristics

Infrastructure

No infrastructure is present on the property.

Water

An adequate amount of irrigated water (≥ 1.5 acre-feet per acre) from the Cottonwood #2 and Butte Irrigation and Milling Ditches is available from May 16 to September 12, approximately 119 days.

Soils

Ninety-nine acres on the King Hodgson property are suitable for diversified vegetable production. Fields 185, 188, 192, 196, 197 and 432 (52 acres) are comprised entirely of Ascalon sandy loam with 1-3% slopes, Capability Class II. Field 198 (47 acres) is comprised of a mixture of Ascalon sandy loam with 1-3% slopes and Ascalon–Otero Complex with 3-5 % slopes, Capability Classes II and III, respectively.

Compatibility with Other Resources and Management Goals

Management area designation	Agricultural
Presence of visitor infrastructure	No
Prairie dog colony management area designation	N/A
Prairie dog occupation	Not occupied
Bobolink management area designation	TBD
Presence of sensitive species	No
Presence of State A listed noxious weeds	No

Management Actions and Cost Estimate for Conversion

- Clean up property
  - Cost Estimate: $5,000
- Construct a small (1/10 acre-foot) irrigation pond near the vegetable cropping area to facilitate the delivery of irrigation water to any planting beds
  - Cost Estimate: $5,000
- Construct a fence to separate the cropping area of a diversified vegetable farming operation from the rest of the property which may be hayed/ grazed
  - Cost Estimate: $15,000
- Cultural Resource Survey

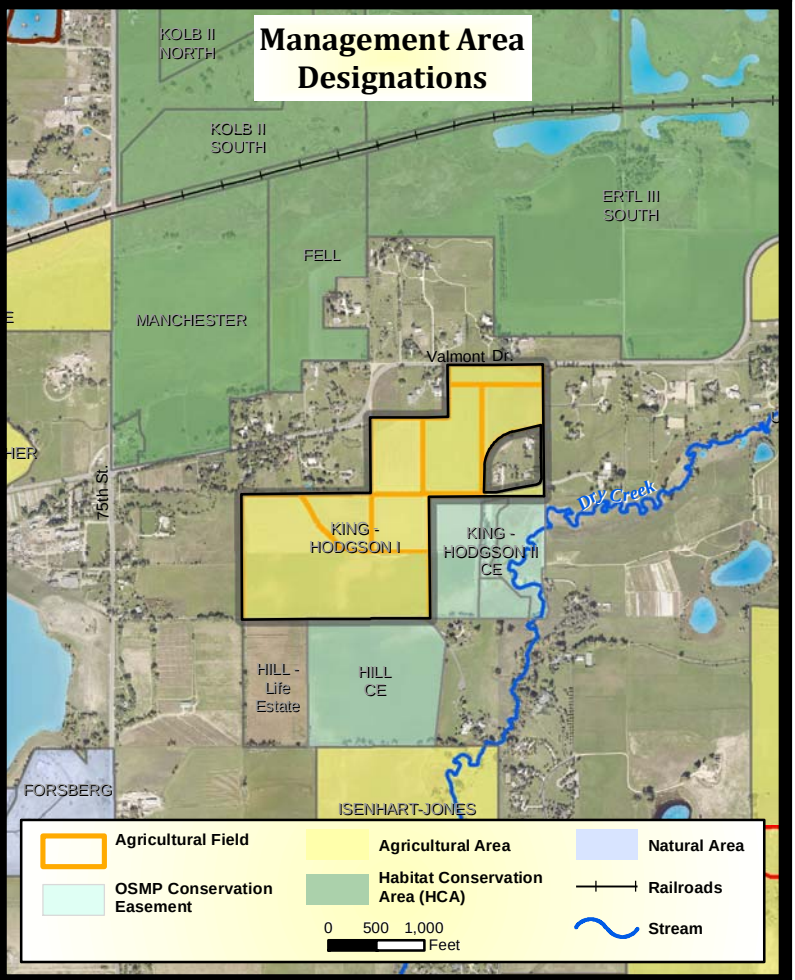
Total Cost Estimate: $25,000

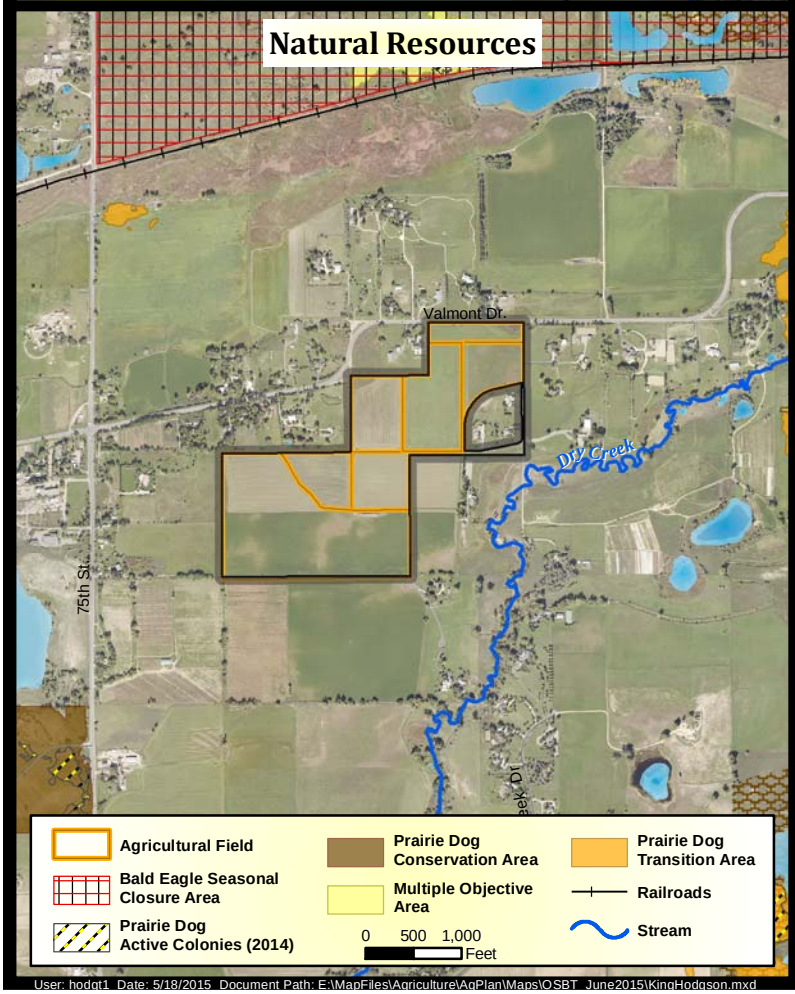
Recommendation

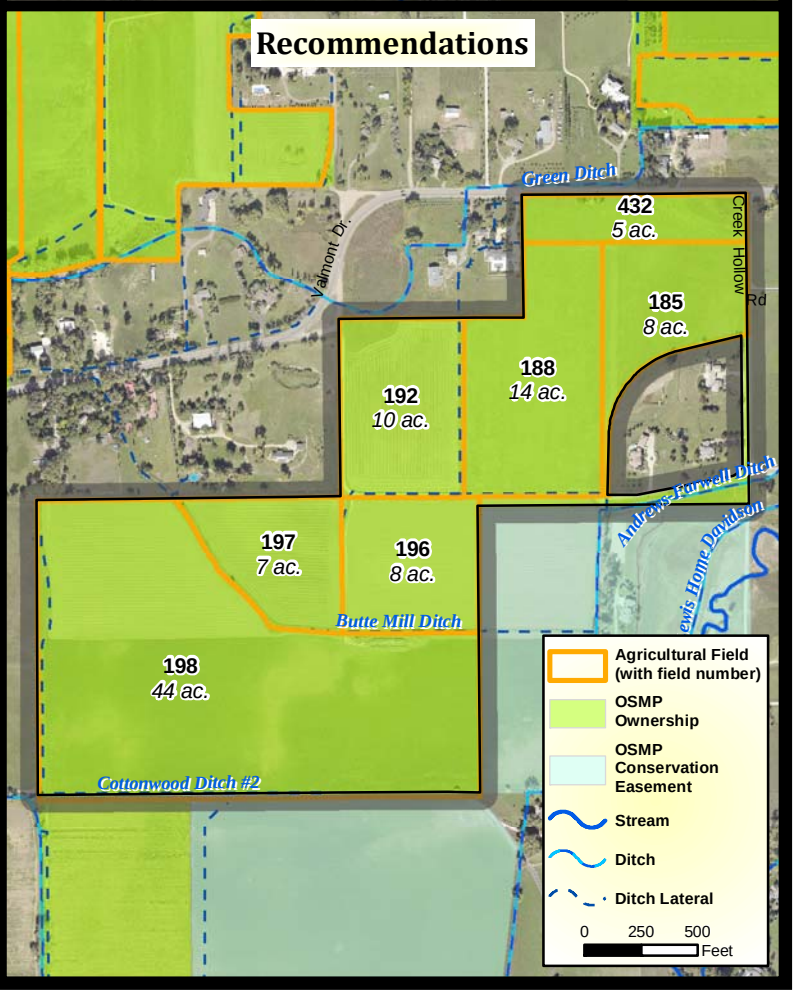
TBD

City of Boulder Open Space and Mountain Parks
Agricultural Plan

King - Hodgson I







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St. Walburga Abbey

Essential Agricultural Characteristics

Infrastructure

No infrastructure is present on the property.

Water

An adequate amount of irrigated water (≥ 1.5 acre-feet per acre) from the McGinn Ditch is available, which runs from April 29 to October 10, approximately 164 days. A portion of fields 303 and 308 are not irrigated.

Soils

Approximately 59 acres of the St. Walburga Abbey property are suitable for diversified vegetable production. Field 302 (27.1 acres) is comprised entirely of Nunn sandy clay loam with 0-1% slopes, Capability Class I. Field 303 has 17.3 acres of irrigated land consisting of Nunn sandy clay loam with 0-1% slopes and Valmont clay loam, 1-3% slopes, both Capability Class III. Field 308 has 14.8 acres of irrigated land comprised of Valmont clay loam with 1-3% slopes, Capability Class III.

Compatibility with Other Resources and Management Goals

Management area designation	Natural Area
Presence of visitor infrastructure	No
Prairie dog colony management area designation	N/A
Prairie dog occupation	N/A
Bobolink management area designation	TBD
Presence of sensitive species	No
Presence of State A listed noxious weeds	No

Management Actions and Cost Estimate for Conversion

- Clean up property
  - Cost Estimate: $5,000
- Construct a small (1/10 acre-foot) irrigation pond near the vegetable cropping area to facilitate the delivery of irrigation water to any planting beds. There are three fields on this property
  - Cost Estimate: $5,000 per pond
- Construct a fence to separate the cropping area of a diversified vegetable farming operation from the rest of the property which may be hayed/ grazed
  - Cost Estimate: $15,000

Total Cost Estimate: $ 25,000-$35,000

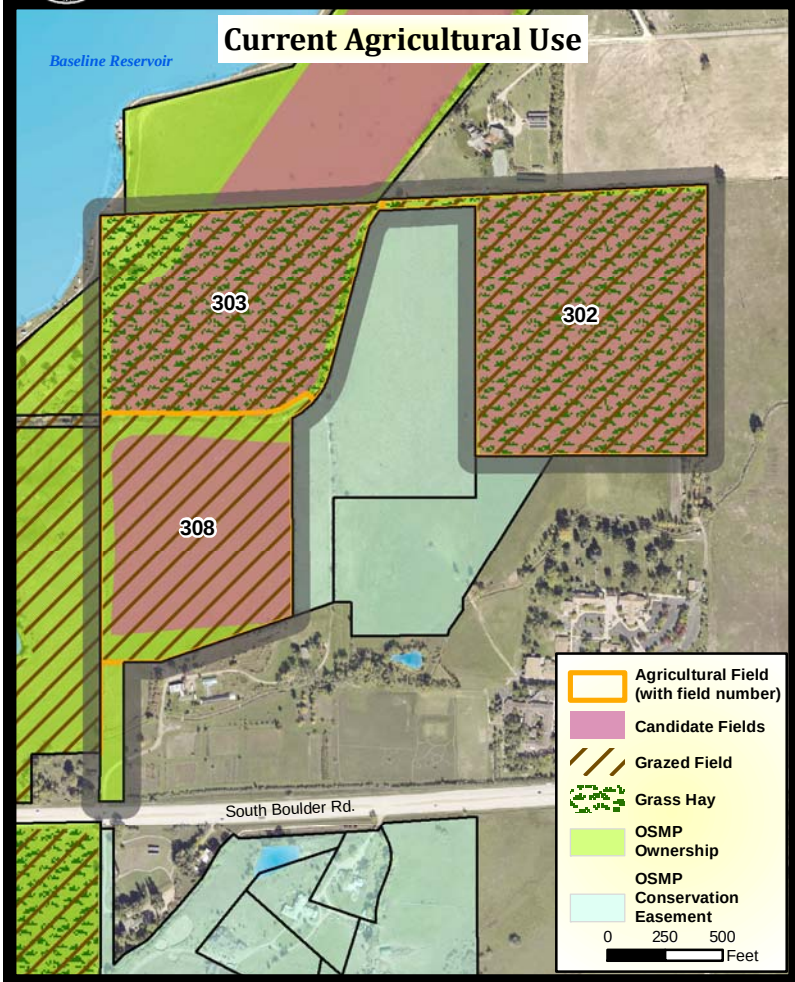
Recommendation

TBD

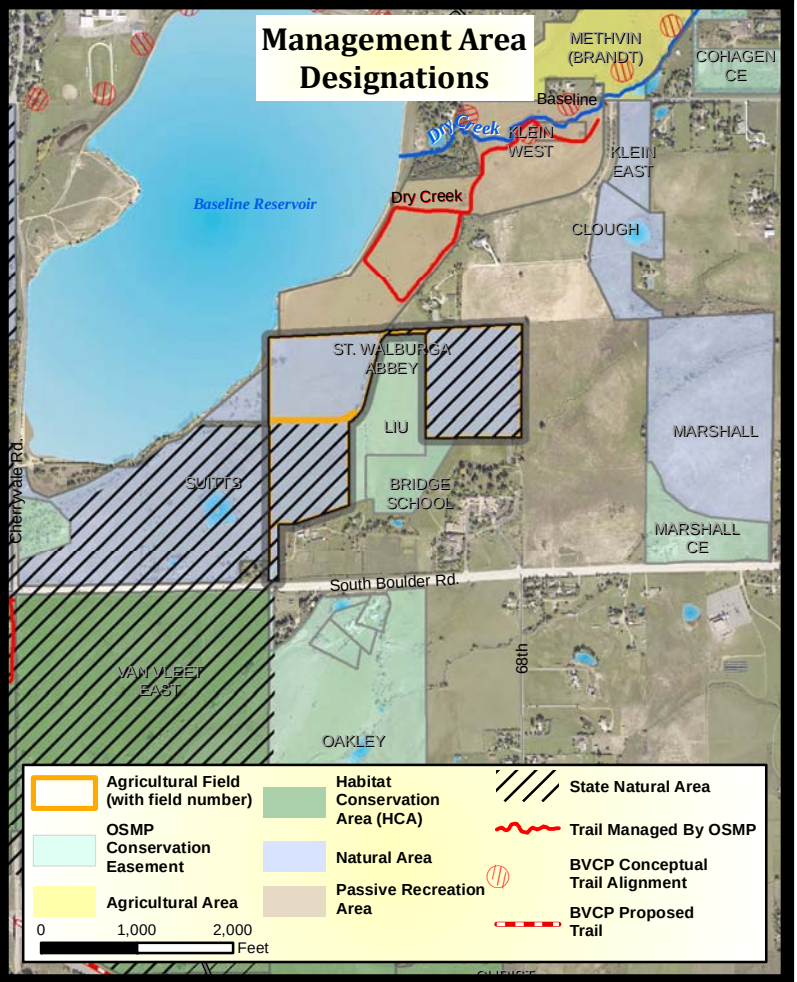
City of Boulder Open Space and Mountain Parks
Agricultural Plan

St. Walburga Abbey

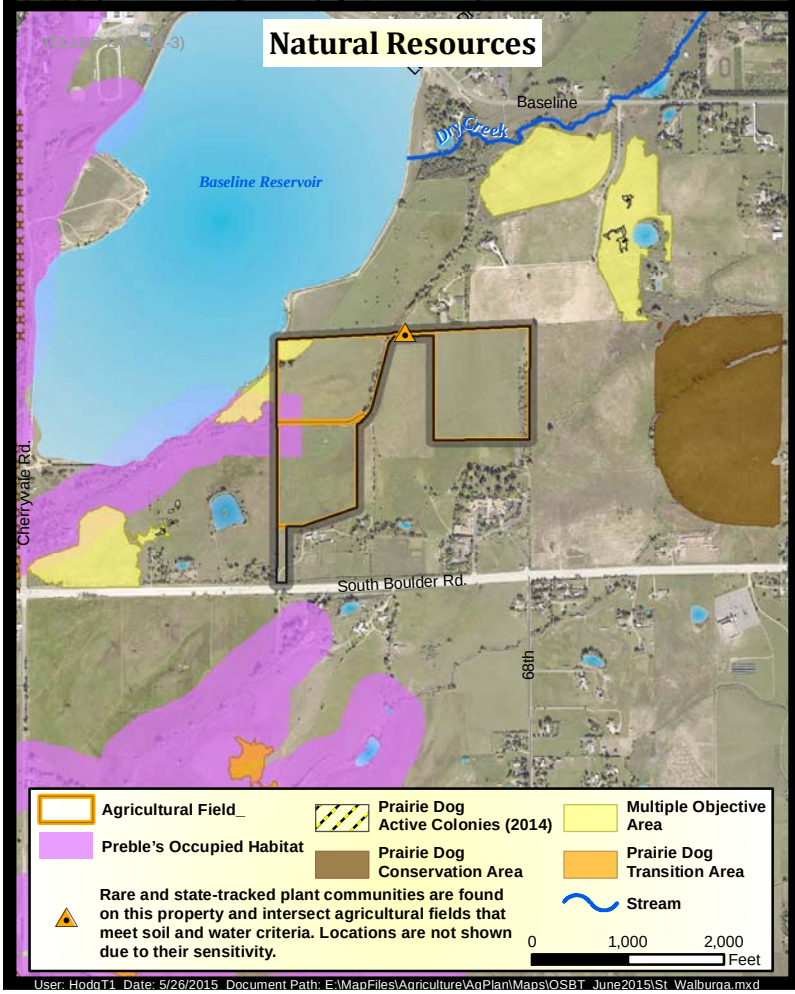
Current Agricultural Use



Management Area Designations



Natural Resources



Recommendations

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Biddle

Essential Agricultural Characteristics

Infrastructure

No infrastructure is present on the property.

Water

An adequate amount of irrigated water (≥ 1.5 acre-feet per acre) is available from the Green Ditch, Butte Irrigation and Milling Ditch and the Jones and Donnelly Ditch. Collectively, these ditches run from May 6 to October 28, 175 days.

Soils

Fifty-two acres are suitable for diversified vegetable production. Fields 182 and 183 are comprised of Manter sandy loam with 0-1% slopes and Loveland soils, both in Capability Class III.

Compatibility with Other Resources and Management Goals

Management area designation	Agricultural
Presence of visitor infrastructure	No
Prairie dog colony management area designation	N/A
Prairie dog occupation	N/A
Bobolink management area designation	TBD
Presence of sensitive species	Rare and state-tracked plant communities are found on the property but do not intersect with agricultural fields that meet the soil and water criteria.
Presence of State A listed noxious weeds	No

Management Actions and Cost Estimate for Conversion

- Clean up property
  - Cost Estimate: $5,000
- Construct a small (1/10 acre-foot) irrigation pond near the vegetable cropping area to facilitate the delivery of irrigation water to the planting beds
  - Cost Estimate: $5,000
- Construct a fence to separate the cropping area of a diversified vegetable farming operation from the rest of the property which may be hayed/ grazed
  - Cost Estimate: $15,000

Total Cost Estimate: $25,000

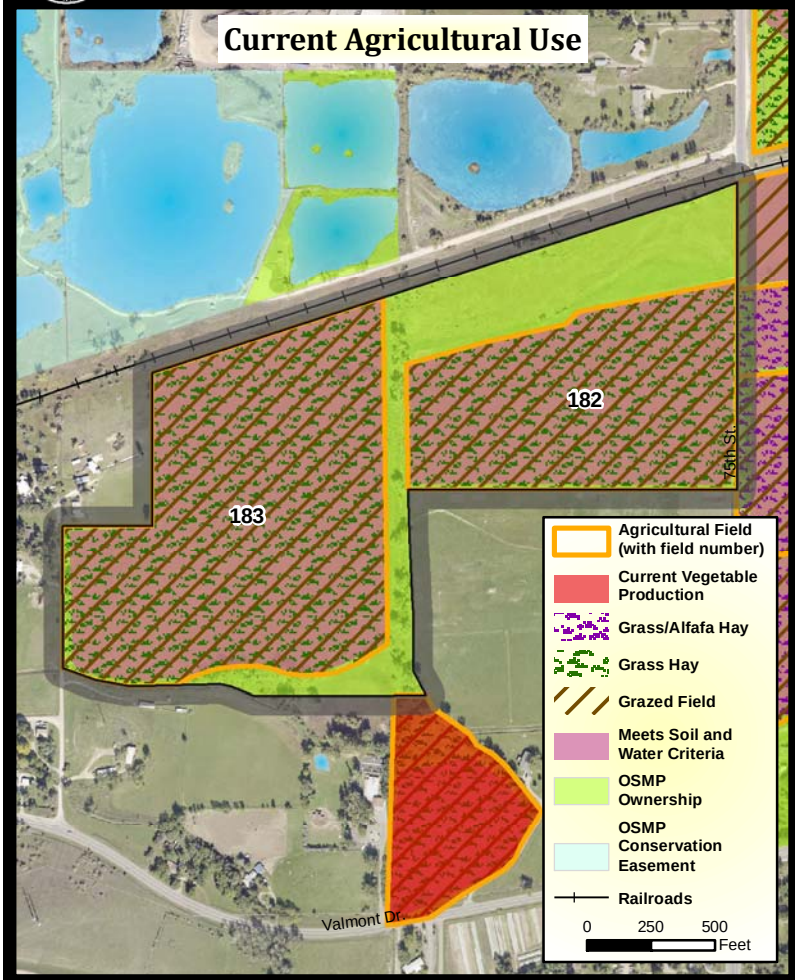
Recommendation

TBD

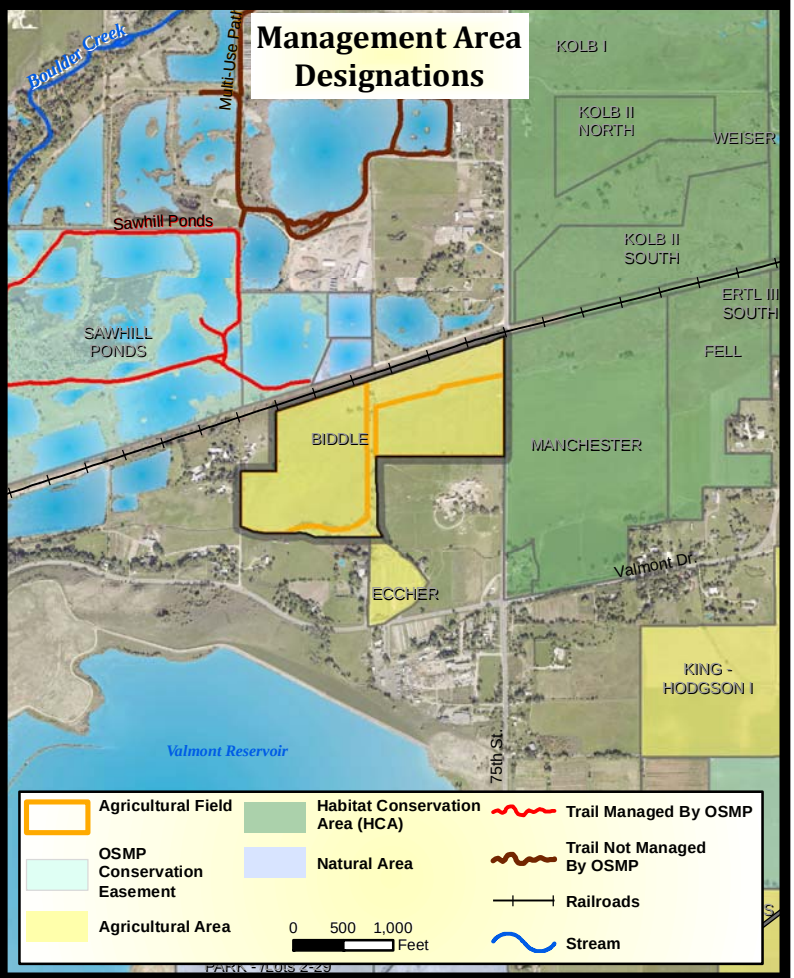
City of Boulder Open Space and Mountain Parks
Agricultural Plan

Biddle

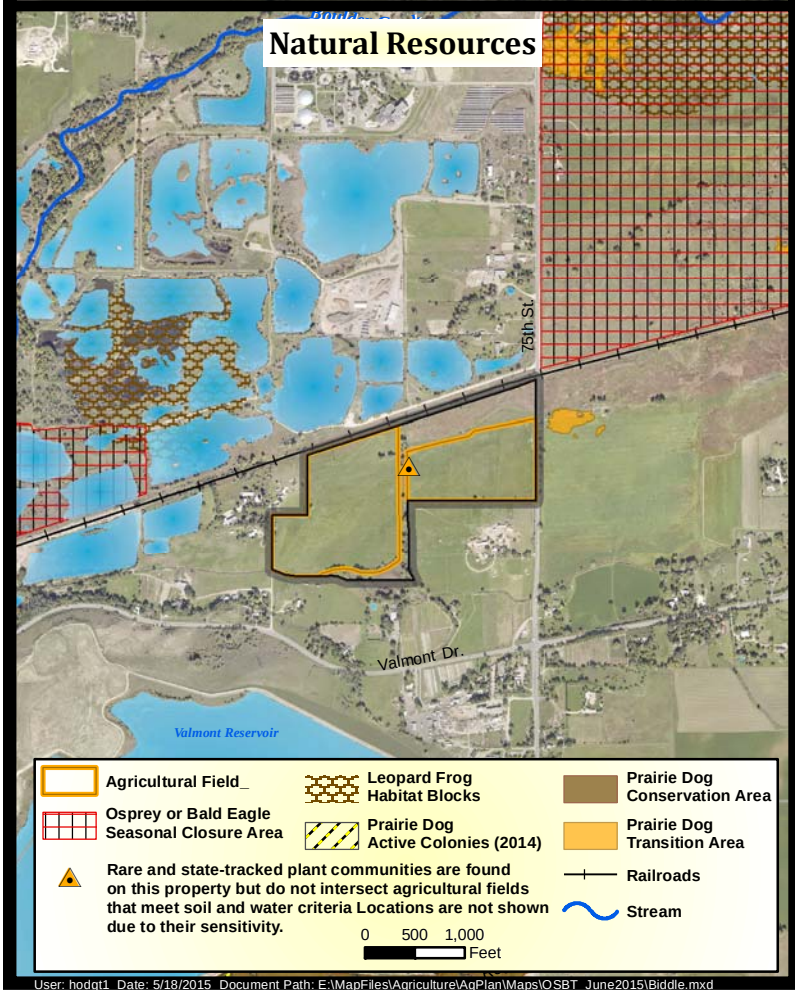
Current Agricultural Use



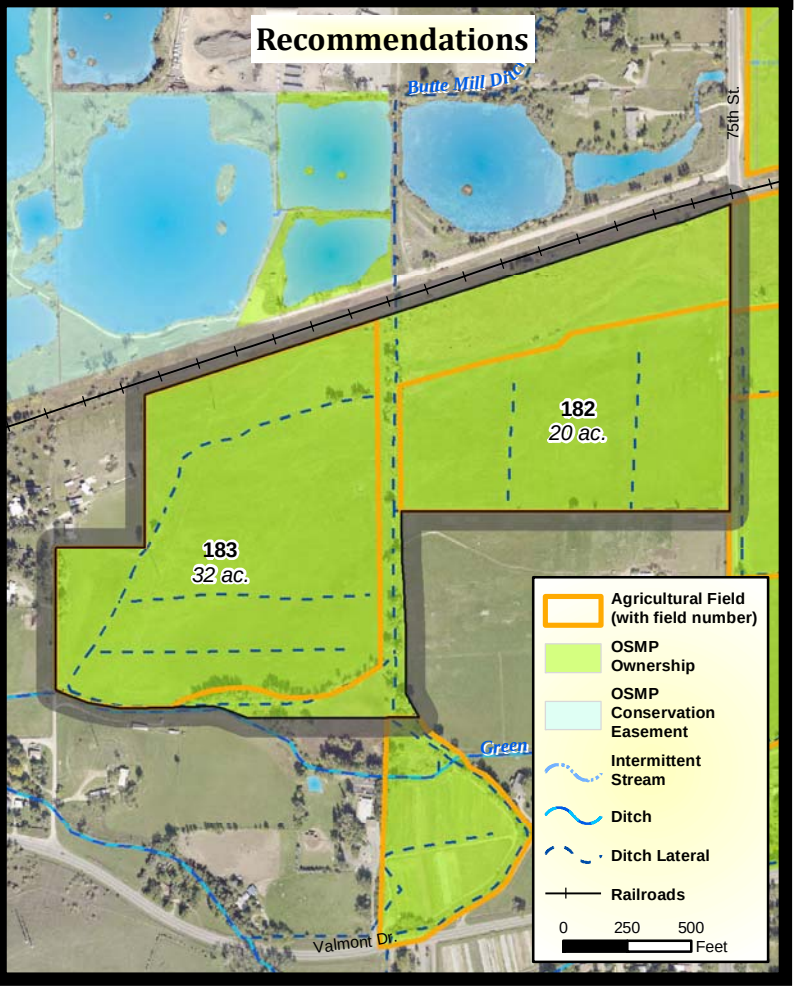
Management Area Designations



Natural Resources



Recommendations



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Fell

Essential Agricultural Characteristics

Infrastructure

There is no infrastructure on the property.

Water

An adequate amount of irrigated water (≥ 1.5 acre-feet per acre) is available from the Green Ditch, Butte Irrigation and Milling Ditch and the Jones and Donnelly Ditch. Collectively, these ditches run from May 6 to October 28, 175 days. Portions of field 174 and 181 (15.6 acres) are not irrigated.

Soils

On the Fell property, 29.6 acres are suitable for diversified vegetable productions. The acres are split between fields 174 and 181 and are comprised of a combination of Manter sandy loam with 0-1% slopes, Manter sandy loam with 1-3% slopes and Loveland soils. All of these soil types are in Capability Class III.

Compatibility with Other Resources and Management Goals

Management area designation	Agricultural
Presence of visitor infrastructure	No
Prairie dog colony management area designation	N/A
Prairie dog occupation	N/A
Bobolink management area designation	TBD
Presence of sensitive species	Rare and state-tracked plant communities are found on the property and intersect with agricultural fields that meet the soil and water criteria.
Presence of State A listed noxious weeds	No

Management Actions and Cost Estimate for Conversion

- Clean up property
  - Cost Estimate: $5,000
- Construct a small (1/10 acre-foot) irrigation pond near the vegetable cropping area to facilitate the delivery of irrigation water to the planting beds
  - Cost Estimate: $5,000
- Construct a fence to separate the cropping area of a diversified vegetable farming operation from the rest of the property which may be hayed/ grazed
  - Cost Estimate: $15,000

Total Cost Estimate: $25,000

Recommendation

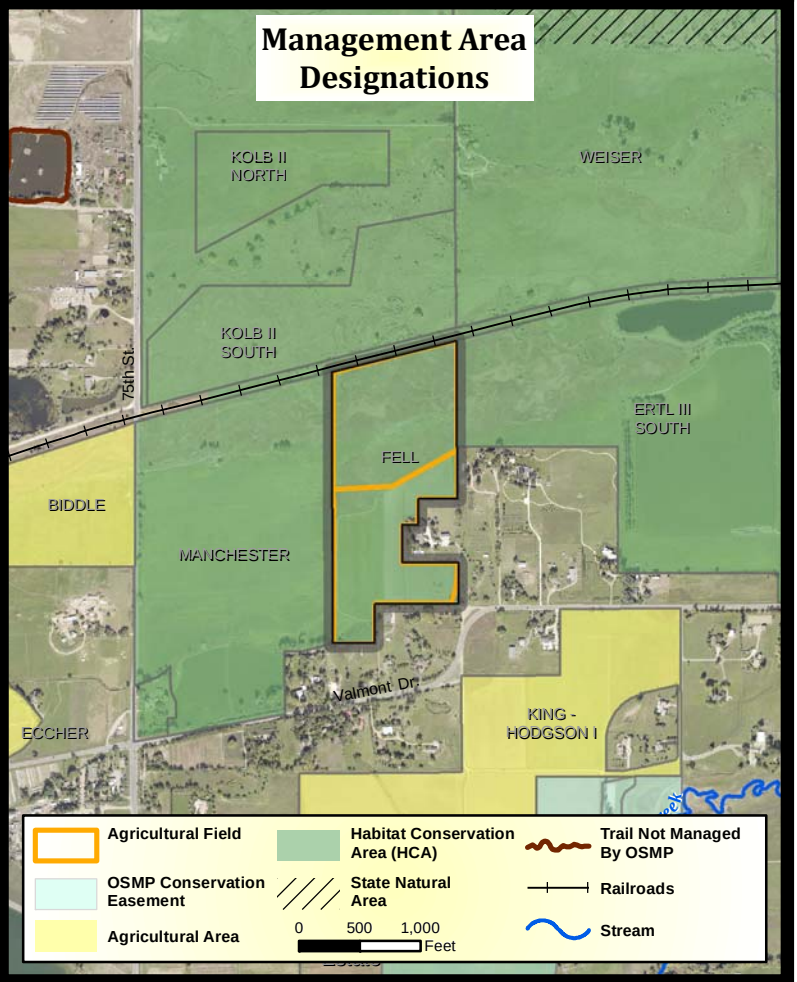
TBD

City of Boulder Open Space and Mountain Parks
Agricultural Plan

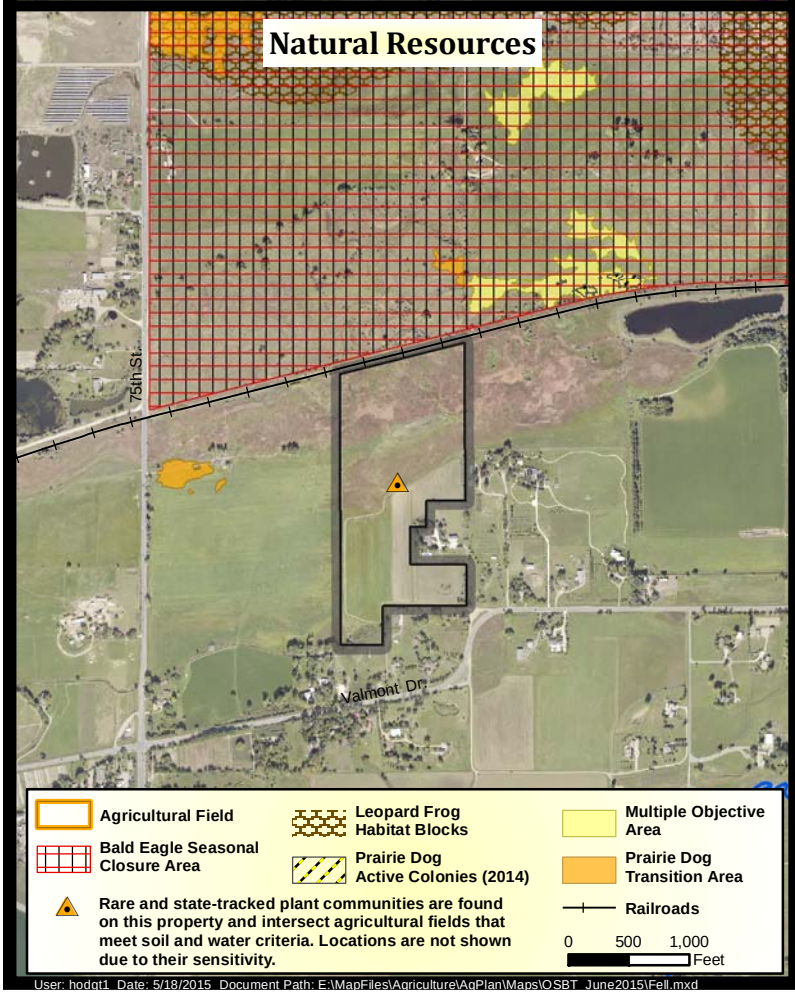
Fell

Current Agricultural Use

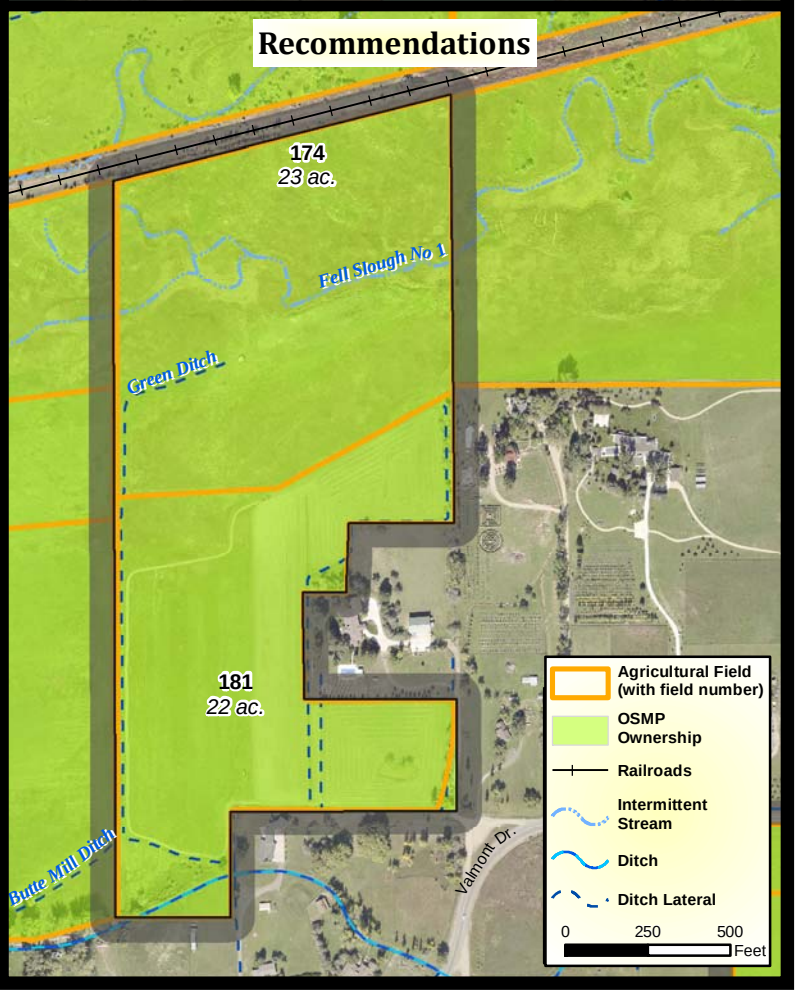
Management Area Designations



Natural Resources



Recommendations



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Isenhart-Jones

Essential Agricultural Characteristics

Infrastructure

No infrastructure is present on the property.

Water

There is an adequate amount of irrigated water (≥ 1.5 acre-feet per acre) from the Cottonwood #2 Ditch from May 16 to September 12, approximately 119 days. Field 139 (22.4 acres) is non-irrigable.

Soils

There are 31.3 acres suitable for diversified vegetable production. Field 82 and 91 are comprised of Ascalon sandy loam with 1-3% slopes, Capability Class II and Ascalon-Otero complex with 3-5% slopes, Capability Class III.

Compatibility with Other Resources and Management Goals

Management area designation	Agricultural
Presence of visitor infrastructure	No
Prairie dog colony management area designation	N/A
Prairie dog occupation	N/A
Bobolink management area designation	TBD
Presence of sensitive species	Rare and state-tracked plant communities are found on the property but do not intersect with agricultural fields that meet the soil and water criteria.
Presence of State A listed noxious weeds	No

Management Actions and Cost Estimate for Conversion

- Clean up property
  - Cost Estimate: $5,000
- Construct a small (1/10 acre-foot) irrigation pond near the vegetable cropping area to facilitate the delivery of irrigation water to the planting beds
  - Cost Estimate: $5,000
- Construct a fence to separate the cropping area of a diversified vegetable farming operation from the rest of the property which may be hayed/ grazed
  - Cost Estimate: $15,000

Total Cost Estimate: $25,000

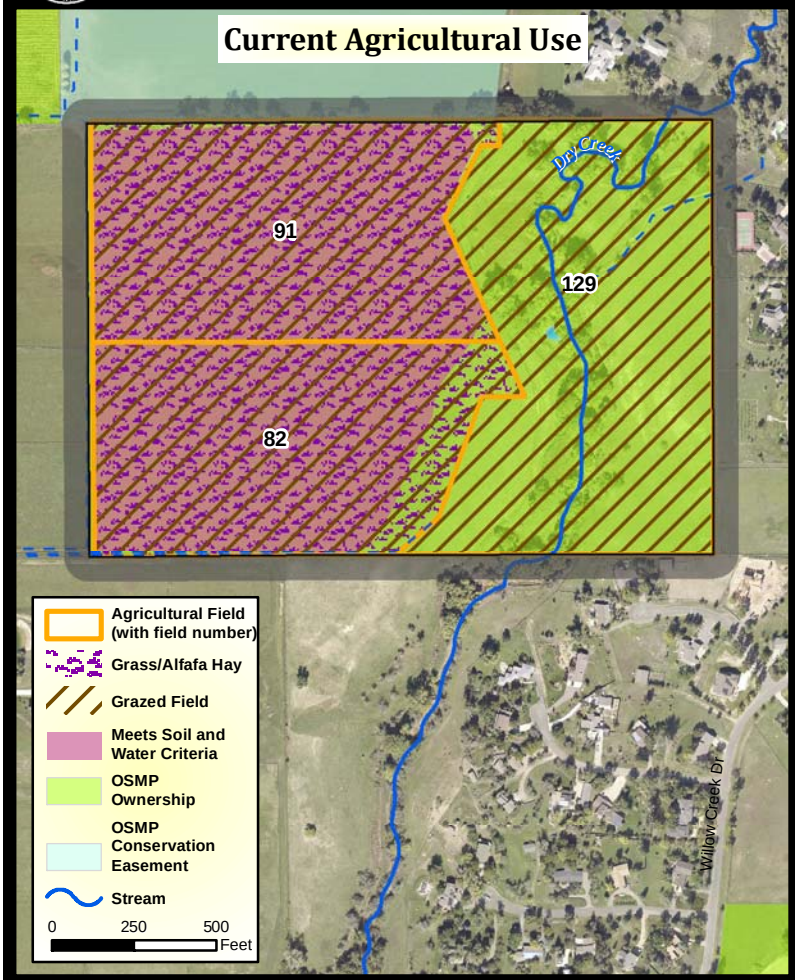
Recommendation

TBD

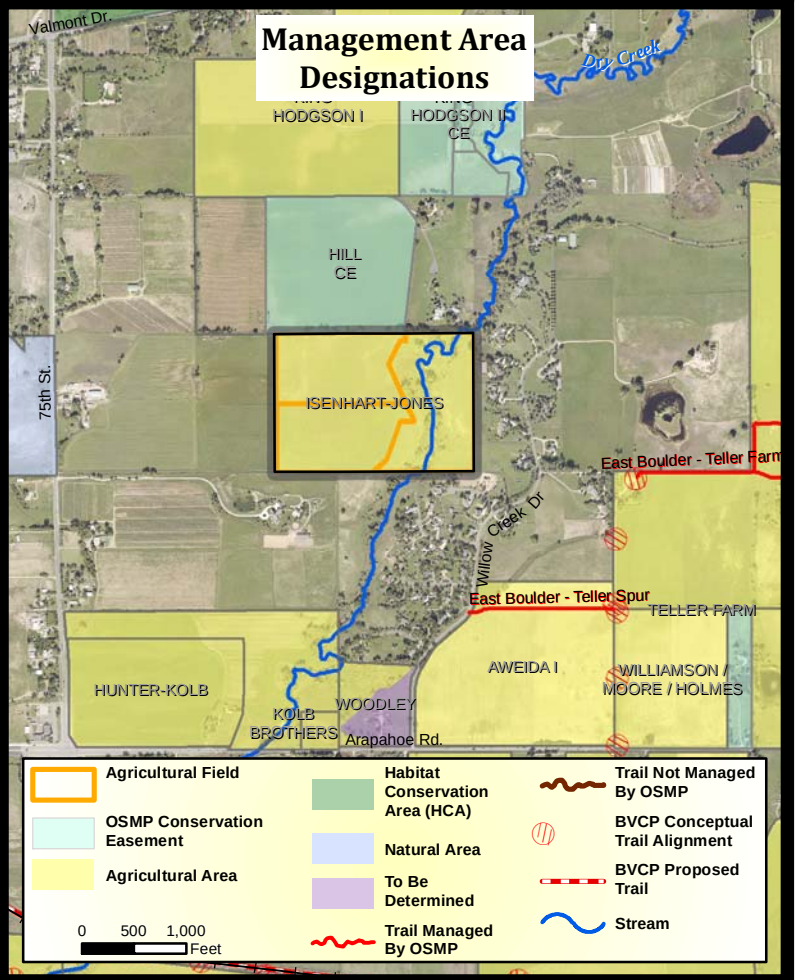
City of Boulder Open Space and Mountain Parks
Agricultural Plan

Isenhart - Jones

Current Agricultural Use



Management Area Designations



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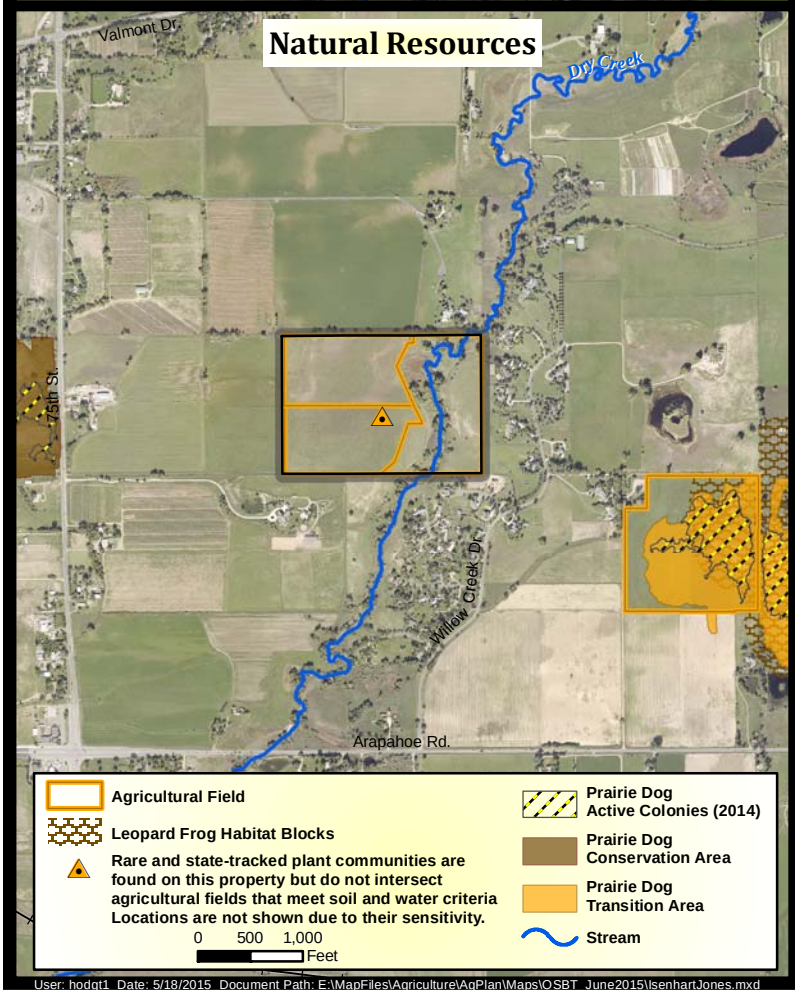

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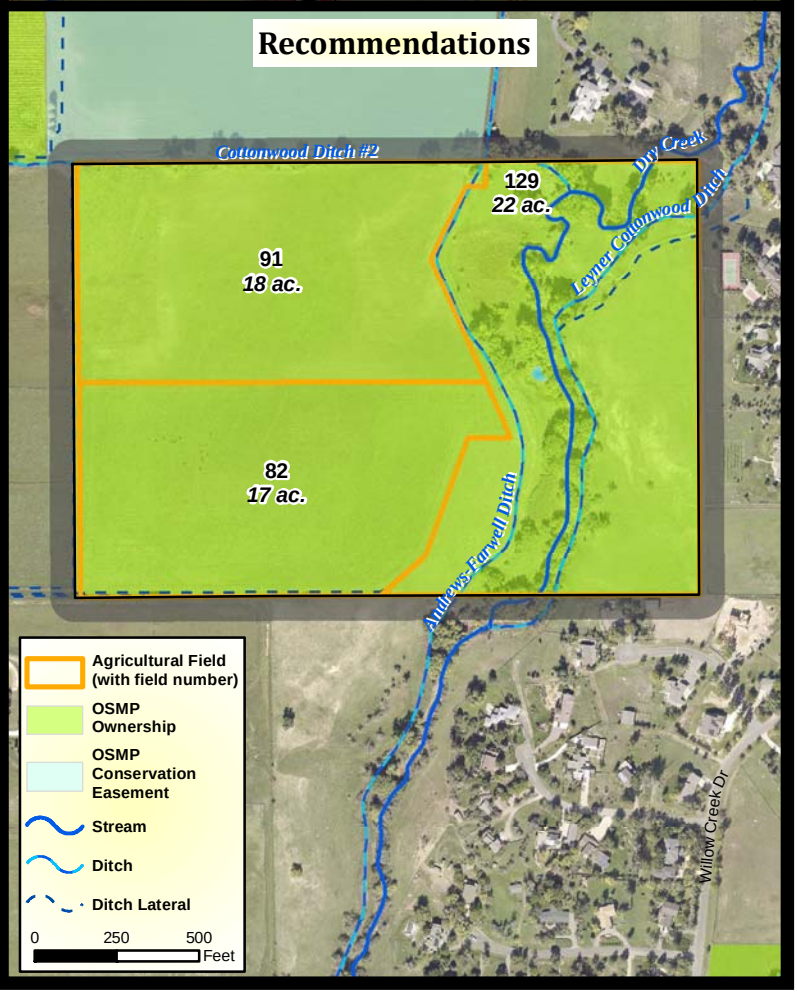

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Straty-Cline

Essential Agricultural Characteristics

Infrastructure

No infrastructure is present on the property.

Water

An adequate amount of irrigated water (≥ 1.5 acre feet per acre) is available from the North Boulder Farmers Ditch, from May 9 to September 28, approximately 142 days.

Soils

On the Fell property, 13.6 acres are suitable for diversified vegetable production. A portion of Field 408 is comprised of a mixture of Loveland soils, Capability Class III and Calkins sandy loam with 1-3 % slopes, Capability Class II.

Compatibility with Other Resources and Management Goals

Management area designation	Natural Area
Presence of visitor infrastructure	No
Prairie dog colony management area designation	Prairie Dog Removal Area
Prairie dog occupation	Subset is Occupied
Bobolink management area designation	TBD
Presence of sensitive species	No
Presence of State A listed noxious weeds	No

Management Actions and Cost Estimate for Conversion

- Clean up property
  - Cost Estimate: $5,000
- Construct a small (1/10 acre-foot) irrigation pond near the vegetable cropping area to facilitate the delivery of irrigation water to the planting beds
  - Cost Estimate: $5,000
- Construct a fence to separate the cropping area of a diversified vegetable farming operation from the rest of the property which may be hayed/ grazed
  - Cost Estimate: $20,000
- Cultural Resource Survey

  Total Cost Estimate: $30,000

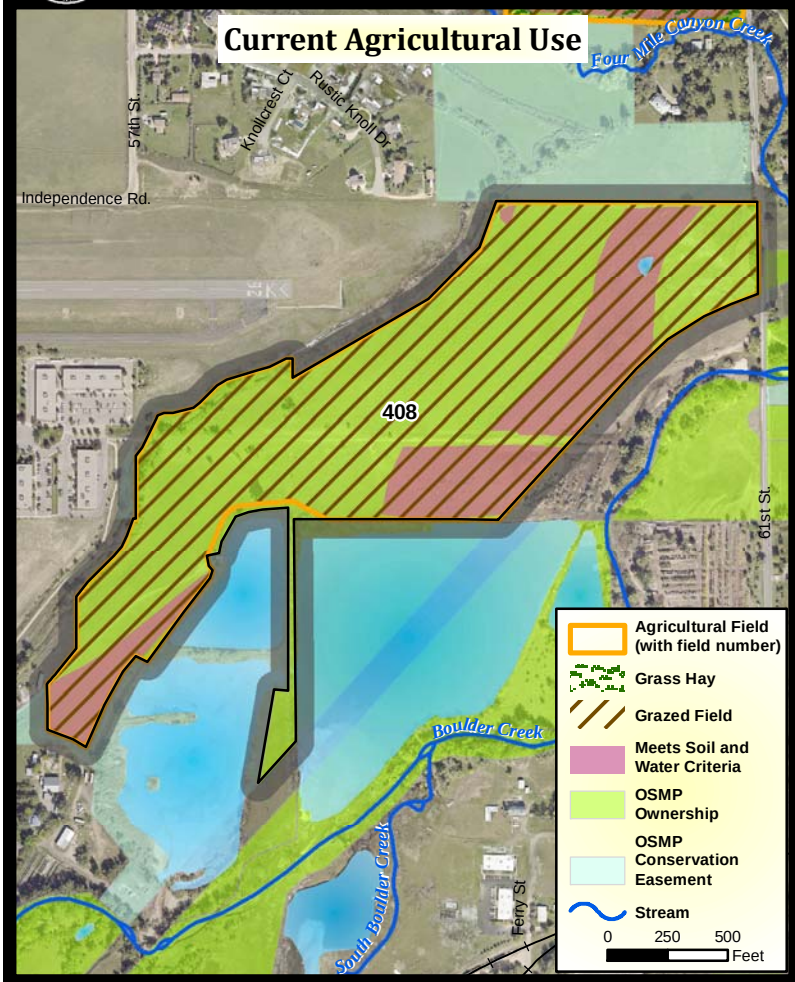
Recommendation

TBD

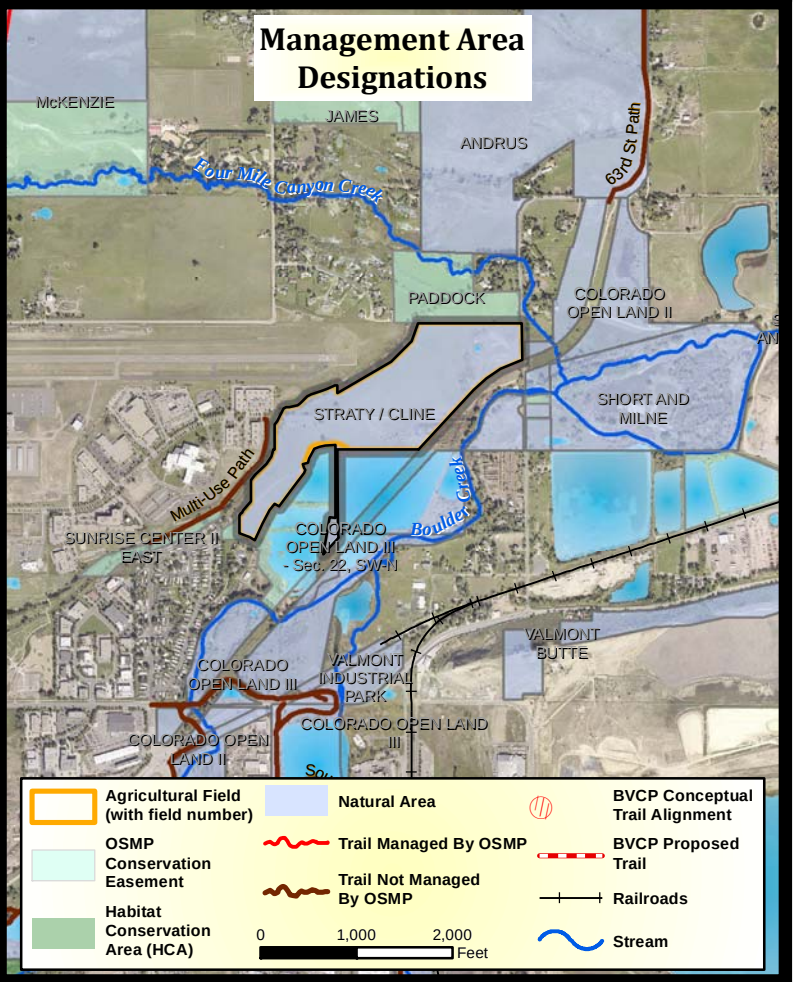
City of Boulder Open Space and Mountain Parks
Agricultural Plan

Straty-Cline

Current Agricultural Use



Management Area Designations



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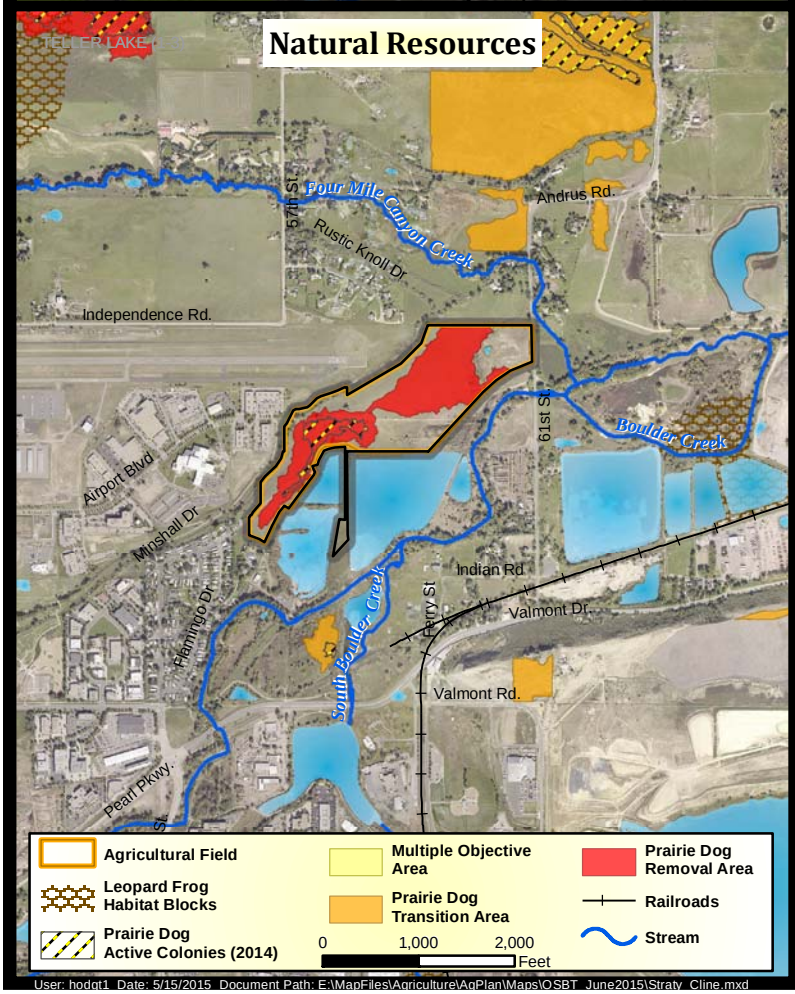
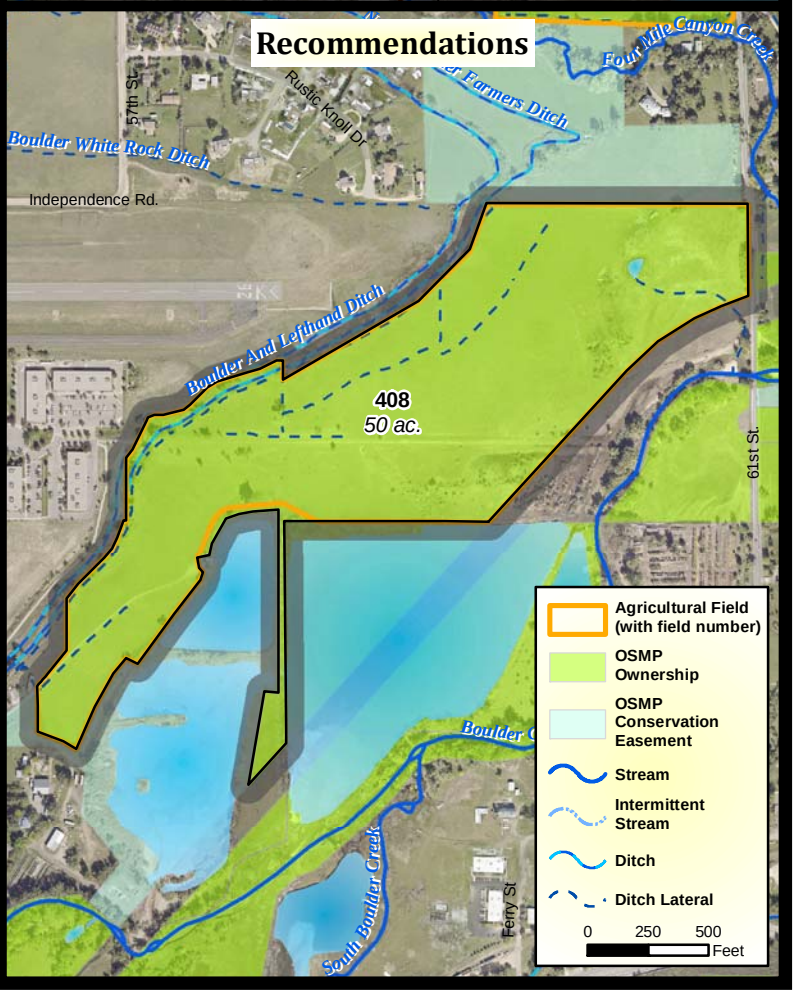


Recommendations



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Appendix A: Soil Capability Classes

Capability Class I: soils have slight limitations that restrict their use.
NnA: Nunn Sand clay loam, 0-1 percent slopes
AcA: Ascalon sandy loam, 0-1 percent slopes

Capability Class II: soils have moderate limitations that reduce the choice of plants or require moderate conservation practices.
NuA: Nunn clay loam, 0-1 percent slopes (shallow, droughty, or stony[14])
NnB: Nunn sandy clay loam, 1-3 percent slopes (erosion)
NuB: Nunn clay loam, 1-3 percent slopes (shallow, droughty, or stony)
WIA: Weld loam, 0-1 percent slopes (shallow, droughty, or stony)
WeB: Weld fine sandy loam, 1-3 percent slopes (erosion)
AcB: Ascalon sandy loam, 1-3 percent slopes (erosion)
AoB: Ascalon-Otero complex, 0-3 percent slopes (erosion)
WIB: Weld loam, 1-3 percent slopes (erosion)
CsB: Colby silty clay loam, 0-3 percent slopes (excess water)
Mm: McClave clay loam, 0-1 percent slopes (excess water)
NuC: Nunn clay loam, 3-5 percent slopes (erosion)
CaA: Calkins sandy loam, 0-1 percent slopes (excess water)
CaB: Calkins sandy loam, 1-3 percent slopes (excess water)
CoB: Colby silty clay loam, 1-3 percent slopes (erosion)
Nv: Nunn-Kim complex, 0-3 percent slopes (erosion)
WoB: Weld-Colby complex, 0-3 percent slopes (erosion)
Me: Manvel loam, 1-3 percent slopes (erosion)
HeB: Heldt Clay, 0-3 percent slopes (erosion)

Capability Class III: soils have severe limitations that reduce the choice of plants or require special conservation practices or both.
MdA: Manter sandy loam, 0-1 percent slopes (erosion)
MdB: Mater sandy loam, 1-3 percent slopes (erosion)
WdB: Weld loamy sand, 1-4 percent slopes (erosion)
AcC: Ascalon sandy loam, 3-5 percent slopes (erosion)
AoC: Ascalon-Otero complex, 3-5 percent slopes (erosion)
VaB: Valmont clay loam, 1-3 percent slopes (erosion)
HaB: Hargreave fine sandy loam, 1-3 percent slopes (erosion)
Lv: Loveland soils, 01- percent slopes (excess water)
MdD: Manter sandy loam, 3-9 percent slopes (erosion)
VaC: Valmont lcay loam, 3-5 percent slopes (erosion)

Capability Class IV: soils have very severe limitations that restrict the choice of plants or require very careful management or both.
AcD: Ascalon sandy loam, 5-9 percent slopes (erosion)

[14] Limitations listed in parenthesis

AoD: Ascalon-Otero complex, 5-9 percent slopes (erosion)
WoC: Weld-Colby complex, 3-5 percent slopes (erosion)
GaB: Gaynor silty clay loam, 1-3 percent slopes (shallow, droughty, or stony)
KuD: Kutch clay loam, 3-9 percent slopes (erosion)
RnB: Renohill silty clay loam, 1-3 percent slopes (shallow, droughty, or stony)
RnD: Renohill silty clay loam, 3-9 percent slopes (erosion)
GaD: Gaynor silty clay loam, 1-3 percent slopes (erosion)

Capability Class V: soils have little or no hazard of erosion but have other limitations, impractical to remove, that limit their use mainly to pasture, range, forestland, or wildlife food and cover.
VcC: Valmont cobbly clay loam, 1-5 percent slopes (shallow, droughty, or stony)

Capability Class VI: soils have severe limitations that make them generally unsuited to cultivation and that limit their use mainly to pasture, range, forestland, or wildlife food and cover.
ReD: Renohill loam, 3-9 percent slopes (erosion)

Class VII: soils have very severe limitations that make them unsuited to cultivation and that restrict their use mainly to grazing, forestland, or wildlife.
Te: Terrace Escarpments, (shallow, steep, stony, erosion)

Class VIII: soils and miscellaneous areas have limitations that preclude their use for commercial plant production and limit their use to recreation, wildlife, or water supply or for esthetic purposes.

Appendix B: Visitor Master Plan Management Area Goals

Agricultural Area Goals:

- Maintain the efficiency of agricultural production and operation.
- Manage agricultural production and operation to ensure safety for operators and visitors in the vicinity.
- Provide, where appropriate, public access and passive recreational opportunities that have minimal impacts on agricultural production and operation or other resources.
- Manage visitor access in areas of intensive agricultural production or operation to ensure visitor safety.
- Eliminate undesignated trails when they are redundant or damaging to resources.

Passive Recreation Area Goals:

- Provide a high level of public access to destinations and connection through designated trails.
- Maintain or improve passive recreational and educational opportunities, while protecting and preserving natural lands and resources.
- Accommodate high levels of visitor use with appropriate management, trails and trailheads, and services.
- Reduce conflicts among visitor activities.
- Minimize the number of undesignated or "social trails," eliminate undesignated trails when they are duplicative or damaging to resources.

Natural Areas Goals:

- Accommodate low-impact visitor activities where adequate trails exist or can be built, and resource impacts can be minimized.
- Provide opportunities for passive recreational and educational activities that require topographic relief or a natural setting.
- Protect the quality of natural and agricultural resources (especially where high value resources exist).
- Eliminate undesignated trails when they are redundant or damaging to resources.

Habitat Conservation Areas (HCA) Goals:

- Maintain, enhance, and/or restore naturally functioning ecological systems.
- Maintain, enhance, and restore habitat for species of concern identified in the Boulder County and the Boulder Valley Comprehensive Plans.
- Provide public access and passive recreational opportunities that foster appreciation and understanding of ecological systems and have minimal impacts on native plant communities and wildlife habitats or other resources.
- Eliminate all undesignated trails, unless they are made part of the designated trails system or provide specialized access to appropriate low-use destinations.
- Where sustainable infrastructure exists, continue to allow public access to appropriate destinations.

Appendix C: Prairie Dog Colony Management Area Designations

Grassland Preserves

Grassland Preserves are areas where prairie dogs and their associated species are part of large and ecologically diverse grassland habitat blocks. These areas are considered the best opportunity to conserve prairie dogs and their associated species. In most cases, prairie dogs will be allowed to persist without removal in Grassland Preserves. However, removal will be allowed for the purposes of maintaining existing irrigation facilities such as headgates, ditches, lateral ditches, reservoirs and irrigated fields. In addition, to ensure protection of habitat within Grassland Preserves, the need for limited removal from a Grassland Preserve will be assessed if prairie dogs occupy more than 26% of the Grassland Preserve (i.e. viability drops below "Good") and indicators of vegetation composition fall below thresholds identified in the Grassland Plan. Inactive, previously occupied colonies within Grassland Preserves could serve as relocation receiving sites (where there is an existing burrow infrastructure) and if the area meets relocation criteria (identified in the Grassland Plan). However, prairie dogs will not be relocated into irrigated fields nested within Grassland Preserves. Following a die-off or other disappearance of prairie dogs from an area, they could be excluded to allow for habitat restoration or to protect existing habitat restoration projects.

Multiple Objective Areas

In Multiple Objective Areas, preservation of prairie dogs and their associated community is one of several management objectives. Prairie dogs will be allowed to persist without removal except for the purpose of maintaining existing irrigation facilities such as headgates, ditches, lateral ditches, reservoirs or irrigated fields. Multiple Objective Areas will not be used as receiving sites for relocated prairie dogs. Exclusion of prairie dogs attempting to re-colonize a Multiple Objective Area could occur to allow habitat recovery.

Prairie Dog Conservation Areas

Prairie Dog Conservation Areas are areas where the conservation of the prairie dog is the primary management objective and are managed opportunistically for associated species. These areas would serve as receiving sites for relocation with the requirements described in the Grassland Plan. No removal of prairie dogs would occur in Prairie Dog Conservation Areas except for the purpose of maintaining an existing irrigation facility such as a headgate, ditch, lateral ditch, reservoir or irrigated field. Prairie dogs will not be relocated into irrigated agricultural fields within Prairie Dog Conservation Areas.

Transition Areas

Transition Areas are grassland areas where the preservation of resources other than the prairie dog and associated community takes precedence. Prairie dogs may inhabit transition areas, but will be relocated away from the property when feasible (i.e. relocation receiving site is available). Following relocation, die-off or other natural events such as dispersal that leads to a reduction of the population and result in uninhabited areas, re-colonization could be prevented or discouraged using barriers, re-seeding, grading, burrow destruction, passive relocation or other methods available to the department. After efforts are made to trap and relocate all remaining prairie dogs, removal through lethal control will be

allowed in accordance with applicable regulations and policies, and if numbers do not exceed 20 individuals. Removal would be allowed at any time for maintenance of existing irrigation facilities such as a headgate, ditch, lateral ditch, reservoir or irrigated field. Continued irrigation will also be allowed in irrigated fields regardless of prairie dog occupancy.

Removal Areas

In removal areas, prairie dogs are incompatible with OSMP management objectives. The designation of a property as a Removal Area provides the option to remove prairie dogs from the property in accordance with applicable regulations and policies. Following removal, efforts would occur to prevent re-colonization including restoration or irrigation of the property, destruction of burrow system, exclusion structures, etc. Continued irrigation will be allowed in irrigated fields regardless of prairie dog occupancy.