

Introduction

This plan explains the Washington State Department of Transportation's (WSDOT) policy and practice for maintenance of roadside vegetation for Maintenance Area 2 within the agency's Olympic Region. This area manages vegetation within approximately 260 miles of state highway corridor, primarily in Kitsap and Mason Counties but with short sections in Pierce and Jefferson as well. The main corridor in the area is State Route (SR) 16 between Tacoma and Bremerton, but the area also maintains portions of other major limited access highways along SR 3 and US 101. There are many secondary routes in the area, mostly forested and rural in character, some are exceptionally high in scenic quality. A map of the area is included as **Figure 1** on the following page.

The primary roadside vegetation management objectives are in relation to traffic safety and preservation of the highway infrastructure. Additionally, as a landowner WSDOT is required to control all listed noxious weeds that occur on the right-of-way by state law (RCW 17.10 and 15.15.010). It is important that WSDOT not only meet the legal requirements for weed control, but also consider the needs and concerns of adjacent landowners in this area.

With these priority objectives in mind, WSDOT practices an annually cycling process called Integrated Vegetation Management (IVM). Plans like this are maintained and updated annually for all areas of the state, with an overall goal of establishing the most naturally self-sustaining roadsides vegetation possible. Adjustments are made year to year in each area plan based on monitoring the previous years' accomplishments and results, available budget, and prioritization of other highway maintenance activities.

This plan serves as the guidance document for vegetation maintenance in Olympic Region Area 2 for the 2022 growing season. It identifies priority locations and prescribes treatments for accomplishing safety and weed control objectives through a combination of seasonally timed control measures. Each year's actions are designed as part of a coordinated multi-year strategy to minimize roadside maintenance requirements wherever possible. This plan also accounts for specific locations where maintenance tactics are adjusted due to environmental issues, neighboring properties, local partnerships, or restoration work done through WSDOT design and construction.

The information contained in this plan document can be geographically referenced by crews in the field using iPads and the agency's Highway Activity Tracking System (HATS). Accomplishments and results are also tracked geographically through this system, providing site specific reference of historic actions and results. This development in WSDOT maintenance management will greatly improve the agency's success in properly executing planned actions, monitoring and documenting results of treatments, and in measuring cost and results over time.

WSDOT welcomes input from local public and private entities on its weed control and other vegetation management activities. Wherever appropriate the agency is looking for opportunities to plan and cooperate with others in managing the roadside. Please contact Duke Stryker, Jeff Smiley, or Ray Willard at the numbers listed below for questions or comments:

Duke Stryker

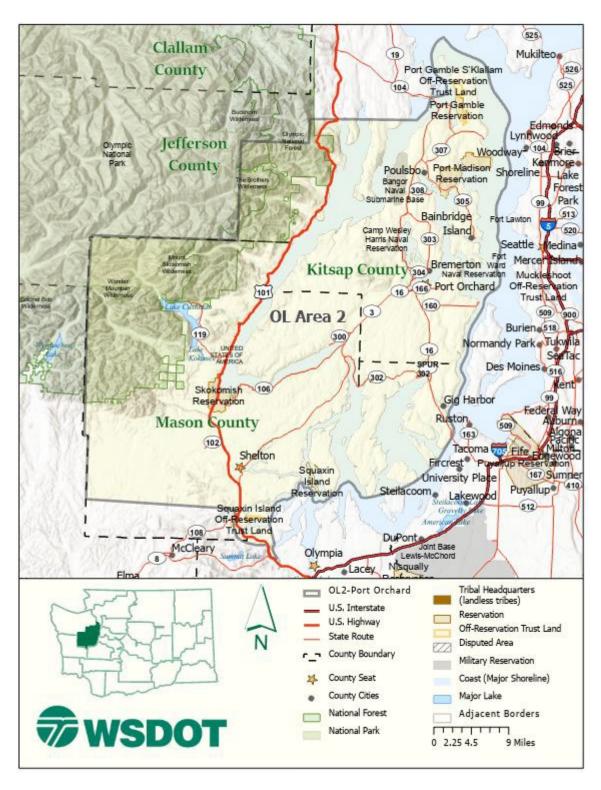
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Olympic Region, Area 2
Figure 1

Olympic Region Area 2 IVM Work Plan - 2022

The section outlines the overall approach and geographic distribution of roadside vegetation management requirements throughout the maintenance area in 2022. Information is organized in relation to four groups of activities defined in the WSDOT Maintenance Accountability Program (MAP) for the performance of roadside vegetation maintenance activities: Control of Vegetative Obstructions, Noxious Weed Control, and Nuisance Vegetation Control. Vegetation management in Drainage and Stormwater features is also included. Specific locations as noted in this work plan are also mapped in the Highway Activity Tracking System (HATS) for reference by maintenance in the field.

Control of Vegetative Obstructions – 3A4

The work of this group of maintenance activities relates to the safety and operational requirements of the highway. These items are considered first priority in terms of the overall roadside maintenance needs. Vegetation management objectives and work activities in this category fall into four groups — Pavement Edge Maintenance/Zone 1, One Pass Mowing/Zone 2, Tree and Brush Control/Zone 2 and 3, and Hazard Tree Removal/Zone 3

Pavement Edge Maintenance/Zone 1

Work Operation: 1615

HATS Form: Pesticide Application

HATS Map Layer: Reference lines – Roadside Features/Spray Zone 1 Reference

This work includes the application of herbicides to road shoulders where necessary throughout the area. The objective of these applications in designated locations is preserving of a band of gravel shoulder adjacent to the pavement that is free of vegetation. This treatment is necessary in the mapped locations described below to provide visibility and maintainability of roadside hardware and guideposts, allow room for vehicles to safely pull off on shoulders, facilitate stormwater drainage, and/or provide added visibility of wildlife approaching the highway.

Total Units of Planned Treatment

• Apply approximately **300 acres** of herbicide treatment to road shoulders throughout the area.

Locations of Planned Treatments

- Planned treatment sites are mapped in HATS layer **Zone 1 Treatments**.
- Locations where bare ground treatments will be applied to all gravel shoulder sections include:
 - o All shoulders except as noted below
- Locations where treatment will be applied using aquatically labelled herbicides:
 - o SR305 MP 0-6.8 (Bainbridge Island)
 - SR302 MP 15.8-15 (Purdy Spit)
 - SR166 MP 0-0.5 (Port Orchard Waterfront)
 - o US101 MP 294.6-334 (Hood Canal)
 - SR106 MP 1.6-26.4 (Hood Canal)
- Locations where no herbicide will be applied to shoulders:
 - o SR3 MP 1.5-3.5 (Shelton)
 - o US101 MP335-339 (Skokomish Tribe)
 - o SR106 MP0-1.6 (Skokomish Tribe)
 - Locations where neighbors have signed a "No Spray Agreement"
 - Locations where neighbors post their own "No Spray" signs will also be honored, any vegetation deficiencies within these sections will need to be directly discussed with the neighbor before using chemical treatment

Treatment Methods

- Herbicides are applied using a truck mounted power spray system
 calibrated to deliver a 3 or 5-ft. band of spray mixture on and adjacent to the
 paved shoulder. Roadside hardware installations are treated with a wider
 application where needed. Depending on the angle of shoulder drop, the
 resulting width of treatment may be wider than the calibrated width.
- Intersections and corners where tall grass is present are established with wider bare ground treatments to facilitate traffic visibility.
- Herbicide mixture applied in designated aquatic sensitive areas:
 - o Imazapyr @ 48 ozl/acre
 - Aquatic glyphosate @ 64 ozl/acre
 - o Agri-Dex @ 16 ozl/acre
- All other locations will be treated in mid to late spring with:

Blend R6

- o Roundup Pro Custom @ 32 oz/acre
- Lockdown SC @ 8 oz/ace
- o Milestone @ 7 oz/acre
- o In-Place 16 oz/acre

Safety Mowing/Zone 2 Work Operation: 1625

HATS Form: Mowing Zone 2

HATS Map Layer: Reference lines - Roadside Features/Mowing Zone 2 Reference

This work includes routine mechanical cutting of all vegetation on the road shoulder in a band width immediately adjacent to pavement. Mowing is necessary in areas where taller growing grasses or other vegetation are present and must be annually or semi-annually cut back for visibility and maintenance of roadside hardware and delineators, to maintenance traffic sight distance at curves and intersections, and for improved visibility of wildlife approaching the highway. Mowing height for these operations is typically 6 to 8 inches above the ground.

Total Units of Planned Treatment

• Approximately **500 acres** of road shoulders are mowed each year.

Locations of Planned Treatments

- SR3 MP 0 to 25
- SR106 MP 0 to 20
- SR119 MP 0 to 11
- SR102 MP 0 to 2.8
- US101 MP 294-350
- US101 MP 350 to 360 (including median shoulders)
- SR305 MP 0.0 to MP 10.3 plan to mow beyond one pass as needed for sight distance and remove woody species behind hardware.
- SR160 MP 1 to MP 7.1 Mow beyond one pass as needed for sight distance and remove woody species behind guardrail.
- SR16 MP 23 to 29, Mow beyond one pass as needed for sight distance and to increase sign visibility.
- SR3 MP 36.5 to 53, mow beyond one pass as needed for sight distance and to increase sign visibility.
- SR300 MP 0.0 to 3.0 Plan to mow beyond one pass up to twice annually as needed to increase and maintain sight distance/safety in this well vegetated and challenging section of roadway.
- Mow SR302 MP 13-15 for sight distance.
- Mow out scotch broom at the Bremerton Airport to the right-of-way fence to address security concerns. (AAH agreement)

Treatment Methods

- The goal in the area is to mow shoulders on all secondary routes once per year. In the coming year the area will be running two tractors with arm mowers in the same operation, this will address both shoulder mowing and tree and brush control in the same operation.
- Tractors with boom mounted mowing heads will be used to mow one to two
 5 ft. (up to 12 ft.) passes as needed.

Tree and Brush Control/Zone 2 and 3

Work Operations: 1622, 1625, 1626

HATS Forms: Tree/Brush Control – Spray, Trimming Mechanical, Trimming Manual,

and Mowing

HATS Map Layer: None

This includes safety and traffic operations related work in Zone 2, such as periodic side-trimming or removal of brush and trees or tree branches encroaching on or overhanging traffic operations, and impacting sign visibility. Also included is work in Zone 2 and 3 when selectively controlling emergent early succession tree species — to prevent them from growing into mature hazard trees within striking distance of the road.

Total Units of Planned Treatment

- Approximately **100 acres** will be trimmed with mechanical trimming throughout the area.
- Approximately 30 acres will be treated with herbicides in the fall.
- Less than **5 acres** will be trimmed with hand tools.

Locations of Planned Treatments

Westside/Shelton

- SR 101 MP 294.6 to 360 Plan to mow beyond one pass in areas that have or develop sight distance issues.
- SR 101 MP 314 to 317 Plan to conduct tree trimming in the MT Walker section where limbs are hanging over road starting to make a large canopy.
- SR 003 MP 1.0 to 25 Plan to continue our efforts to control scotch broom by selectively mowing in order to enhance the further re-establishment of native vegetation in the corridor.
- SR 106 MP 1.0 to 20 Plan to mow with sidearm beyond one pass in areas that have or develop sight distance issues.
- SR 106 MP 0.0 to 20 Plan to continue work trimming trees/brush for sight distance and encroachment issues.
- SR 003 MP 1.0 to 25 Plan to mow with sidearm beyond one pass in areas and intersections for sight distance.
- SR101, 106, 003, 119 Plan to use the bucket truck/man lift as it comes available to remove canopy shading roadway and clear sign sight distance for safety.

Eastside/Port Orchard

- SR16 at Wollochet MP 12.1 northeast quadrant, monitor and spot spray any regrowth of Cottonwoods removed for safety concerns.
- SR16 MP 7.2 to 29, plan to continue and finish removing trees and vegetation blocking sign sight distance as the man lift or bucket truck becomes available.
- SR3 MP 36 to 60, plan to begin removing trees and vegetation blocking sign sight distance if man lift or bucket truck is available.
- SR3 MP 37 to 52, cut and stump treat volunteer alders on shoulders and medians.
- SR16 MP 9 to 28, cut and stump treat volunteer alders on shoulders and medians.
- SR 307 MP 0.2 to MP 5.2 Plan to mow beyond one pass as needed for sight distance and remove woody species crowding back of hardware.

- SR 305 MP 0.0 to MP 10.3 plan to mow beyond one pass as needed for sight distance and remove woody species behind hardware.
- SR 160 MP 1 to MP 7.1 Mow beyond one pass as needed for sight distance and remove woody species behind hardware.
- SR 016 MP 7.2 to 29 Plan to continue and finish removing trees/vegetation blocking sign site distance as the man lift/bucket truck becomes available.
- SR 016 MP 9 to 29, mow beyond one pass as needed for sight distance and to increase sign visibility.
- SR 003 MP 36.5 to 53, mow beyond one pass as needed for sight distance and to increase sign visibility.
- SR 003 MP 36 to 60 Plan to begin removing trees/vegetation blocking sign site distance if man lift/bucket truck is available.
- SR 300 MP 0.0 to 3.0 Plan to mow beyond one pass up to twice annually as needed to increase and maintain site distance/safety in this well vegetated and challenging section of roadway.
- Mow out Scotch broom at the Bremerton Airport to the right-of-way fence to address security concerns.

Treatment Methods

- Mechanical trimming will be conducted using tandem arm mowers for shoulder mowing operations
- Some trimming will be accomplished with hand held saws and man lift equipment if necessary.
- Herbicides will be applied as a cut stump treatment to prevent regrowth from the roots.
- Small regrowth may treated for follow up at any time during the year.
- Herbicides will also be used to remove undesirable seedling tree species, and to trim encroaching branches and brush.
- Herbicides used:
 - o Capstone @ 128 ozl/acre
 - o Syl-tac @ 16 oz/acre

Hazard Tree Removal/Zone 3

Work Operation: 1628

HATS Forms: Hazard Tree Removal – Individual Tree Removal, Stand Removal, and

Cleanup Fallen Trees HATS Map Layer: None

Trees within and adjacent to the right of way are routinely monitored by maintenance staff for potential risk to the highway and/or neighboring structures. Individual and stands of mature trees identified as a potential imminent threat will be further evaluated and removed as soon as possible where needed. These activities also include clean up of wind blown limbs and debris if not part of a declared disaster.

Total Units of Planned Treatment

 Up to 400 mature hazard trees are removed throughout the area in a typical year.

Locations of Planned Treatments

• Annual evaluation and removal of identified hazard trees is a year-round practice throughout the area.

Treatment Methods

- Crews are continuously looking for trees that exhibit structural defects and could strike the road or neighboring property if they come down. Any hazard trees identified at any time are removed as soon as possible.
- If trees growing outside WSDOT right of way are hazards, crews work with the neighboring property owner to negotiate removal.

- Cut and drop in place wherever possible
- Stump treat with herbicides to prevent re-growth when needed
- No replanting will be conducted in conjunction with hazard tree removals.

Noxious Weed Control - 3A2

This group of activities includes control of non-native invasive weed species as defined by state law and individual county designation. This group of activities is second priority vegetation management work after safety related objectives have been addressed. While all Class A, B, and C noxious weed species as listed in RCW 17.10 are considered potential targets for WSDOT noxious weed control, the agency is currently not funded to achieve 100% control of all noxious weeds. Therefore, the top priorities for weed control are focused on locations and species that are more limited in distribution on the right of way – where there is a chance of successful eradication. To prioritize control of species that are already widespread in the area, WSDOT works with the local county noxious weed boards and coordinators, to annually review and determine which species and locations will be specifically targeted.

To prioritize, plan, and track noxious weed control, WSDOT maps and monitors weed infestations in three categories: **Priority**, **Planned Treatment**, and **General Reference**. **Priority** locations are where Class A noxious weed species exist on the right of way, and complete eradication is required by state law. **Planned Treatment** sites are locations where there are new, and/or limited distribution infestations of Class B and C noxious weed exist, and eradication is possible. **General Reference** sites are recorded for reference only to document the presence of noxious weed species which are more commonly occurring in the local area.

Noxious Weed Control

Work Operations: 1616, 1618, 1641, 1699

HATS Forms: Pesticide Application (for spray applications,) and three sub-forms under Noxious Weed Control General– Manual/Mechanical, Seed/Fertilize/Mulch, and Biological

HATS Map Layer: Reference Points – Roadside Features/Noxious Weed Control Priority, Noxious Weed Control Planned Treatment, and Noxious Weed Control General Reference

Operations are prescribed throughout the season to prevent the spread of any legally designated noxious weed species, and to reduce or eliminate populations wherever possible. Integrated treatment plans combine field monitoring and an integral mixture of seasonally timed control methods with proven effectiveness on designated species. Successful plans are consistently implemented over a series of years and annually adjusted as necessary based on field observations. Care must be taken in all cases to avoid damage to surrounding desirable/native vegetation.

<u>Priority Class A Noxious Weeds known to exist on WSDOT right of way in Area 2:</u>

 Giant Hogweed/Heracleum mantegazzianum is present in a number locations along US101 and SR106 near south Hood Canal. Total area of planned treatment is less than 1 acre.

Locations of Planned Treatments

• Locations will be recorded as features in HATS layer – <u>Noxious Weed Control Priority</u> for species location and distribution.

Treatment Methods

 All visible stocks will be injected near the ground with 5 cc Aquaneat in the early summer prior to flowering.

Target Noxious Weed Species on WSDOT Right of Way in Area 2

Common Name/Botanical Name	Treatment Notes
Bull thistle/Cirsium vulgare	Control small patches where visible in conjunction with seasonal patrols
Butterfly bush/Buddleia davidii	Control where visible, priority target sites mapped for early detection sites and treatment at flower stage.
Canada thistle/Cirsium arvense	Control small patches and individual plants where visible in conjunction with seasonal patrols
Common mullein/Verbascum thapsus	Control where visible in conjunction with seasonal patrols
Hawkweed sp./Hieracium sp.	Control where visible in conjunction with seasonal patrols
Knapweed sp./Centaurea sp.	Control where visible in conjunction with seasonal patrols throughout the area, priority target sites are mapped and treated in the spring
Knotweed sp./Polygonum sp.	Target sites mapped and treated after flower stage in late summer
Orange Hawkweed/ <i>Hieracium a.</i>	Target sites mapped and treated at early flower stage in summer
Poison hemlock/Conium maculatum	Control where visible in conjunction with seasonal patrols, priority target sites are mapped and treated in the spring
Purple loosestrife/Lythrum salicaria	Target sites mapped and treated at early flower stage in summer
Scotch broom/Cytisus scoparius	Controlled only when present in small isolated patches, in conjunction with seasonal weed patrols.
Sulfur cinquefoil/Potentilla recta	Target sites mapped and treated in the spring
Tansy ragwort/Senecio jacobaea	Occurs sporadically throughout the area. All visible plants are sprayed in the spring prior to bud/seed set, any remaining plants visible in flower are hand pulled with seed heads removed, bagged, and disposed of
Wild chervil/Anthriscus sylvestris	Target sites mapped and treated in early spring
Yellow flag iris/ <i>Iris pseudacorus</i>	Target sites mapped and treated in summer

Total Units of Planned Treatment

- Approximately **200 acres** will be treated with herbicides.
- Less than 30 acres will be controlled by mowing or hand pulling

Locations of Planned Treatments

- Timing and location to be determined from field reviews and new locations from spread of seedlings.
- Reference HATS layer Noxious Weed Control General includes
 Thurston and Pierce County data points for species location and distribution.
- Planned treatment targets include:

Westside/Shelton

- SR 101 MP 360 to 295 Plan to treat noxious weeds as needed.
- SR 101 and SR 106 Skokomish Indian Reservation we will continue to work with the Department of Natural Resources to address noxious weeds and will monitor for reappearance of knotweed and treat as needed.
- SR 101 MP 335.7 Planned follow up treatment to inject giant hogweed patch for eradication.
- SR 003 MP 1-25 Plan to treat for noxious weeds and follow up treatment of tansy ragwort.

- SR 106 MP 2-20 Plan to treat for noxious weeds as needed.
- SR 119 and SR 102 Plan to treat as necessary on these routes with the intent to control and possibly eradicate the small populations present.

Eastside/Port Orchard

- SR 305 MP 0.27 to 6.8 Plan to treat noxious weeds including poison hemlock and tansy ragwort Bainbridge Island.
- SR 003 SB MP 37.8 Plan a follow up treatment of knotweed patches.
- SR 302 MP 15 Plan to treat knotweed patch for eradication.
- SR 016 MP 27.8 to 28.1 Plan a follow-up treatment of knotweed regrowth in the median.
- SR 016 MP 28.5 WB Plan a follow up treatment of knotweed on right shoulder.
- SR 300 MP 2.3 to 3.0 Plan to treat knotweed along shoulder between roadway and Hood Canal.
- SR 003 MP 35 to 36.5 Plan a follow up treatment to knapweed on right shoulder.
- SR 003 MP 53.38 Plan a follow up treatment of knapweed patch.
- SR 166 MP 0.0 to 2.0 Plan to work together with City of Port Orchard to address large patches of knotweed and butterfly bush in corridor and along waterway behind hardware.

Treatment Methods and Timing

Seasonal target species and herbicide prescriptions include:

Early Season Targets

 Tansy ragwort, poison hemlock, shiny geranium, rush skeletonweed, and Canada thistle

Late Season Targets

- o Knotweed, blackberries, butterfly bush, and scotch broom
- Prescriptions for herbicide treatments for noxious weed treatments in early season:
 - Garlon 4 Ultra 64 Ozl/Pre Acre
 - Metcel VMF 2 Ozl/Per Acre
 - o Spreader 90 330zl/Per Acre
 - o Blazon-Blue 66Ozl/Per Acre

Nuisance Vegetation Control – 3A3

Nuisance vegetation control takes place only in a select set of carefully prioritized locations throughout the state, primarily along wider rights of way and interchanges on limited access highways. These locations are delineated on maps in HATS as polygon outlines in Zone 3. Locations are prioritized to take place where there is heightened local interest in the visual appearance and condition of the roadside vegetation. Typical locations include: wider areas along limited access freeways in urban and suburban areas, freeway interchanges for local urban centers, environmentally sensitive areas, and areas where neighbors are willing to partner with WSDOT on management efforts. Because nuisance weed control activities are not related to safety or legal requirements, and are primarily undertaken to improve the visual appearance of the roadside, they are considered the last priority vegetation management needs.

For all areas designated to receive Nuisance Vegetation Control, multi-year treatment plans have been developed. The actions contained in these plans will be executed and tracked in relation to specific Zone 3 polygons for **Nuisance Vegetation Control Zone 3**, referenced on HATS maps and described below.

Nuisance Vegetation Control

Work Operations: 1611, 1612, 1641, 1699

HATS Forms: Pesticide Application (for all spray applications), and 3 sub-forms under Nuisance Veg. Control General – Manual/Mechanical, Biological, and Seed/Fertilize/Mulch

HATS Map Layer: Feature polygons – Roadside Features/Nuisance Vegetation Control Zone 3

Maintenance activities in each identified location are planned and tracked as multiyear treatment strategies, utilizing monitoring and the most effective combination of control methods – with a goal of establishing desirable vegetation that requires only minimal maintenance. Care must be taken in all cases to avoid damage to surrounding desirable/native vegetation. In some cases, soil enhancements may be used as well as seeding or planting of beneficial competition species. Successful plans are consistently implemented over a series of years and annually adjusted as necessary based on field observations.

Total Units of Planned Treatment

- Less than **5 acres** will be treated with herbicides for nuisance weed control as part of IVM treatments in prioritized Zone 3 areas.
- Up to 10 acres will be mowed for nuisance vegetation control in 2022.

Locations of Planned Treatments

- Areas designated for nuisance vegetation control and prescribed treatments will be mapped in 2022 on HATS layer – Roadside Features/Nuisance Vegetation Control Zone 3.
- Primary focus areas for Nuisance Vegetation Control in Zone 3 includes:
 - SR16 Wollochet (partnership with local business)
 - SR3 City of Bremerton
 - o US101 Steamboat, Wallace Kneeland, SR3/US101, Matlock
 - SR 3, US101 Interchange and 101 south of the interchange

Stormwater Facilities Maintenance - 2A4

Stormwater facilities maintenance operations that include vegetation management considerations are discussed in this section of the plan. This work is regulated by the agreement WSDOT has established under the statewide National Pollution Discharge Elimination System (NPDES) permit granted to the agency by the USEPA.

NPDES Maintenance

Work Operations: 1368, 1399

HATS Forms: Pesticide Application (for all spray applications)

HATS Map Layer: All biofiltration feature types listed under Stormwater Features Layer
There are several vegetation management activities necessary to maintain function and operation of certain constructed stormwater management facilities such as vegetated filter strips and swales along the edge of pavement and throughout the roadside, and stormwater retention/detention ponds in the more urbanized areas. Each of these features includes a manual which details the requirements in relation to control of vegetation and sediment buildup over time. Any vegetation control work required within designed treatment features is charged to the stormwater program.

Locations of Planned Treatments

- All stormwater management facilities with biofiltration components are mapped within the Stormwater Features Layer in HATS.
- Vegetation management activities in stormwater management features are specified in the Owner's Manual for each constructed feature.
- Required work in stormwater features within the area for 2022 include:
 - None required

Treatment Methods and Timing

•	Weed control within stormwater management features is carried out in concert with other weed control activities throughout the area.