SALIDA CITY PARKS TREE INVENTORY 2021

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Table of Contents

INTRODUCTION

Deliverable Details from the Statement of Work include:
This report was prepared by the Colorado State Forest Service. The primary purpose of this report is to provide a park tree inventory and assessment with recommendations for Salida that will assist with maintaining and improving the overall health of its park trees to meet the listed objectives. It should be studied for information and used as a reference when implementing park improvement projects.

A mathematical formula using ISA tree appraisal dollar value, tree diameter, species, condition and placement can be used to generate an estimate of the dollar value of the City of Salida's urban forest.

A summary report will also be submitted to the City of Salida, and will include the following:

- A summary of data collected including tables and graphs
- USDA USFS iTree Eco report
- Map of tree locations
- Photo gallery of sample conditions of trees inventoried
- Immediate and/or suggested management needs

Tree inventories were conducted by CSFS Salida Field Office during the months of July 2021 through November 2021, with completion and submittal of the report by Spring of 2022.

BACKGROUND

The City's Parks and Recreation Department is responsible for managing the City's parks, trails, open spaces, Aquatic Center, recreation activities, and community events. Our mission is to offer park and recreation services that are essential to the health and well-being of those who live, work and play in Salida.

The Parks and Recreation Department approached CSFS to provide an overview of the current conditions, needs, future management needs and potential tree risks for all parks as a proactive approach to ensure the trees are best managed and used as future assets to the parks. Parks inventoried includes: Centennial, Riverside, City Hall, Alpine, Thonhoff/MacWitty, Nuno, Monarch Spur Trail, Chisholm, Dog Park, Marvin

PURPOSE

The trees of the parks in the City of Salida represents a considerable economic, social, and environmental asset to the community. Trees are major capital assets to Salida's parks and communities. Like streets, sidewalks, utilities and buildings, the community forest is a critical and valuable component of the urban infrastructure. Trees provide citizens direct and indirect benefits, including increased property values, improved water quality, enhanced energy conservation, improved mental and physical health, reduced violence, and improved wildlife habitat. New businesses are stimulated to locate in tree-friendly environments. Trees are good for our health, producing oxygen and removing air pollutants, and their beauty enhances the quality of life in Salida.

Improved tree health and survival will result in long term benefits and reduce public liability by elimination of hazardous conditions. The development of a progressive, long range urban and community forestry maintenance program based on preliminary research, inventory and study will provide the foundation for an ongoing program that will result in a healthier and safer community forest in Salida.

This inventory will serve many purposes including:

- Establishing a baseline with which trends, such as trees removed and trees planted, can be compared
- Considering park trees as part of the City's overall green infrastructure (natural systems that help reduce stormwater runoff and protect the City's resources)
- Helping the Parks & Recreation Department manage maintenance and planting schedules
- Supporting grant applications tree planting and planning projects

PROPERTY DESCRIPTION

The City of Salida covers approximately 1,647 acres (calculation from ArcGIS) and houses approximately 5,791 residents (as of 2019). City parks (including parks not inventoried during this project and city open spaces) cover approximately 445 acres. The City of Salida is located in Chaffee County. Salida is the County seat for Chaffee County, largest city, largest economic and retail center in the upper Arkansas Valley. Salida is located in portions of Sections 32 in Township 50 North, Range 9 East and Sections 4, 5, & 6 in Township 49 North, Range 9 East. Salida is located near the intersections CO Hwy 50 and CO Hwy 291.

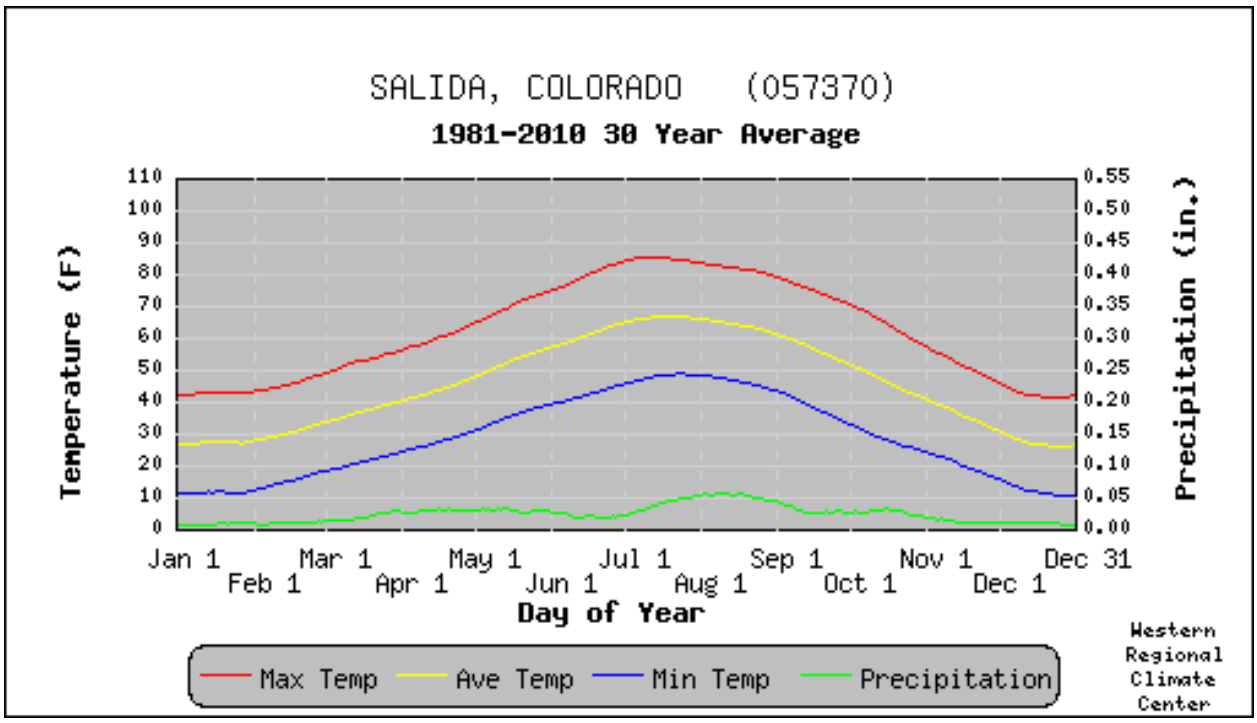
The landscape of Salida is fairly flat with most slopes less than 10%. It is located along the Arkansas River. The elevation of Salida is 7,083 feet.

CLIMATE

The overall climate can be characterized as being semi-arid with low precipitation and high evaporation rates. According to the Western Region Climate Center, the average annual precipitation is 10.8 inches, with a historical high of 17.9 inches (1961) and historical low of 4.45 inches (2002). The highest rainfall amount being in August (~1.65 inches), and the driest month being in January. Most of the rainfall occurs as high-intensity, convective thunderstorms during the growing season. Winter precipitation occurs as snow with an average of 48.0 inches annually. The average annual temperature ranges from 28.9 to 62.9° F. The annual average minimum and maximum temperatures in Salida, CO are 12.5° F and 84.3° F, respectively, with the warmest month being July, and the coldest month being January. The freeze-free period averages 109 days and ranges from 87 to 127 days, decreasing in length with elevation.

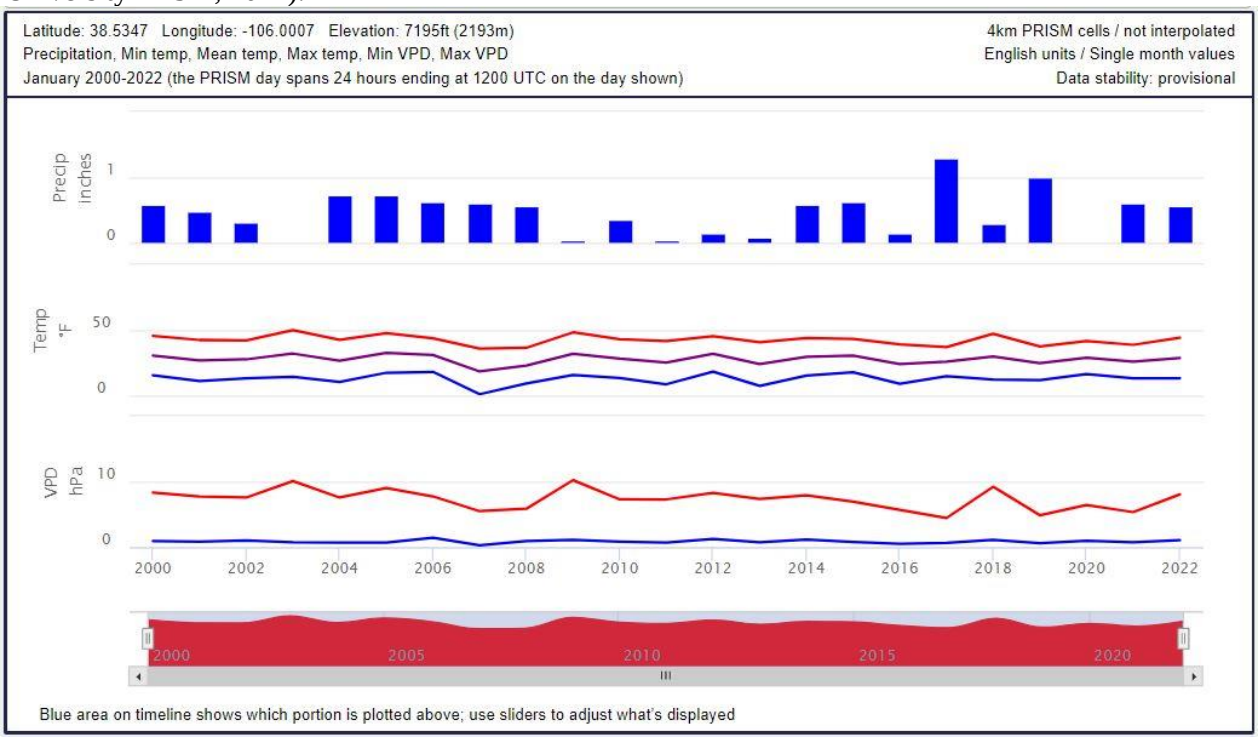
Climate conditions indicate that trees for planting should be USDA zone 4 or 5 hardy, be able to handle a growing season of 90-120 frost free days and be drought tolerant. This creates some challenges for the city as it restricts the use of some readily available and popular trees. The severe spring winds can also be problematic to newly planted trees and older declining trees.

The graph below is for a station near the City of Salida. Temperature and precipitation data for the period 1981 through 2010. With an ever-changing climate, this is something to consider when managing for a healthy urban forest and park trees. Precipitation patterns and amounts are changing, with droughts becoming more intense and frequent, consequently affecting forest growth. With storms also becoming more intense, overland flooding can lead to a loss of topsoil, leaving behind even more nutrient-poor soils, especially on highly erodible soils.



30-year temperature and precipitation averages in Salida, CO (Western Region Climate Center, 2021).

The following graph is a more accurate representation of precipitation and temperature for the City of Salida. See below figure for temperature and precipitation data ranges from 2000-2022 (Oregon State University PrISM, 2022).



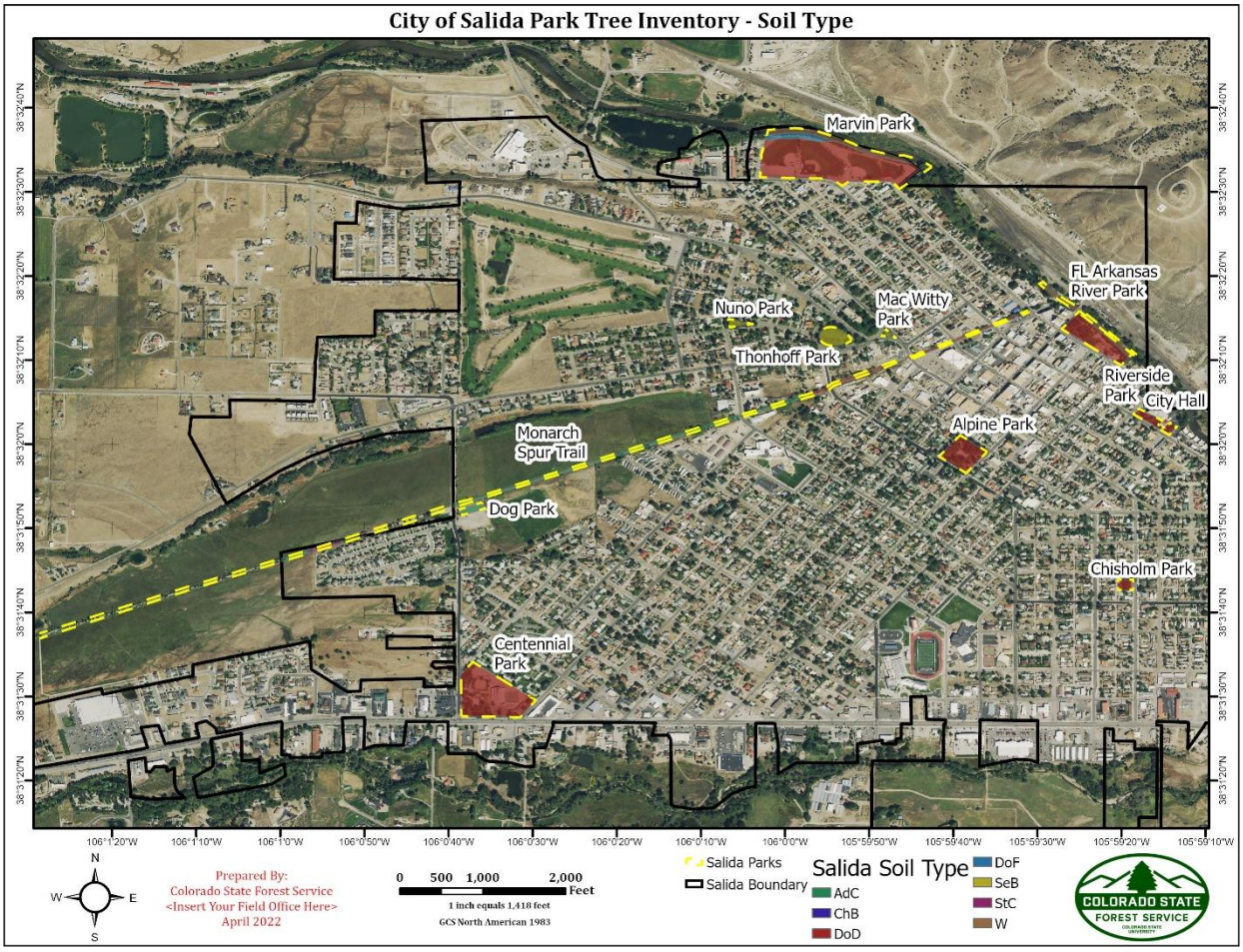
Temperature and precipitation data from 2000-2022 in Salida, CO (Oregon State University PrISM, 2021).

SOILS

The soils in Salida are also a driving factor in the selection of tree species that grow here. Most of Salida is located in the flood plain of the Arkansas River, where the soils vary from sandy and well drained to sandy loam. Tree selection should be made based off of the moisture needs of the trees and matching that to the type of soil. Soil pH is alkaline and varies from 7.0-8.2. The majority of soils in Salida are Dominson gravelly sandy loam (DoD) and St. Elmo gravelly sandy loam (SeB), which are both well suited for hand planting (see map and table below).

Implications/Limitations

- Only trees that are alkaline tolerant should be planted
- All soils are well-suited for hand planting trees



CITY OF SALIDA SOIL TYPE AND PARK			
Salida Park/s	**Map Unit**	**Map Unit Name**	**pH**
Dog Park, Monarch Spur Trail	AdC	Adilis loam, 1-5% slopes	7.4
Marvin Park	ChB	Chaffee loam 1-3% slopes	7.4
Alpine, Centennial, Chisholm, City Hall, Marvin, Monarch Spur Trail, and Riverside Parks	DoD	Dominson gravelly sandy loam, 1-9% slopes	8.1
Marvin Park	DoF	Dominson gravelly sandy loam, 9-45% slopes	8.1
Mac Witty, Nuno, Monarch Spur Trail, and Thonhoff Parks	SeB	St. Elmo gravelly sandy loam, 1-3% slopes	8.2
Monarch Spur Trail	StC	Sawatch sandy loam, 1-5% slopes	7.0

TREE INVENTORY PROCESS

- See **Appendix G** for list of data collection fields.
- The CSFS used Trimble Junos, a hand-held computer, to record data for each tree.
- After tree data was collected, it was imported from the Trimble into the ArcMap 10.1 software program for analyzing and map production.
- Using ArcGIS (GIS software), the CSFS created a customized geodatabase for Salida's inventory. The Trimble units were loaded with ArcPad 10.1 software to facilitate data collection with aerial photos.
- The inventory is a stand-alone product based in the Geographical Information System (GIS) ArcGIS, version 10.1. GIS software captures, stores, analyzes, manages and presents data linked to a location and includes mapping capability.
- Once the Salida park tree inventory data is stored on a computer we can:
    - Query data
    - Generate reports within ArcMap and in Microsoft Excel
    - Create maps
    - Update data as frequently as needed
        - Salida may be trained in how to update the data
- Polygons were used to break the Monarch Spur Trail up into geographically distinct segments according to the street crossings. The data included in the polygons included species, average DBH, average height, and management need.

CSFS may keep the data updated via a Service Agreement

TREE RISK

The following data fields represent the tree risk assessment collected. The defects for each tree were ground level visually inspected for defects including: large cracks, areas of decay, dead and broken limbs and mushrooms or conk evidence on the bark or cavities. Trees containing these features were evaluated as individual trees and analyzed with the Colorado Tree Coalition (CTC) tree risk rating system. Every tree larger than 20" was assessed using the CTC criteria.

Tree risk background: adapted from, *Front Range Urban Forestry Council, Urban Area Defective Tree Evaluation and Analysis*. Every tree is a candidate for failure, if exposed to the proper conditions. Perfectly healthy looking trees can fail when exposed to high winds, heavy snow and ice loads or dry summer days. Tree risks can escape detection, however; cities, public agencies and tree managers cannot afford to plead ignorance when a tree failure causes damage to life or property.

A basic definition of a risk tree is when a tree with a defect is located within striking distance of a target. A risk tree is one that has some structural defect or location that increases the probability of failing and hitting the identified target. These failures can be an individual part of the tree such as branches or a limb, or the complete failure of the trunk or roots. The combination of a defect and target can result in property damage or personal injury or death if a failure occurs. Liability from failure increases where people's presence is invited.

There are three basic components in this defective tree inspection. Two of these, species and defect, deal with the science of horticulture. The third, target, is a policy decision which must be developed internally by the inspecting agency. A tree species profile is regional and usually is developed with the aid of a group of professional tree experts. The target list should be based on location, use and mobility. This Tree Risk Assessment Rating system is designed to assist urban tree managers in providing a safe, friendly environment for users, while working within budgetary limitations.

Many external factors such as snow and ice loads, and prevailing winds will affect a tree's failure potential. Therefore, individual tree evaluations must be conducted. This is especially true while assuring public safety.

COLORADO TREE COALITION'S TREE RISK ASSESSMENT RATING SYSTEM

The goal of any defective tree evaluation is to maintain the largest number of trees within budgetary limits, while assuring public safety. The removal of too many trees can destroy the aesthetic qualities of an area, which is what made the area popular to begin with. Careful thought and evaluation should go into determining defective tree management actions.

Once a Tree Risk Assessment program has been selected and begun, it should be maintained in the same manner by all. Changes to the program should be understood and executed by all personnel involved. It is imperative that all players in a program of this type be on the same page and communicate with each other. Remember, we are dealing with living organisms which change daily. Once a program begins, you must keep it up.

This technique provides a good systematic method that can easily be repeated for future comparison on the trees future risk potential. There are two portions to the assessment and calculated this will provide an assessment rating for each tree. All classes are measured on a scale of 1 – 4, with larger numbers having more value in risk assessment ranking. The Assessment classes are added together. The Management classes are added together. The Assessment is then multiplied by the Management for a prioritized rating.

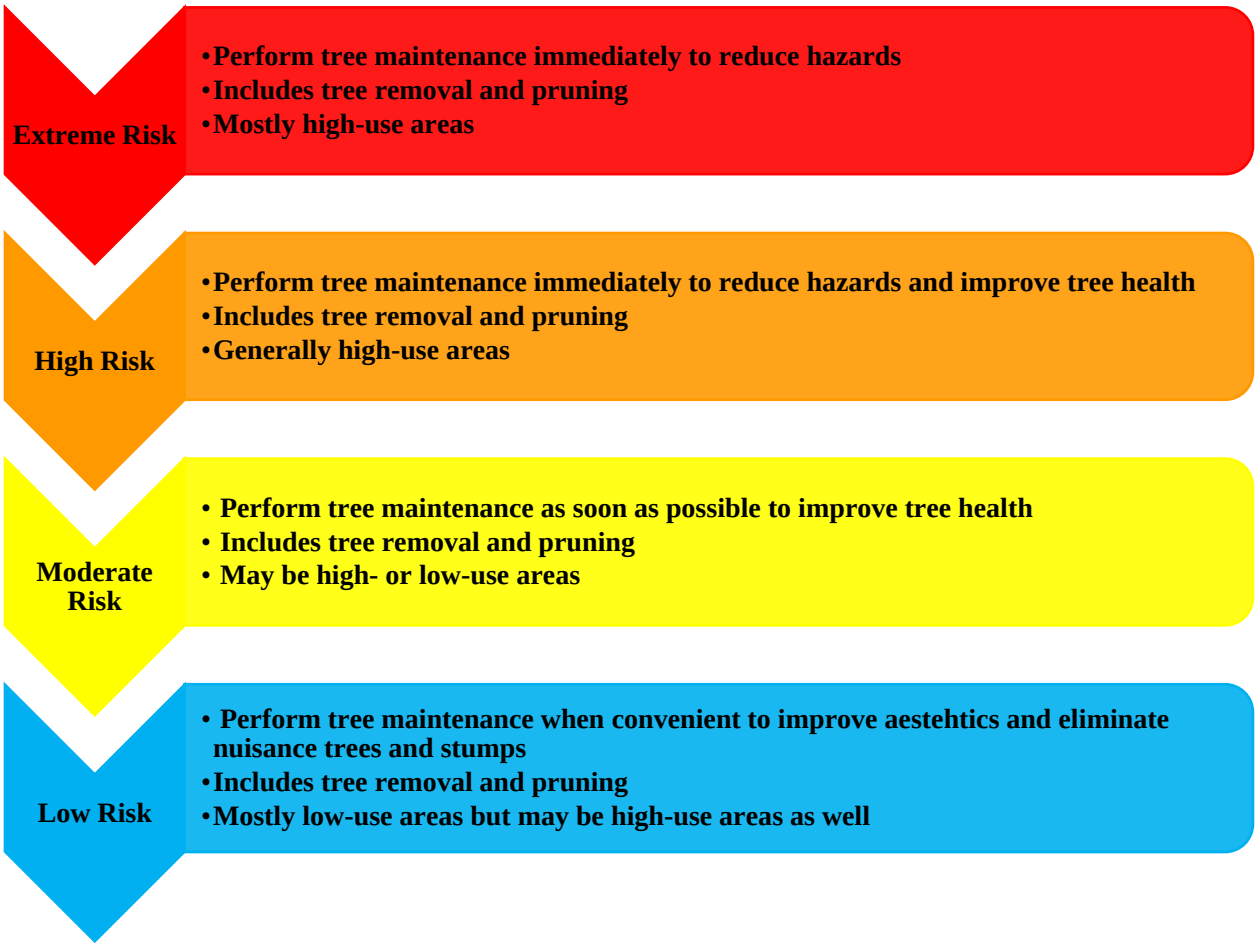
1. **Risk Assessment Classes** – What is the current risk?
    a. *Likelihood of Failure* – Physical conditions of the tree that may lead it to falling.
        i. *Improbable* - the tree or branch is not likely to fall during normal weather conditions and may not fall in many severe weather conditions within the specified period.
        ii. *Possible* - failure could occur, but is unlikely during normal weather conditions within the specified period.
        iii. *Probable* - may be expected under normal weather conditions within the specified period.
        iv. *Imminent* - Failure has started or is most likely to occur in the near future, even if there is no significant wind or increased load. This is a rare occurrence for a risk assessor to encounter, and it may require action to protect people from harm.
    b. *Likelihood of Target Impact* – Chances of hitting a specific target. A ranking of 1 poses the lowest risk and a ranking of 4 is the highest risk.
    c. *Consequences of Failure* – Amount of damage that failing tree may cause. A ranking of 1 is least damaging and a ranking of 4 is most damaging.

2. **Risk Management Classes** – Balance of risk assessment, affected targets, species and action.
    a. *Target* – Low Use to Very High Use area and the type of area affected. Concern should begin with human activity, followed by value of non-human targets. A ranking of 4 denotes the heaviest use.
    b. *Species* – Biologically differences in species morphology, architecture, decay susceptibility, included bark and root patterns influences its risk potential. A ranking of 1 is a less susceptible species than a ranking of 4.
        i. *Low (1)* = cherry, goldenrain tree, hawthorn, juniper, Rocky Mountain maple, Amur maple, bristlecone pine, pinon pine, limber pine, plum
        ii. *Moderate (2)* = apple, quaking aspen, crabapple, Douglas-fir, white fir, honeylocust, horse chestnut, hornbeam, lilac tree, mountain ash, mulberry, red oak, white oak, Ohio buckeye, Austrian pine, lodgepole pine, ponderosa pine, Russian olive
        iii. *High (3)* = *g*reen ash, white ash, catalpa, Kentucky coffeetree, American elm, hackberry, black locust, sugar maple, red maple, ornamental pear, Colorado spruce, Engelmann spruce, black willow
        iv. *Very High (4)* = lanceleaf cottonwood, narrowleaf cottonwood, plains cottonwood, hybrid cottonwood, Siberian elm, American linden, silver maple, white willow
    c. *Action* – Next step that should be taken for each tree.
        i. *Re-Evaluate Next Inspection Cycl*e (4) - usually an agreed upon time frame (agreed upon during the communication with the management team) set in years.
        ii. *Re-Evaluate Next Growing Season (3)* - usually within the middle of the growing season of the year following inspection. This will allow the assessor to observe health conditions of the tree such as live crown and twig growth.
        iii. *Remedial Care (2)* - the process of diminishing the risk without removing the entire tree.
        iv. *Removal (1)* - the removal of the tree when current mitigation procedures are unlikely to diminish the risk.

PRIORITIZING TREES FOR RISK MANAGEMENT

In risk assessment, likelihood of failure and action were the two categories that seemed most relevant to management for the City of Salida to move forward with. Note that although only a couple of trees fell under the *Extreme* priority category, there were still multiple removals recommended and trees that need mitigation.

PRIORITY		Priority 1 EXTREME	Priority 2 HIGH	Priority 3 MODERATE	Priority 4 LOW
LIKELIHOOD OF FAILURE	Improbable (15)	--	--	**13**	**2**
	Possible (131)	--	**31**	**88**	**12**
	Probable (11)	--	**8**	**3**	--
	Imminent (3)	**2**	**1**	--	--
ACTION	Re-Evaluate Next Inspection Cycle (105)	--	**14**	**77**	**14**
	Re-Evaluate Next Growing Season (8)	--	**3**	**5**	--
	Mitigation (41)	--	**19**	**22**	--
	Removal (6)	**2**	**4**	--	--



RECOMMENDED CORRECTIVE ACTION

This final step is when priority recommendations are implemented. Corrective Action should be completed as soon as possible. This action may require entire tree removal, pruning of the defective part of the tree, target moving or removal or other means of reducing the risk. Schedule trees with a moderate or low rating for planned periodic inspections. The tree's risk rating may change over a short period of time. Scheduling evaluations will build the basis for future ratings. If immediate corrective action in areas of very high or high risk is not possible, post the area and close it to public access.

The following corrective actions are listed in order of priority. This list can be used to further refine the corrective action priorities based on budget additional safety concerns or work load.

Four techniques are available to manage the risk trees:

1. **Move the target** – This can provide a temporary solution until other options are available. This can provide a permanent solution if the publics' use of the area is not affected. This could involve moving a picnic table away from the hazardous tree.
2. **Provide tree maintenance to remove the risk –** This includes pruning deadwood out of the tree that may fall.
    a. **Defect Pruning –** Selective removal of dead, diseased, broken or weakly attached branches from a tree crown. This removes larger deadwood, reduces weight on branch ends, and removes other defective parts of trees that could impact people and property. This typically involves the removal of dead branches >2" diameter.

3. **Close public access around the risk** – This should only be considered a temporary solution due to the high use of the area.
4. **Removing the tree –** These trees pose a direct safety threat. The only other option is moving the target.

RISK RATING, CATEGORY, & PRIORITY TABLE				
Priority	**Risk Category**	**Total Risk Rating**	**Action**	**# Trees**
Priority 1	Extreme	108-144	Consider removal of trees	2
Priority 2	High	72-107	Defect Pruning	40
Priority 3	Moderate	36-71	Defect Pruning	104
Priority 4	Low	9-35	Start Routine Pruning	14

*175 trees under 20" DBH, having no risk rating

PRESERVING EXISTING TREES

Tree planting is a critical part of improving a local tree canopy and will play an important role in the future improvements of various parks. Often overlooked, however, is the value of the existing mature tree population. These trees have done the hard work of growing to the size that provides true environmental benefits, and these benefits are so hard to replace once lost. They are a pre-existing asset that should not be taken for granted. Any high value mature trees should be inspected on a regular basis (typically every two years) by an ISA-certified arborist.

MANAGEMENT NEEDS

All urban forest trees need management as they establish, mature and are eventually removed from the landscape. The 'management need' question identifies the most pressing need the tree has at the time of the inventory. In some cases, the tree may be doing well and does not need management other than a pruning rotation for future management. Each tree management type was identified as one of the following categories:

- **Clearance Prune -** Pruning is needed to prevent damage to personal property or injury to people. This tree management need addresses public safety. The standard branch height over streets is 14 feet and a branch height of 8 feet over sidewalks. Trees or branches must not block public safety signs.
- **Structural Prune** – Most commonly used in young trees to establish & promote good structure. In older trees this is used to fix structural problems.
- **Defective Prune -** The tree needs a one-time corrective action to eliminate a serious problem. The call for a defective prune is usually instigated by the presence of a nearby target. Some examples of defective pruning include hanging dead branches two inches or larger in diameter, cracked branches, trunk lean, large deadwood or co-dominant trunks that could fail. Immediate action to mitigate the defect is recommended.
- **Routine Prune**- Create a proactive and preventative pruning rotation for small to medium trees. The targeted trees are between four to ten inches in diameter. Once established, trees need to be pruned in regular 3 to 5 year intervals to encourage healthy branch structure. A regular pruning cycle can prevent future needs of crown raising and defective pruning. Some trees in the park will need annual pruning care to restore a healthy branching structure and to prevent the tree from developing an undesirable form.
- **Monitor** - The tree is in overall good condition. However, the tree may have an issue that should be documented and watched to ensure the concerned area does not worsen causing the tree to decline rapidly or fail.

- **Remove**- This tree is either dead or in poor health due to neglect, level of existing care, over-crowding, pests or people abuse. It would be prudent to remove it from the growing site. Trees harboring aggressive or nuisance pests should be removed as soon as possible.
- **Cultural Treatment -** This need is chosen when the tree needs more or less water, the health would be improved by adding fertilizer or the growing site needs to be mitigated (e.g., soil compaction). Although the need is not immediate, the tree would benefit from further inspection to determine how to improve the existing situation.
- **Plant -** A space has been identified as suitable for planting based on the existing site conditions and the horizontal and vertical space.
- **Protect -** The tree is being damaged by existing external factors such as people or animals (e.g. tree grates, girdling roots, fabric, caging and poor lawn care). Deer damage would also fall into this management need. Action is needed to mitigate and/or prevent future damage.
- **Do Nothing -** The tree is in good health and condition. In its present state the tree is a good example of the species for that site. No action is recommended at this time, but tree should be incorporated into the maintenance plan rotation.
- **Treat Insect or Disease** – Insect or disease is to the point where it might start to affect tree health and should be treated.
- **Prune to One Stem** – Multiple stems are present. Pruning to one stem will reduce competition and help develop proper tree structure.
- See **Appendix B** for picture examples of the following management needs.

The following additional data was collected to help give a picture of the health of the trees, tree identification and additional work that may be needed.

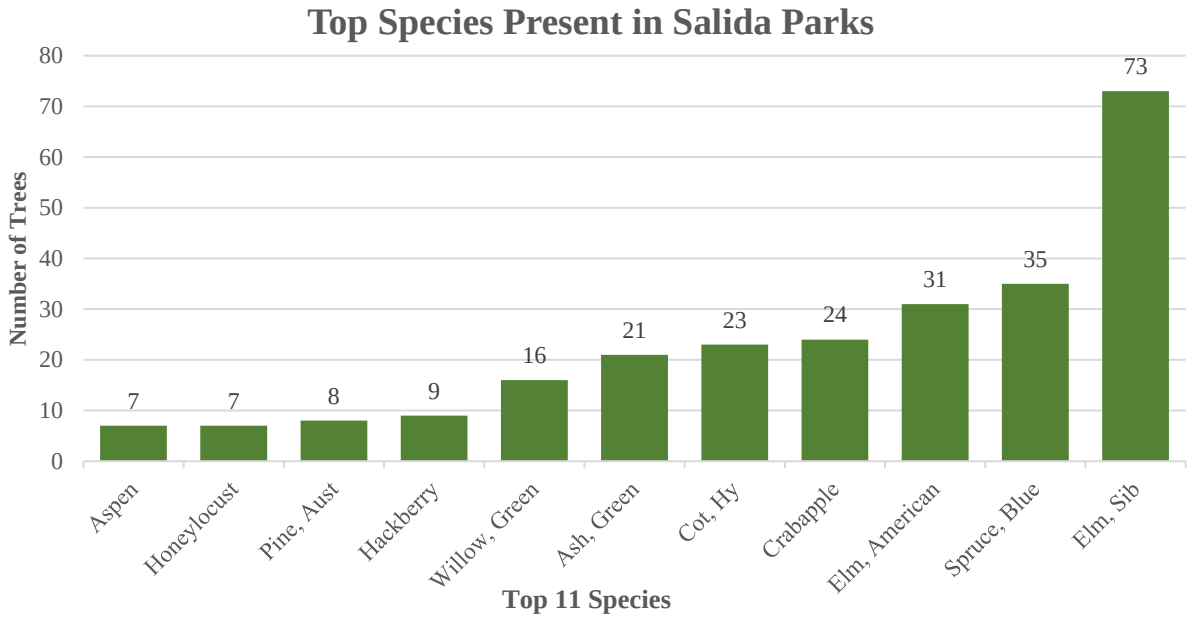
- **Species** – The species of each tree was collected because biological differences in species morphology, architecture, decay susceptibility, included bark and root patterns influences its risk potential.
- **Tree Height** – Tree height was taken as either:
    - *Small*: less than 20’ tall
    - *Medium*: 20-40’ tall
    - *Large*: over 40’ tall
- **Diameter** at Breast Height (DBH)
    - DBH is a measurement of the tree trunk diameter at 4.5 feet above the ground.
    - Every tree was assigned a size class based on the tree’s diameter.
    - The inventory measured the DBH in two-inch size classes: 0.1-2.9, 3.0-4.9, 5.0-6.9, etc. up to 62”.
    - Trees with forks were treated as one tree with an average taken.
    - This can be useful to confirm you are looking at the correct tree.
- **Condition** – Overall health of the tree. Condition rating system used is based on CSFS definitions.
    - **Excellent**- Perfect tree. A tree is rarely ever given this rating.
    - **Good** – Most trees are placed in this condition unless the tree’s condition is truly superior to the other trees, or issues are observed.
    - **Fair** – The tree would have some of the following issues; stagnant growth pattern, poor vigor, uneven growth pattern, minor trunk damage, deadwood, etc.
    - **Poor** – The tree would exhibit some of the same issues as above but the problem or condition is more advanced than a tree with a Fair rating.
    - **Very Poor** – The trees were usually barely alive, ugly specimens, heavily damaged, or are being severely impacted by insect or disease.
    - **Dead** – No leaves present during growing season or signs of active vascular system in the winter.

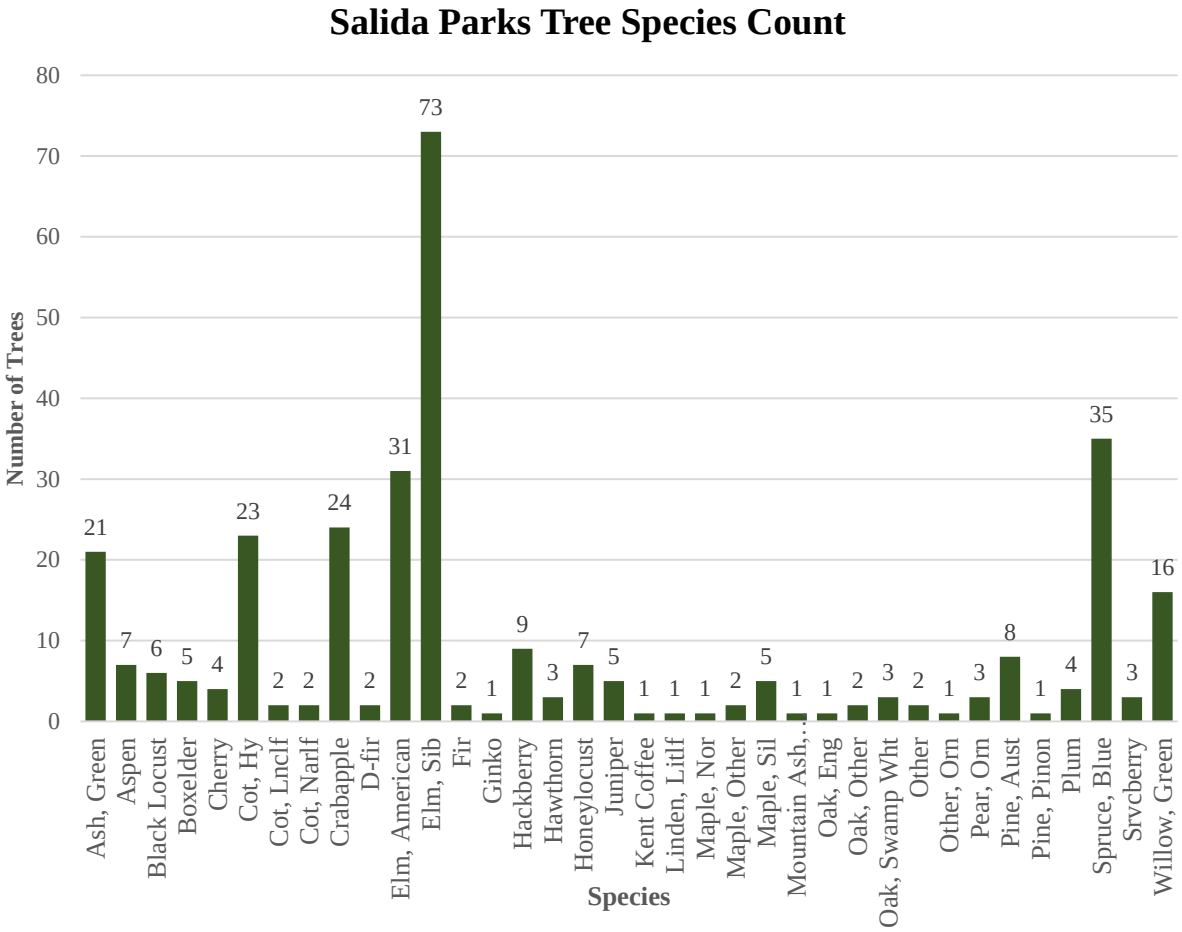
- **Placement – C**ategories are slightly subjective, depending on the person observing the tree regarding the placement.
    - **Excellent** - Generally, most data collectors avoid using the excellent category.
    - **Good** - Most trees were placed in the good category unless the tree's placement was truly superior to the other trees of the same species they have inventoried.
    - **Fair** - Trees rated as fair would have some of the following issues: close to other vegetation or structures that impede normal growth habits, have the potential to affect sidewalk pathways in the future, or are growing beneath an overhead line but have not yet made contact.
    - **Poor** - Trees rated as poor would exhibit some of the same issues as above, but the problem or placement was worse than a tree having a fair rating.
    - **Liability** - Liability trees are located where they were currently creating problems for infrastructure items such as sidewalks or overhead lines. These trees may also negatively impact pedestrian or vehicle safety. These trees were usually recommended for removal.

TREE INVENTORY ANALYSIS

The purpose of the 2021 Salida park tree inventory was to determine the composition of the urban park trees, their current condition and the management needs. Foresters from the CSFS collected data on tree species, size, health, management need and more (See Tree Inventory: 2021 Data Fields Section). The table below is a summary of the tree inventory; in total 317 trees were inventoried.

Recommendations: While the number of species planted is high, the overall diversity outside of the top seven species is low. Salida needs to work on increasing the overall variety and diversity of the trees planted. Due to the top 7 trees making up 70% of the park trees, it is recommended that no more of these species be planted in the next few years: Siberian elm, blue (Colorado) spruce, American elm, crabapple, cottonwood, green ash, and green willow.



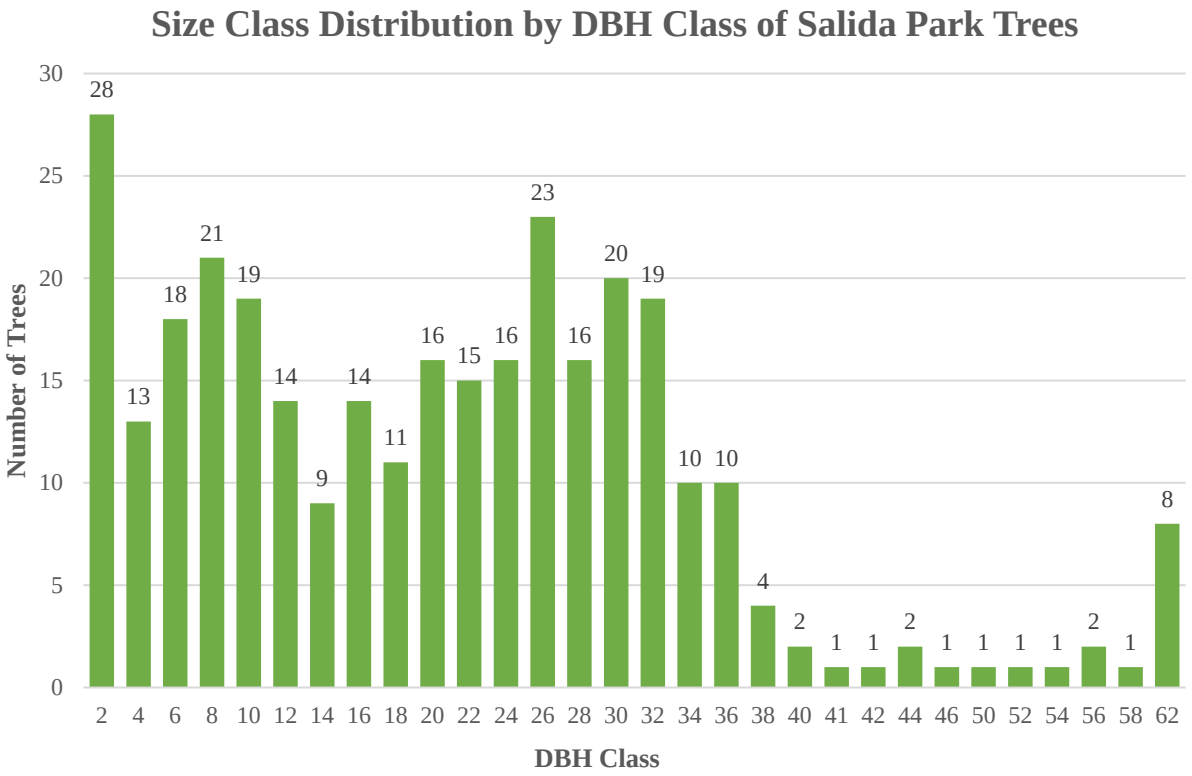


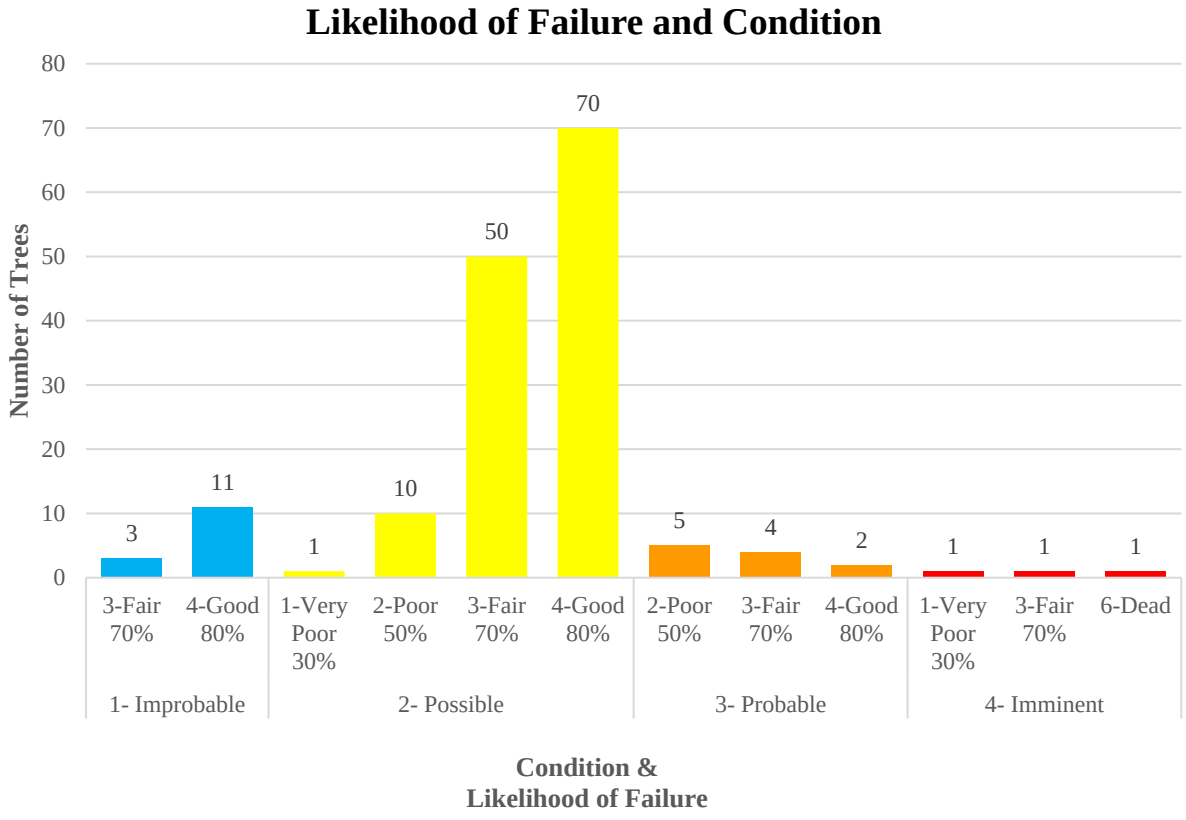
SIZE CLASS

Size class is represented as Diameter at Breast Height (DBH). Size class can be somewhat related to age when factoring in site growing conditions and tree species. Growing conditions for trees in Salida are limiting due to the semi-arid climate. Trees here will probably exhibit smaller diameter and lower height when compared to trees of the same age under ideal growing conditions.

The size class graph below depicts that the largest size class represented fall into the 62" DBH. The average diameter is 21". Quite a few trees fell into the largest size classes above 30" DBH. There are also a handful of very large trees above 50" DBH.

Recommendations: This data shows a good relative population of smaller diameter trees to large diameter trees. One thing to consider with so many large and mature trees is that trees must constantly be replaced or new ones planted to maintain size class diversity, which ultimately relates to age class, especially with large trees nearing the end of their lifespan.


Size Class Distribution by DBH Class of Salida Park Trees
Number of Trees
DBH Class
0 5 10 15 20 25 30
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 41 42 44 46 50 52 54 56 58 62
28 13 18 21 19 14 9 14 11 16 15 16 23 16 20 19 10 10 4 2 1 1 2 1 1 1 1 2 1 8


Likelihood of Failure and Condition
Number of Trees
0 10 20 30 40 50 60 70 80
3 11 1 10 50 70 5 4 2 1 1 1
3-Fair 70%
4-Good 80%
1-Very Poor 30%
2-Poor 50%
3-Fair 70%
4-Good 80%
2-Poor 50%
3-Fair 70%
4-Good 80%
1-Very Poor 30%
3-Fair 70%
6-Dead
1- Improbable
2- Possible
3- Probable
4- Imminent
Condition & Likelihood of Failure

OVERALL TREE CONDITION (i.e. tree health)
The combined overall health of the trees within Salida was found to be mostly good. This means that the trees are fine and are surviving the harsh growing conditions (i.e. climate and soils) of Salida.

Recommendations: The rating of many *fair* trees could potentially improve to *good* through management actions such as supplemental watering, mulching, and rotational pruning.

INSECTS & DISEASES

Insects and diseases are part of all plant ecosystems, they remove poor specimens and make sure a forest does not become too dense. In urban environments, they remove trees stressed by human or environmental factors, planted incorrectly or are incompatible with the planting site. Management may include tree removal or a spraying regime to control or prevent the insect. Some insects found in the community are not 'tree killers', but instead stress the tree by killing leaves, branches or tree leaders, sometimes on an annual cycle. This damage can predispose the tree to 'killers' by weakening their defense system or creating a poor tree structure that may require future pruning maintenance.

All of the identified insects and diseases are found in other locations in Colorado and are not on the United States Department of Agriculture's Animal and Plant Health Inspection Service's Plant Protection and Quarantine program's list of concerned pests. Removed trees may safely be transported around Salida and the community without concern of spreading insects and diseases.

Noted pests include: aphids, *Armillaria* spp., bacterial wetwood, cooley spruce adelgid (*Adelges cooleyi*), cyto canker, elm leaf beetle, gummosis, leaf galls, leaf miner, sapsuckers, scale, and paper wasps. See **Appendix B** for further information.

MEASURABLE BENEFITS

- Various tree canopy assessment and analytical tools were used to quantify and value the benefits of Salida's park trees. These ecosystem benefits value the trees' ability to store carbon, intercept and absorb stormwater, and clean the air (**Appendix C**). For a more detailed analysis of these and other ecosystem services provided by Salida's park tree population, see Section
- **Overall Benefits Overall:** Salida's parks existing canopy provides its residents with almost $104,832 annually in quantifiable benefits related to stormwater runoff reduction, air quality improvements, and carbon sequestration. The tables below list a summary of the annual benefits provided by Salida park trees.
- **Stormwater Runoff Reduction:** Trees intercept rainfall by temporarily holding rainwater on leaves and bark, delaying that water from reaching the ground and moderating peak runoff quantities. Tree roots also directly absorb stormwater by consuming water stored in soil pores, and thereby increasing the capacity of local soils to store rainwater. Trees in Salida are able to intercept an impressive 4.68 million gallons of stormwater annually. The stormwater avoided runoff equates to 4.68 gallons/acre of avoided runoff annually. This is an important infrastructure service that trees provide.
- **Air Quality Improvements:** Trees absorb gaseous pollutants from the air through the stomata in their leaves. Every year Salida park trees remove huge amounts of pollution from the air, including over 8.15 lbs/acre of carbon monoxide (CO), 44.45 lbs/acre of nitrogen dioxide (NO_2), 442.75 lbs/acre of ozone (O_3), 28.01 lbs/acre of sulfur dioxide (SO_2) 21.51 lbs/acre of dust, soot and other "particulate matter" ($PM_{2.5}$), and 148.31 lbs/acre of dust, soot and other "particulate matter" (PM_{10}). This equates to $202 worth of air quality improvements annually. Of these gaseous pollutants, the absorption of dust, soot, and other particle ($PM_{2.5}$) pollution provides the greatest monetary benefit value to Salida residents at $561 annually. Reforestation efforts in and around urban areas have been shown to be one of the more cost effective and feasible methods for controlling dangerous ground level ozone, which is known to cause increases in respiratory and cardiovascular diseases and human deaths world-wide (Kroeger et

al. 2014). However, it is important to note there are species-specific differences in air filtration and the emission of volatile organic compounds; thus, it is important to select high value species when the goal of a planting effort is to improve air quality.

- **Carbon Reduction:** Tree leaves absorb carbon dioxide (CO_2) from the atmosphere and turn it into energy through the process of photosynthesis. Carbon is then stored in the living tissues of trees over their lifetimes. The leaves of the trees in Salida are calculated to absorb over 4.387 tons of CO_2 carbon dioxide annually, which is valued at $748 a year. Furthermore, the amount of carbon stored in the woody tissue of the living trees in Salida over their lifetimes is calculated at 494.1 tons. Carbon storage represents a total benefit value of $84,300. Carbon sequestration in urban environments like Salida is an important tool for mitigating climate change.

i-TREE CANOPY ANALYSIS FOR SALIDA PARK TREES		
Annual Benefit	**Amount**	**Value**
Stormwater: Avoided Runoff	4.68 gallons/acre	$0
Air Quality: Carbon Monoxide (CO) **Removed**	8.15 lbs/acre	$0
Air Quality: Nitrogen Dioxide (NO_2) **Removed**	44.45 lbs/acre	$1
Air Quality: Ozone (O_3) **Removed**	442.75 lbs/acre	$31
Air Quality: Sulfur Dioxide (SO_2) **Removed**	28.01 lbs/acre	$0
Air Quality: Dust, Soot, Other Particles Removed ($PM_{2.5}$)	21.51 lbs/acre	$64
Air Quality: Dust, Soot, Other Particles Removed (PM_{10})	148.31 lbs/acre	$23
*Data is based off 100 points that were randomly dropped in Salida Parks via i-Tree (see Appendix for full data).		

i-TREE ECOSYSTEM ANALYSIS FOR SALIDA PARK TREES		
Annual Benefit	**Amount**	**Value**
Number of trees	317	--
Tree cover	8.761 acres	--
Percentage of trees <6" diameter	18.6%	--
Pollution removal	601.4 lbs/year	-$104,000/year
Carbon storage	494.1 ton	$84,300
Carbon sequestration	4.387 tons/year	$748/year
Oxygen production	11.7 tons	--
Replacement values	--	$2,210,000
*Data is based off of the Salida Parks Inventory data that was input into i-Tree (see **Appendix C** for full data).		

OVERALL PARK ANALYSIS:

ALPINE PARK:

Description: Alpine Park is located in downtown Salida between 4th and F Street at 404 E Street. At 2.42 acres, the park contains a large grassy area, basketball hoops, restrooms, picnic tables, a playground, electricity, and trash cans. Trees in Alpine Park range from recently planted hackberry, crab apple, and boxelders, to well-established Colorado blue spruce, as well as American and Siberian elms that line the park. Part of the park is dedicated as a large grassy open space. There is also a playground with a restroom, picnic tables, and paved basketball courts. Although the overall condition of trees in Alpine Park is good (38 trees), there are still a high number of cases (11 trees) that are in fair condition, primarily elms due to their lush, but defective branching in crowns.

Map:

Hazards: The most hazardous concern in Alpine park is a large Siberian Elm that is near the playground. The tree scored 100 in our risk assessment and is recommended for removal. Given the amount of traffic that Alpine Park receives, the general concerns associated with its trees are branches that overhang the targets that keep park-goers in a given location for extended periods of time. There are several benches and picnic tables along with the playground that sit underneath large mature trees that will need consistent routine prunes and monitoring to eliminate hangers and deadwood for public safety reasons. It is important to identify the specific targets that a hazardous tree concern will potentially impact. During our inventory process there were two separate school groups using Alpine Park for recess outdoor space. The park appears to be heavily utilized by families and children, and for extended periods of time. For these reasons it will be imperative to maintain consistent care for the trees in Alpine Park.

Recommendations: Include removal, pruning, planting, and monitoring of trees. As stated above, there is one tree that we have recommended for immediate removal due to its declining condition and proximity to susceptible targets. Additionally, there are several trees along the north and west sides of Alpine Park that are beginning to provide sidewalk clearance issues that ought to be clearance pruned. Several of the large mature Siberian Elms in Alpine Park were observed having issues warranting defect prunes such as hangers or deadwood. Most of the young trees that have been recently planted appear to be on the right track for achieving good structure which will decrease future risk concerns, but there is one small Hackberry for which we have recommended as structure prune in year one. Also, as stated above, routine prunes and careful monitoring are recommended all trees in Alpine Park. Finally, planting is recommended where trees have been removed, as well as in areas with sufficient watering systems in place and adequate surface area for roots to expand without suppression by non-permeable surfaces. Species suggested for planting are dependent on light availability, space requirements, and soil type. There were several places in Alpine Park where new trees could thrive.

Management Needs:

YEAR 1 MANAGEMENT RECOMMENDATIONS								
Park	**Remove**	**Clearance**	**Routine**	**Defect**	**Structure**	**Monitor**	**Inspect Next Season**	**No Action**
Alpine	**1**	5	20	7	1	1	7	8

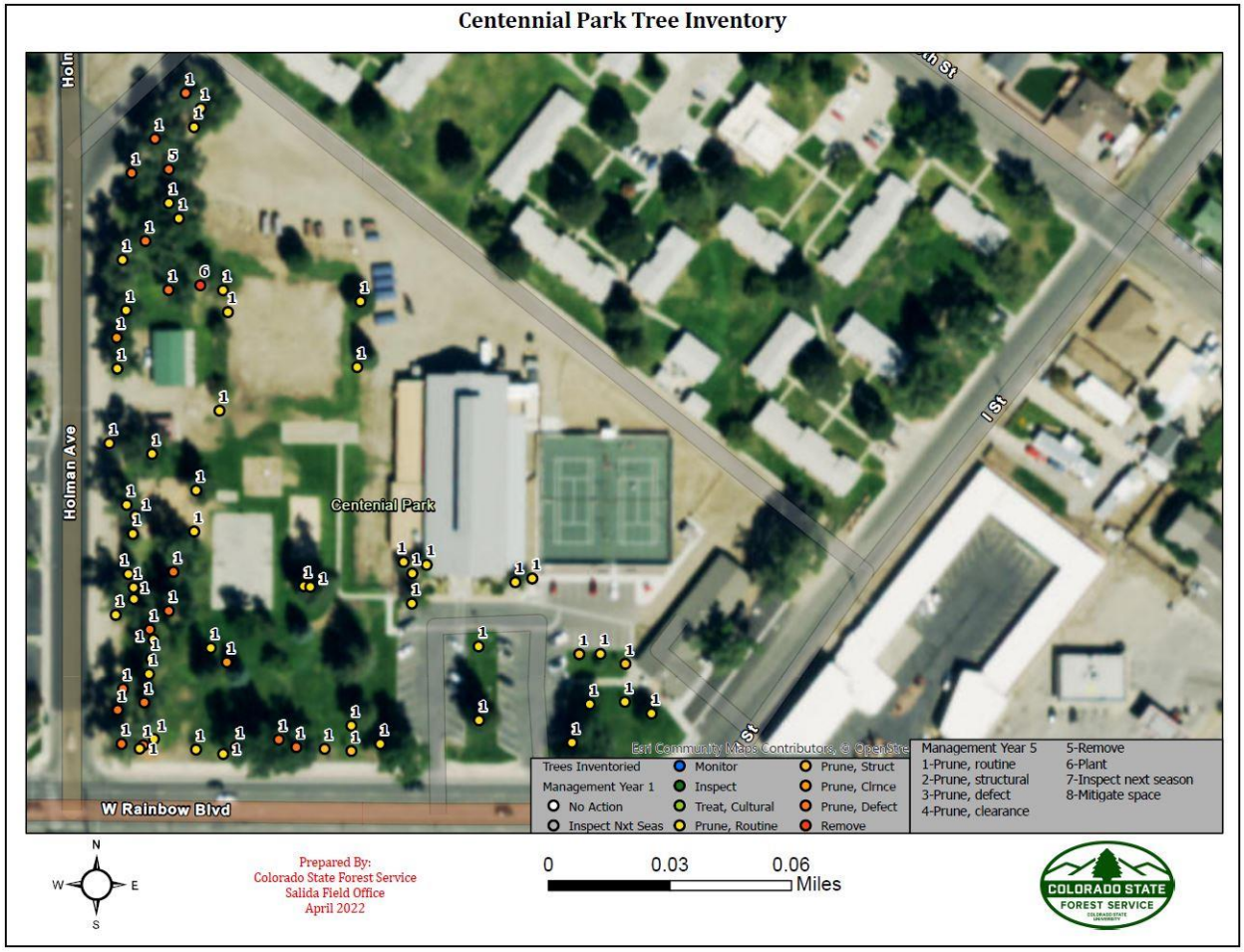
YEAR 5 MANAGEMENT RECOMMENDATIONS								
Park	**Remove**	**Clearance**	**Routine**	**Defect**	**Structure**	***Mitigate Space***	**Inspect Next Season**	***Plant***
Alpine	**1**	4	39	1	1	1	2	1

YEAR 10 MANAGEMENT RECOMMENDATIONS								
Park	**Remove**	**Clearance**	**Routine**	**Defect**	**Structure**	***Mitigate Space***	**Inspect Next Season**	***Plant***
Alpine	--	--	49	--	--	--	--	1

CENTENNIAL PARK:

Description: Centennial Park is located adjacent to the Salida Hot Springs Aquatic Center and Centennial Courts at 410 W Rainbow Boulevard. The park provides basketball, tennis, volleyball, and pickleball courts, along with a horseshoe pit, picnic tables, restrooms, trash cans grills, a large covered pavilion, a workout loop, and playground. In 2020 the City of Salida was awarded grants from Great Outdoors Colorado (GOCO) and The Skatepark Project, which were used to construct a new 14,500 ft^2 skatepark in Centennial Park. Centennial Park has some of the most species diversity (14 species) of the parks inventoried for this plan, and there seems to be a concerted effort to continue promoting diversity in the park based on the young trees that have been recently planted. Overall the tree health in Centennial Park ranges from very poor to good with many trees scoring fair. Several of the large Siberian Elms in the northwest portion of the park are large, mature, and beginning to show signs of decline such as included bark and deadwood. Species diversity in this park could be further promoted by removing several of its declining Siberian Elms and replacing with species found in the attached recommended planting list.

Map:



Hazards: The most immediate hazard in this park has occurred since the inventory was conducted. A large (28-32" DBH) Colorado spruce is marked for removal due to imminent failure, marked by uplifting of the roots and soil. The tree is leaning towards a highly trafficked pedestrian area, the skate park. The tree has not had sufficient watering the previous two years, has scale and adelgid infestations, severe soil compaction from local construction, and most recently a 1' x 1' trench was constructed within the dripline of the tree, cutting a large majority of the tree's roots. These issues may potential impact the medium-sized Colorado spruce adjacent to the large Colorado spruce marked for removal. It is now recommended to

watch the medium-sized tree as well. (Note that this occurred after our inventory was conducted, thus this removal is not reflected in our tables or graphs. To see more information and photos about this specific Colorado spruce marked for removal, see page 49-50 **root damage** and **insufficient watering**.) The most overt hazards found in Centennial Park are related to the aforementioned Siberian Elms. Many of these trees were found to have included bark, weak branch unions, or deadwood in their canopies. Given that this seems to be a showcase park for the City of Salida with future development plans that will increase both its visitation rate and average time spent in the park grounds, these concerns ought to be addressed with high priority. While only two of these trees were recorded as recommended for removal during the inventory process, there are several that require significant pruning and could be candidates for removal depending on the City's priorities.

Recommendations: Include the removal, pruning, and planting of trees throughout Centennial Park. The overt hazards related to the various concerns of the park's Siberian Elms ought to be first addressed being removals and defect prunes. Additionally, there were numerous trees in Centennial Park found to have some sort of basal damage. This often occurs while park staff is mowing or weed whacking around trees or by park-goers causing damage incidentally. This is a good opportunity to experiment with the various options for mitigating these damages occurring. This could include mulching around the base of existing or planted trees, spraying herbicide to create bare ground surrounding trees, fencing recently planted trees, or providing education and direction to park maintenance staff. Finally, planting is recommended where trees have been removed, as well as in areas with sufficient watering systems in place and adequate surface area for roots to expand without suppression by non-permeable surfaces. Species suggested for planting are dependent on light availability, space requirements, and soil type. In this park specifically, soil compaction is a concern. Make sure to plant trees where their roots will have adequate room for growth.

Management Needs:

YEAR 1 MANAGEMENT RECOMMENDATIONS								
Park	**Remove**	**Clearance**	**Routine**	**Defect**	**Structure**	**Monitor**	**Inspect Next Season**	**No Action**
Centennial	**1**	2	48	17	4	--	--	--

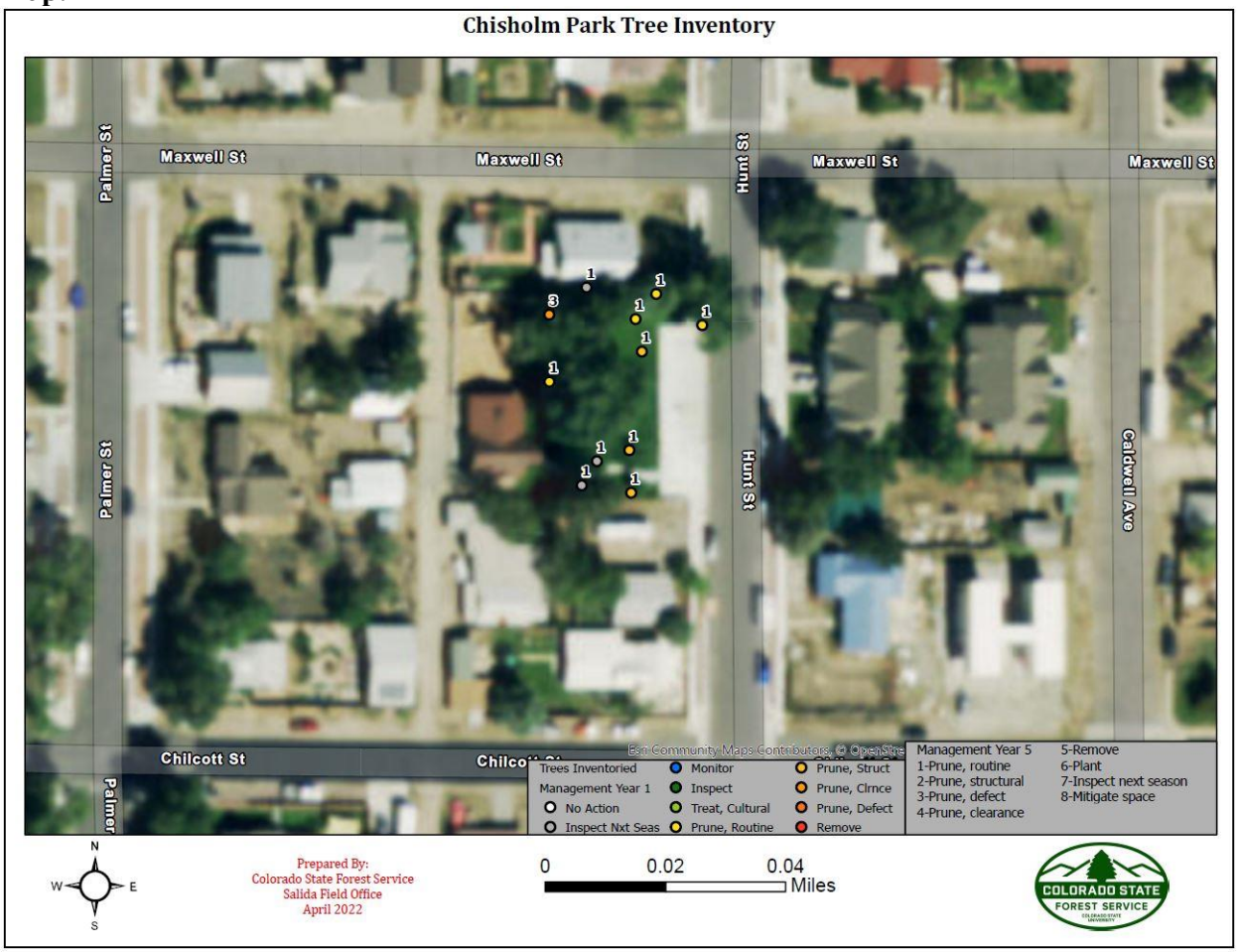
YEAR 5 MANAGEMENT RECOMMENDATIONS								
Park	**Remove**	**Clearance**	**Routine**	**Defect**	**Structure**	***Mitigate Space***	**Inspect Next Season**	***Plant***
Centennial	**1**	--	70	--	--	--	--	1

YEAR 10 MANAGEMENT RECOMMENDATIONS								
Park	**Remove**	**Clearance**	**Routine**	**Defect**	**Structure**	***Mitigate Space***	**Inspect Next Season**	***Plant***
Centennial	--	--	70	--	--	--	--	2

CHISHOLM PARK:

Description: Chisholm Park is located at 324 Hunt Street, and is among the smallest parks within the city at 0.42 acres. The park offers restrooms (open seasonally), indoor/outdoor seating, an indoor/outdoor pavilion, water fountain (running seasonally), a gas grill, and prep counter with sink (seasonally available). During the inventory process patronage of Chisholm Park was low and seems to be utilized mostly by residents of the immediate neighborhood for lunch breaks, playground visits, and other various short term activities. However, the infrastructure available could keep patrons at the park for longer periods. Trees in Chisholm Park are comprised mostly of Siberian Elms with the addition of some Douglas-firs, junipers, and various other small-medium ornamentals. Tree health in Chisholm Park was good with only one tree receiving a poor rating and four trees in fair condition. Some of the trees along the park border overhang into private property which ought to be taken into consideration for hazard management.

Map:



Hazards: the two most obvious tree related hazards in Chisholm Park are associated with the playground and the adjacent private property. The playground is in close proximity to a mature Siberian Elm that will require consistent monitoring and routine pruning to ensure safety from falling deadwood. As stated above, several of the trees that border Chisholm Park are large enough to overhang into private property and could potentially impact adjacent structures.

Recommendations: Include the pruning, monitoring, and planting of trees. As stated above, routine pruning and regular monitoring/inspections Chisholm Park's large trees will reduce the potential for hazardous situations. Additionally, several of the park's recently planted trees would benefit from structure

pruning to eliminate co-dominant stems and provide a good starting point for future growth. Finally, Chisholm Park is tree heavy around its border but has an open space its interior. This space is not quite large enough for ball games or group activities and could be utilized as an opportunity to plant more diverse species. Planting is recommended in areas with sufficient watering systems in place and adequate surface area for roots to expand without suppression by non-permeable surfaces. Species suggested for planting are dependent on light availability, space requirements, and soil type.

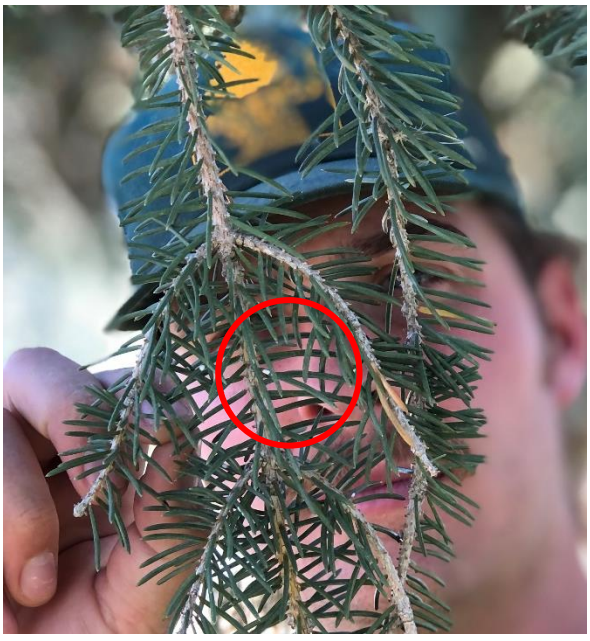
Management Needs:

YEAR 1 MANAGEMENT RECOMMENDATIONS								
Park	**Remove**	**Clearance**	**Routine**	**Defect**	**Structure**	**Monitor**	**Inspect Next Season**	**No Action**
Chisholm	--	1	4	--	3	--	3	--

YEAR 5 MANAGEMENT RECOMMENDATIONS								
Park	**Remove**	**Clearance**	**Routine**	**Defect**	**Structure**	***Mitigate Space***	**Inspect Next Season**	***Plant***
Chisholm	--	--	10	1	--	--	--	--

YEAR 10 MANAGEMENT RECOMMENDATIONS								
Park	**Remove**	**Clearance**	**Routine**	**Defect**	**Structure**	***Mitigate Space***	**Inspect Next Season**	***Plant***
Chisholm	--	--	11	--	--	--	--	--

Bacterial wetwood, found in nearly all Siberian Elms in Salida Parks, and a cavity in Centennial Park.

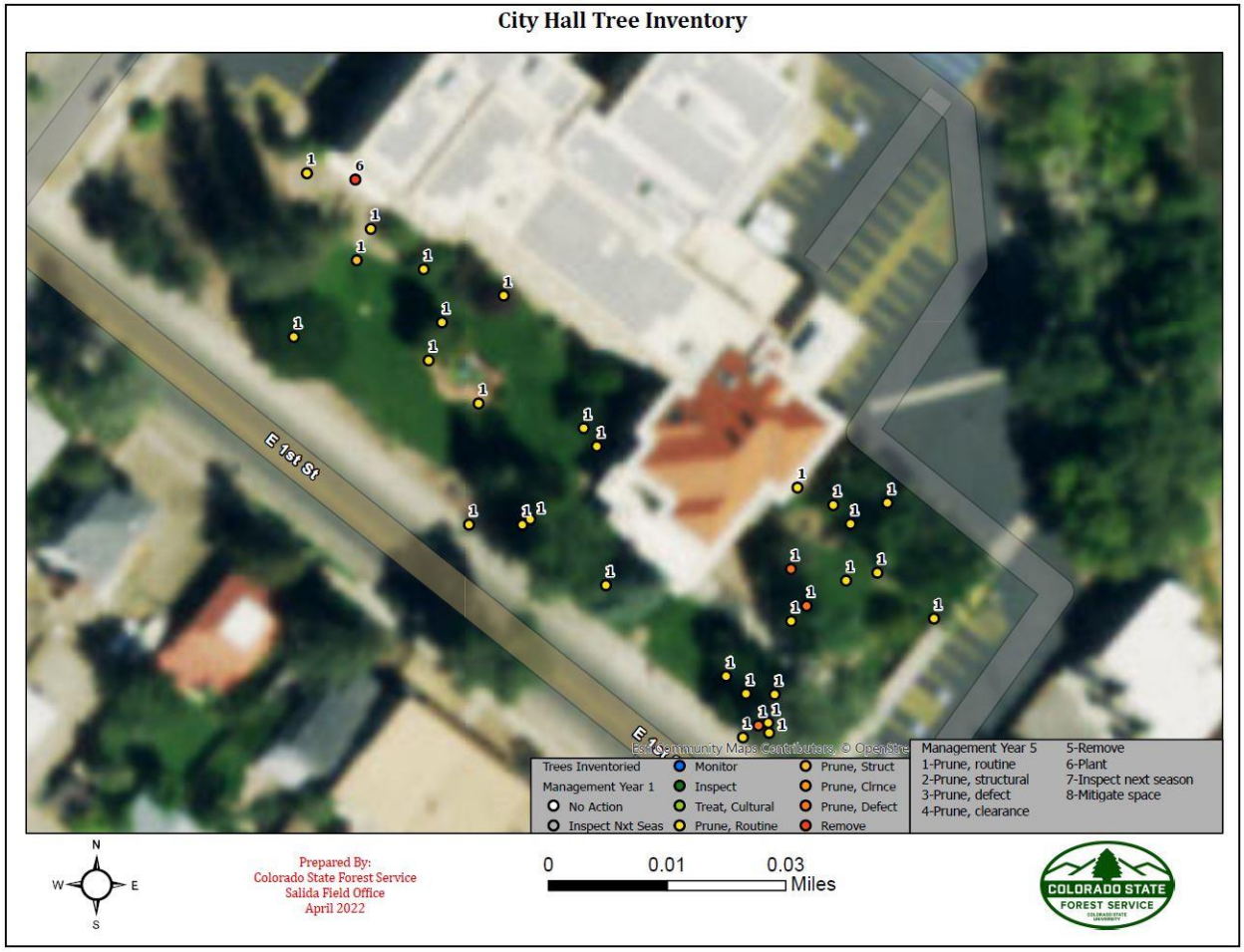


Note inconspicuous, small white specs in the above red circle, which are pine needle scale, found on a handful of Colorado spruce trees in Centennial Park.

CITY HALL:

Description: City Hall is located on the northeast side of Salida at 448 E 1st St. This is park is relatively small in size compared to other parks inventoried for this plan and serves mostly as a green space on the south side of the City Hall complex of buildings. The park features fountains located both centrally and on its east side and a newly landscaped section including a community garden on its west side. The green space outside of City Hall appears to function less like a traditional park attracting local residents to spend time and more as a showcase for patrons of the facilities and as an outdoor escape for its employees. Overall the tree health in City hall is good with only seven trees receiving a fair rating and one poor rating. The species diversity in City Hall is also good including several species that were not inventoried in other parks.

Map:



Hazards: Being that there are few targets present within the City Hall green space that serve to keep people in a given location for extended periods of time, the most likely hazards are related to passersby using the various walkways/sidewalks in the vicinity and cars parked along the street and in the parking lots. Additionally, the majority of the trees inventoried at City Hall fall into either the small or medium size categories which are less likely to create hazardous conditions.

Recommendations: Include pruning, planting, and replacing trees at City Hall. In particular, a juvenile Colorado (blue) Spruce has been recently planted in close proximity to the building in the newly landscaped western side of the City hall green space. This tree could reach substantial size and its planting location will negatively impact both the building and the tree. It is recommended that this tree be replaced to a more open location before it matures further. Additionally, it is recommended that a consistent routine pruning

schedule is maintained to ensure that the large number of small and medium size trees in the park continue to grow as desired. A routine pruning schedule will also serve to mitigate hazard risk associated with the large trees in the park. Finally, City Hall is an ideal location to continue planting a variety of small to medium size-class trees, especially in the central portion of the park where there is more open space.

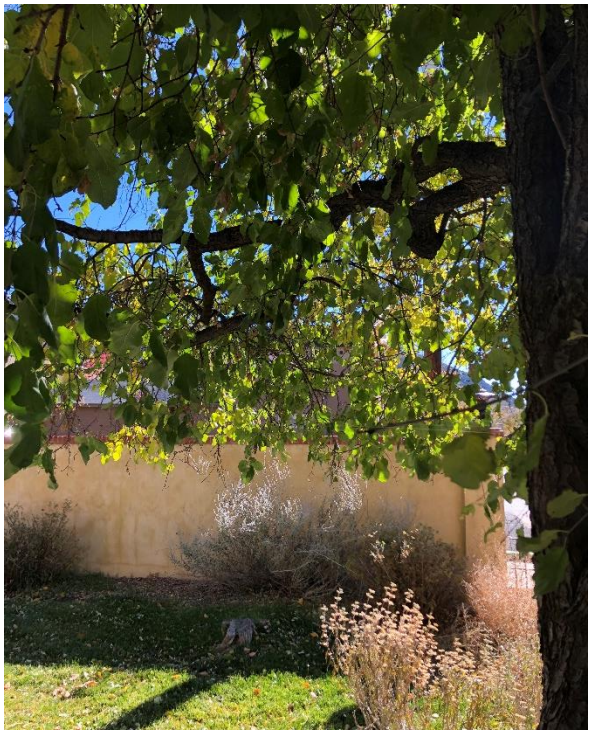
Management Needs:

YEAR 1 MANAGEMENT RECOMMENDATIONS								
Park	**Remove**	**Clearance**	**Routine**	**Defect**	**Structure**	**Monitor**	**Inspect Next Season**	**No Action**
City Hall	**1**	--	28	3	1	--	--	--

YEAR 5 MANAGEMENT RECOMMENDATIONS								
Park	**Remove**	**Clearance**	**Routine**	**Defect**	**Structure**	***Mitigate Space***	**Inspect Next Season**	***Plant***
City Hall	--	--	32	--	--	--	--	1

YEAR 10 MANAGEMENT RECOMMENDATIONS								
Park	**Remove**	**Clearance**	**Routine**	**Defect**	**Structure**	***Mitigate Space***	**Inspect Next Season**	***Plant***
City Hall	--	--	33	--	--	--	--	--

A Colorado spruce that has been planted too close to the building at City Hall. (Note that if this tree is a dwarf species, it would be able to survive in this location.)

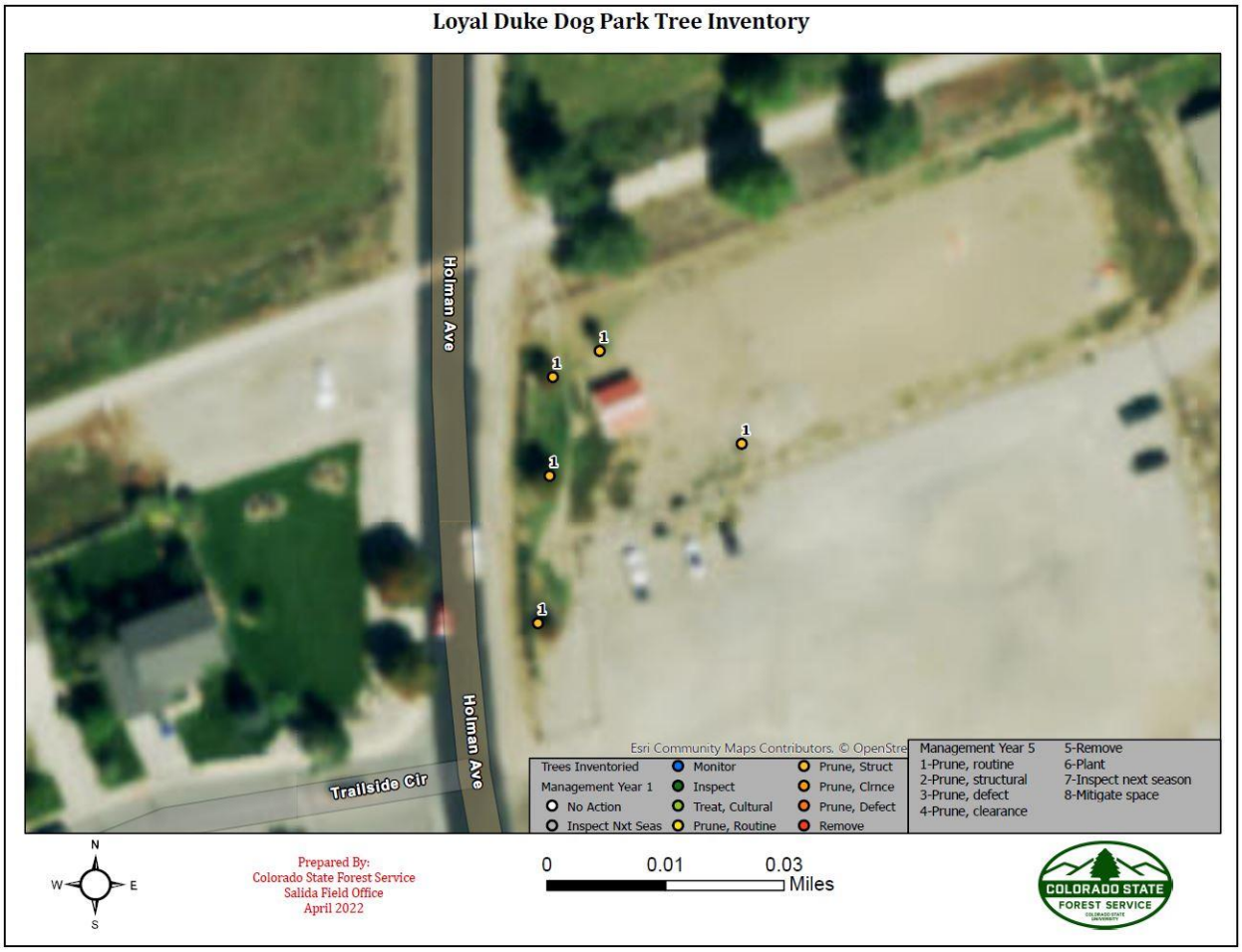


A multi-stemmed deciduous tree in City Hall that provides mid-canopy shade.

LOYAL DUKE DOG PARK:

Description: Named after a historical Salida dog, the Loyal Duke Dog Park at 0.39 acres, is located off of the Monarch Spur Trail and is easily accessible by car or foot at 1455 Holman Avenue. The park is Salida's only off-leash dog park, completely enclosed by a metal fence. Due to this fact the Loyal Duke Dog Park receives heavy human and canine visitation. There are few trees at the Dog Park that include a row of Junipers and 5 young crabapples. The junipers have been collected as a polygon and their specific condition and recommendations are included in the Monarch Spur Trail section to follow, but in general, they are in good health and are receiving water on an irrigation system. The crabapples present in the park are mostly in good condition but several have received basal damage.

Map:



Hazards: There are no hazards associated with the trees currently in place at the Loyal Duke Dog Park at the time of inventory for this plan.

Recommendations: Include pruning the crabapples in the Dog Park along with planting and protecting additional trees. Every crabapple in the Loyal Duke Dog Park has been marked as requiring a structure prune in year one. These trees are primed to have co-dominant stems in their current form, and providing a structure prune at their current age will minimize future concerns. The Dog Park has potential to support a variety of species and sizes of trees, but will need care and attention to do so. Given the primary use of the park is for dogs to run wild and release energy it is recommended and newly planted trees be protected with fences to avoid basal damage from leashes, chewing, etc. In addition, most of the trees are planted with a bare ground surface treatment in the Dog Park, but one has rock surrounding the base. This practice could

be further utilized in future plantings to provide another layer of protection from young trees being damaged incidentally by the park's canine patrons. It was unclear at the time of inventory if the crabapples in the park are on an irrigation system or being hand watered. If additional trees are being planted in the Dog Park and irrigation system is the recommended water delivery system.

Management Needs:

YEAR 1 MANAGEMENT RECOMMENDATIONS								
Park	**Remove**	**Clearance**	**Routine**	**Defect**	**Structure**	**Monitor**	**Inspect Next Season**	**No Action**
Loyal Duke Dog Park	--	--	--	--	5	--	--	--

YEAR 5 MANAGEMENT RECOMMENDATIONS								
Park	**Remove**	**Clearance**	**Routine**	**Defect**	**Structure**	***Mitigate Space***	**Inspect Next Season**	***Plant***
Loyal Duke Dog Park	--	--	5	--	--	--	--	--

YEAR 10 MANAGEMENT RECOMMENDATIONS								
Park	**Remove**	**Clearance**	**Routine**	**Defect**	**Structure**	***Mitigate Space***	**Inspect Next Season**	***Plant***
Loyal Duke Dog Park	--	--	5	--	--	--	--	--

MARVIN PARK:

Description: Marvin Park is located in the northwest side of Salida and is the largest park inventoried, at just over 16.3 acres. Trees in Marvin Park range from recently planted Colorado spruce to well established green ash and cottonwoods. Much of the park is dedicated to two baseball field with bleachers where frequent baseball, softball, and t-ball games and practice take place, particularly in the spring months. The overall condition of trees in Marvin Park is good. However, there are a couple of cases where mower damage has occurred and compromised the health of young trees. The three green ash in the park, all of various size, were all in fair condition. There is a dead cottonwood on the southeast border of the park, along with multiple cottonwoods that are in need of defect, routine, or structural prunes.

Map:

Hazards: Included bark was found on both large silver maples. This is something to be cautious of because it is associated with weak branch unions. Silver maples are also known for sudden branch drop, where large branches can drop off without warning. There is also a cottonwood that has some infrastructure issues behind the baseball field bleachers on the southeastern side.

Recommendations: Include the pruning (clearance, defect, structural, and routine), planting, protection of trees from future mower damage (mulching, watering bag, fence, etc.), as well as the removal of a dead cottonwood. Remove the fence around the young Austrian pine to improve structure and form. Prunes suckers on silver maple. Many of the larger cottonwoods bordering the park need to be monitored for deadwood and hangers. The silver maples, green ash, and cottonwoods all have bacterial wetwood, but no other pests were noted in this park. Finally, planting is recommended where trees have been removed, as

well as in areas with sufficient watering systems in place and adequate surface area for roots to expand without suppression by non-permeable surfaces. Because this park is watered daily due to requirements of watering the baseball field, there most likely is a reliable watering source for newly planted trees. Species suggested for planting are dependent on light availability, space requirements, and soil type.

Management Needs:

YEAR 1 MANAGEMENT RECOMMENDATIONS								
Park	**Remove**	**Clearance**	**Routine**	**Defect**	**Structure**	**Monitor**	**Inspect Next Season**	**No Action**
Marvin	**1**	2	6	2	7	--	--	1

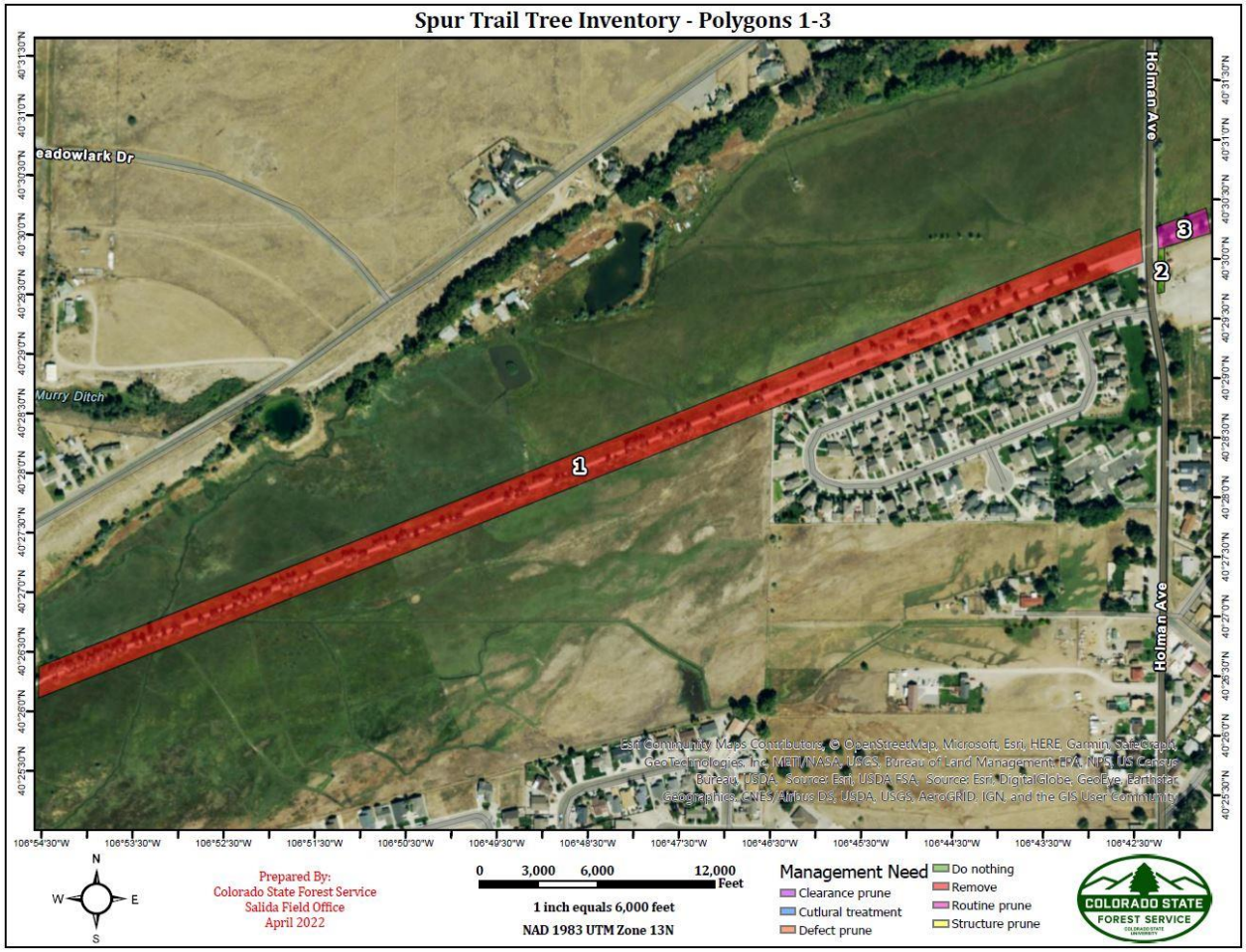
YEAR 5 MANAGEMENT RECOMMENDATIONS								
Park	**Remove**	**Clearance**	**Routine**	**Defect**	**Structure**	***Mitigate Space***	**Inspect Next Season**	***Plant***
Marvin	--	--	16	--	2	--	--	1

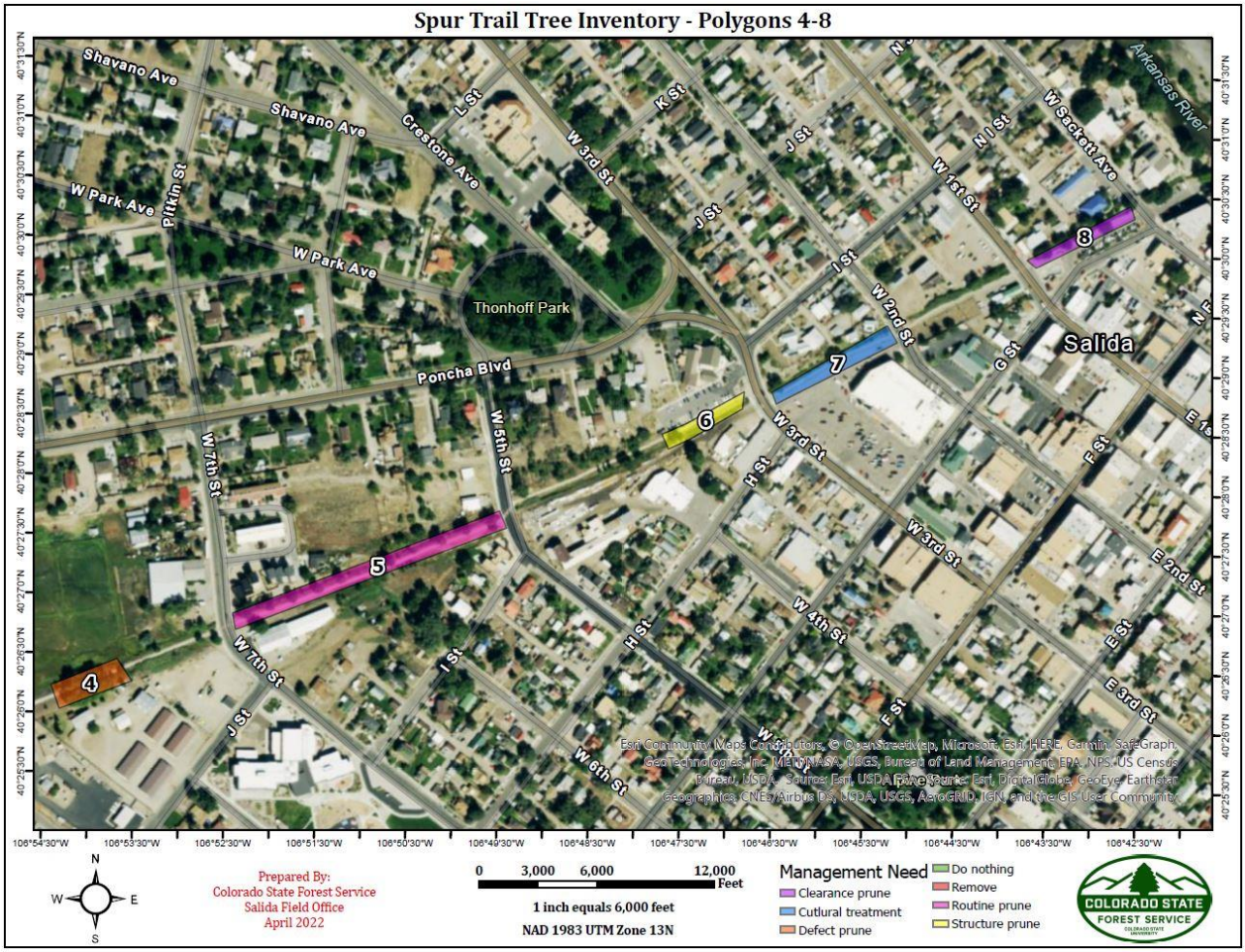
YEAR 10 MANAGEMENT RECOMMENDATIONS								
Park	**Remove**	**Clearance**	**Routine**	**Defect**	**Structure**	***Mitigate Space***	**Inspect Next Season**	***Plant***
Marvin	--	--	19	--	--	--	--	--

MONARCH SPUR TRAIL:

Description: The Monarch Spur Trail is a linear park that runs through and west of town along an irrigation ditch. This park is heavily travelled by pedestrians and cyclists as a transportation route from Salida's western subdivisions into downtown. The Monarch Spur Trail is also utilized by patrons simply looking to get out for a walk in nature without having to venture outside of town. This park has more of a natural feel than many of Salida's other parks and is less meticulously manicured. The tree species found along the Monarch Spur Trail lack diversity and are comprised mostly of Russian olive and cottonwoods with some scattered ornamental fruit trees and junipers. Overall, the tree health and condition along the Spur Trail is good, with a few exceptions that will be discussed below.

Maps:





Hazards: The major hazardous concern related to the Monarch Spur Trail lies in polygon #4 (images displayed below). This section includes several benches and a picnic table which if utilized will keep people in the area for an extended period of time. Directly adjacent to and above these benches and picnic table are several hazardous cottonwoods. These trees have begun to decline and are displaying significant amounts of deadwood that could render harm to someone sitting at a bench below. Additional hazards related to the Spur Trail are potential trail clearance issues that tree branches could provide. At the time of inventory there were several trees in polygon #8 that were obstructing the trail. This is a concern that will be ongoing given the nature of this park running along a trail lined by tree species that continuously grow new branches.

Recommendations: Include removing the trees now classified as noxious weeds and replanting with another species. At the time of their planting Russian olives were an excellent choice to plant in areas where it was historically difficult to get a tree to grow. Since that time the State of Colorado has classified Russian olive as a noxious weed. It is now recommended they be replaced with a more suitable species. Additionally several sections of trees along the Spur Trail require pruning for structure, trail clearance, or defects. Finally, there are several trees along the Spur Trail that have protection fences in place that have grown out of the need for such protection that would benefit from the fences being removed. The management recommendation table below indicates the specific concerns related to their corresponding numbered polygons in the maps above. Polygon #2 falls inside of the Dog Park, but made more sense to be inventoried in the same manner as the Spur Trail, and therefore is displayed in this section. This park currently benefits from its proximity to an irrigation ditch for tree watering purposes and this ought to be taken into

consideration for future planting; if the flows of that ditch diminish a watering plan will be required for the trailside trees. Planting is recommended where trees have been removed, as well as in areas with adequate surface area for roots to expand without suppression by non-permeable surfaces. Species suggested for planting are dependent on light availability, space requirements, and soil type.

These images are of polygon 4: There are several decadent cottonwoods overhanging the benches/picnic tables that will require significant pruning or removal. Some are obviously being utilized by wildlife, begging the question: move the target or mitigate the risk?

Management Needs:

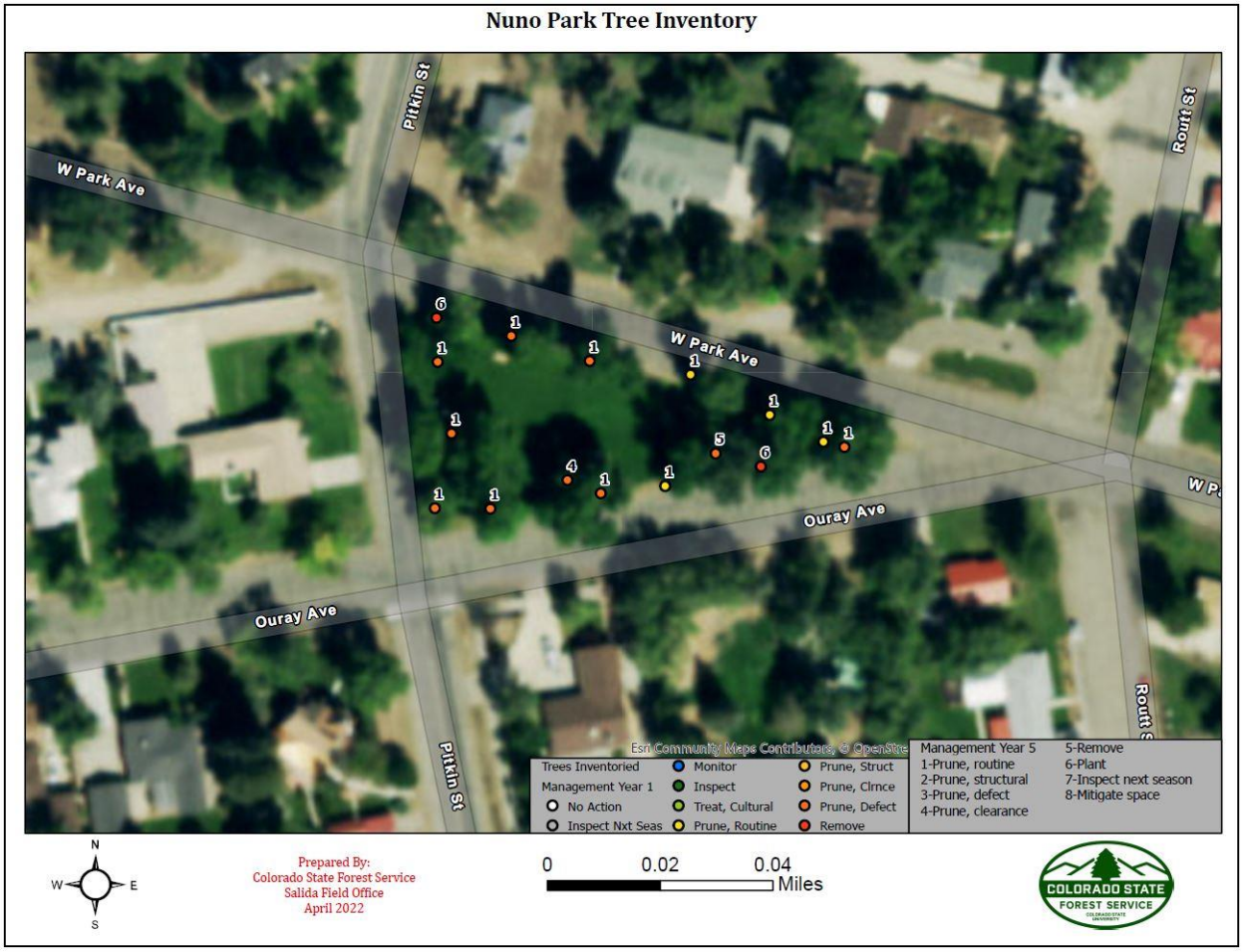
Polygon	Species	Year 1	Year 5	Year 10
1	Russian Olive	Remove	Plant	Routine prune
2	Juniper	Do nothing	Routine prune	Routine prune
3	Cottonwood	Routine prune	Remove fences	Routine prune
4	Cottonwood	Defect prune	Remove	Routine prune
5	Cottonwood	Routine prune	Remove fences	Routine prune
6	Various planted decorative trees	Structure prune	Remove fences around junipers	Routine prune
7	Potential planting next to Safeway	Cultural treatment	Plant	Routine prune
8	Cottonwood	Clearance prune	Routine prune	Routine prune

Polygon	Average DBH	Height	Notes
1	8"-10"	20'-40'	In same polygon - several large cottonwoods to routine prune, small fenced cottonwoods to structure prune
2	4"-6"	< 20'	Irrigation system present, no pruning required currently
3	16"-18"	40'+	Fences unnecessary at this size
4	Variable: 2"-20"+	40'+	Dangerous situation with deadwood above benches, much pruning required
5	Variable: 2"-20"+	20'-40'	Pinons, junipers, Russian olives present on east side of trail - looked like on private property
6	4"-6"	< 20'	Irrigation system present
7			Need watering plan to support tree planting
8	14"-16"	20'-40'	Cottonwoods near AHRA building sagging over trail & needing general pruning

NUNO PARK:

Description: Nuno Park is located in the northcentral portion of Salida and is one of the smaller parks within the city at 0.27 acres. Nuno Park has a low diversity of tree species, including only 12 green ash and 3 Siberian elms. All of the trees are over 40' in height, except for two medium height trees. The majority of the trees in this park are in very poor to fair condition. Thus this park is an excellent candidate for tree plantings to enhance species diversity, canopy levels and age diversity. Much of the park is dedicated uninterrupted green space.

Map:



Hazards: Armillaria, a sign of decay and bacterial wetwood were present in park trees in Nuno Park. With armillaria present, a level three assessment is recommended for the large green ash where it was noted. 11 of the 15 trees in this park have deadwood, posing a potential hazard to park users. A few green ash have potentially hazardous overhead branches that need mitigation work. A handful of Siberian elms have included bark, making branch failures more likely.

Recommendations: Include the primarily defect pruning, routine pruning, planting, and the removal of two large green ash trees with decay present. This park is an excellent location for planting new trees with the idea that a few trees will eventually replace existing older, dying trees. This park has a watering system, improving the survival of newly planted trees. Planting locations can be in between existing, large trees, with guards to protect the young trees from deer and mower damage.

Management Needs:

YEAR 1 MANAGEMENT RECOMMENDATIONS								
Park	**Remove**	**Clearance**	**Routine**	**Defect**	**Structure**	**Monitor**	**Inspect Next Season**	**No Action**
Nuno	**2**	--	4	9	--	--	--	--

YEAR 5 MANAGEMENT RECOMMENDATIONS								
Park	**Remove**	**Clearance**	**Routine**	**Defect**	**Structure**	***Mitigate Space***	**Inspect Next Season**	***Plant***
Nuno	**1**	1	11	--	4	--	--	2

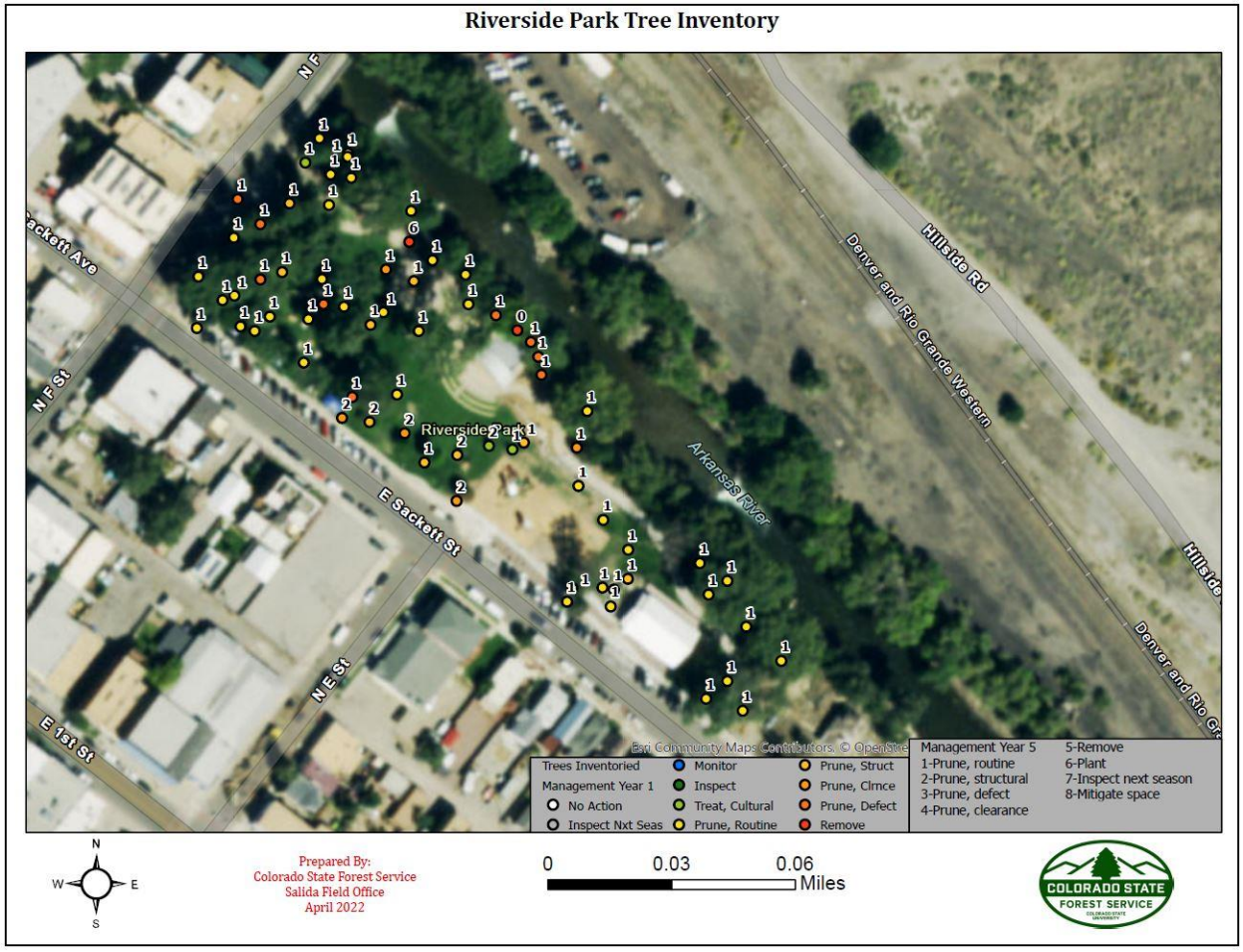
YEAR 10 MANAGEMENT RECOMMENDATIONS								
Park	**Remove**	**Clearance**	**Routine**	**Defect**	**Structure**	***Mitigate Space***	**Inspect Next Season**	***Plant***
Nuno	--	--	18	--	--	--	--	1

Note lack of tree diversity n Nuno Park, with the majority of trees being Green Ash or Siberian Elm. All trees are similar in age as well. This is an ideal park to remove any sick/unhealthy trees and begin adding young, diverse species.

RIVERSIDE PARK:

Description: Located at the corner of F Street and Sackett Avenue at 170 East Sackett Avenue, Riverside Park reaching 3.6 acres in size, is one of the most popular parks in Salida. Riverside Park is also one of the most popular parks to rent in Salida with numerous public and private events held in the park throughout the year. There are a large variety of tree species in Riverside Park including large cottonwoods, willows, and elms (American and Siberian), along with medium-sized green ash, boxelder, crabapple, hackberry, and small-sized cherry, ginko, maple, oak, ornamental pear, and plum. The park has an amphitheater and is frequently used for events and musical performances. There is also a playground, multiple picnic tables, river access, numerous concrete pathways throughout the park, and a bouldering wall, with a few recently planted young trees around it. Some of the younger trees are beginning to outgrow the cages around them. These cages need to be removed before they begin to girdle the trees or impact the structure of the young trees. Although the overall condition of trees in Riverside Park is fair to good, there are a few cases where small or medium trees are in poor condition due to mower damage or infection of cyto canker.

Map:



Hazards: Included bark is present on multiple Siberian elms, American elms, willows, and the one linden. Included bark can cause structural deficiencies in branches and is something to keep an eye on incase mitigation is needed to prevent large branch failure. A couple of large willows in the park have cavities and decay, a level three assessment is recommended to determine if internal rot and decay is present, and whether the trees need to be removed or not. The large willows are thought to be planted around 1910 and are passed their typical lifespans, reaching the extent of their longevity. These willows may need to be replaced overtime.

Recommendations: Include the pruning (clearance, defect, routine, and structural), planting, protection of trees, cultural treatment, as well as the removal of two trees. A medium-sized Siberian elm with elm leaf beetle and bacterial wetwood and a small crabapple infected with cyto canker and elm leaf beetle have been marked for removal. There is also a very large willow (58" DBH) with Armillaria, a sign of potential root and/or basal decay; a level three assessment is strongly suggested in this tree to determine if there is internal decay that may warrant the tree's removal for public safety. Many of the Siberian elms, cottonwoods, and a handful of American elm have bacterial wetwood. Bacterial wetwood exudes a slime from the tree, attracting insects and weakening wood strength. There are not many effective measurements to rid trees of wetwood, aside from eliminating stresses to the tree, which may be accentuated in urban areas. Other insects and disease present in Riverside Park include scale, gummosis, aphids, and leaf galls.

Ensuring that newly planted trees have adequate protection from mowers, and other human-caused damage is vital. Ensuring newly planted trees have adequate watering systems is also important. If a watering system is not in place, watering bags can be a great option. Also, make sure that there are no girdling roots around the base of newly planted trees. This was an issue with many older, mature trees, as well as with one small, newly planted hackberry in the park. Mitigation of the girdling root is recommended to prevent weakening of the tree, and potentially death of the tree.

An old, girding root that is impacting the infrastructure of a nearby building and pavement.

Armillaria on a willow in Riverside Park. This fungus indicates the potential of rot in the root system and or stem of the tree.

Management Needs:

YEAR 1 MANAGEMENT RECOMMENDATIONS								
Park	**Remove**	**Clearance**	**Routine**	**Defect**	**Structure**	**Monitor**	**Inspect Next Season**	**No Action**
Riverside	**2**	5	41	9	10	--	--	--
Riverwalk*	--	--	4	--	1	--	--	--

*3 trees recommended for cultural treatment

YEAR 5 MANAGEMENT RECOMMENDATIONS								
Park	**Remove**	**Clearance**	**Routine**	**Defect**	**Structure**	***Mitigate Space***	**Inspect Next Season**	***Plant***
Riverside	--	--	62	--	6	--	--	1
Riverwalk	--	--	5	--	--	--	--	--

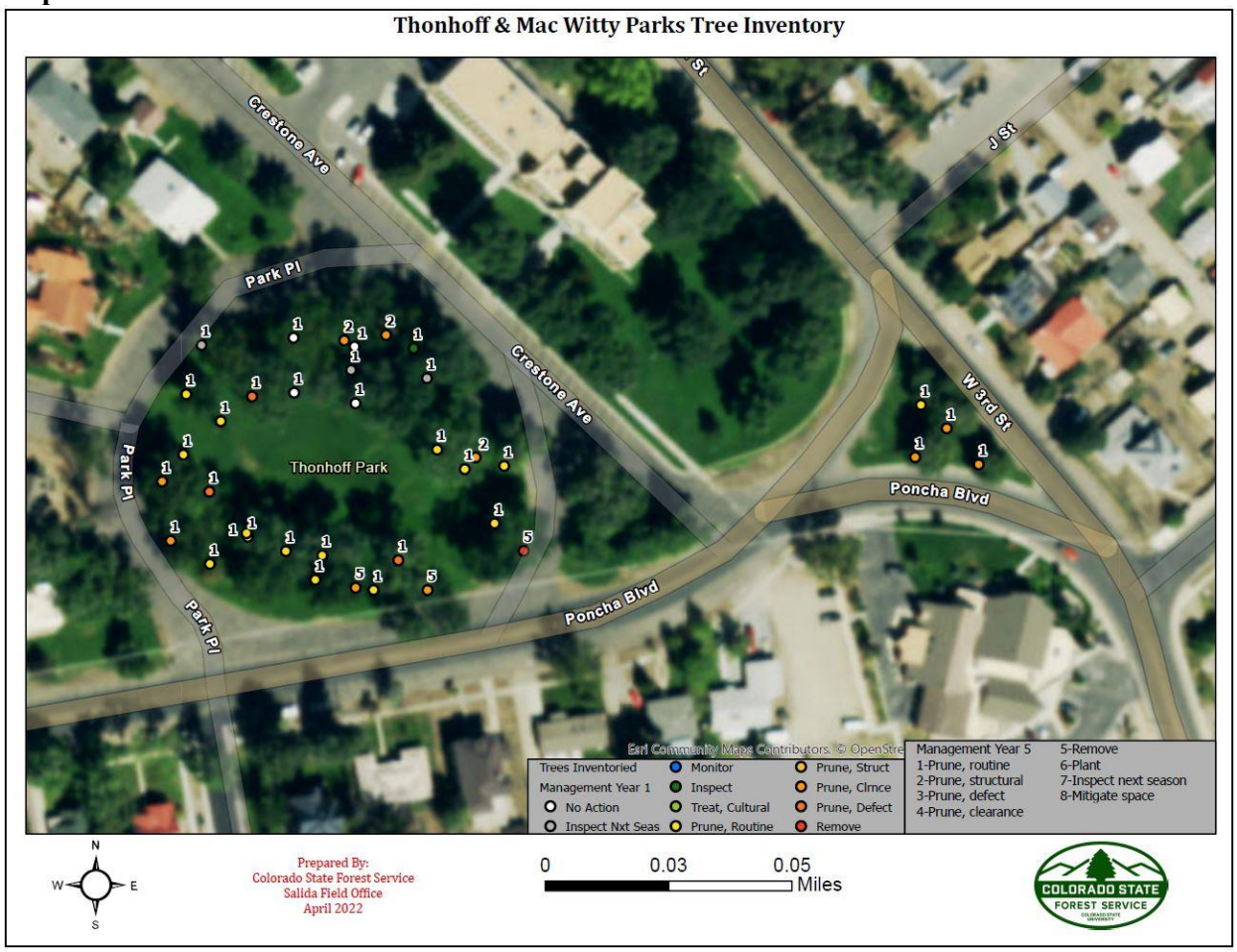
YEAR 10 MANAGEMENT RECOMMENDATIONS								
Park	**Remove**	**Clearance**	**Routine**	**Defect**	**Structure**	***Mitigate Space***	**Inspect Next Season**	***Plant***
Riverside	--	--	68	--	1	--	--	--
Riverwalk	--	--	5	--	--	--	--	--

THONHOFF/MAC WITTY PARKS:

Description: Thonhoff and Mac Witty Parks were inventoried together, therefore their data is reflected together in this plan's associated attribute tables, and are being addressed together here. Thonhoff Park is located at 142 Crestone Avenue across from the Chaffee County Courthouse. The park is 1.17 acres in size and has several picnic tables, electricity, and trash cans. Thonhoff Park receives regular visitation for a variety of uses ranging from picnic lunches to drum circles and yoga gatherings. Thonhoff Park is also encircled by slow traffic roads and parking spaces for the adjacent Chaffee County Administration Building. Thonhoff Park has a combination of high patronage with marginal tree species diversity and condition. The vast majority of trees found in Thonhoff Park are Siberian or American Elms that line the exterior of the park. There also exists a handful of small to medium size trees of other varieties.

Mac Witty Park is located kitty-corner to Thonhoff Park in the northwest side of Salida and is the smallest park inventoried within the city at 0.12 acres. Mac Witty Park has a newly installed picnic table and is adjacent to recent road and development changes and receives low visitation. The park lies in a triangular island between two main transportation routes and a shared residential driveway. Mac Witty Park has only four trees including one Ash and three Willows that are in good condition but may provide clearance issues when in full foliage.

Map:



Hazards: Include various concerns associated with the high volume of elm trees found within the park. Many of these trees are mature and beginning to decline. This has resulted in several instances of deadwood, hangers, and decay being found at the time of inventory. Thonhoff Park in particular receives high visitation

and has several picnic tables that will keep people in the park for extended periods of time. These combined factors pose a threat to visitor safety and care ought to be taken to ensure the aforementioned hazards are mitigated. Additionally, several of the elm trees along the south and west sides of Thonhoff Park are growing in close proximity to power lines. There are obvious concerns associated with this scenario and it ought to be evaluated by parks staff. Finally, in both Thonhoff and Mac Witty Parks several trees when in full foliage may create clearance issues along sidewalks and roads.

Recommendations: Include inspecting next season, pruning (clearance, defect, and routine), planting and protection of young trees, as well as the removal of one American elm that has significant decay. The majority of elms in this park have substantial amounts of bacterial wetwood. Elm leaf beetle also seems to be impacting a handful of Siberian elms. Scale is another insect of concern in Thonhoff Park, impacting American and Siberian elms. With the large elms being significantly impacted by various insect and disease, this park is a great candidate for the planting of new, diverse species that are resistant to bacterial wetwood, scale, and elm leaf beetle. Newly planted species can progressively replace dying trees or trees recommended for removal, and provide a more diverse urban forest. Mac Witty Park in particular has open space where a couple of small tree species could go in as well.

Management Needs:

YEAR 1 MANAGEMENT RECOMMENDATIONS								
Park	**Remove**	**Clearance**	**Routine**	**Defect**	**Structure**	**Monitor**	**Inspect Next Season**	**No Action**
Thonhoff/Mac Witty	**1**	10	15	3	--	--	4	4

YEAR 5 MANAGEMENT RECOMMENDATIONS								
Park	**Remove**	**Clearance**	**Routine**	**Defect**	**Structure**	***Mitigate Space***	**Inspect Next Season**	***Plant***
Thonhoff/Mac Witty	**2**	--	31	--	3	--	--	--

YEAR 10 MANAGEMENT RECOMMENDATIONS								
Park	**Remove**	**Clearance**	**Routine**	**Defect**	**Structure**	***Mitigate Space***	**Inspect Next Season**	***Plant***
Thonhoff/Mac Witty	--	--	34	--	--	--	--	2

A new picnic table with a concrete pad was added to MacWitty Park near the willows.

70% of the species in Thonhoff Park are elm trees (American and Siberian elms), or large size (>40’ in height).

CURRENT TREE SITUATION AND RECOMMENDATIONS

PLANT DIVERSITY

Plant diversity in a city, town, subdivision, park, or block is extremely important to the overall health and quality of the urban forest. The CSFS recommends that no one particular tree species compiles more than 10 percent of the total tree population. This recommendation can be traced to two infectious fungal diseases and one recent insect outbreak that have wiped out native tree populations in the United States. The two diseases are the chestnut blight on American chestnut and the Dutch elm disease in American elm. The emerald ash borer is currently killing all ash trees in the Midwest and the Northeast, and state and federal resources are actively trying to prevent the spread of this insect to other parts of the United States.

Based on the tree inventory, there are three species that represent more than 41% of the tree population in Salida. At 23%, the Siberian elm is the most common tree species in Salida. If an insect or disease that affects Siberian elm were to be introduced into the area, over 70 trees could be lost, and this number only includes the park trees. The second most common species at 11% of the tree population is the Colorado (blue) spruce, with the third species being American elm at 9.8%. Keep in mind that these percentages do not take in account the species present on the Monarch Spur Trail because the data for that location was taken based on polygons rather than individual trees.

While the number of species planted is high, the overall diversity outside of the top seven species is low. Salida needs to work on increasing the overall variety and diversity of the trees planted.

Species currently in Salida that should be planted more. This expanded list was created by comparing recommended species in cities with a similar climate such as Denver & Fort Collins CO and Salt Lake City & Logan UT as well as the websites alamosatrees.net and https://treebrowser.org

SPECIES CURRENTLY IN SALIDA THAT SHOULD BE PLANTED MORE:				
Common Name	**Scientific Name**	**Size**	**Type**	**Lifespan (years)**
American linden/basswood	*Tilia americana*	M-L	D	50-100
American plum	*Prunus americana*	S	D	15-30
Aspen varieties	*Populus tremuloides*	L	D (Prairie Gold, Swedish Columnar)	50-60 Max. 150
Austrian pine	*Pinus nigra*	L	C	>80
Boxelder	*Acer negundo*	L	D	75-100
Gingko	*Ginkgo biloba*	L	D	>100
Hackberry	*Celtis occidentalis*	M	D	>100
Hawthorn	*Crataegus* spp.	S	D	50
Kentucky coffee tree	*Gymnocladus dioicus*	L	D	50-100
Maple	*Acer* spp.	L	D (Highland Park, Flashfire, Red Pointe)	50-100
Mountain ash	*Sorbus* subg. Sorbus	S	D	20-30
Ponderosa pine	*Pinus ponderosa*	L	C	200-500

Size = Small (S <20'), Medium (M 20-40'), Large (L +40')
Type = Deciduous (D), Coniferous (C)
Note that the lifespan may be significantly less than the number above. The lifespan of a tree species is directly dependent on the environment that the tree is planted in. The lifespan estimated based on ideal growing conditions.
Good reference - https://treebrowser.org

TREES NOT PLANTED IN SALIDA THAT ARE WORTH GIVING A TRY:							
Common Name	**Scientific Name**	**Size**	**Type**	**Zone**	**Chance**	**Lifespan (years)**	**Notes**
Larch	*Larix* spp.	L	D	3	Medium	200-300	American or Japanese; prefer acidic-basic soils
Apricot	*Prunus armeniaca*	S	D	4	High	40-150	Fruiting
Bald Cypress	*Taxodium distichum*	L	D	4	Medium	≤600	Not drought tolerant
Beech	*Fagus* spp.	L	D	3	Medium	≤250	Prefer basic or acidic soil
Birch	*Betula* spp.	S-M	D	3		30-40	Many species and varieties. Whitespire.
Buckeye	*Aesculus glabra*	L	D	3	Medium	60-250	Mixed success in Denver
Catalpa	*Catalpa*	L	D	4	Medium	>100	

Cherry, Pink Flare	*Prunus sargentii* 'JFS-KW58'	S	D	4-8		>50	Replacement for overplanted pear. Hardy cherry, thriving in North Dakota. Base-shaped.
Chokecherry	*Prunus virginiana*	M	D			>40	
Crab Apple	*Malus* spp.	S	D	varies	High	<70	Not planted much in parks, but in private lots. Royal Rain Drop, Show Time, Red Jewel, Prairie Rose, Marilee
Elm, David	*Ulmus davidiana*	M	D	3-9		>100	Has cold-hardiness and drought tolerance, resistant to Dutch elm disease, elm yellows, European elm scale and elm leaf beetle
Elm, Lacebark	*Ulmus parvifolia*	M	D	4	High	50-150	Nice winter bark
Elm, Princeton	*Ulmus americana* 'Princeton'	L	D	3	High	100	Dutch Elm Disease resistant American elm, Geenstone
Filbert	*Corylus maxima*	S	D	4	High	40	
Fringetree	*Chionanthus virginicus*	M	D	4-9	Medium	25-50	Numerous in Pueblo
Goldenrain Tree	*Koelreuteria paniculata*	M	D	5	Low	50-100	Alkaline soil tolerant
Hophornbeam	*Ostrya virginiana*	M	D	3	Medium	100-150	
Hornbeam	*Carpinus betulus*	M	D	4	Low	250-350	
Horse Chestnut	*Aesculus hippocastanum*	L	D	4	Low	>60	Mixed success in Denver
Katsura	*Cercidiphyllum* spp.	M	D	4	Low	>60	Long-lived species in right conditions
Lilac tree	*Syringa reticulata*	S	D	3	High	>80	Numerous varieties
Locust, Black	*Robinia pseudoacacia*	L	D	4	High	60-100	Root suckers. One in Poncha Springs. Thorns
Locust, NM	*Robinia neomexicana*	M	D	5	Medium	>60	Root suckers. Thorns. Value for honey bees.
London Plane tree	*Platanus* × *acerifolia*	L	D	4	Medium	>100	Not drought tolerant
Maple, Tatarian	*Acer tataricum*	S	D	4	High	50-100	Nice color

Mulberry, Red	*Morus rubra*	M	D	4	Medium	<75	Edible fruit
Mulberry, White	*Morus alba*	M	D	4	Medium	>100	Fast-growing
Oak, Bur	*Quercus macrocarpa*	L	D	3	Medium	400	Slow-growing
Oak, Shingle	*Quercus imbricaria*	L	D	4	Medium	400	Slow-growing
Oak, Swamp White	*Quercus bicolor*	L	D	4	Medium	300	Great shade and street tree
Oak, English	*Quercus robur*	L	D	4-5	Large	500	*Or* Crimson Spire
Osage orange		M	D	4	Medium	75	Very large fruit. Thorns
Pagoda	*Styphnolobium japonicum*	M	D	4	Medium	50-150	No fall color, blooms after 8-10 years
Pear, Ussurian	*Pyrus ussuriensis*	M	D	4	High	50	
Pine, Scotch	*Pinus sylvestris*	L	C	3	High	150-300	
Redwood, Dawn	*Metasequoia glyptostroboides*	L	D	4	Low	>100	
Yellowwood	*Cladrastis kentukea*	M	D	4	High	<100	Vase-like form
Keaki	*Zelkova serrata*	L	D	5	Medium	50-100	Fall colors. Adaptable and tolerant of heat, little water, and nutrient poor soils. Elm leaf beetle resistant.
Keaki	*Zelkova sinica*	M	D	5	Medium	>60	Fall colors. Adaptable and tolerant of heat, little water, and nutrient poor soils. Elm leaf beetle resistant.

Size = Small (S <20'), Medium (M 20-40'), Large (L +40')
Type = Deciduous (D), Coniferous (C)
Note that the lifespan may be significantly less than the number above. The lifespan of a tree species is directly dependent on the environment that the tree is planted in. The lifespan estimated based on ideal growing conditions. Various scientific studies suggest that the average lifespan of an urban tree is about a tenth of a lifetime of the same species in a rural setting, due to sidewalks, pavement, limited sunlight, and compacted soils.
Good reference - https://treebrowser.org

OVERALL RECOMMENDATIONS

The City of Salida has over 34 different tree species planted along streets and in parks, with the majority of species being 23% of the trees are Siberian elm, 11% blue spruce, 9.8% are American elm, 8.5% cottonwood (23 hybrid trees, 2 lance leaf, and 2 narrow leaf), 7.6% are crabapple, and 6.6% green ash. Elm species make up about one third of the park trees in Salida. As stated previously, the CSFS strongly recommends continuing to diversify when it comes to planting new trees and to try different species in the community. Planting green ash is no longer recommended due to the potential of the Emerald Ash Borer reaching Salida and killing all ash trees. An urban forest is a living thing and it needs management to ensure it continues to grow strong and healthy. The following comments are the CSFS's recommendations that will assist in fulfilling the city's urban forest potential.

This tree inventory is a great opportunity to show landowners what their urban forest is; the good attributes, the areas where improvements can be made, and how it brings value to the city. A great way to share this information is on the Salida city website and in the newspaper. This tree inventory report can be available online, along with the suggested species list, problem insect and disease fact sheets, and potentially, a featured tree write-up. The goal is to raise the level of knowledge within the landowners to facilitate intelligent decision making. The CSFS can help provide documents on insect and disease issues and information on how to write feature tree articles.

The landscaping around the City Hall, Aquatic Center, and parks presents a great opportunity for the city to introduce the community to new species and varieties of trees that will thrive in the colder climate. Currently, some of trees around these buildings are in fair to poor condition. A lack of water may be part of the problem; the management need identified in the inventory for these trees is *'cultural treatment'*. The symptoms of trees needing cultural treatment are small leaves, early yellowing of the leaves or twig/branch dieback. In some cases, it may be too late to restore a tree to good health and removal is the best option before they attract insects and diseases. These newly available planting spaces create an opportunity to plant underutilized tree species that the community will be able to duplicate in their landscapes. Overall, the landscaping needs to be a shining example of tree health and maintenance to the citizens of Salida, a place where they can visit to gain knowledge about tree species, care and the value of trees.

Another teaching tool is for Salida to hold tree care workshops that can cover tree species selection, planting, tree maintenance, and young tree pruning. The CSFS is willing to teach these classes to residents, in-house staff, and contractors. Salida may also consider hiring a local Certified Arborist to teach workshops as well. Resident education is extremely important to improving the health of the community forest, if they support Salida management actions, more work can be done.

Currently a Salida Tree Board member maintains a website (www.cityofsalida.com/bc-tb) that contains information on species selection, planting and tree care tips. The site is an opportunity to show landowners how diverse their urban forest can be, the good attributes, and how they bring value to the community.

A tree ordinance is a very important document and is created and updated by the Tree Board, but final approval is given by the City Council. The primary purpose of a 'street tree ordinance' is to specify the rules for the planting, pruning and removal of trees within the public rights-of-way.

They often contain provisions governing the maintenance or removal of private trees that pose a hazard to the traveling public. Currently Salida's tree ordinance does have regulations on who can prune public or private trees. In some Colorado communities a Certified Arborist or Certified Tree Worker license is required to prune any public or private trees if the work is over 10' high.

Certified Arborist credentials identifies professional arborists who have a minimum of three years' full time experience working in the professional tree care industry and have passed extensive examination through the International Society of Arboriculture (ISA). A Certified Tree Worker has a minimum of 18 months experience professionally climbing trees in a safe and efficient manner to perform tree care. CSFS strongly recommends updating the current town tree ordinance to require a certified professional perform all major pruning activities. By requiring a higher quality of tree care, Salida is demonstrating the importance of trees and is improving the overall safety of the community.

Finally, Salida must make a commitment to updating the tree inventory data on a frequent basis in ArcGIS. This tree inventory project is the effort and collaboration of many people and the goal is to produce a working and living document that can continue to be used by future foresters and tree boards. One way to handle updates is to create an 'update' form where management actions are documented and inputted into the database.

MANAGEMENT PRIORITIES

The following recommendations are placed in order of priority. Most likely Salida will not be able to complete all the priority management in one year; therefore, this list can be used to create an implementation schedule or to write a management plan.

1 YEAR ACTION ITEMS

- Prune or remove city trees with identified hazardous concerns.
- Monitor and care for newly planted trees on city projects.
- Establish a routine systematic trimming cycle for all trees less than five years old to help establish good form and decrease long term maintenance needs.

YEAR 1 MANAGEMENT RECOMMENDATIONS

Park	Remove	Clearance	Routine	Defect	Structure	Monitor	Inspect Next Season	No Action
Alpine	1	5	20	7	1	1	7	8
Centennial	1	2	48	17	4	--	--	--
Chisholm	--	1	4		3	--	3	--
City Hall	1	--	28	3	1	--	--	--
Loyal Duke Dog Park	--	--	--	--	5	--	--	--
Marvin	1	2	6	2	7	--	--	1
Monarch Spur	See Table in Monarch Spur description.							
Nuno	2	--	4	9	--	--	--	--
Riverside	2	5	41	9	10	--	--	--
Riverwalk*	--	--	4	--	1	--	--	--
Thonhoff/Mac Witty	1	10	15	3	--	--	4	4

*3 trees recommended for cultural treatment

5 YEAR ACTION ITEMS

- Improve species diversity in new plantings.
- Routine prune identified trees.

YEAR 5 MANAGEMENT RECOMMENDATIONS								
Park	**Remove**	**Clearance**	**Routine**	**Defect**	**Structure**	***Mitigate Space***	**Inspect Next Season**	***Plant***
Alpine	**1**	4	39	1	1	1	2	1
Centennial	**1**	--	70	--	--	--	--	1
Chisholm	--	--	10	1	--	--	--	--
City Hall	--	--	32	--	--	--	--	1
Loyal Duke Dog Park	--	--	5	--	--	--	--	--
Marvin	--	--	16	--	2	--	--	1
Monarch Spur	See Table in Monarch Spur description.							
Nuno	**1**	1	11	--	4	--	--	2
Riverside	--	--	62	--	6	--	--	1
Riverwalk	--	--	5	--	--	--	--	--
Thonhoff/Mac Witty	**2**	--	31	--	3	--	--	--

10 YEAR ACTION ITEMS

- Increase public education and involvement in the planning, care and maintenance of the community trees and forests.

YEAR 10 MANAGEMENT RECOMMENDATIONS								
Park	**Remove**	**Clearance**	**Routine**	**Defect**	**Structure**	***Mitigate Space***	**Inspect Next Season**	***Plant***
Alpine	--	--	49	--	--	--	--	1
Centennial	--	--	70	--	--	--	--	2
Chisholm	--	--	11	--	--	--	--	--
City Hall	--	--	33	--	--	--	--	--
Loyal Duke Dog Park	--	--	5	--	--	--	--	--
Marvin	--	--	19	--	--	--	--	--
Monarch Spur	See Table in Monarch Spur description.							
Nuno	--	--	18	--	--	--	--	1
Riverside	--	--	68	--	1	--	--	--
Riverwalk	--	--	5	--	--	--	--	--
Thonhoff/Mac Witty	--	--	34	--	--	--	--	2

First priority in Salida is to review all trees that need to be **removed**. Tree removal is recommended for 9 trees with very poor health that will continue to decline and attract insects and diseases. Salida staff and tree board members should determine whether or not to accept all of these recommendations.

Second priority is to create a proactive and preventative **defect pruning** of 50 park trees**,** primarily to remove deadwood. The targeted trees are between four to ten inches in diameter and are the future urban forest of Salida. Once established, trees need to be pruned in regular 3 to 5 year intervals to encourage healthy branch structure. A regular pruning cycle can prevent future needs of crown raising and defective

pruning. Some trees in the City will need annual pruning care to restore a healthy branching structure and to prevent the tree from developing an undesirable form.

Third priority is **routine pruning** and is recommended for 170 trees in Year 1, to improve their overall structure. This is the most common management need found in Salida and is due to lack of a pruning rotation for all trees in the city. A planted balled and burlapped tree can take between 3 to 5 years to become established in the planting site. Once established, the tree needs to be pruned in regular 3 to 5 year intervals to encourage healthy branch structure, which can prevent clearance and defective pruning needs.

Public Works Concerns	
Overhang sidewalk – 8' clearance	7
Overhang street – 14' clearance	5
Sidewalk damage	1
Block line of site at intersection	1
Block view of stop sign	--
Block view of sign	2
Note some of these numbers are trees that have two public works concerns.	

Fourth priority is structural pruning for 32 trees in Year 1. This primarily relates to young and recently planted trees that need a prune to create a healthy growth structure and crown morphology.

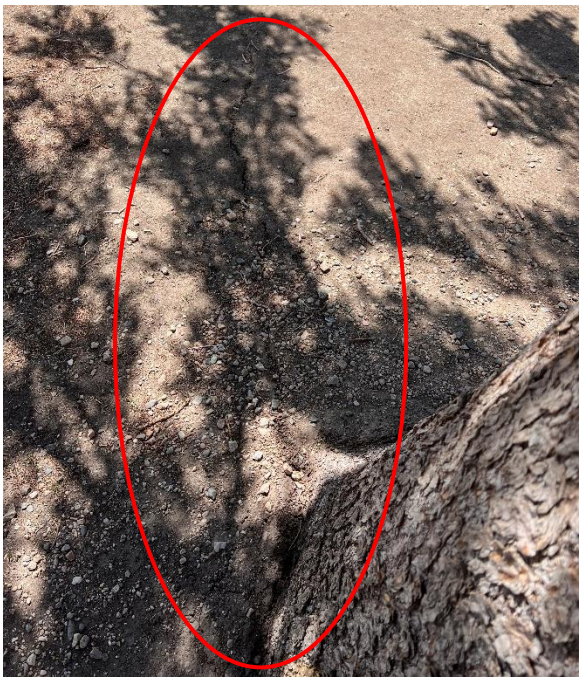
Fifth priority is to begin **clearance pruning** on 25 trees in Year 1. This management action is needed along certain streets and pedestrian paths to avoid damage to personal property or injury to residents. In some instances, branches are blocking street signs and can pose a danger for vehicle traffic. The branch height standards are 14' of clearance above streets and 8' of clearance above sidewalks.

Large trees, such as the Siberian elms and cottonwoods in Riverside Park should be monitored and pruned or removed as issues develop. These large trees are not the future of Salida's urban forest and should be removed and replaced as their costs for care outweigh the benefits they contribute to the community. The underutilized tree species should be planted as replacements for the elm trees to improve the tree diversity and overall health.

Mature or young tree pruning should not be done without proper training or an objective in mind. Proper training, including objectives for tree pruning, can be conducted by the CSFS in a workshop for residents, in-house staff, or contractors. Also, it is highly recommended that a contractor with a Certified Arborist (CA) on staff, whom can oversee workers, should be hired to perform any pruning that Salida staff is unable to perform. A search for local CAs can be done on the International Society of Arboriculture's website at www.treesaregood.org/findtreeservices/FindTreeCareService.aspx. To ensure a larger pool of candidates, do not focus the search only in the Salida area.

EXAMPLES OF CONCERN

Root damage can wound or even kill a tree. About 85% of a tree's roots are within the top 18" of the soil and usually do not reach a depth of more than 3-7'. Roots grow from their tips, and can potentially extend from the trunk two to three times the height of the tree. Avoid compaction of the soil from the trunk out to the drip line. One last tip is to try and avoid running over large roots with the lawnmower: this can cause decay problems and weaken your tree. See **Appendix A & F**.



Insufficient watering, particularly proceeding the first three years after a tree is planted, can severely reduce the chances of a tree's survival. Sprinkler systems, driplines, watering bags, and hand watering are all feasible options to ensure trees are being properly watered. Do not water the trunk of the tree, that can lead to rot. Watering should be focused to the root system under the dripline of the tree.

Basal damage to a tree decreases the trees vigor since it reduces the amount of water and nutrients that can be transported and creates an area for decay.

- *Solution 1*: More care when taking care of grass.
- *Solution 2*: Protect trunk with mulch that prevents the lawn care equipment from coming in contact with the trunk.
- *Solution 3*: Apply herbicide to grass to prevent lawn care equipment from coming in contact with the trunk.
- *Solution 4*: This was also observed on numerous private business trees. Work with lawn care companies during business registration to promote tree care awareness.

Overcrowding: Some trees are planted too close to each other. Trees grow most healthy when they are not spaced close together and compete for water, sunlight or nutrients. Good spacing between trees to decrease competition is determined by the tree's crown width at maturity. For example, a mature Cottonwood's canopy could be 30'-40' wide so they should be planted 30'-40' apart.

- *Solution 1*: Do not automatically replace a tree in the same location one was removed from. That location may no longer make sense. In crowded locations removing a tree will have the added benefit of decreasing the competition between remaining trees and make them healthier. Currently these trees root systems may now be dependent on each other and general thinning may facilitate wind throwing those trees that remain, so only remove Priority 1 trees and do not thin to decrease competition.
- *Solution 2*: Ensure proper spacing when planting new trees.
- *Solution 3:* Trees requiring full sunlight should not be planted in the shade of other trees.

Topping can leave a tree exposed to decay and insect/disease invasion. The loss of limbs and foliage significantly decreases the potential of success of the tree, and weakens the roots as well as the tree's structural strength. While the tree may survive, its lifespan may be significantly decreased.

CONCLUSION

The tree inventory collected information on the overall health and diversity of Salida's community forest. Salida now has the tools to successfully manage the community forest with the knowledge of how many trees are in the parks, what species have been planted, what condition the trees are in, and more. The information gathered during the inventory gives Salida staff and City Council the capability to rank tree maintenance needs, schedule routine pruning, know where trees should be planted, create a planting plan and track what insects and diseases are becoming an issue. These management actions in place that will benefit the community over the next 100 years.

Salida has a beautiful urban forest that has been developing, maturing, changing and evolving for over 100 years. While it is in need of management, it has great potential for becoming a healthy and diverse community forest. The forest continues to evolve and the tree inventory is part of this process. Now, in 2022, the forest has many different tree species and age classes requiring specific care and management. Increasing diversity, starting trees on a routine pruning schedule, and managing insects and diseases are now easier to track and update with the inventory in ArcPro.

The software program the data is housed in, ArcPro, is a great tool for creating reports and maps so management actions can be done efficiently on the ground and the work can be updated in the database. The inventory is a living, working document of the trees and their conditions and is not a snapshot in time. This is important for reaching the full potential of the inventory and what ArcMap can offer.

Overall, Salida's community forest is healthy, thriving, and full of potential. The next steps are to bring the current tree population under regular maintenance, ease the over-mature tree population out, continue to plant for future residents, and educate the residents of the benefits of their trees. Keep planting and keep learning what Salida's trees have to teach us.

BUDGET

Initially the City of Salida should address the risks observed during data collection. Then a five-year safety pruning cycle would help in the proactive management of these trees. Breaking the area into affordable segments and doing a portion of the safety pruning/removals on an annual basis will help alleviate problems with unexpected tree failures which can be catastrophic to life and property. Additionally, this method helps spread the costs of tree maintenance over a period of time, rather than getting hit with emergency removal costs and associated problems all at once, which can happen when the trees are managed reactively.

Local rates for tree services were investigated. These prices are averages, but due to the location, amount of material to be removed and complexity of some of the trees this could be more.

- **Removal:** $600 - $3,500 per tree, *with expenses calculated at $2,000*
  - **9 trees at $1,500 each for removal = $13,500**
  - Assuming they are larger diameter non-technical removals
- **Defect Cleaning:** $400 - $900 per tree, *with expenses calculated at $650*
  - **50 trees at $500 each for removal = $25,000**
  - Consider contracting this to a firm with ISA Certified Arborists who work with crews on the ground
- **Routine Prune:** $150 - $800 per tree, *with expenses calculated at $400*
  - **170 trees at $250 each for removal = $42,500**

REPLACEMENT PROGRAM

Once again the removal of too many trees can destroy the aesthetic qualities of an area, which is what made the area popular to begin with. A replacement plan should be established before trees are removed.

1. Do not automatically replace a tree in the same location one was removed from. That location may no longer make sense to have a tree. In crowded locations removing trees will decrease the competition between remaining trees and make them healthier.
2. Consider replacing trees 10'-15' from buildings with smaller trees that only get 10'-20' tall. This will decrease the long term opportunity for trees to fall on buildings and make pruning easier. http://www.alamosatrees.net tree index listing for small trees contains species appropriately suited for growing in the San Luis Valley.

APPENDICES

A. Construction and Trees
B. Insect and Disease
C. i-Tree Data
D. Soils
E. Species Suitability and Recommended Planting Lists
F. Tree Care
G. Tree Data in Excel
H. Park Maps
I. CTC Management and Definitions