

# CITY OF MADISON ENGINEERING DIVISION 2021 ANNUAL INTEGRATED PEST MANAGEMENT REPORT

## SECTION 1 – City Facilities Maintained by Engineering

### Summary of Non-Chemical Pest Control Management

The Engineering Division contracts Plunkett’s Pest Control for pest control in facilities maintained by Engineering. These include Madison Municipal Building, Police Stations and Police outbuildings, Fire Stations and Engineering facilities and outbuildings. Pests controlled include flying insects, crawling insects and rodents.

Plunkett’s Pest Control uses exclusion and sanitation as first approaches to pest control. If these approaches are ineffective they must seek permission from a contact at each building to use pesticides. Plunkett’s uses snap traps for rodent control inside buildings. They remove spider webs and stinging insects with a de-webber dusting tool and place insect zone monitors around buildings. They plug smaller holes and cracks as possible. After a service visit, Plunkett’s may prepare a “Client Action” report with recommendations for fixes that may help with pest control—these reports include photos of areas of concern. Examples of solutions that may be suggested include door sweeps needing repair, sanitation concerns, cracks and holes that need to be addressed, or other possible methods of exclusion.

There were no pesticide applications at the following Engineering maintained facilities in 2021:

Building	Location
Fire Administration Bldg	325 W Johnson Street
Fire Motor Equipment	1234 E Washington Avenue
Police Storage (L-shaped)	200 N First Street
Fire Station #13	6350 Town Center Dr
Fleet Services Building	200 N First St
Police Storage Shed #991702	200 N First Street
Madison Police South	825 Hughes Place
City of Madison Property Shed	#50013
Madison Water Utility	#2134001
Streets East Facility	4602 Sycamore Ave
Streets East (Sycamore)	#2054018

### Summary of Chemicals and Quantities Used

Pesticide applications at facilities maintained by the Engineering Division are summarized below.

Location	Date	Pesticide	Quantity	EPA #	Active Ingredient	% by Weight	Mice Caught
Police Midtown #9213561	4/9	Demand G	2 lb	100-1240	Lambda-cyhalothrin	0.045	
	5/6	Demand G	2.5 lb	100-1240	Lambda-cyhalothrin	0.045	
	7/9	Demand G	2 lb	100-1240	Lambda-cyhalothrin	0.045	
	9/17	Demand CS	1 gal	100-1066	Lambda-cyhalothrin	9.70	1

Police North #9213561	5/4	Demand G	2 lb	100-1240	Lambda-cyhalothrin	0.045	
	8/12	Suspend Polyzone	1.5 gal	432-1514	Deltamethrin	0.42	
Police East #370701	5/17	Termidor SC	1.5 gal	7969-210	Fipronil	9.10	
	8/23	Termidor SC	1.5 gal	7969-210	Fipronil	9.10	
Police West #370702	5/3	Termidor SC	2.5 gal	7969-210	Fipronil	9.10	
	8/10	Suspend Polyzone	3 gal	432-1514	Deltamethrin	0.42	2
Madison Vehicle Impound #2029684	6/28	CB80	1 oz	279-3393	Pyrethrins	0.5	7
	6/28	ExciteR	4 gal	89459-41	Pyrethrins	6	
					Piperonyl butoxide	60	
	6/28	Suspend Polyzone	4 gal	432-1514	Deltamethrin	0.42	8
Madison Police Training #2060124	5/24	Alpine WSG	4 oz	499-561	Dinotefuran	40	
	6/16	Alpine WSG	4 oz	499-561	Dinotefuran	40	
	7/2	Advion WDG	6 oz	100-1501	Indoxacarb	20	
	7/26	ExciteR	16 oz	89459-41	Pyrethrins	6	
	7/26	Suspend Polyzone	16 oz	432-1514	Deltamethrin	0.42	
	9/27	Advion WDG	2 oz	100-1501	Indoxacarb	20	
	9/30	Demand CS	0.5 gal	100-1066	Lambda-cyhalothrin	9.70	
Madison Municipal Bldg (MMB) #2011099	5/7	Demand CS	4 gal	100-1066	Lambda-cyhalothrin	9.70	
	7/6	Demand CS	3 gal	100-1066	Lambda-cyhalothrin	9.70	
	9/15	Demand CS	3 gal	100-1066	Lambda-cyhalothrin	9.70	
Fairchild Bldg #2008468	6/1	Demand CS	0.5 gal	100-1066	Lambda-cyhalothrin	9.70	1
	8/2	Demand CS	0.5 gal	100-1066	Lambda-cyhalothrin	9.70	
DPW Olin #2002550	5/14	Suspend Polyzone	2 gal	432-1514	Deltamethrin	0.42	9
	7/9	Suspend Polyzone	2 gal	432-1514	Deltamethrin	0.42	
	7/9	Temprid FX	1 gal	432-1544	Imidacloprid	21	
					Cyclopropanecarboxylate	10.5	
Engineering Services Bldg (Emil St) #2054017	8/12	Suspend Polyzone	1 oz	432-1514	Deltamethrin	0.42	27
	8/12	Alpine WSG	1 oz	499-561	Dinotefuran	40	
Fire Station #7 McKenna #2014538	5/3	Termidor SC	1.5 gal	7969-210	Fipronil	9.10	
	7/6	Demand CS	1.5 gal	100-1066	Lambda-cyhalothrin	9.70	
	10/16	Tempo 1% Dust	10 oz	432-1337	Cyfluthrin, cyano methyl 3-2, 2-dimethylcyclopropane-carboxylate	0.01	

	10/16	PT Wasp Freeze	6 oz	499-362	d-trans Allethrin	0.129	
					Phenothrin	0.12	
Fire Station #5 Cottage Grove #2015472	5/21	Demand CS	1.5 gal	100-1066	Lambda-cyhalothrin	9.70	
	7/2	Termidor SC	1 gal	7969-210	Fipronil	9.10	
	8/2	Suspend Polyzone	1 gal	432-1514	Deltamethrin	0.42	
Fire Station #3 Williamson St #2015469	5/10	Demand CS	1.5 gal	100-1066	Lambda-cyhalothrin	9.70	
	7/9	Suspend Polyzone	1 gal	432-1514	Deltamethrin	0.42	
	8/3	Suspend Polyzone	1 gal	432-1514	Deltamethrin	0.42	
Fire Station #2 Grand Canyon #2015467	5/5	Termidor SC	1.5 gal	7969-210	Fipronil	9.10	
	7/6	Demand CS	1.5 gal	100-1066	Lambda-cyhalothrin	9.70	
Fire Station #1 Dayton St #2014495	8/4	Suspend Polyzone	0.5 gal	432-1514	Deltamethrin	0.42	6
	8/4	Demand CS	1 gal	100-1066	Lambda-cyhalothrin	9.70	
Fire Station #6 Badger Rd	5/14	Taurus SC	1 gal	53883-279	Fipronil	9.1	5
	6/15	Suspend Polyzone	2 gal	432-1514	Deltamethrin	0.42	
	7/20	Suspend Polyzone	1.5 gal	432-1514	Deltamethrin	0.42	
	8/17	Suspend Polyzone	2 gal	432-1514	Deltamethrin	0.42	
Fire Station #4 Monroe St #2015470	5/4	Demand CS	1.5 gal	100-1066	Lambda-cyhalothrin	9.70	
	7/6	Demand CS	1 gal	100-1066	Lambda-cyhalothrin	9.70	
	8/2	Suspend Polyzone	1 gal	432-1514	Deltamethrin	0.42	
Fire Station #9 Midvale Blvd #2015475	5/3	Termidor SC	1 gal	7969-210	Fipronil	9.10	1
	7/2	Termidor SC	1 gal	7969-210	Fipronil	9.10	
Fire Station #8 Lien Rd #2015474	5/7	Demand CS	1.5 gal	100-1066	Lambda-cyhalothrin	9.70	
	8/4	Suspend Polyzone	1 gal	432-1514	Deltamethrin	0.42	
Fire Station #10 Troy Dr #2015476	5/4	Termidor SC	1 gal	7969-210	Fipronil	9.10	
	7/1	Demand CS	2 gal	100-1066	Lambda-cyhalothrin	9.70	
Fire Station #11 Morgan Way #2015477	8/3	PT Wasp Freeze	8 oz	499-362	d-trans Allethrin	0.129	23
					Phenothrin	0.12	
	8/6	ExciteR	0.5 gal	89459-41	Pyrethrins	6	
	8/6	Suspend Polyzone	0.5 gal	432-1514	Deltamethrin	0.42	

	9/5	PT Wasp Freeze	4 oz	499-362	d-trans Allethrin	0.129	
					Phenothrin	0.12	
Fire Station #12 South Point Rd #2044394	5/10	Taurus SC	2 gal	53883-279	Fipronil	9.1	
	7/20	Taurus SC	2 gal	53883-279	Fipronil	9.1	

## Estimated Size of Total Area Managed

The Engineering Division is responsible for Integrated Pest Management services at 34 buildings totaling over 800,000 square feet. These facilities include office, vehicle storage and maintenance facilities as well as Police and Fire Stations. The goal for the Engineering Division Integrated Pest Management is to control the insect and rodent population at the buildings identified above. Engineering is responsible for integrated pest management at the following facilities:

Building	Location	SF
Engineering Services Bldg	1600 Emil Street	78,242
Fairchild Bldg	120 S Fairchild Street	52,329
Fire Administration Bldg	314 W Dayton Street	23,867
Fire Motor Equipment	1234 E Washington Avenue	8,236
Fire Station #01	316 W Dayton Street	37,841
Fire Station #02	421 Grand Canyon Drive	7,609
Fire Station #03	1217 Williamson Street	8,372
Fire Station #04	1437 Monroe Street	10,328
Fire Station #05	4418 Cottage Grove Road	8,052
Fire Station #06	825 W Badger Road	11,874
Fire Station #07	1810 McKenna Boulevard	12,539
Fire Station #08	3945 Lien Road	10,054
Fire Station #09	201 N Midvale Boulevard	5,564
Fire Station #10	1517 Troy Drive	5,959
Fire Station #11	4011 Morgan Way	11,204
Fire Station #12	400 South Point Road	12,500
Fire Station 13	6350 Town Center Dr	12,725
Fire Station 14	3201 Dairy Drive	21,758
Fleet Service Bldg	4151 Nakoosa Tr	103,000
Madison Municipal Bldg	215 Martin Luther King Jr Boulevard	74,154
Police East District Station	809 S Thompson Drive	14,125
Police South District Station	825 Hughes Place	10,387
Police North District Station	2033 Londonderry Drive	7,901
Police West District Station	1710 McKenna Boulevard	12,249
Police Midtown District Station	4020 Mineral Point Road	31,071
Police Training Facility	5702 Femrite Road	33,000
Police Vehicle Impound Storage	29 Marsh Court	9,600
Police Storage (heated) #2077484	200 N First Street	1,600
Police Storage (L-shaped)	200 N First Street	3,741
Police Storage Shed #991702	200 N First Street	364
Streets East	4602 Sycamore Avenue	138,000
Streets South Point Facility	402 South Point Rd	25,452
Streets Waste Transfer Station	121 E Olin Avenue	26,000
Street West	1501 W Badger Road	76,000
<b>Total Square Footage</b>		<b>906,697</b>

## **SECTION 2 - City Engineering Stormwater Right-of-Way Maintenance**

### **Summary of Non-Chemical Pest Control Management**

The Engineering Division is responsible for the design, construction, operation, and maintenance of the City's stormwater conveyance system. This conveyance system includes retention, detention and infiltration ponds, greenways and non-active stormwater management land or "natural areas." The vegetation in the stormwater management system is designed to slow down stormwater and provide some level of treatment by helping to remove sediment and nutrients. The Engineering Division also does some vegetation maintenance on select bike paths and non-stormwater land owned or leased by Engineering.

Encouraging the growth of native plant species is the primary vegetation management goal for stormwater land. Native plantings are beneficial in numerous ways. Besides providing habitat in urban areas, native plantings do not require frequent mowing—this decreases both maintenance costs and grate clogging, which is a serious hindrance to stormwater system function. Native plants tend to have deep roots that open up the soil and allow for faster infiltration. They also slow runoff, store nutrients, fix carbon, and provide stability to steep slopes. Native plants provide habitat to native wildlife including pollinators. The biggest threat to native plant communities are invasive plants. The effective maintenance of native plant communities involves the monitoring and control of invasive plants.

Monitoring is the most important management tool used on Engineering land. Engineering spent approximately 2,400 hours monitoring sites in 2021, down from 2,750 hours in 2020, and 2,000 hours in 2019. The decrease in hours is likely due to having had two redeployed employees as extra field staff in 2020. Monitoring involves walking sites and noting desirable species, invasive species, sources of invasive species, disturbed areas, pollution or litter, erosion and any other issues that can disrupt the ecological functioning of a site. Without monitoring there is no way to know which sites require and will benefit from additional maintenance.

In 2021 Engineering decided to again hire two Greenway Restoration Interns to assist the Greenway Vegetation Coordinator with vegetation maintenance on stormwater land. The interns both had academic backgrounds in ecological restoration and several seasons of prairie and wetland maintenance experience that they applied to vegetation maintenance and monitoring on stormwater land. A former intern from 2019, Emily Jorgensen, was again asked to stay on with Engineering for a third field season. Emily instructed and worked alongside interns in the field.

An Operation Fresh Start (OFS) youth crew was also engaged in vegetation maintenance. Crew sizes averaged three participants and one supervisor. OFS crews focus on manual invasive species removal, brush cutting, trash picking and seed collecting and planting. City Engineering was also fortunate to participate in the first year of a new program at OFS in 2021, the Conservation Graduate Crew. Conservation Grad Crew participants are youth with a high school diploma and an interest in pursuing a career in restoration ecology. Participants work on more highly skilled restoration activities such as using a chainsaw for brush cutting and foliar herbicide applications. In 2021 there were two Conservation Grad Crew participants and one crew supervisor. The Conservation Grad Crew joined City Engineering for four weeks in October and will return again in 2022.

Mowing is the second most common management tool used on Engineering land. Most ponds and greenways were mowed at least once in 2021. Mowing sets back undesirable tree and shrub growth that can shade out herbaceous species and lead to erosion. Some woody plants are aggressively invasive (i.e. buckthorn, honeysuckle) and can greatly reduce plant diversity in an area. Mowing can also help control herbaceous invasive species if timed appropriately—usually when the plant is in bloom. Engineering may request selective spot mows in conjunction with timed mows to preserve desirable blooms and reduce unnecessary mowing. 2021 was very dry in early summer, allowing for mowing in areas that may typically be inaccessible.

Prescribed burns are a management tool used on sites with large populations of native species. Many of Wisconsin's native plants evolved with fire and may increase in population or vigor after a burn. Burning also opens up areas to allow for better monitoring and control of invasives. Most fire-adapted native species are "warm season" plants that green up later in the season. Many invasive plants are "cool season" and green up very early. After a well-timed spring burn, invasives can be easily identified as some of the first plants to green up and start growing. Fall burns remove vegetative litter creating excellent opportunities for seed to soil contact on sites that require supplemental seeding. Since many of our native plants require winter to stimulate germination, fall is the ideal time to spread native seed.

In 2021, Engineering contracted for burns on nine sites. Six of the burns took place in spring, and three took place in fall. Contracted sites burned in 2021 include:

**Spring**

- Saturn Drive Ponds
- Woodman's East Pond
- West Starkweather Creek shorelines (south of E Wash down to Milwaukee St)
- Wingra Creek shorelines (Quann Dog park section)
- High Point Confluence Pond
- Attic Angel Retention Pond and Greenway

**Fall**

- Northeast Green space
- Ashworth Drive Pond
- Woods Road Pond

In 2021 Engineering staff performed prescribed burns on twelve small rain gardens or bioretention ponds. In-house sites burned in 2021 include:

**Spring**

- Hancock Street Rain Basins
- Dayton & North Street Rain Garden
- Ivy Street Rain Garden
- Madison Library Rain Garden
- Zeier Road Bioretention Pond
- Tenney Park Rain Gardens (five units)
- Venus Way Outlot
- Rustic Drive Outlot
- Dixon Street Greenway

**Fall**

- Caldera Drive Biobasins
- Linda Vista Rain Garden
- Inner Drive Pollinator Planting

Other non-chemical management tools used to control pests on stormwater land include hand digging, cutting and pulling to eliminate invasives in small areas as well as overseeding with native species and planting with native plant plugs.

As Engineering shifts the focus of stormwater management to a stronger focus on native plants, wildlife habitat and resilient ecosystems, management approaches will necessarily change. From a dynamic mowing approach, to the incorporation of prescribed burns and targeted pesticide applications, all management techniques may need to be employed. Initially, areas that are a management focus will require more attention and have more issues with pests. With careful planning over the years, problem populations will be diminished leading to lower input in labor and less herbicide use.

Below is a break-down of how the Greenway Restoration interns and Emily Jorgensen spent their time on various management activities:

Method	Labor Hours Spent	Percent of Time Spent
MAN	489.98	32.76
HERB	363.63	24.31
MOW	225.24	15.06
SEED	153.5	10.26
PLANT	107	7.15
FIRE	95.75	6.40
SURV	39.50	2.64
BEES	12	0.80
GERM	9	0.60

**MAN** – Time spent doing manual removal of weeds and invasives including digging, pulling, and removing seed heads

**HERB** – Time spent applying herbicide, either foliar or cut stump

**MOW** – Time spent conducting spot mows

**SEED** – Time spent collecting, processing, mixing, or distributing seed

**PLANT** – Time spent planting and watering new plantings

**FIRE** – Time spent conducting prescribed burns

**SURV** – Time spent surveying sites where other maintenance activities didn't occur simultaneously

**BEES** – Time spent beekeeping or learning beekeeping

**GERM** – Time spent starting seeds

Below is a break-down of how the Operation Fresh Start Crew and the OFS Conservation Graduate Crew spent their time on various management activities:

Method	Labor Hours Spent	Percent of Time Spent
MAN	902	29.61
TRASH	627	20.58
SEED	605	19.86
BRUSH	451	14.81
SPEC	253	8.31
PLANT	132	4.33
HERB	22	0.72
MOW	22	0.72
SURV	22	0.72
BEES	10	0.33

**MAN** – Time spent doing manual removal of weeds and invasives including digging, pulling, and removing seed heads

**TRASH** – Time spent collecting trash

**SEED** – Time spent collecting, processing, mixing, or distributing seed

**BRUSH** – Time spent cutting brush, treating stumps or burning brush piles

**SPEC** – Time spent on special projects (i.e. building shelves, planting/mulching Dairy Dr homeless encampment)

**PLANT** – Time spent planting and watering new plantings

**HERB** – Time spent applying herbicide, either foliar or cut stump

**MOW** – Time spent conducting spot mows

**SURV** – Time spent surveying sites (Cons. Grad Crew only; surveying porcelain berry)

**BEES** – Time spent learning beekeeping or building hives

## Summary of Chemical Pest Control Management

The primary pesticides used on Engineering land are herbicides. Engineering employees or contractors that applied herbicides in 2021 included the Greenway Vegetation Coordinator, former intern and field worker Emily Jorgensen, the two Greenway Restoration interns, our regular OFS crew supervisor and OFS Conservation Grad Crew supervisor and participants. These employees are Wisconsin certified pesticide applicators in Category 6: Right-of-Way & Natural Areas. These employees may have applied herbicide via foliar spraying or cut-stump applications.

Non-certified OFS crew members applied herbicide only in the limited capacity of applications to cut woody stumps and under supervision of a certified applicator. As an enhanced safety measure in 2020, we provided our OFS crew and interns with herbicide applicator wands. These wands store the herbicide inside a PVC tube and allow for application of herbicide to cut stumps via a sponge on the end of the pipe. A spigot allows the flow of herbicide to be turned off when not in use. The sponge application, rather than a spray bottle, reduces overspray and allow applicators to keep hands further away from herbicide. These wands debuted in late 2020, but have proven to greatly reduce the amount of herbicide utilized by our OFS crew in 2021. For example, in 2020 OFS applied 6.5 times more active ingredient in brush cutting over 2021, despite spending a comparable number of days brush cutting!

Employees prioritize safe and proper storage, mixing, and application of herbicides. Foliar applications with a backpack sprayer are targeted directly onto the leaves of plants. Trees and shrubs are treated with a spot application directly to the cut stump. Wherever possible, employees chose herbicides that are specific to the plant family they are targeting to avoid affecting non-target species. To further avoid overspray, herbicide equipment is regularly maintained and completely broken down and cleaned at the end of the field season.

### Summary of Conditions that May Merit Herbicide Use

Engineering uses chemical pest control as a management tool when the species or site conditions merit it.

Areas that may merit the use of herbicides:

- Have significant populations of species that threaten human health (i.e. poison ivy, wild parsnip) in areas of heavy public use
- Primarily native and/or desirable vegetation
- Have good connectivity to other sites that are primarily native or desirable vegetation
- Have a good chance of being improved with minimal follow-up work, or where funds and resources have been specifically designated for follow-up improvements
- Where control or eradication is highly likely

Species that may merit chemical control include those having a growth method that resists, or even benefits from, hand digging or mowing; species that are perennial, clonal or spread through rhizomatous roots; species that emit chemicals into the soil that render it inhospitable for other plants, or species that are notoriously aggressive. Species that do not have these growth methods may still warrant chemical control if they meet site conditions listed above, if they pose health hazards to people or pets, or if they are species with a legal status requiring control. Species that Engineering typically controlled with herbicide in 2020 included:

- Poison ivy
- Teasel
- Crown vetch
- Canada thistle
- Wild parsnip
- Honeysuckle



- Bird's foot trefoil
- Buckthorn
- Purple loosestrife

- Multiflora rose
- Reed canary grass
- Tansy

Species that merit chemical control because of a legal status requiring action *or* because of an extremely limited distribution in our region include:

- **Japanese knotweed** (*Polygonum cuspidatum*)—listed as “Prohibited” under Wisconsin Administrative Code NR 40; listed as a noxious weed under City of Madison General Ordinance 23.29. The City of Madison has a grant from WDNR to pursue eradication of this species on wetlands or in areas adjacent to wetlands. This clone-forming herbaceous plant has an extremely aggressive growth habit and is especially prone to taking over shorelines and wetlands.
- **Porcelain berry** (*Ampelopsis brevipedunculata*)—listed as “Prohibited” under Wisconsin Administrative Code NR 40; relatively rare in Madison. WDNR has a grant to pursue the eradication of this species and has been pursuing eradication across Dane Co including on City of Madison land. It is a vine that grows rapidly, producing huge mats of vegetation that suppress the growth of all plants in the area.
- **Tree of Heaven** (*Ailanthus altissima*)—locally rare and chance of eradication is strong. This species grows rapidly producing weak wood (and hazard trees) and outcompetes other forest species.
- **Wild chervil** (*Anthriscus sylvestris*)—locally rare and chance of eradication is strong. This herbaceous species has an extremely high seed production rate. It escaped from gardens where it is planted as an herb.

City Engineering is in year three of a five year DNR grant awarded to the City of Madison to control Japanese knotweed in wetlands or wetland-adjacent land. The grant pays for many of the Japanese knotweed treatments done on City land.

Good Oak Ecological Services also applied herbicides as part of an ongoing contract to maintain reconstructed greenways or ponds. The contracted areas, planted within the last three years, are being maintained for high quality, diverse native vegetation. The vegetation maintenance contract began in 2020 and ended in 2021, but will be extended for targeted areas into 2022. Areas in this contract include:

- Tree Lane Greenway (Tree Ln to S High Pt Rd)
- Waite Cir (on Southwest Commuter Bike Path)
- Nautilus Dr Pond
- Jacobson-Furey Pond
- Portage Rd (& Hanson Rd) Greenway

Engineering allows certified volunteers, or experienced volunteers under the guidance of a certified applicator, to assist in invasive plant removal up to and including herbicide applications. These applications were very limited in 2021 and were mainly focused on treating cut stumps of invasive brush. Areas of focus for volunteers include the Southwest Commuter Bike Path and the Dixon St Greenway.

In 2021, Engineering allowed UW-Extension (UWEX) to continue a trial looking at the effectiveness of various herbicides on controlling crown vetch. This trial began in 2020. The land is owned by the Streets Division at 402 South Point Rd on the far west side of Madison for research. The site at 402 South Point Rd is an open field that is dominated by a monoculture of crown vetch.

Engineering also allows residents to adopt ash trees on Engineering property that meet pre-defined requirements. Tree Health Management, the contracted company, used the insecticide, Tree-Age, to prevent Emerald Ash Borer from killing the adopted ash trees.

## Summary of Chemicals and Quantities Used

The following summary of pesticides includes quantities of active ingredient used by all employees, volunteers and contractors on the City's Stormwater and Right-of-Way Management system and bike paths leased by the City and managed by Engineering Division.

### In-House Herbicide Use

Trade Name	EPA Reg. #	Active Ingredient	AI % by Weight	Total Active Ingredient Used (oz)	Use
Garlon 4	62719-527	Triclopyr	60.45	33.48	Broadleaf species and woody species
Milestone	62719-519	Aminopyralid	40.6	86.955	Legumes, thistles, knapweeds
Intensity	34704-976	Clethodim	26.4	177.07	Reed canary grass (Grass specific)
Aquaneat	228-365	Glyphosate	53.8	212.3	Non-selective for aquatic or upland uses
Polaris AC	228-480	Isopropylamine	53.1	46.935	Non-selective, main use for Japanese Knotweed

In 2021 the amount of Aquaneat used was greatly reduced due to an adjustment in the rate used for foliar applications to invasive grass, and also to switching to Polaris AC as the primary herbicide used to control Japanese knotweed.

Intensity use increased due to increased confidence in using this product after consulting with area restoration ecologists, as well as a larger-scale effort to control reed canary grass.

Polaris AC use increased due to an increase in the number of Japanese knotweed sites under in-house treatment; in 2020 a contractor performed many of the JKW treatments. Discussions with area restoration ecologists also led to advice to use a water conditioner to improve absorption.

### Contracted Herbicide Use (including OFS)

Trade Name	EPA Reg. #	Active Ingredient	AI % by Weight	Total Active Ingredient Used (oz)	Use
Aquaneat	228-365	Glyphosate	53.8	344.32	Woody species, herbaceous non-specific
RoundUp Pro	524-475	Glyphosate	41	588.8	Herbaceous species
Milestone	62719-519	Aminopyralid	40.6	387.16	Legumes, thistles
Method	432-1565	Aminocyclopyrachlor	25	128	Broadleaf invasives
Vastlan	62719-687	Triclopyr choline	54.72	2206.31	Broadleaf invasives & woody species
Polaris AC	228-480	Isopropylamine	53.1	734.05	Non-selective, main use for Japanese Knotweed
Garlon 4	62719-527	Triclopyr	60.45	22.545	Woody cut-stump

In 2021, total amount of herbicide used by contractors increased despite the expiration of a joint Parks-Engineering shoreline maintenance contract, and fact that no contractor was hired to pursue Japanese knotweed treatments. This increase in herbicide is due to the fact that the five sites under contract by Good Oak are in the earliest stages of restoration, most in their first or second year of growth. The early years of restoring land to native plant communities, particularly urban areas that were formerly dense sources of weed or overgrown woodlots, require far more inputs of time, energy, mowing, hand control of weeds, and herbicide applications.

### Volunteer Herbicide Use

Trade Name	EPA Reg. #	Active Ingredient	AI % by Weight	Total Active Ingredient Used (oz)	Use
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Milestone	62719-519	Aminopyralid	40.6	183.715	Legumes, thistles
Crossbow	62719-260	2, 4-D	34.4	1.207	Non-specific herbaceous, woody stumps
		Triclopyr BEE	16.5	0.579	
Garlon 4	62719-527	Triclopyr	60.45	19.344	Woody stumps
Intensity	34704-864	Clethodim	26.4	84.48	Invasive grasses
RoundUp Pro	524-475	Glyphosate	41	112.34	Herbaceous species

#### UW-Extension Herbicide Use

Trade Name	EPA Reg. #	Active Ingredient	AI % by Weight	Total Active Ingredient Used (oz)	Use
Whetstone	81927-82	Triisopropanolammonium salt of 2-pyridine carboxylic acid, 4-amino-3,6-dichloro	40.6	166.298	Broadleaf invasives & woody species

UW-Extension decreased volume of herbicide use in 2021 in their crown vetch control trial. Number of herbicides used decreased from ten to one.

### Estimated Size of Total Area Managed

The City's greenway system consists of more than 1,500 acres located throughout the City. The Engineering Division has maintenance responsibility for 971.29 acres of ponds and greenways, and approximately 500 acres of miscellaneous open space.

Engineering is responsible for mowing along 10.89 miles of bike paths. These bike paths include the Southwest Commuter Path from the Capital City Trail in Fitchburg to North Shore Drive; Cannonball Bike Path from Seminole to Fish Hatchery Road; Capital City Trail from Garrison Street to Stoughton Road (Hwy 51).

### Annual Summary of Complaints

Engineering received a few complaints about vegetation that was, or was perceived to be, overgrown. Complaints came from property owners abutting various greenways. Engineering's response to these complaints was spot mowing.

Engineering received a few complaints about mows and the timing of mows from the perspective of wildlife habitat preservation. Engineering's response to this depended on the site. If the site harbored high quality vegetation, the explanation was offered that these sites were already on a closely monitored mowing schedule (or no mowing schedule) to preserve and improve the plant diversity and habitat. If the site had invasives that could be controlled by mowing and Engineering was prioritizing timed mows for invasive species reduction, this was conveyed to concerned residents. If the site was low diversity or had many invasives that were unlikely to be controlled with mowing, the explanation was provided that these sites were not prioritized for mowing given limited resources. Engineering reminded mowing operators to avoid mowing milkweed plants whenever possible.

## SECTION 3 - Pest Management Requirements as set by City Policy

Our agency will maintain appropriate records of pest monitoring data, pest control actions attempted (both non-chemical and chemical), and results of pest control activity. We plan to submit our annual report no later than March 1st of the following year to the Pest Management Advisory Committee. This report will contain the following information:

When chemical pest control is necessary we will provide at a minimum, readily visible posting for a period of 24 hours prior to a pesticide application (when possible) and a minimum of 48 hours following the application. These time intervals may be extended based on health or safety concerns. For areas that receive pesticide applications on a regular basis, permanent signs will be posted.

Any complaints regarding health effects possibly related to pesticide applications will be reported to the Public Health Department at the earliest opportunity.

Any unusual amount of pesticide use due to unusual circumstances will be reported to the Director of Public Health or his/her designee at the earliest opportunity.

The IPM Coordinator and all supervisors having responsibility for the handling, application, disposal or storage of pesticides will be State certified under the Department of Agriculture, Trade and Consumer Protection's Pesticide Applicator Certification Program for Commercial Applicator - Government. All employees and volunteers applying pesticides will be State certified or working under the direct supervision of a certified applicator. All employees having any involvement with pesticide handling, application, disposal or storage will receive basic training in pesticide safety.

Our agency will store, apply, and dispose of pesticides and pesticide containers in accordance with label directions and any other State and Federal regulations.

Any contractor hired by our agency will be required to comply with the City Policy.

Our agency will not apply chemical pesticides to control dandelions and other broadleaf weeds on general parklands, median strips, street terraces, roadsides, general lawn areas, and athletic fields that are not reserved, nor are fees paid for their use. Lawns and garden areas (including medians) will be managed using non-toxic methods.

Our agency will not apply any pesticides that are currently under EPA Special Review.