



TOWN OF CARBONDALE
511 COLORADO AVENUE
CARBONDALE, CO 81623

Board of Trustees Agenda Memorandum

Meeting Date: February 14, 2023

TITLE: 2023 Town of Carbondale Integrated Weed Management Plan

SUBMITTING: Parks & Recreation Department

ATTACHMENTS: Parks Department Yearly Timeline
Weed Management Plan Spreadsheets
Weed Map of Nature Park

PURPOSE:

Resolution # 13 Series of 2019 adopted the Town of Carbondale Integrated Weed Management Plan (CIWMP). The management techniques prioritized in this plan include prevention, cultural, mechanical, biological strategies and as a last resort, chemicals. This plan includes consult with area Natural Land Management Specialists to exhaust all strategies named above before resorting to chemical control. Before using any chemical on town managed land in Carbondale, it is necessary to get approval from the Board of Trustees, because Carbondale pursues an herbicide and pesticide free policy whenever possible.

On an annual basis an assessment, well in advance of the growing season, will take place of the weed mitigation methods used per park and on other Town owned lands. The effectiveness assessment will utilize data compiled on the Parks Department & Public Works Department Weed Management Plan spreadsheets, which detail the methods, techniques, timing, and effectiveness of the efforts of weed management presently being used. These documents also provide data on species of non-desirable plants not responding to the non-chemical treatment efforts.

If necessary, at this time a plan for the following growing season will be presented to the Environmental Board and to the Weed Advisory Board (Board of Trustees) for the use of an approved chemical treatment for the eradication of the weed in question, which will be identified by type, location, size of infestation, methods of chemical use, details of chemical used and the use regimen per location.

Anytime chemicals are recommended for weed management to the Weed Advisory Board, the Parks & Recreation commission and the E-Board will have first reviewed the “Logs and Archive” of integral strategies pursued by staff, including the report from the Natural Land Management specialists to confirm that integral (chemical-free) management techniques have been exhausted, or are not realistic with budget limitations and staff availability. Town staff will consult with a Natural Land Management Specialist to determine the most beneficial and effective chemical management technique. The 2023 *Integrated Weed Management Plan* was presented to the Parks & Recreation Commission and to the Environmental Board at their January 2023 meetings. Both advisory commissions were in support of the 2023 *Integrated Weed Management Plan*.

BACKGROUND:

The State of Colorado Noxious Weed Act (C.R.S. 35-5.5) was signed into law in 1990 and amended in 1996. Now known as the Colorado Noxious Weed Act (Act), it states that noxious weeds pose a threat to the natural resource of Colorado. The Act also directs that the governing body of each municipality shall adopt a Noxious Weed Management Plan for all lands within the municipality. The Mayor and Board of Trustees shall provide for the administration of the Noxious Weed Management Plan authorized by the Act. In October of 2015, the Board of Trustees appointed a Citizens Weed Advisory Task Force to develop a noxious weed management plan. This citizen group produced a base plan that saw numerous revisions and was finally adopted in 2019. The *Integrated Weed Management Plan* that we are now using is the product of continuing refinement of the document by the Citizens Task Force, the Public Works Department, the Parks & Recreation Department, the E-board and the Parks & Recreation Commission.

DISCUSSION of 2022 Weed Management Techniques:

Reviewing the park specific management plans from 2019-2022, many of the techniques for weed eradication will remain the same and chemical free as we have seen progress in the success of these efforts. In addition, the steam machine equipment was purchased and used successfully for certain weed eradication efforts in 2020-22. The site-specific plans did expose some problem areas that are not responding well to our existing techniques. The following locations are problem areas that we are closely monitoring. These locations are not presently recommended for any chemical weed treatment.

- **2022-Baseball field infields-** A perennial rhizomes bind weed *Field Bindweed* (C-list) and other weeds were manually removed in the fall of 2019 to a depth of 6" on Triangle, Bill Hanks and Tiny Nightingale infields. The steam machine was also used on Tiny Nightingale field to see if a deeper root steam technique would work. Monitoring the infields in 2022 during the growing period it appeared that these previous methods did not have a beneficial effect on these well-established weeds on any of these infields. Taproots of the bindweed can be 2-10 feet deep, seed can remain viable for 50+ years and shallow tillage only increases the number of plants. This rendered the steam machine an ineffective tool to deal with this weed. Since the fields were not being used and the daily field prep was not being conducted during covid, the bind weed took over the infields. We used our "bolt drag" to try and pull the weeds in the infields and then hand-picked the remnants, but this weed is established in the soil and we are not getting ahead of it with these techniques. Other weeds identified in the infields are *Purslane*, *Prostate Knotweed*, *Common Mallow*, *Prostate Pigweed*, *Khakiweed*. For 2023 we are going to use our Town tractor to turn the soil for a deeper tillage, remove the organic material exposed by this technique, apply and saturate the soil with magnesium chloride, then top dress with new infield dirt.
- **2022- The *Alpha Natural Proprietary Product*** showed promise on the bind weed in our experimental plot at the North Face Bike Park on the established rhizomes. We tested this natural product on the infields last spring. This took place on the Bill Hanks and RVR and Tiny Nightingale baseball diamonds. We did not see a significant weed eradication or diminished growth with this product. We also experimented on the fields with a vinegar-salt-liquid dish soap based product to check the efficacy of that natural product. We did not see results that would justify the time and materials cost and the multiple applications needed for efficacy.
- **2022- Gateway RV Park-** prior to being open to the public and at first growth we increased our efforts to eradicate the weeds established in the gravel camp sites. We used avenger, a natural

burn down herbicide, manual extraction and/or weed burning techniques, and continue to test the effectiveness of the steam machine as an additional weed control method. Other weeds that are present on site include *Scotch Thistle* & *Canada Thistle* (B-List) which our manual extraction, before they go to seed, has been slowly diminishing the size of the infestation and their annual regrowth.

- **2022**-Manual weed eradication has been taking place at the following location with Town staff and volunteer groups.
 - The Carbondale Rotary Club worked at **Nuche Park** on *Common Burdock* (C-list) and *Hounds Tongue* (B -list) and a small infestation of *Absinth Wormwood* (B -list). There is also *Scotch* , *Canada* and *Plume less Thistle* (B-listers).
 - The Summer Advantage School Program (organized through Roaring Fork Outdoor Volunteers) worked on the **North Face Bike Park and Bill Hanks Baseball Diamond** going after the thistle and the bindweed.
 - The Environmental Club at Roaring Fork High School worked with RFOV and the Town Parks & Recreation Department to manually extract Russian Thistle & Kochia (AKA tumbleweeds) from the **Red Hill Trailhead**.
 - The permaculture garden at the **Thompson Park** needed a large volunteer effort to manually extract weeds and to reestablish the guilds and pathways that had been overgrown. Town parks staff will need to schedule a once-a-month mow and weed whack of the areas around the guilds, so this does not happen again in 2023. The permaculture garden group, spearheaded by Erin Anderson, will need to grow interest in the project and provide additional workdays to mitigate last summer's situation.

Proposed 2023 Weed Management Techniques:

- **2023**-We will continue our relationship with the volunteer entities listed above for help with the management of weeds on our public lands. We also put in a Request for Proposal to utilize the Roaring Fork Outdoor Volunteer Community Workday opportunity to conduct stewardship work at the Riverfront Park on the Crystal River. The Crystal River Restoration Project is back out to bid this winter for a summer of 2023 project. The public project scope of work will depend upon the timing of the contractor's progress and could be one or a combination of the following: manual weed extraction and reseeding with native seeds, trail restoration work, and / or the physical planting of native species slated for the project. This will be one of RFOV's first community projects in the Spring of 2024.
- **2023**- Staff Training- Town staff in the Public Works and Parks Department will receive their applicator training of pesticides and herbicides. Utilizing the on-line training programs offered through the Colorado Environmental Pesticide Education Program offered by Colorado State.

Our largest and most difficult weed management challenge is at the 33 acre Nature Park. Coming in a close second is the weed management challenge at our 2 acres of irrigated dirt at the North Face Bike Park. The roundabout parks and bulb out gardens and Highway 133 corridor have unique weed issues also. The Highway 133 corridor was originally seeded with wildflower and native grasses, but this technique has not been effective enough to crowd out weeds and they have established themselves to a point that they are getting tall enough to create a visual hazard on the entrances to the roads and businesses along the corridor and we recommend a monthly mow and weed whack on those effected corners.

The following parklands are recommended for chemical weed control subject to the Integrated Weed Management Plan guidelines for 2023.

- **Nature Park-** Last year we identified and manually extracted some patches of *Common Burdock* (C-list) and *Hounds Tongue* (B -list) and *Plume less Thistle* (B-list). This effort is not eradicating these weeds, just controlling their spread. There is also a growing abundance of *Canada Thistle* (B-list) and a small but worrying infestation of *Yellow Toadflax* (B-list). Steve Anthony, Garfield County Weed Management Director, would like to see this weed receive a systemic chemical-based herbicide to eradicate the potential growth. (Please see map)
At the Nature Park, there is enough of an embedded seed bed of *Canada Thistle* in the soil, with the rust fungus working on certain patches but not stopping disturbed soil from sprouting new weeds. We will continue to monitor and will try to propagate the rust fungus that is working on the *Canada Thistle* in the eastern portion of open area of the park.
We will lose this park to the *Canada Thistle* if we do not start to manage this park as open pasture land with systemic chemical based herbicides.

2023 - We will continue manual weed extraction around the cabin and the solar panels and burn what we can in the spring. This seems to be working on the *Common Burdock* (C-list) and *Hounds Tongue* (B -list) and *Scotch & Plume less Thistles* (B-list). Our biological efforts (rust fungus) and environmental (burning) weed management techniques will continue. We will continue to monitor and will try to propagate the rust fungus that is working on the *Canada Thistle* in the eastern portion of open area of the park and we will look for an opportunity to burn the park in the spring. The natural burn down broad leaf management techniques with the *Avenger* products are not working on the *Canada Thistle*. We would like to use a spot spray application of *Milestone* or *Opensight* herbicide on the *Canada Thistles* and (chlorsulfuron) *Telar XP* or (picloram) *Tordon 22k* on the *Yellow Toadflax*.

From Steve Anthony Garfield County Vegetation Manager:

"We concur with staff's recommendation to use Opensight on Canada thistle. In addition to the timing listed, also consider a spot application in late September to early October with Milestone. The active ingredient in Milestone is aminopyralid. The active ingredients in Opensight are aminopyralid and metsulfuron-methyl. Metsulfuron-methyl has some pre-emergent qualities to it, and is effective in the spring. A fall treatment on Canada thistles with Milestone only will be very effective, as Canada thistle will start translocating carbohydrates down to it's root system after the first frost in the fall. Treating after the first frost will move the herbicide into the deep, interconnected roots system of Canada thistle."

- At the **North Face Bike Park** we are proposing a spot spray application to attempt to eradicate weeds on the Colorado Noxious Weed B list, *Common Tansy*, *Hoary Cress* (White Top) and *Canada Thistle*. *Common Tansy* is a List B that requires elimination by 2023. We have been weed whacking and hand pulling the *Canada Thistle* and are keeping it from expanding, but mowing is not effective on the *Tansy* and *Hoary Cress* and may cause the plant to develop perennial characteristics. Both weeds have not responded favorably to our existing techniques for weed mitigation and have established themselves in specific areas adjacent to the riding surfaces in the bike park. In 2021 we continued with our techniques of weed whacking growth and we re-established the pea gravel on top of the weed barrier on the non-rideable surfaces

within the park. The Parks Department is requesting the use of a spot application on the B-list noxious weed *Common Tansy*, *Hoary Cress* and *Canada Thistle* of the herbicide *Escort XP* with a non-ionic surfactant and to apply it when the plant is bolting to the bud growth stage.

- The Public Works Department used a combination of weed steaming and manual extraction for weed control in the roundabout garden areas in 2022. Carl Meinecke, our Town Arborist, would like to continue this technique in the roundabout but also have the option to spot spray a chemical herbicide *Tenacity* targeted at specific noxious weeds and also a spot spray in the early spring of *Opensight* and late fall of *Milestone* for the Canada Thistle. There is no public access through this area, and it would allow him to get a better handle on the bindweed and thistle. *Tenacity* Herbicide is a systemic pre-emergence and post-emergence herbicide for the selective contact and residual control of weeds. When used as a post-emergent, *Tenacity* weed killer is absorbed by susceptible weeds through foliar contact and soil absorption. Foliage of treated weeds cease growth after application, then turn white (loss of chlorophyll) and death may take up to three weeks. A repeat application is required after two to three weeks for improved post-emergence weed control. Its active ingredient, mesotrione, is based on a naturally occurring compound produced by the bottlebrush plant (*Callistemon citrinus*) that inhibits photosynthesis in susceptible plant species. It is absorbed by plants through the roots, shoots and leaves and distributed throughout the plant by both xylem and phloem translocation.

Town staff would follow the public notification rules stated in the CIWMP regards to use of herbicides on Town owned land:

Notification of Herbicide Use

1. *Public Registry-* town staff will establish a program for the registration of all pesticide sensitive (interested) residents so they may be informed, at minimum, within a 48 hour window before the application of an airborne herbicide.
2. *On-site Posted Notification-* Any town staff that uses any herbicides should comply with the following on-site notification procedure: Signs should be posted at all usual public and employee points of entry to the treated area and pursuant to State or Federal law, regulation and by product label instructions. Signs should be posted two (2) days in advance of application and remain in place for the re-entry interval as determined by the product label or regulation. Signs should contain the name and active ingredient of the herbicide product, the target plant, the actual date of application, the re-entry interval as determined by the product label or regulation, and the name and contact number for the town department responsible for the application. Signs should be of a standardized design that are easily recognizable to the public and workers.
3. *Posted Notification on Town of Carbondale website of herbicide application on town property.*

- **Proposed 2023 Revegetation Techniques:** This language is derived from the Carbondale Integrated Weed Management Plan and is a good outline for necessary revegetation techniques to be used by Town staff after manual extraction or successful herbicide use on areas of noxious weed infestations. Leaving disturbed soil in the locations of our extraction efforts will result in the opportunity for a re-infestation of noxious weeds, so we will focus some of our efforts in the coming years on the revegetation plan where our actions have disturbed the soil. These revegetated zones will hopefully succeed at creating a healthier environment for desirable plants to grow and stymie the opportunity for the Canada Thistle and other noxious weeds to come back.

A crucial part of any integrated weed management plan is the introduction of site appropriate vegetation. Establishing a desirable plant community after undesirable weeds have been removed from a highly infested area requires timely cultivation and reseeding. Since the seeds from undesirable weeds may lay dormant for many years, removing all visible signs of the undesirable weeds does not ensure against their return. Revegetation is the best remedy to prevent the germination of weed seeds. It is important to inspect the land regularly to identify and treat small, new infestations by improving the soil and planting desirable plants. For the highest chance of successful revegetation, managed irrigation of dry areas, fertilization, and reseeding are beneficial in establishing desirable plant communities. Native plants are most appropriate when the goal is restoration (trying to restore native habitat). Weed-free seeds of native Colorado grasses, wildflowers or plant species appropriate to the site may be purchased, but the best source for seeds is from native species that grow in the immediate vicinity of the area to be planted. They will be best adapted to local conditions and will help maintain local integrity and genetic viability. Using native plants or seeds to reclaim disturbed land reduces degradation of native ecosystems, reduces the need for herbicides and conserves water resources. Native plants will provide a broad biological diversity and help keep Colorado looking like Colorado with a unique regional landscape that sets us apart from other areas of the country.

- *Contact the Natural Resources Conservation Service or Colorado State University Cooperative Extension for seeding recommendations. The Native Plant Revegetation Guide for Colorado, <http://cpw.state.co.us/Documents/CNAP/RevegetationGuide.pdf> published by the Colorado State Parks Natural Areas Program, is an excellent guide for native plant reseeding. Contact the Town of Carbondale Public Works office for further information on this material.*

STRATEGIES:

1. *Study all vegetation in the area and surrounding areas.*
2. *Preserve plant species native to Colorado.*
3. *Test the soil for pH balance and micro biome health by using the Haney and PLFA soil tests that are recommended by the Natural Resource Conservation Service (NRCS.).*
4. *Retain, improve and utilize as much on-site topsoil as possible.*
5. *Select a predominant species that is appropriate to the site. Then choose a few complimentary species to provide a balanced plant community.*
6. *Use weed-free seeds. Use non-hybrid seeds. Avoid commercial seed packets containing exotic plant species.*
7. *To landscape for wildlife, choose native plants that provide cover, forage, browse, seeds for birds and rodents, and shade.*
8. *Establish a vegetative cover that is diverse, effective and long lasting, capable of self-regeneration and appreciated by wildlife and people.*
9. *Stabilize the surface with proper ground cover.*

RECOMMENDATION:

The noxious weed management method selected should be the least environmentally damaging, yet practical and reasonable in achieving the desired results. In making these decisions all factors including budget implications, materials costs, training and availability of labor need to be considered. The challenge for the Parks & Recreation and Public Works Department is the total square acreage of parklands and gardens in the Town right of ways that require ongoing maintenance. The goal is to develop the most feasible and time efficient means of noxious weed control.

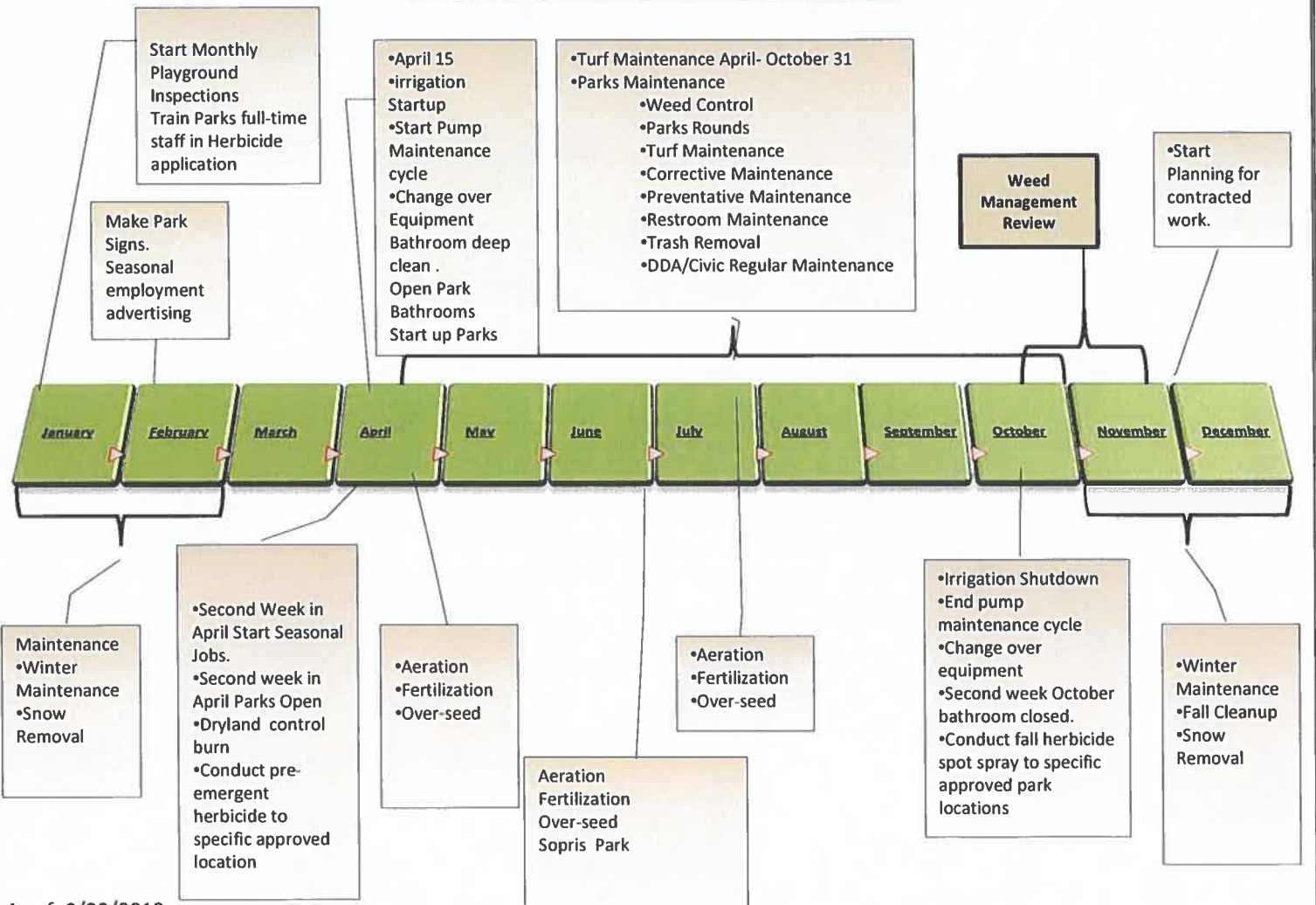
It is the County's and the Town of Carbondale's philosophy to minimize the use of herbicides and impacts to desirable vegetation. However, for some species of noxious weeds, herbicide application is the most efficient and effective method of control. It is extremely important to treat small infestation of certain weeds (List A and B species mandated to be eradicated) as soon as possible. To ensure that small infestations of noxious weeds are controlled or eradicated effectively, it is extremely important to take immediate action on certain weed patches.

Parks & Recreation Department staff is seeking approval from the Parks & Recreation Commission, the E-Board and the Board of Trustees to use a spot spray application of a chemical-based herbicides to eradicate the Type A and Type B Colorado Noxious Weed species from the Town owned land mentioned above. This recommendation would be presented to the Trustees for the final decision. The CIWMP states:

In this manner Town staff, whom have been trained in the application of the herbicide, receive permission from the Board of Trustees acting as the Weed Advisory Board, to use an approved herbicide for the eradication of a noxious weed on Town lands. This plan uses the expertise of land managers for a long-term strategy that has the goal of long-term eradication and/or control of noxious weeds without uncontrolled proliferation. Any permission obtained to use herbicides from the board of Trustees must follow the label instructions. Any use of a herbicide inconsistent with the label's directions is illegal.

Prepared By: Eric Brendlinger, Parks & Recreation Director
Russell Sissom- Parks Supervisor
Carl Meinecke-Town Arborist

Parks Department Yearly Timeline



As of: 9/22/2019

2023

TOC Turf Parks

Weed Control Method	Priority	Status	Season	Date	% effective	Notes
Soil & Turf Evaluation	Normal	In Progress	Spring	2023	50%	Soil samples potential to send in other samples from turf parks if we see issues.
Aeration	Normal	scheduled	Spring/Sumn	2023	80%	parks contain clover and dandelions, good turf root systems parks have less.
Fertilization	Normal	scheduled	Spring/Sumn	2023	80%	parks contain clover and dandelions, good turf root systems parks have less.
Over Seed	Normal	scheduled	Spring & Fall	2023	80%	parks contain clover and dandelions, good turf root systems parks have less.
Applying soil conditioners or organics	Normal	Not Started	Fall	2023	0%	Potential additives to our Aeration, fertilization and overseed techniques.
Top Dressing	Low	completed	Summer	2019	100%	Summer 2019 Hendricks & Miners Soccer Fields Top Dress product could have used more sand to enhance leveling.
Mowing regimen	High	In Progress	Seasonal	April 15 - Oct 15	100%	Height of Mowers 2.5" , 1 x time per week.
Watering Regimen	High	In Progress	Seasonal	April 15-Oct 15	100%	Utilizing smart water wise irrigation sensors.
Avenger Spot Spray Burn Down natural, non-chemical herbicide	Low	Not Started	Spring	2023	0%	# of Gallons of avenger (6 to 1 ration with water) is more effective on broad leaf weeds and cannot be used on turf fields because it is non-selective.
Steam Machine Weed Burn	High	Experimental Phase	Spring, Summer	2023	0%	Town now owns a machine so we will experiment with it in weed problem areas. Turf parks are not high priority for this machine.
Seek consultation with Natural Land Manager Specialists for next step	High	Not Started	Spring	2023	0%	This step will be necessary when the previous methods of weed mitigation are not successful.
Spot spray Use of chemical based Herbicide	Low	Not Started	Spring	2023	0%	This step will be necessary when the previous methods of weed mitigation are not successful.

These are Sopris Park, North Face Park, Historical Park, Thompson Park, Bonnie Fisher Park, Hendricks Soccer field, Holland strip, Hendricks Strip, Miners Park, Colorado Meadows, and Gianinetti Park. New park to this inventory is the Ramey-Harvey Park and the 4th street Plaza Park..

Spring aeration with tine about 4" depth. (Feb. to Mar.)
 Spring fertilization after irrigation is on. (Apr. to May.)
 Parks that have heavy usage (Sopris & Hendricks) will
 Aerate in the end of July. If necessary apply fertilizer.
 Seed Mixture for Turf Parks : COOP Roaring Fork Lawn Mix

TOC Nature Park

Weed Control Method	Priority	Status	Season	Date	% effective	Notes
Uplands and Wetlands Evaluation	Low	Completed	Spring	2015	0%	Conducted by Ryan Sparhawk in 2015
Burning	High	Scheduled	Spring	2023	80%	One burn in 2017. 2018-19 drought conditions and did not have trained manpower for burn. Conducted in Spring 2020 only 65% of park. Burned 80 % in 2021 spring. No burn conducted in 2022 due to weather and manpower
Flood Irrigate	Low	Not Started	Summer	2023	0%	Last Flood Irrigation was 2016
Manual Extraction	Medium	started in 2020	Year round	2023	10%	Potential volunteer effort with schools or established "Friends of the Park" groups. Town staff does mitigation work on Canadian Thistle on adjacent hillside and has taken over maintenance of the Solar Array. 80% effective
Goat Pasture Technique	Low	pursue for solar array	Spring & Sun	2023	0%	Could be cost prohibitive on this parcel, unless we owned some goats. Could be used in Solar array due to existing fence and trade out for camping location at rodeo.
Fertilization	Low	Not Started	Spring	2023	0%	
Over Seed	High	Experimental	Spring & Fall	2023	0%	Tried Fall 2021 for a reestablishment of some native plants in areas of noxious weed infestations post treatment or after manual eradication. 2022 seed application also. Continue in 2023 in disturbed areas.
Applying soil conditioners or organics	Low	Not Started	Spring	2023	0%	
Biologics : Introduced Rust Fungus	High	Started in 2015	Spring	4 year process	70%	Specific to the Canada Thistle, Colorado Department of Agriculture experiment on 1 patch, 148 stem in 2015 down to 44 stems in 2019. Insects are available, but provide limited control. Currently, collection and distribution methods for Canada thistle rust fungus are being refined.
Mowing regimen	Low	Summer mowing season	Seasonal	2023	30%	Path to Archery Range. And around and inside Solar array fencing.
Watering Regimen	Low	Not Started	Seasonal	2023	0%	This was a suggestion from the 2015 Parks Recreation and Trails Master Plan. We only irrigate the trees and plants around the solar array on a schedule.
Avenger Spot Spray Burn Down natural, non-chemical herbicide	Low	Started for the test plots in 2021	Spring	2023	0%	Must re-apply every two weeks to be effective. Will try in solar array and around cabin in 2022. Weed whacked and manually pulled in these locations instead.
Seek consultation with Natural Land Manager Specialists for next step	High	Started for the test plots in 2021	Spring	2023	20%	This step will be necessary when the previous methods of weed mitigation are not successful. Consulting with a Natural Land Manager for the test plots.
Spot spray Use of chemical based Herbicide	Low	Started for the test plots in 2021	Spring	2023	20%	This step will be necessary when the previous methods of weed mitigation are not successful. See recommendation for 2023 below which will require approval by BOT.

Nature Park- The Friends of the Nature Park and the Roaring Fork Outdoor Volunteers joined forces in September 2021 to conduct a weed map of the property and to manual pull the known noxious weeds. We have identified some patches of Common Burdock (C-list) and Hounds Tongue (B-list). There is also Canada Thistle (B-list) and Plumeless Thistle (B-list). We burned the park in the spring 2021 but not in 2022. There is a need to organize another Friends of the Nature Park volunteer clean-up effort. We will continue to monitor and will try to propagate the rust fungus that is working on the Canada Thistle. Recommending spot herbicide treatment of the Canada Thistle in the spring and fall for 2023 and for the small patches of Yellow Toadflax.

North Face Bike Park

Weed Control Method	Priority	Status	Season	Date	% effective	Notes
Hydro Seed non-rideable berms and backsides of features	Low	Attempted	Spring	2015 post construction	10%	We had irrigation problems, so seed did not receive sufficient moisture to take. X2 Tried a manual scarify of soil and seed planting in 2016 also, but only mildly successful.
Soil Analysis	Normal	Completed	Fall	2016	20%	Had soil samples accessed by Colorado State 2016. Soil lacking in Phosphates. No soil additions budgeted.
Mulch	Low	Attempted	Winter	2017	10%	Used Christmas tree mulch 4" thick in low moist spots with out success. Fertilized weeds, held moisture.
Pea Gravel and Weed Barrier	Normal	scheduled	Spring & Fall	2016 & 2017 & 2021	75%	helped in between jump lines and pump track features. needs weeding every year by hand for newly established weeds in the pea gravel.
Burn perimeter	Normal	scheduled	Spring	2016, 17, Not 2018, 19 or 20	25%	Was effective on the perimeter but did not help the berms and backsides of the features in the park. Will attempt in 2023 if staffing and weather allows.
Weed whack scalping with machines	High	scheduled	Spring, Summer	May, June, August 2023	50%	Manual scalping first of large weeds necessary. Labor intensive. Cut down the weeds that propagate via seed and removed all the cuttings. With Parks staff 2 to 3 times a year or 1 employee and 1 temp worker, two days
Manual Pull	High	scheduled	Spring, Summer	May, June, Aug 2023	75%	1 to 2 guys, 40 Hours for 1 week, \$1,000 Temp Budget not used due to covid in 2021 & 22. Not able to repeat multiple times due to budget
Manual Pull with volunteers	High	scheduled	Spring, Summer	May, June Aug 2023	25%	Not conducted due to covid in 2020-21. 1 to 3 x per year school groups or RFOV Youth Corps will manually pull one section of the park. 2 to 3 hours only. Ascendigo vocational 6 weeks, two people, one day a week. 2022
Steam Machine burn down	High	experimental	Spring & Summe	April, May, June Aug 2023	0%	Potential technique that could be tried this coming year because we own a machine. Lacked manpower in 2021
Avenger Spot Spray Burn Down natural, non-chemical herbicide	High	In Progress	Spring, Summer	June, July, August 2023	50%	# of Gallons of avenger 4 (one case) (6 to 1 ration with water) Need to re-apply every 2-3 weeks. Lacked the trained staff to stay with this schedule.
B List Colorado Noxious Weed List Canadian & Scotch Thistles	High	as needed	mid summer	2023 spring	40%	Cut down all thistles that were flowering and before the went seed. Removed all debris. 1 employee or two temp workers 1 day.
B List Colorado Noxious Weed Mitigation Required Common Raawort	High	proposed	Spring, Summer	2023	60%	Hand pulled common ragwort when noticed. 1 employee in travels. Mandated to eradicate by 2022. Spot Spray of Chemical herbicide recommended
B List Colorado Noxious Weed Hoary Cress (White Top) mitigation	High	proposed	Spring, Summer	2023	0%	White top will need to be spot sprayed before it gets out of control. If we catch it while it is small then eradication will be less spray then if we wait. Did not conduct in 2021-22
Seek consultation with Natural Land Manager Specialists for next step	Low	not scheduled	March / April	2023	0%	This step will be necessary when the previous methods of weed mitigation are not successful.
Spot spray Use of chemical based Herbicide	High A and B list weeds	proposed	Spring, Summer	2023	0%	This step will be necessary when the previous methods of weed mitigation have not been successful on A & B

At the North Face Bike Park we are proposing a spot spray application to attempt to eradicate weeds on the Colorado Noxious Weed B list, *Common Tansy*, *Hoary Cress* (White Top) and *Canada Thistle*. *Common tansy* is a List B that requires elimination by 2022. We have been weed whacking and hand pulling the *Canada Thistle* and are keeping it from expanding, but mowing is not effective on the *Tansy* and *Hoary Cress* and may cause the plant to develop perennial characteristics. Both weeds have not responded favorably to our existing techniques for weed mitigation and have established themselves in specific areas adjacent to the riding surfaces in the bike park. The plan for 2023 is to burn the park in the spring and to continue with weed whacking growth and re-establishing the pea gravel on top of the weed barrier on the non-rideable surfaces within the park. The Parks Department is requesting the use of a spot application on the B-list noxious weed *Common Tansy*, *Hoary Cress* and *Canada Thistle* of the herbicide *Escort XP* with a non-ionic surfactant and *Eco-Might* and to apply these when the plant is bolting to the bud growth stage.

2023

Baseball Infields

Weed Control Method	Priority	Status	Season	Date	% effective	Notes
Infield drag with the 5&1 twice a month	Normal	scheduled	all season	2023	50%	Drag with the grader, pulling all annuals. Manually remove all weeds and throw away.
Hand pull and dig bindweed and grass	Normal	Completed	Late fall	2023	10%	No temp workiers in 2022. Staff dug up root systems of the bindweed and grass. Weeds returned rapidly.
Spot Burn with handheld weed burners	Normal	scheduled	spring/summer	2023	20%	Pre-season when plants are flowering prior to going to seed. Continue this in 2022.
Carpet weed steam the entire infield to kill all seeds	low	not scheduled	early spring	2023	0%	This will be experimental with steam machine if the machine is availabe and staff is available. Not available in 22
Manual Weed Pull with students as a public lands stewardship work project	Normal	on schedule	mid summer	2023	10%	Roaring Fork Outdoor Volunteers organize Summer Advantage Students from Crystal River Elementary One Day only and Bill Hanks only in 2022. Try to repeat
Seek consultation with Natural Land Manager Specialists for next step	High	scheduled	Spring	2023	0%	Contracted with Alpha Naturals for two applications of his proprietary orgainc weed spray for the bind weed. Did not seem to make a difference.
Top dress with new infield material	High	Scheduled	Spring	2023		After the blanket spray of mag chloride, a grader drag and then a top dress will be tried in 2023.
Biological Control	low	not scheduled	Spring	2023		The bindweed gall mite, Aceria mahlerbae, has proven to be effective in reducing field bindweed infestations. This is an option for large infestations. Available from Colorado Department of Agriculture, 970-464-7916.
Spot spray Use of chemical based Herbicide	High	needs BOT approval	Spring/Fall	2023	0%	This step will be necessary when the previous methods of weed mitigation are not successful..

The bind weed is taking over and needs to be dealt with. Covid caused a re-growth of the weed due to lack of use of the field and lack of machinge dragging. The root system grows horizontally about 6-10 inches below the surface sending off shoots of new plants. Just hand picking the foliage only makes the weed stronger and bigger. I want to see if digging the root systems will slow down the spread. We tried Alpha Naturals in 2022. Biological control would not work here due to the distrubances with dragging and play. If the bind weed is unaffected from these new techniques, Prior to summer use a Mag Chloride saturation of exisiting infield dirt then a top dress of new material. This technique could

2023

TOC Gateway RV Park

Weed Control Method	Priority	Status	Season	Date	% effective	Notes
Camp hosts to spray with avenger and burn as they see fit	Normal	done as needed	camping season	2023	<div><div></div></div> 25%	Camp hosts are supplied with avenger and a weed burner to take care of small spots as they come up. Helped with the sharp burs from the Puncturevine infestation c-List
Steam Technique	Normal	scheduled	early spring	2023	<div><div></div></div> 25%	Tried the weed steamer on the ground cover in the camping spots when they first flower. Needs multiple treatments
Hand extraction	Normal	scheduled	Spring	2023	<div><div></div></div> 50%	Unable to use temp workers in 2022. Staff hand pull plus one Friday with seasonal parks crew. Seem to be getting ahead of the Scotch and Plumeless Thistle
Spot Burn gravel camping and parking sites	High	experimental	Spring, April	2023	<div><div></div></div> 0%	Conduct in springtime prior to opening.
Cut down flowering thistle	High	Scheduled	Spring, Summer	As needed 2023	<div><div></div></div> 75%	Cut down and removed all thistles that had flowered but not seeded yet. Working on Scotch Thistle and Canadian Thistle. Are diminishing with this technique but not eradicated.
B List Colorado Noxious Weed - Scotch Thistles & Canadian Thistles	High	Scheduled	Spring & Summer	2023	<div><div></div></div> 50%	Thistles are a tri annual plant propagating by seed. If we can keep the thistles from going to seed then we will slow down the infestation. It takes many years but works as long as we keep on top of it. After a thistle flowers it will usually not put out another flower so mitigation has to be done after the thistle has flowered.
Biological	Normal	Did not have biological controls available	Spring & Fall	2023	<div><div></div></div>	There are two biological controls available for control of Puncturevine; Microlarinus lareynii, a seed feeding weevil, and Microlarinus lypriformis, a stem boring weevil. Palisade Insectary of the Colorado Department of Agriculture at 970-464-7916
Seek consultation with Natural Land Manager Specialists for next step	Low	Need to schedule	camping season	2023	<div><div></div></div> 0%	This step will be necessary when the previous methods of weed mitigation are not successful.
Spot spray Use of chemical based Herbicide	Normal	needs BOT approval	Spring, before park opens	2022	<div><div></div></div> 0%	This step will be necessary when the previous methods of weed mitigation are not successful.

2023

TOC Promenade Park

Weed Control Method	Priority	Status	Season	Date	% effective	Notes
Burning	Low	Not Started	Spring	2023	0%	Due to proximity to residential properties this would not be prudent for this park.
Manual Extraction	Low	Scheduled	Spring/ Summmer	2023	50%	In progress :crusher fine areas and the pathways. Ascendigo Vocational program, UPS workers, staff
Fertilization	Low	Not Started	Spring	2023	0%	
Over Seed	Low	Not Started	Spring & Fall	2023	0%	
Applying soil conditioners or organics	Low	Not Started	Spring	2023	0%	
Mowing regimen	High	scheduled	Seasonal	2023	80%	Height of Mowers, 1 time every 2 to 3 weeks. Weed whack growth where mowers can't reach.
Watering Regimen	High	scheduled	Seasonal	2023	50%	Good growth of natives but also of weeds.
Avenger Spot Spray Burn Down natural, non-chemical herbicide	High	scheduled	Spring/ Summer	2023	50%	# of Gallons of avenger 4 (6 to 1 ration with water) used on pathways and picnic pavilion only. Requires re-application and not effective on bind weeds without large leaf surface areas.
Steam Machine Weed Burn	High	scheduled	Spring/ Summer	2023	50%	Purchase of steam machine in 2020 allowed experimentation on crusher fine paths and picnic shade areas for the summer of 2021. Effective with avenger and but needed additional treatment. Once a month for bind weed
Seek consultation with Natural Land Manager Specialists for next step	Low	Not Started	Spring	2023	0%	This step will be necessary when the previous methods of weed mitigation are not successful.
Spot spray Use of chemical based Herbicide	Low	Not Started	Spring	2023	0%	This step will be necessary when the previous methods of weed mitigation are not successful.

2023

TOC Nuche Park

Weed Control Method	Priority	Status	Season	Date	% effective	Notes
Burning	Low	Not Started	Spring	2023	0%	Burnin of the ditches takes place her in the Spring and could be expanded to the open space areas of the park as an additional weed management technique.
Manual Extraction	Low	Not Started	Spring	2023	60%	Partnered with Rotary Club, RFOV school groups to manually extract B list noxious weeds present. Will continue in 2023. Park sstaff spent 2 days on site also in 2022.
Goat pasture	Medium	pursue this technique	Spring & Summer	2023	0%	Cost could be prohibitive, unless we own our own goats or trade out for camping at Rodeo grounds
Fertilization	Low	Not Started	Spring	2023	0%	
Over Seed	High	pursue this technique	Spring & Fall	2023	0%	When the noxious weeds are manually extracted the bare and disturbed ground needs to be reseeded.
Applying soil conditioners or organics	Low	Not Started	Spring	2023	0%	
Mowing regimen	Low	Not Started	Seasonal	2023	0%	Height of Mowers, x times per week. Weed wacking to scalp weeds prior to seeding.
Steam Machine burn down	Low	experimental	Spring & Summer	2023	0%	Potential technique that could be used now that we own a machine. Lacking staff and access to machine to conduct on aregular basis.
Watering Regimen	High	scheduled April - Oct Ditch season	Seasonal	2023	50%	RVR controlled irrigation system was not functioning in early 2020, planted trees have died, with irrigation fixed we planted trees and could expand this with native cover crops in the future. RVR mows 1 to 2 x per season
Avenger Spot Spray Burn Down natural, non-chemical herbicide	Low	not started	Spring/ Summer	2023	0%	# of Gallons of avenger (6 to 1 ration with water) Have not tried this in this park, but the potential for this to work is high due to small infestations of weeds.
Seek consultation with Natural Land Manager Specialists for next step	High	Need to schedule	Spring	2023	0%	Fenced in parking lot now functioning. Assessment of what type of weed problem we have and how to control them can take place in 2022.
Spot spray Use of chemical based Herbicide	Low	Not Started	Spring	2023	0%	This step will be necessary when the previous methods of weed mitigation are not successful.



Town of Carbondale Integrated Weed Management Plan Herbicide Usage 2023

The purpose of the *Integrated Weed Management Plan* is to provide guidelines for effective land management to ensure healthy soils which are resistant to opportunistic non-native plants. This plan outlines and prioritizes protocols that furthers soil preservation, environmental health, and public health through a “prevention, early detection, early treatment” philosophy. The management techniques prioritized in this plan include prevention, cultural, mechanical, biological strategies and as a last resort, chemicals. Anytime chemicals are recommended for weed management the Weed Advisory Board (Board of Town Trustees) will have reviewed the “Logs and Archives” of integral (chemical free) strategies pursued by staff, including the reports from Natural Land Mangers to confirm that integral management techniques have been exhausted. The Parks & Recreation Department Weed Management Plan spreadsheets, detail the methods, techniques, timing and effectiveness of the methods of weed management presently being used. These document also provide data on species on non-desirable plant not responding to the non-chemical treatment efforts. To see the *Integrated Weed Management Plan* and the park specific spreadsheets go to the Town of Carbondale website www.carbondalegov.org under Parks & Rec.

Employee Name: _____

Department Contact Information: _____

Town Park/Facility Location of Herbicide Usage:

Specific Treated Area Inside Park/Facility:

Date(s) of Herbicide Application: _____

Time(s) of Herbicide Usage: _____

Application Method: _____

Product Used (Active Ingredient(s)): _____

Targeted Weed(s): _____

Date/Time of Safe Public Access to Park/Facility:

Carbondale Nature Park
Noxious Weed Assessment
September 2020 September 2022

- Legend
- Common Burdock
 - Canada Thistle
 - Hounds Tongue
 - Yellow Toadflax

2022

2022

Rust Fungus
Treatment Zone

07/10/2019

© All Pictometry

