

CLALLAM COUNTY ROAD DEPARTMENT

Integrated Weed Management Plan

2019 Annual Report



Prepared by **Clallam County Noxious Weed Control Board**
Available online: http://www.clallam.net/Weed/RD_IWMP.html
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Contents

EXECUTIVE SUMMARY	4
PROJECT SUMMARY.....	5
MAPS: PROJECT AREAS AND TARGET ROADS	7
MAP 1. CLALLAM COUNTY ROADSIDE TREATMENT OVERVIEW 2019.....	7
MAP 2. BLYN – MILLER PENINSULA TREATMENT AREA.....	7
MAP 3. SEQUIM-DUNGENESS VALLEY TREATMENT AREA.....	7
MAP 4. PORT ANGELES TREATMENT AREA	7
MAP 5. JOYCE TREATMENT AREA	7
MAP 6. HOKO-CLALLAM BAY TREATMENT AREA.....	7
MAP 7. FORKS TREATMENT AREA.....	7
MAP 8. LAKE PLEASANT TREATMENT AREA.....	7
POST SEASON OBSERVATIONS:	16
RECOMMENDATIONS:.....	19
APPENDIX A: 2019 IWM TASK TABLE.....	20
APPENDIX B: WEED SPECIES TREATED ON COUNTY ROADSIDES AND ROCK SOURCES 2019	24
APPENDIX C: 2019 ROADSIDE TREATMENT ACTIVITIES:.....	27
APPENDIX D: COUNTY ROCK SOURCES/SOIL DISPOSAL SITE TREATMENT ACTIVITIES.....	34
APPENDIX E: HERBICIDE VOLUMES BY COUNTY ROADS AND ROCK SOURCES	37
APPENDIX F: PILOT POLLINATOR PLANTINGS.....	41
APPENDIX G: PROTOCOLS.....	42
APPENDIX H: WSU EXTENSION MASTER GARDENER ROADSIDE WEED MANAGEMENT MONITORING REPORT	43
APPENDIX I: PENINSULA DAILY NEWS LEGAL NOTICE OF HERBICIDE USE 2019	64
APPENDIX J: SAMPLE HERBICIDE NOTICE	65
APPENDIX K: SAMPLE HERBICIDE/MANUAL TREATMENT DATA FORM (SIDE 1)	66
APPENDIX K: SAMPLE HERBICIDE/MANUAL TREATMENT DATA FORM (SIDE 2)	67
APPENDIX L: SAMPLE OWNER WILL CONTROL.....	68
APPENDIX M: SAMPLE ADOPT-A-PATCH PERMIT	69
APPENDIX N: SAMPLE ADOPT-A-PATCH ACTIVITY REPORT	70
APPENDIX O: SAMPLE ADOPT-A-PATCH WAIVER	71

Executive summary

Program Goal:

This program ensures Clallam County complies with noxious weed laws of Washington State. The goal of this project is to shift roadside vegetation to natural, site appropriate plant communities. The goal is implemented by reducing existing weed populations and preventing the establishment of new ones across the county.

Program Overview:

The Clallam County Integrated Weed Management Plan (IWM) was created to help the County efficiently comply with its noxious weed control obligations. Integrated Weed Management is a coordinated decision making process that uses the most appropriate weed management methods and strategies, along with a monitoring and evaluation system, to achieve roadside maintenance goals and objectives in an environmentally and economically sound manner. The project identifies high priority targets to contain the worst infestations and prevent the spread of noxious weeds. High priority targets also include county rock sources and spoil disposal sites (Pits) that act as sources/vectors for weed dispersal.

2019 Project Overview:

This year we further integrated weed management into Road Department activities through communication and trainings. We began treatments earlier and expanded our control of weeds in pits. We combined weed surveys with manual control wherever possible. Our roadside treatments were observed to be effective and well received by the public. Where treatments have occurred, overall weed densities are declining. We monitored, maintained, and augmented pollinator-friendly native planting begun last year; we applied lessons learned, and began two new plantings this year.

2019 Project Accomplishments:

Program Development

- Completed or progressed with all program development and implementation tasks outlined in IWM Plan.
- Facilitated communication to further synch the IWM Plan with Road Department activities.
- Implemented Pit Plans and partnered with Sheriff Department Chain Gang for weed control in pits.
- Initiated a pilot project to observe the effect of native shrub cover on tree seedling recruitment in the right-of way.
- Expanded Pollinator Planting Program; 2 new plantings, monitored, maintained and augmented 2018 projects.

Roadsides:

- Controlled a total of **105 County Roads**; **43 roads** manual only, **33 roads** manual/herbicide, and **29 roads** herbicide only. **2 roads** were surveyed and determined not to need treatment in 2019.
- Controlled **231 miles** and examined **403 acres**.
- Herbicide was applied on **62 roads** with a total of **7.24 gallons** applied over **131 miles**
- Controlled **35 species**.
- More than **92 individuals** interacted with staff during treatments.

County Rock Sources/Spoil Disposal Sites (Pits):

- Treated **26 County Pits**.
- Controlled a total of **32 species** over a total of **226 acres**.
- Controlled an estimated **0.9 solid acres** manually.
- Controlled an estimated **26.5 solid acres** chemically.
- Herbicide was applied within **26 County Pits** with a total of **13.1 gallons** applied over **191 acres**.

Strategic Pollinator Plantings:

- Monitor, maintained, and augmented **two** projects (**Old Olympic Hwy/ODT** and **Black Diamond Rd**).
- Initiated two new planting projects; first phase of Deer Park Overpass project, Woodcock Rd. adjacent to the Master Gardener Demonstration Garden.
- Incorporated **22** native shrub and forb species with sequential bloom periods.
- Combined total of **5017 plants** over **two acres** of roadside.

Program Monitoring, Evaluation and Reporting

- RWMT assessed **45%** of roadside treatments and reported **74%** average efficacy; assessed pollinator pathways.
- **Herbicide treatments were determined to be very precise. (See MG report in appendix H)**

Observations and Recommendations:

- Our treatments of Canada thistle were effective; should continue collaboration with local farmers for priorities.
- Our early start led to increased efficiency by detecting plants in an early life stage.
- Pit plans helped us improve organization and overall weed control in these locations. This component is a significant means of achieving reduced weed densities and preventing new weed introductions and spread.
- The Deer Park Overpass is an exciting opportunity to produce varied and quality habitat for pollinators.

Project Summary

Program Goal:

This program ensures Clallam County complies with noxious weed laws of Washington State. The goal of this project is to shift roadside vegetation to natural, site appropriate plant communities. To accomplish the stated goal and be a responsible steward of county owned land, the County must ensure noxious and invasive weeds are effectively and efficiently controlled. The goal is implemented by reducing existing weed populations and preventing the establishment of new ones across the county. Invasive and noxious weeds negatively impact agricultural and forestry production, property value, as well as water flow and availability. Roadsides are high priorities for control of weed species because they cross and link many adjacent properties and land uses, and can act as conduits for the spread of weeds. County rock sources/soil disposal sites act as weed sources and are additional high priorities for control.

Program Overview:

The Clallam County Integrated Weed Management Plan (IWM) was created to help the County efficiently comply with its noxious weed control obligations. Integrated Weed Management is a coordinated decision making process that uses the most appropriate weed management methods and strategies, along with a monitoring and evaluation system, to achieve roadside maintenance goals and objectives in an environmentally and economically sound manner. The IWM plan dictates that each weed problem is addressed from the perspective of all available control options and that the selected control options represent the best treatment for the long term stability of the desired plant community.

Weed control methods include biological, chemical, cultural, physical and preventative. This project uses the most effective method or a combination of methods within the IWM decision-making framework to achieve greatest roadside service levels at the lowest life-cycle costs. With more than five hundred miles of country roads there are a variety of weed problems as well as control opportunities.

To successfully create the shift in roadside vegetation to natural, site appropriate communities, the project identifies high priority targets to contain the worst infestations and prevent the spread of noxious weeds. High priority targets include infestations of *regulated* noxious weeds and invasive species of special concern on roadsides, and county rock sources and spoil disposal sites (Pits) that act as sources/vectors for weed dispersal. The project aims to eliminate these significant weed pressures while systematically reducing weed abundance and promoting desirable vegetation. As the project matures and the number of high priority targets is reduced the number of chemical and physical treatments will also be reduced and balanced by cultural and preventative methods.

Weed control work on the County right-of-ways and pits is to be implemented by the Clallam Noxious Weed Control Board (NWCB) and through partnerships with other county entities, non-governmental agencies, and volunteers. In 2018 working partnerships included the Clallam County Road Department, Clallam County Sheriff's Department Chain Gang, Olympic Discovery Trail Volunteers and the 10K Years Institute. Partnerships add efficiency and overall value to the project by promoting collaboration and public engagement, recruiting larger work forces, and reducing travel time across the county.

2019 Project Description:

In this third year of the IWM Program we further integrated weed management into Road Department activities. We facilitated communication, began implementing pit plans, and initiated a new study to further inform mowing practices through the efforts of Roadside Weed Monitoring Team (RWMT), a dedicated group of Master Gardeners with professional backgrounds in natural resources.

The addition of a full-time weed inspector with the Clallam County Noxious Weed Control Board, increased our treatment capacity and allowed us to begin treatments earlier. This expansion aided in early detection at many sites. We recruited three seasonal employees, which promptly dropped to two. The small size of our seasonal crew impeded our ability to complete all planned work. We expanded our control of weeds in pits as a prevention measure to protect and enhance existing County resources. The RWMT independently reviewed treatments to assess efficacy and potential impacts. Their report with the results of their observations can be found in Appendix H. Roadside treatments were observed to be effective and well received by the public.

The RWMT continues to develop the Strategic Pollinator Assessment map which identifies potential pollinator corridors on County roadsides or managed lands. NWCB staff, the Sheriff's Chain Gang, and volunteers implemented two new pollinator friendly plantings with native plants grown at the Matt Albright Native Plant Center.

2019 PROJECT ACCOMPLISHMENTS:

Program Development

- Completed or progressed with all program development and implementation tasks outlined in IWM Plan.
- Facilitated communication to further synch the IWM Plan with Road Department activities.
- Implemented Pit Plans and partnered with Sheriff Department Chain Gang for weed control in pits.
- Initiated a pilot project to observe the effect of native shrub cover on tree seedling recruitment in the right-of way.
- Expanded Pollinator Planting Program; 2 new plantings, monitored, maintained and augmented 2018 projects.

Program Implementation

Roadsides:

- Controlled a total of **105** County Roads; **43 roads** manual only, **33 roads** manual/herbicide, and **29 roads** herbicide only. **2** roads were surveyed and determined not to need treatment in 2019.
- Controlled **211 miles (403 acres examined)** comprised of: **91 miles** manual only, **68 miles** of manual/ herbicide, and **74 miles** herbicide only.
- Controlled **1.2 solid acres** manually.
- Controlled **13.4 solid acres** chemically.
- Herbicide was applied on **62 roads** with a total of **7.15 gallons** applied over **130.1 miles**.
- Controlled **35** species – including **11 regulated** noxious weed species.
- More than **92 individuals** interacted with staff during treatments.

County Rock Sources/Spoil Disposal Sites (Pits):

- Treated **26 County Pits**.
- Controlled a total of **32 species** over a total of **226 acres**.
- Controlled an estimated **0.9 solid acres** manually.
- Controlled an estimated **26.5 solid acres** chemically.
- Herbicide was applied within **26 County Pits** with a total of **13.1 gallons** applied over **191 acres**.

Strategic Pollinator Plantings:

- Monitor, maintained, and augmented **two** projects (**Old Olympic Hwy/ODT** and **Black Diamond Rd**).
- Initiated two new planting projects; first phase of **Deer Park Overpass** project, **Woodcock Rd.** adjacent to the Master Gardener Demonstration Garden.
- Incorporated **22** native shrub and forb species with sequential bloom periods.
- Combined total of **5017 plants** over **two acres** of roadside.

Program Monitoring, Evaluation and Reporting

- RWMT assessed **45%** of roadside treatments and reported **74%** average efficacy; this year they excluded all manual treatments and treatments west of Lake Crescent.
- Herbicide treatments were determined to be precise. (**See MG report in appendix H**)
- RWMT assessed pollinator pathways while surveying the Olympic Discovery Trail for weed species.

Maps: Project Areas and Target Roads

Map 1 shows an overview of all roadside and rock source treatment activities completed by Clallam County Noxious Weed Control Board and partners in 2019. Maps 2 – 8 show treatment activities in focus areas in East, Central and West Clallam County. Some roads that received treatment may not be shown in these maps, however every road that received treatment is listed in Appendix C and Appendix D.

Map Description:

The top priority of the 2019 IWM Plan is the control of *regulated* noxious weeds. *Regulated* weeds are limited in distribution and control to contain or eradicate infestations is required by state law (RCW 17.10). The maps include data points for all treatment activities to control regulated weeds except those that occurred in county pits. Data points represent discrete infestations but are not representative of scale; a point may represent the treatment of a single plant or more expansive infestations.

Non-regulated weeds, such as Scotch broom and Canada and bull thistle, are more widely distributed across the county and treatment activities varied by location, species and available resources. The maps generally do not include data points for treatment activities of non-regulated weeds; however, comprehensive tabular data of treatment activities and species treated on each road can be found in Appendix C and Appendix D.

Legend Description:

The Legend for maps 2-8 includes symbols only for **Species Treated** in areas encompassed in each specific map. Together, maps 2-8 show all species with spatial data recorded in 2019. *Regulated* weed species are listed first, as **stars** or **asterisks**, in alphabetical order according to weed codes; *non-regulated* weed species, where points were taken, are listed second, as circles, triangles, or squares, in alphabetical order by weed codes. All county pits shown on the map received treatments in 2019. In the **Overview** map, all treated roads are shown with solid **green lines**. In **Maps 2-8** treated roads are further color coded by treatment type; roads that received ONLY manual treatments are shown with green/white stripes, roads that had combination manual/herbicide treatments, or herbicide only, are shown with solid green.

Map List:

Clallam County

Map 1. Clallam County Roadside Treatment Overview 2019

East Clallam County

Map 2. Blyn – Miller Peninsula Treatment Area

Map 3. Sequim-Dungeness Valley Treatment Area

Port Angeles/Central Clallam County

Map 4. Port Angeles Treatment Area

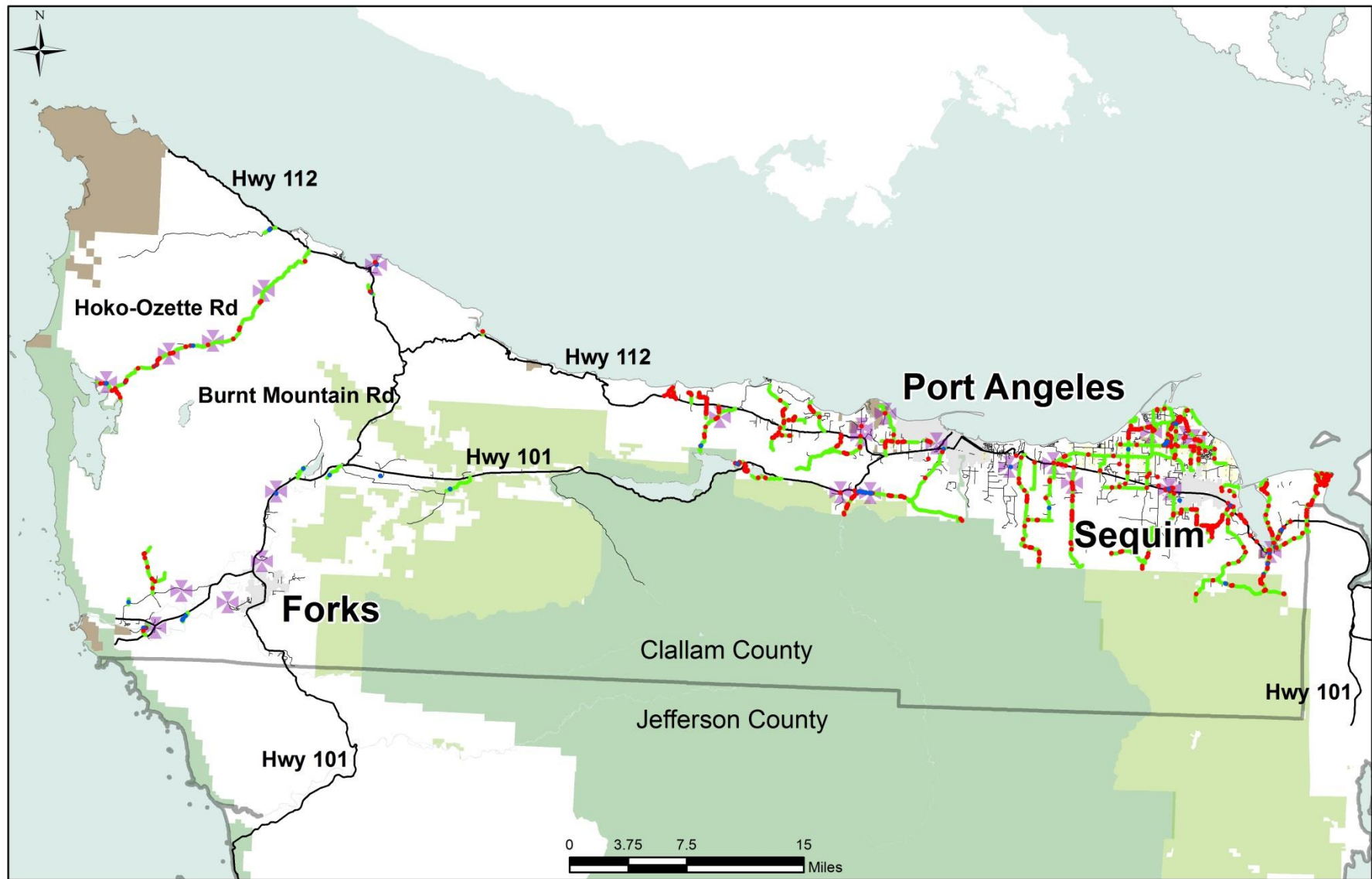
Map 5. Joyce Treatment Area

West Clallam County

Map 6. Hoko-Clallam Bay Treatment Area

Map 7. Forks Treatment Area

Map 8. Lake Pleasant Treatment Area

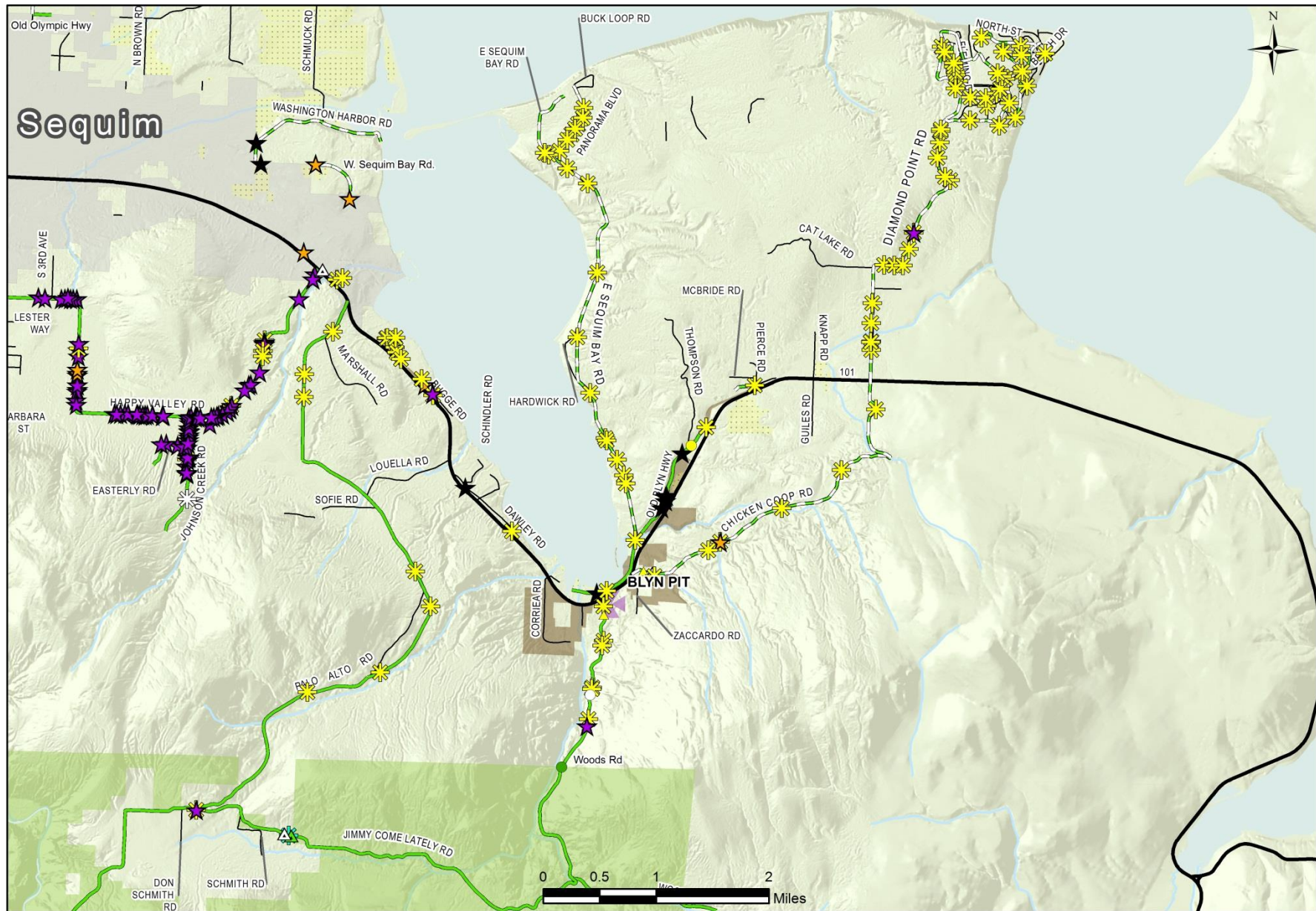


Species Treated

— Treated Roads	✱ County Pits	■ Olympic National Forest
• Regulated species	— County Roads	■ Olympic National Park
• Other species	— State Highway	



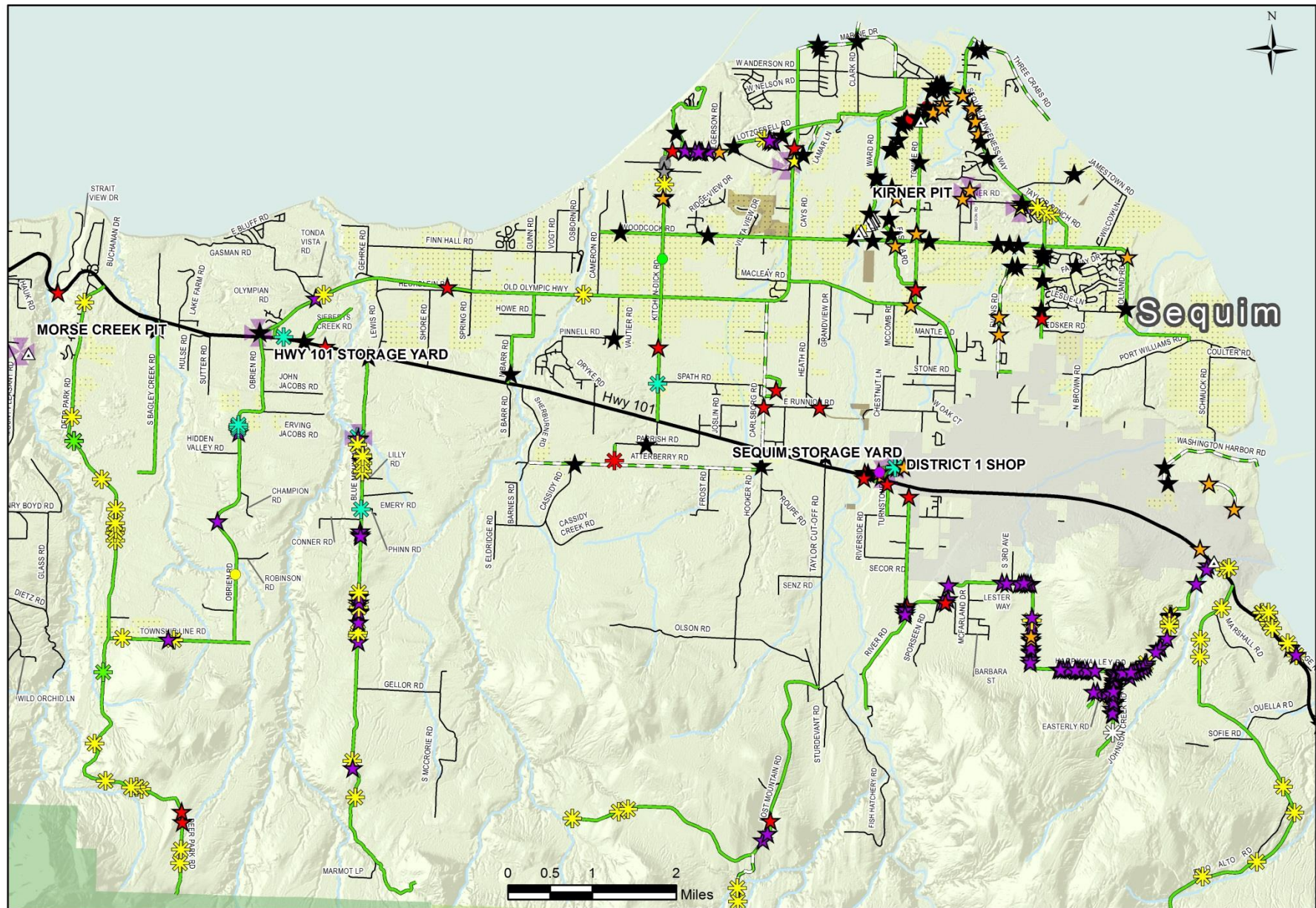
Map 2. Blyn – Miller Peninsula Treatment Area



- Roads Treated**
- Herbicide or Combination
 - Manual Only
- * See legend description at the beginning of "Maps" section.**
- *Species Treated**
- County Pits
 - County Roads
 - State Hwy
 - Agriculture Areas
 - City UGA
 - Fuller's teasel
 - Meadow knapweed
 - Poison hemlock
 - Tansy ragwort
 - Yellow archangel
 - Sulfur cinquefoil
 - Hedge bindweed
 - Scotch broom
 - Spurge laurel
 - Bohemian knotweed
 - Japanese knotweed
 - Common tansy
 - Periwinkle



Map 3. Sequim-Dungeness Valley Treatment Area



Roads Treated

- Herbicide or Combination
- Manual Only

* See legend description at the beginning of "Maps" section.

- County Pits
- County Roads
- State Hwy
- Agriculture Areas
- City UGA

*Species Treated

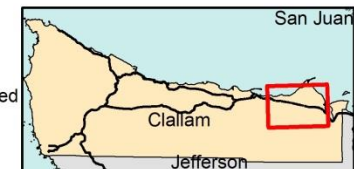
- Hoary alyssum
- Italian thistle

- Meadow knapweed
- Spotted knapweed
- Poison hemlock

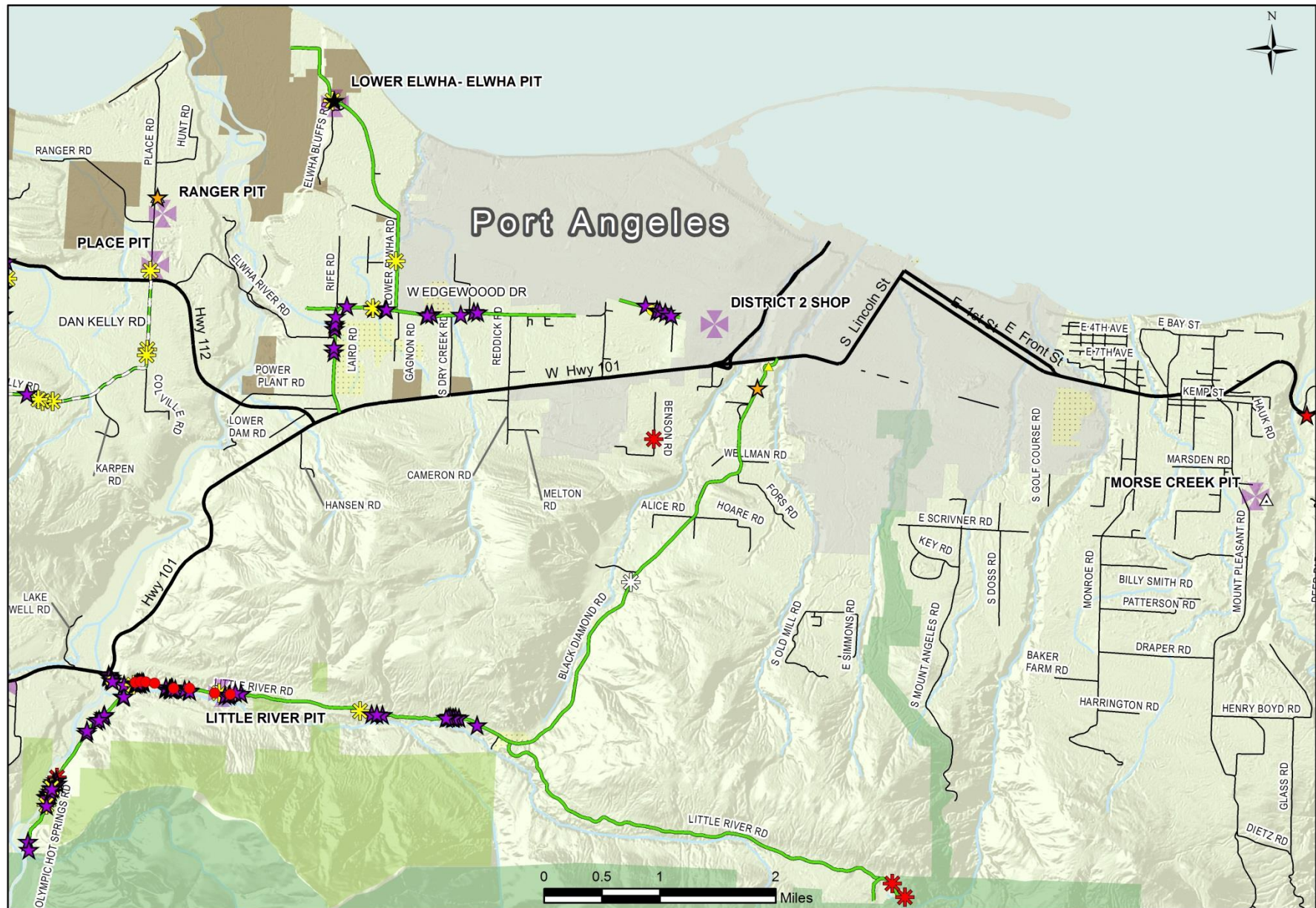
- Fuller's teasel
- Orange hawkweed
- Yellow Hawkweed
- Tansy ragwort

- Yellow archangel
- Sulfur cinquefoil
- Butterfly bush
- Field bindweed
- Spurge laurel

- Herb-Robert
- Yellow flag iris
- Hairy whitetop
- Bohemian knotweed
- Common tansy



Map 4. Port Angeles Treatment Area



Roads Treated

— Herbicide or Combination
 — Manual Only
 * See legend description at the beginning of "Maps" section.

— County Pits
 — County Roads
 — State Hwy
 — Agriculture Areas
 — City UGA

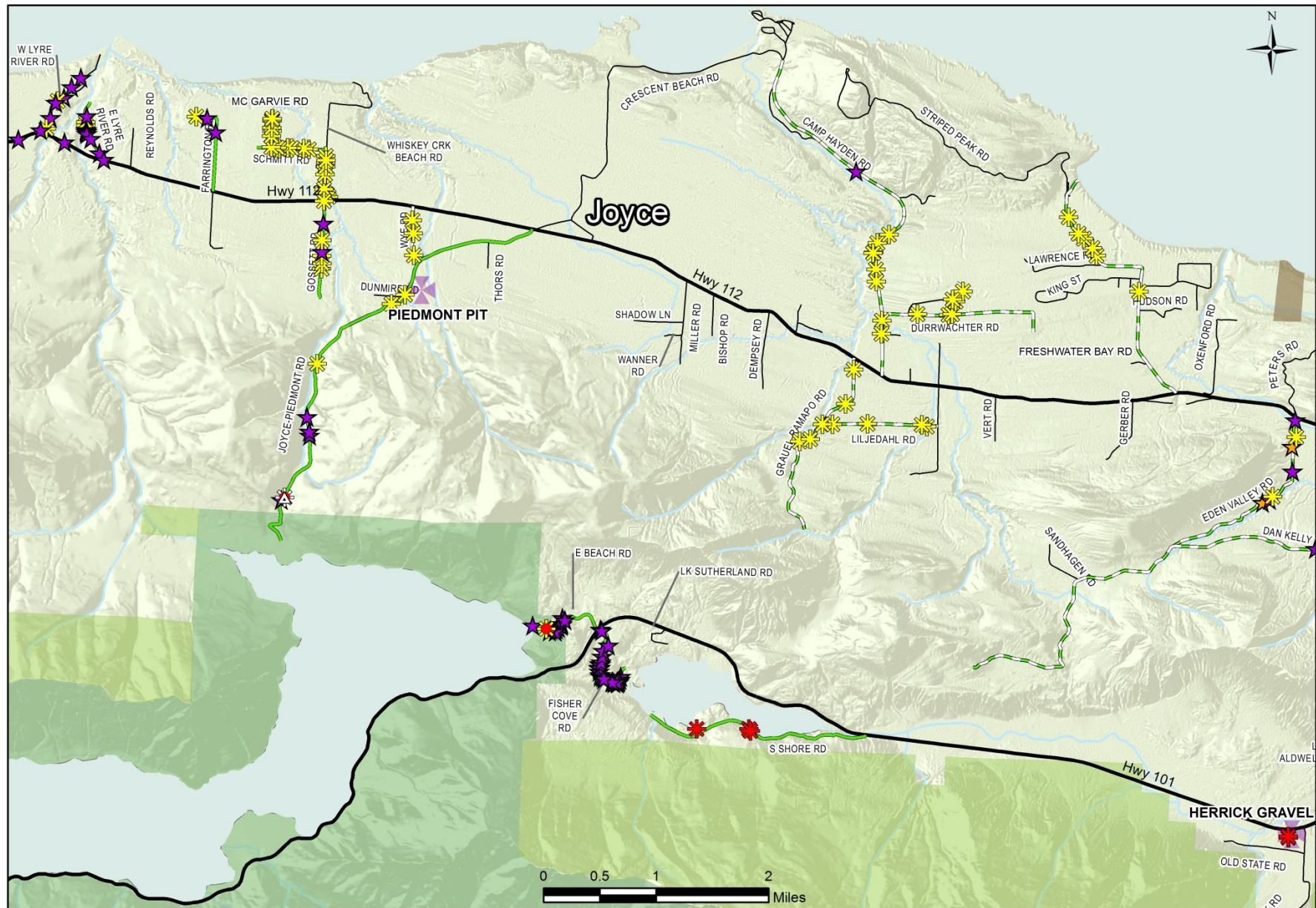
Species Treated

★ Poison hemlock
 ★ Fuller's teasel
 ★ Spotted knapweed

★ Tansy ragwort
 ★ Yellow archangel
 ★ Scotch broom

★ Herb-Robert
 ★ Bohemian knotweed
 ★ Common tansy

Map 5. Joyce Treatment Area



Roads Treated

— Herbicide or Combination
— Manual Only

* See legend description
at the beginning of
"Maps" section.

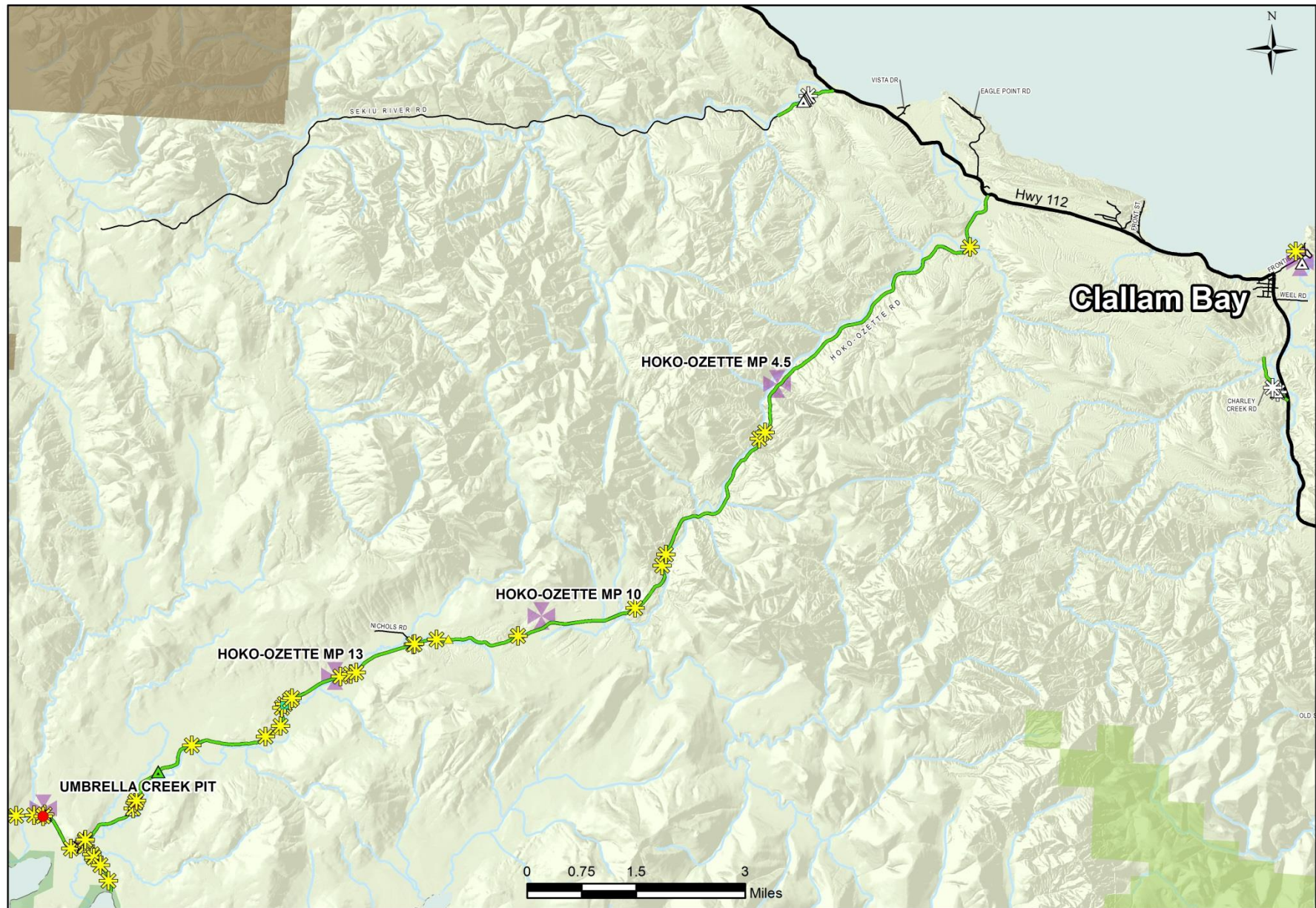
County Pits
County Roads
State Hwy
Agriculture Areas

*Species Treated

Fuller's teasel
Tansy ragwort
Meadow knapweed
Orange hawkweed
Yellow archangel
Herb-Robert
Bohemian knotweed



Map 6. Clallam Bay Treatment



Roads Treated

- Herbicide or Combination
- - - Manual Only
- * See legend description at the beginning of "Maps" section.**

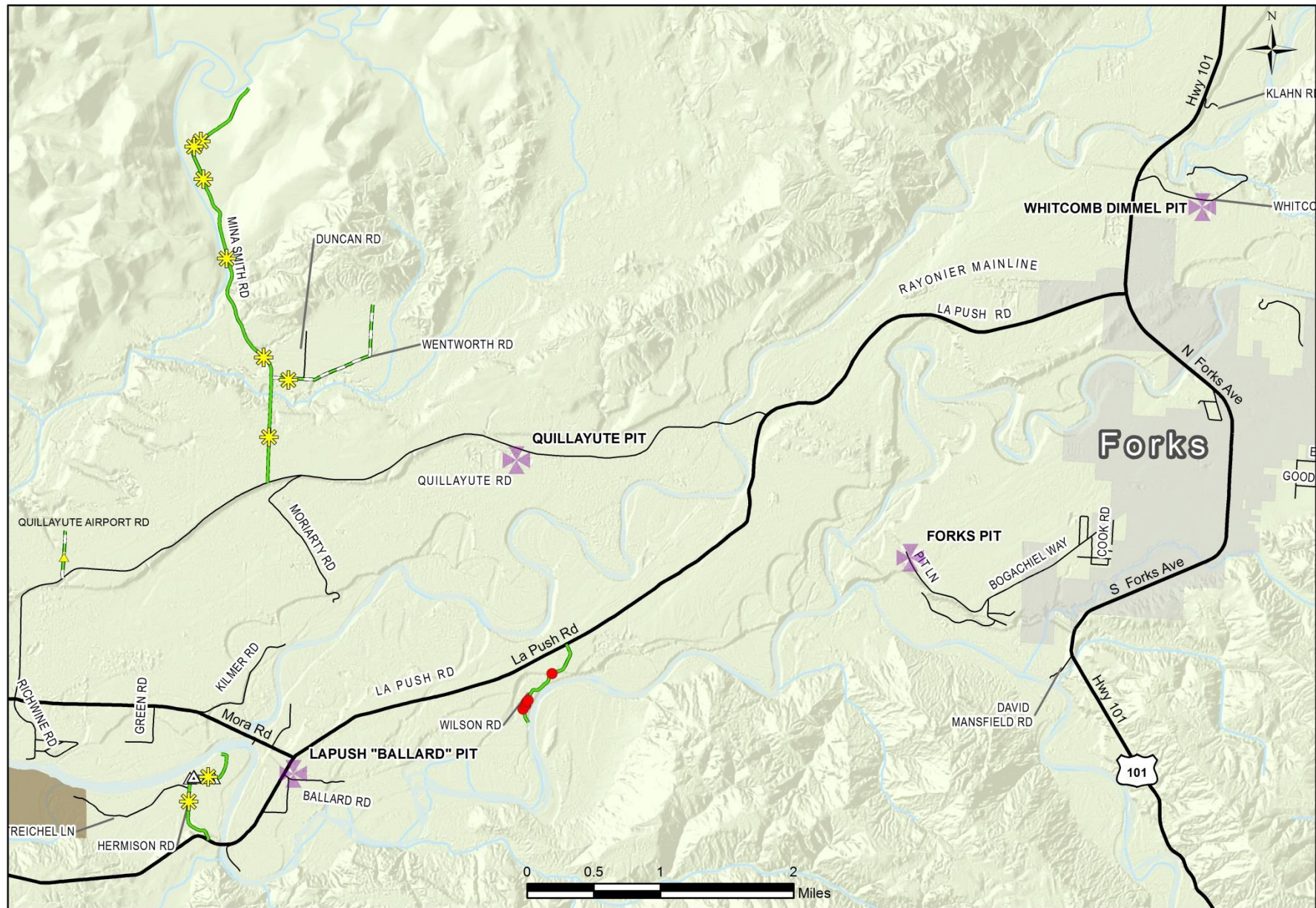
- ✕ County Pits
- County Roads
- State Hwy
- Agriculture Areas

***Species Treated**

- ✿ Tansy ragwort
- Herb-Robert
- ★ Meadow knapweed
- English ivy
- ✿ Yellow archangel
- △ Bohemian knotweed
- ▲ Scotch broom
- ▲ Japanese knotweed



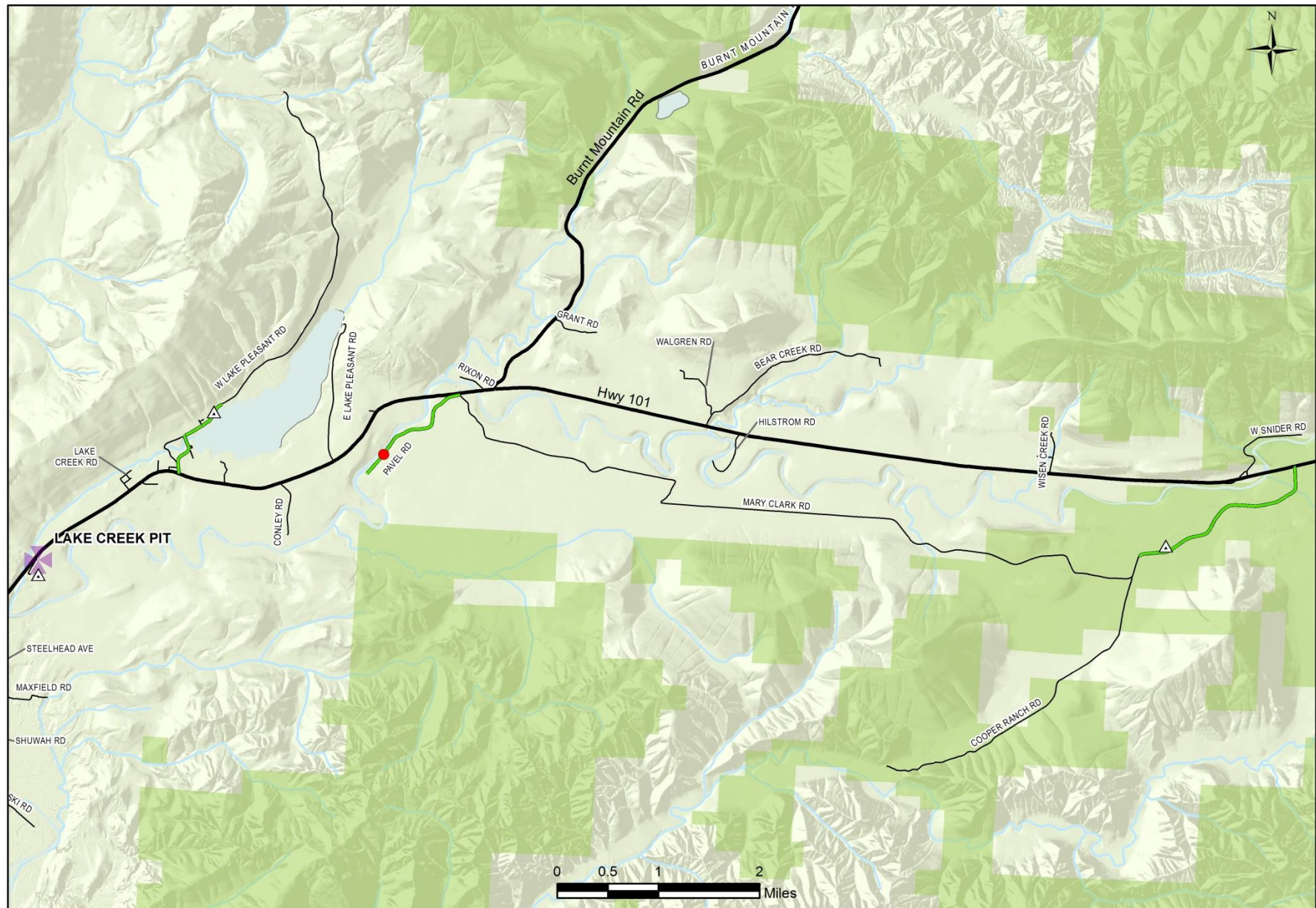
Map 7. Forks Treatment Area



- Roads Treated**
- Herbicide or Combination
 - Manual Only
- * See legend description at the beginning of "Maps" section.**
- *Species Treated**
- ★ Scotch broom
 - Herb-Robert
 - △ Bohemian knotweed
- County Pits**
- ✕ County Pits
 - County Roads
 - State Hwy
 - City UGA



Map 8. Lake Pleasant Treatment Area



Roads Treated

- Herbicide or Combination
- - - Manual Only
- County Roads
- State Hwy

*** See legend description at the beginning of "Maps" section.**

***Species Treated**

- Herb-Robert
- ✕ County Pits
- △ Bohemian knotweed



POST SEASON OBSERVATIONS:

2019:

Roadside weed management is an evolving process, and the IWM Plan is intended to be evaluated and adapted over time based on our observations, technical updates and input from partners and the public. The 2019 Plan was designed to complement our previous work, adapt to the observed conditions, and further specific weed management goals.

The successful execution of the IWM plan is dependent on the effective coordination of its components. We reviewed the existing program, forms and protocols developed previously and revised where needed for 2019.

We invested substantial time and effort to improve coordination between IWM and maintenance activities. The IWM Plan is a unique element within the Road department's maintenance program, but to be successful, weed control activities must be seamlessly incorporated into the general maintenance activities. Weed control strategies must also be shaped to fit road maintenance criteria.

We consulted with each shop supervisor to confirm and implement pit management plans. The pit plans and trainings improved communication and weed awareness with maintenance staff, but there is still room for improvement. This element of the plan will need to be reviewed and adjusted annually to achieve the best coordination possible. The road department is undergoing drone assisted surveys of all county pits. This information will be used for pit inventory purposes, but will also be a valuable aid with planning weed prevention and control as we go forward.

The addition of a full-time inspector with the Noxious Weed Control Program greatly enhanced early treatment capacity. This gain was off-set by a nearly three week delay in bringing on seasonal staff, upon whom we depend to increase our resources during the summer. This delay compressed our field season making it hard to complete planned treatments for multiple projects. In general, we observed that infestations treated in 2018, especially those areas with heavy Canada thistle, had greatly reduced infestation densities in 2019.

The acquisition of a dedicated vehicle for the Integrated Weed Management program greatly improved our efficiency, safety and capacity. In response to our demonstrated need last year, the Road Department purchased and outfitted a new vehicle dedicated for noxious weed control. Equipped with a tall canopy, it provided a doubling in our equipment carrying capacity. The 100 gallon water tank with pump allowed us to better carry supplies needed for both treatments and plantings. The WSDA smartphones provided access to information that was crucial to decision making in the field. Our pilot Pollinator Plantings locations provided considerable insight which we put to good effect as we began new planting projects this year.

Specific observations:

Program Development

- We updated and published the "Adopt-a-patch" and "Owner Will Control" public engagement opportunities online; received and accepted one "Owner Will Control" agreement. An additional "Adopt-a-patch" agreement with the non-profit 10,000 Years Institute was prepared, but not signed before the end of the season. We hope we will have one in place for 2020.
- We updated permission forms to provide for improved control of infestations of regulated weeds across jurisdictional boundaries and facilitate the eradication of localized species.
- We collaborated with maintenance supervisors and PUD to identify "light-touch" mowing BMP pilot and implemented pilot-study with WSU Extension Master Gardener Volunteers.
- We communicated with PUD management to discuss maintenance activities and continued dialogue to identify compatible management practices to align weed management and vegetation management goals.
- The pit plans improved coordination between pit management activities and weed control efforts. Major pit activities, such as sand extraction, were successfully coordinated with weed control activities to help prevent material contamination.
- Our partnership with the Clallam County Sheriff Department Chain Gang was beneficial for early season control in pits.
- We improved communication between the Shop Supervisors, Roads Management and the NWCB. We identified communication failures with Chain Gang and took action to prevent further failures.
- In-field training and "walk-along" with the Master Gardeners Roadside Weed Monitoring Team (RWMT) improved synchronization between treatments and monitoring.

- Supported RWMT implementation of “light-touch” MOW bmp pilot project, including adjacent weed control activities.
- The RWMT provided us with valuable in-season control updates and notified us of areas in need of rechecks.
- The RWMT provided invasive plant surveys for the Olympic Discovery Trail to help identify control priorities.
- The RWMT is an invaluable asset to the program and provided excellent feedback for every one of the excellent projects they undertook this season. (Appendix H).
- The RWMT Pollinator corridor map provides a framework to prioritize future control work and implement pollinator plantings as sites become ready.

Weed Control

- The 2018 and 2017 season treatments of Canada thistle were effective.
- There was an overall reduction in weed species diversity on roads and pits.
- Roads where crew walked between known infestation sites led to the discovery and treatment of additional priority species.
- All chemical treatments were entirely non-mechanized and carefully targeted allowing us to maximize the protection of native or desirable vegetation.
- The pit plans helped us improve overall weed control; the improved coordination helped us prioritize treatments and prepare pits for upcoming material storage and extraction projects.
- The combination of mechanical, manual, and chemical (foliar and cut-stump) methods used to control Scotch broom in the pits was very effective.
- The program developments provided for treatment activities to take advantage of weather windows throughout the year.
- Early season weed treatments allowed for more effective control of weed species that develop rapidly, such as Italian thistle, thus reducing the number of flowering plants encountered, overall weed biomass, and volume of herbicide needed during those treatments.
- Milestone® was highly effective for control of Italian thistle.
- Vastlan® and Milestone® in combination were used to control broad number of species, higher rates of Vastlan® and surfactant were used during drought conditions or if plants were observed to be stressed.
- Foliar application of Polaris® has been very effective to control Bohemian knotweed.
- We improved our efficiency this year and were able to treat 25% more road miles with 20% fewer treatment days.
- The overall infestation density on roadsides was reduced based on our estimated “solid acres” treated.
- Land leasee and land use maps derived from agricultural outreach were helpful decision making tools in the field.
- All treatments were conducted on foot and made us visible and readily approachable to the public at all times.
- We recorded a reduction in interactions with interested persons during treatments; the majority consisted of brief explanations of the IWM plan and described as positive interactions with directly adjacent landowners. Additional interactions focused on the use of herbicides and addressing safety concerns.
- We invested substantial time and effort to communicate with individuals and businesses with specific concerns regarding herbicide treatments.

Plantings

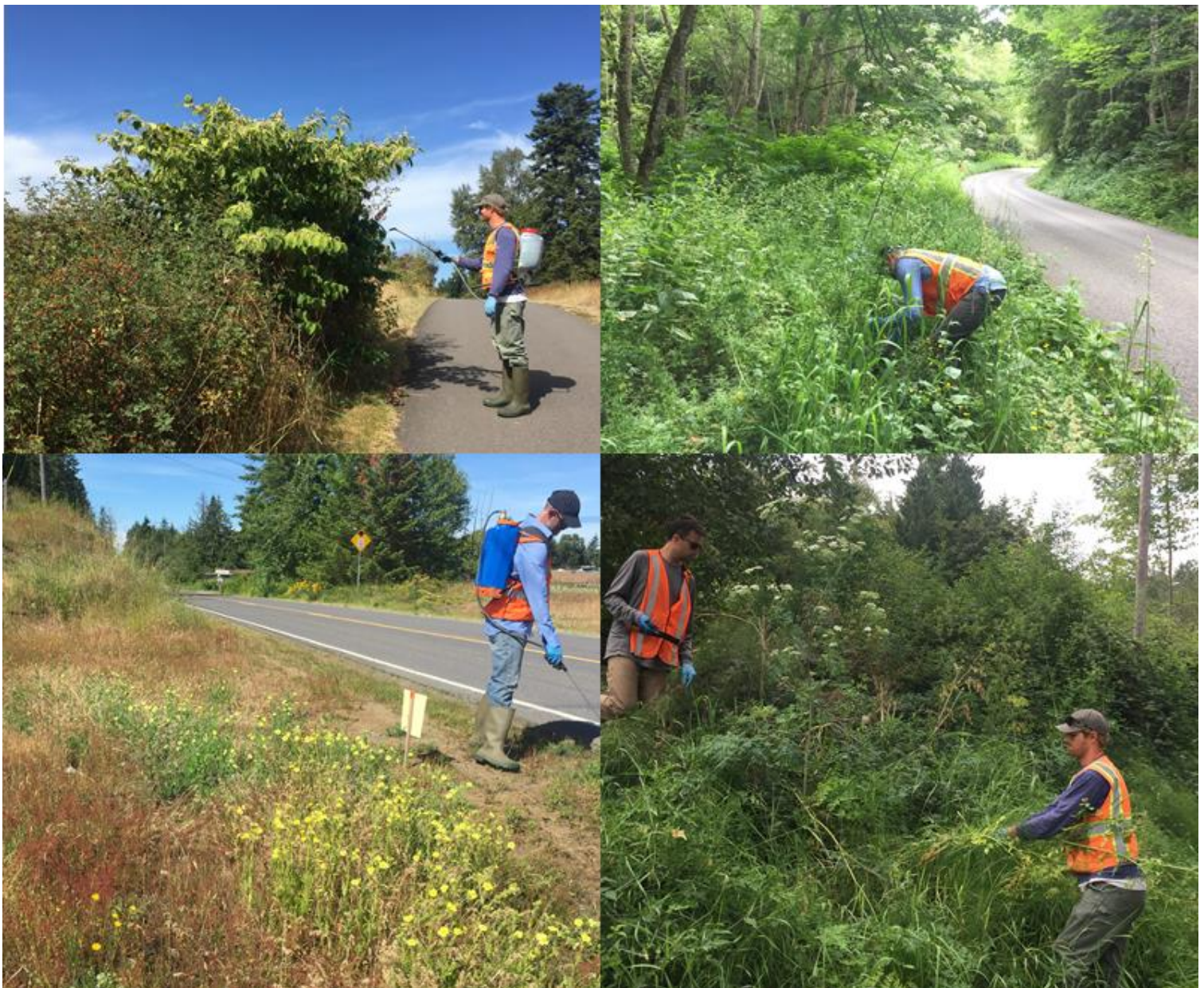
- The RWMT monitored the 2018 Pollinator Plantings on Black Diamond Rd and Old Olympic Hwy/ODT sites to assess survivorship and to assess pollinator habitat using the Xerces Society habitat assessment protocol. These two sites were treated for noxious weeds and augmented with additional native plants as dictated by space and need.
- The partnership between Clallam County and the Matt Albright Center was invaluable to the success of our goals. They were a flexible, local resource that provided us with healthy plants and technical advice.
- Native plant material was shared between County departments as needed.
- Two new sites were planted in 2019; portions of the Deer Park Overpass, and a portion of Woodcock Rd adjacent to the Master Gardener Demonstration Garden. The Woodcock Rd is site small and was entirely planted by a Master Gardener volunteer who will maintain the site. The Deer Park Overpass site is very large and is comprised of many microenvironments. It is notably steep and inhospitable. The Deer Park project will span multiple years.
- The plantings occurred in November, when temperatures had cooled and the weather was wet.
- The Sheriff’s Chain Gang assisted with transporting and planting for three days; the Road Department’s Environmental coordinator and three Weed Board staff were onsite to direct and assist. Robust volunteers assisted with plantings on

an additional day. Weed Board crew spent an additional week finalizing plantings. This year's plantings at Deer Park are the first phase of a multi-year's project.

- The Road Department provided a vehicle with a hundred gallon tank fitted with a pump which enabled us to easily water all plants and reduce plant mortality.

Crew and Equipment

- The published 2019 IWM was a valuable guide for crew and a helpful reference for the public.
- The roadside crew included up to 2 full-time staff and 2 seasonal employees but varied by project area.
- All crew passed WSDA examination and acquired Washington State Pesticide Licenses.
- Seasonal crew received on-going training; crew efficiency improved over the season.
- Crew size was limited by lack of applicants and activity was reduced by relatively late available start dates.
- Updated vehicle greatly improved crew efficiency and added to program safety, visibility and professional appearance.
- Vehicle water and equipment carrying capacity increased crew capacity to better match the scope of work.
- The hand held mini mattocks planting tools worked well to plant the small- to medium- potted plants. We acquired short handled fire shovels to help with larger holes as needed.
- WSDA Smartphone and ArcCollector provided the crew access to spatial databases in the field and increased crew ability to identify adjacent ownership and boundary lines, and coordinate treatments with wider landscape goals.



Crew uses a combination of control methods and equipment to treat infestations of noxious weeds. Clockwise (beginning from top left): foliar treatment of Bohemian knotweed; manual control of poison hemlock; chemical control of sulfur cinquefoil along roadside; manual control of poison hemlock.

RECOMMENDATIONS:

The Clallam County Integrated Weed Management Plan is intended to be annually evaluated and adapted over time in response to changing conditions and needs. Input and technical updates from federal and state agencies, tribes, universities and local partners and stakeholders are essential. For that reason the results of control activities are monitored, evaluated and the program activities adjusted as necessary.

Specific recommendations for the 2020 IWM Program:

- Continue to support coordination and communication between the Noxious Weed Control Board, Road Department, Sheriff Department, WSU Extension, Clallam PUD and other partners.
- Collaborate with Road Department maintenance staff and Clallam PUD to identify landscape goals and harmonize maintenance techniques where possible.
- Evaluate and revise pit plans as necessary with input from ER&R Manager, shop supervisors and engineers.
- Further “light touch” MOW pilot project and support WSU Master Gardener pilot study to assess maintenance techniques and collaborate with Road Department maintenance staff.
- Conduct early season Road Department training with maintenance staff that includes the IWM Plan, plant identification, effective vegetation management strategies and finalized pit plans. Support maintenance staff with solutions compatible with weed management goals.
- Provide Chain gang with additional training, focus area maps and shared work schedules.
- Coordinate with Road Department for gear rack and accessories as necessary for work vehicle.
- Continue to diligently map and record all new infestations of high priority, category 1 species.
- Provide for time and resources to walk treatment areas of roads with known infestations of priority weeds.
- Develop strategy to determine treatments of non-priority category 2 species.
- Evaluate and update Italian thistle eradication plans as necessary.
- Coordinate with Clallam County GIS department to support and utilize all technical upgrades for data collection.
- Continue to support and develop native plant materials availability.
- Partner with local experts to develop native seed mix for Road Department projects where bare ground is necessary.
- Increase communication with Olympic Discovery Trail Volunteers and Coordinator to provide weed control trainings.
- Recruit and train seasonal crew earlier in 2020.
- Monitor and support the pilot Pollinator Plantings with follow-up weed control and volunteer maintenance.
- Further develop Strategic Pollinator plantings and coordinate with Road Department, WSU Extension and Chain Gang.
- Develop a program through WSU Extension to recruit and train the public for roadside plantings consistent with the IWM Plan and County stewardship goals.
- Evaluate roads not treated in prior seasons.

General 2020 Treatment Recommendations:

1. Treat category 1, priority weeds on roadsides.
 - a. Repeat treatment of roads in 2019 IWM Plan as necessary; identify roads to begin a 4 year maintenance cycle.
 - b. Survey known or suspected infestation areas on foot as time and resources allow.
 - c. Roads intersecting or adjacent to 2019 treatments as necessary to complete control.
2. Treat category 1 and category 2 weeds in County pits as determined by pit plans.
3. Treat species and locations with most impact local agriculture.
 - a. Continue outreach with local farmers to identify priorities and potential concerns.
4. Treat species and locations with most impact to local forestry
 - a. Continue outreach to identify priorities and potential concerns.
5. Treat non-native weeds at Road Department identified special sites.
 - a. Consult with environmental coordinator, shop supervisors, and engineers to identify priorities.
6. Coordinate roadside treatments to support weed management goals adjacent to County land.

Appendix A: 2019 IWM Task Table

The table below lists the tasks included in the IWM Work Plan and highlights the balanced approach to weed management. The specific tasks represent the best mix of control options chosen to address specific weed problems. The tasks are categorized by the weed management strategies: **Biological, Physical, Cultural, Preventative, and Chemical**. We completed or made substantial progress on all tasks listed below. The integral precept of the IWM Work Plan is that all treatment methods are potentially applicable to the County's management of noxious weeds. The table lists the task in **bold**, description of 2019 activities; blue check marks indicate completed tasks, orange check marks indicate partially completed tasks.

Task Status ¹	Biological
✓	Identify release appropriate sites adjacent to County right-of-way: WSU released Scotch broom agents on one site.
✓	Coordinate with WSU Extension and Noxious Weed Control Board for Releases as they become available: No new, site appropriate biocontrol agents currently available; potential for Canada thistle agents in 2020. Suitable sites TBD.
✓	Assist with research projects where possible: Participated in University of Vermont genetic study of PNW populations of meadow knapweed to assess functional trait variation and ancestry. Provided samples from three long standing populations of meadow knapweed across Clallam County. Master Gardeners are working on a pilot study to gauge the ability of salal, ferns, snowberry and other native shrubs cover to suppress seedling recruitment along right-of-way back slope.
	Physical
✓	Update contact list to be shared between departments: Updated contacts with Road engineers, maintenance staff, and ER&R Manager. Shared contact between Olympic Discovery Trail volunteers and volunteer coordinator. Shared contact with Clallam County PUD, City of Port Angeles and City of Sequim.
✓	Coordinate mowing schedule with weed treatments to avoid incompatible treatments: NWCB staff regularly updated shop supervisors when working in their regions. Treatments were able to be effectively applied to all sites without interference of mowers or NWCB staff interfering with mowing schedule.
✓	Provide mowers with map of planned weed treatment areas: Pre-season focus maps were provided to all roads managers for distribution and inclusion into planning process.
✓	Clearly mark treatment areas, communicate location to field crews: All treatment sections were posted with Herbicide Notice during and after treatments for at least 24 hours. Supervisors were notified when treatments were to occur in their district.
✓	Schedule and oversee six weeks of Chain Gang time for large pulling projects: Clallam County Chain Gang assisted with approximately four weeks of manual/chemical weed control under direct NWCB staff supervision. The Chain Gang assisted with 3 days of pollinator plantings.
✓	Provide training and focus area maps for Chain Gang projects: Created and provided preliminary Pit Plans with manual control instructions and guidance; plans included aerial maps, weed locations and prioritization and planting/ no-mow
✓	Support volunteer opportunities for weed pulling projects as appropriate: Supported "Weed Busters" volunteer group with removal equipment for Scotch broom removal along the Olympic Discovery Trail locations in Sequim/Dungeness Valley. Support the Clallam County Tuesday volunteer crew for broom and tansy removal along the Discovery Trail.
✓	Identify "Adopt-a-Patch" locations appropriate for manual control that can be adopted by members of the public; post online before treatment season begins: Completed on adopt-a patch agreement with one landowner with property near the Olympic Discovery Trail.
✓	Review public involvement opportunities to ensure the available material meets program goals and is readily accessible online: Maintained an online process for the public to apply for "Adopt-a-Patch" sites on appropriate roadways. Tailored an agreement for 10,000 Years Institute, however, no completed agreement to date.

✓	Create <i>Report It!</i> forms so that road crews can report weed infestations: Provided seasonal trainings to each district road crew; training included weed ID and protocols to report sightings. <i>Road crews may prefer to call us with infestations rather than complete a form.</i>
✓	Discourage mowing of desirable native vegetation wherever possible: Provided trainings to each district mow staff with progressive mow BMPs. Focus on a “light touch” techniques to maintain desirable vegetation, however, more work needs to be done in this area.
✓	Collaborate with mowing personnel to update mowing practices: Pre- and post- season meeting with shop supervisors to develop updated maintenance BMPs to promote synchronization between maintenance activities and weed control.
✓	Consult on road standards that maximize mowing effectiveness in regard to weed control: Developed “light touch” BMPs with Roads management and maintenance staff. Began implementing progressive approach where appropriate.
	Cultural
✓	Identify opportunities to use native plantings in the early stages of projects in the county's transport plan: Provided for the exchange of native plant material with Road Department plantings, including rain garden, pump station, wetland mitigation sites and post-construction revegetation. Began Deer Park Overpass planting-a post project opportunity
✓	Create maps to incorporate roadside environmental typing system: Master Gardner's Roadside Weed Monitoring Team integrated environmental typing to create Pollinator Corridor map. The RWMT surveyed the Olympic Discovery Team for noxious weeds AND pollinator habitat opportunities.
✓	Compile list of plant material sources and needs from other government entities: Continued collaboration with local agencies including: USFS, Olympic National Park and DNR to address plant material needs and potential sources.
✓	Seek grant opportunities to implement pilot projects: Monitored, maintained and augmented 2018 sites. Began two new projects Deer Park Overpass, Woodcock Rd. Planted 5017 native shrubs and forbs in total, 12 planting days, 6 volunteers plus Chain Gang crew.
✓	Foster partnership with Olympic National Park Matt Albright Plant Material Center and update native plant material list and program as necessary: Renewed contract, received 22 roadside-specific, from Matt Albright PMC. Several new species are being considered for Deer Park Overpass including Gary oak and appropriate associated shrub species.
✓	Partner with experts from local, state and federal agencies and entities including but not limited to: Clallam County Parks, Washington State University Extension, WSU Master Gardeners, local chapter of bee keepers, the native plant and Audubon societies, the Nature Conservancy, conservation districts, Olympic National Park, Olympic National Forest, USFW Marine Refuge System, Makah, Quileute, Lower Elwha Klallam, and Jamestown S'Klallam tribes, and others who have an interest in developing local native seed and plant resources for use in government projects: Encouraged the establishment of the non-profit Peninsula Native Plant Center, under the umbrella of Olympic View Community Foundation whose mission it is “to improve the quality of life in our community”. Conducted Peninsula and beyond meetings to exchange ideas and further professional development.
✓	Encourage landowners with "Owner Will Control" agreements to undertake adjacent roadside enhancement consistent with developing a low maintenance, self-sustaining plant community to prevent weed invasion. Include roadside appropriate list in "Owner Will Control" packet as it becomes available: Created online protocols for "Owner Will Control" agreements - did not receive any applications in 2019.
✓	Identify suitable county pit locations for native plant seeding and implement as material becomes available and when seasonally appropriate: Site appropriate, native seed mix may just be coming available. Finalized Pit Plans should incorporate native seeding of desirable, native vegetation.
	Preventative
✓	Update rock and gravel source weed management protocols: Met with Roads management (ER&R manager, engineers, and shop supervisors) to identify Pit Management goals, short term plans, and general strategies to protect and improve

	current resources.
✓	Inventory, develop and implement weed management plans for all county quarries, storage areas, and spoil disposal sites (pits); update as needed as County use requirements change: Completed inventories of all County pits (26). Preliminary Pit Plans were created; Plans to be finalized with support from ER&R and supervisors..
✓	Create county pit reference maps to include in management plans: Aerial maps created for all weed control efforts. Maps to be included in finalized Pit Plans for reference. Road Department is conducting drone surveys for this purpose.
✓	Adopt weed free material requirements for all county projects: Provided “weed-free” criteria reminder to County project managers. Requested list of upcoming Roads projects and prospective material providers.
✓	Develop clean equipment standards and requirements for all county projects: “Weed-free” requirements included in all Road Department engineer projects. Parks Department and Department of Community Development IWM plans adopted annually by Clallam Noxious Weed Control Board.
✓	Provide inspection services for all privately sourced material for county projects that may be weed-contaminated: Completed 8 private and 4 state-managed pit inspections. Complemented work in 10 pits on US Forest Service land.
✓	Compile list of sources that meet weed-free standards: Updated list included in NWCB USFS Report 2019
✓	Facilitate annual department weed and native plant identification training in cooperation with weed board staff. Supply field crew with identification booklets. Provide plant identification services for field crew in cooperation with weed board staff: Provided updates and trainings to maintenance staff and supervisors.
	Chemical
✓	Implement project list based on tables 4-8 and planned reduction of Category 2 weed sites: Accomplished 2019 IWM Plan and treated 105 roads and 26 pits (including a wetland mitigation site) using chemical methods or a combination of methods. See Appendix C and Appendix D.
✓	Develop and utilize regional partners to assist in weed control across the county: Communicated IWM Plan with regional partners (Clallam PUD, WSDOT, USFS and DNR). Provided training and resource materials for 10K Years Institute and utilized work force for assistance and manual treatment on four county roadsides in District 3.
✓	Complete treatment records: Completed "Herbicide/Manual Treatment Data Form" (Appendix K) for all noxious weed control activities.
✓	Enter data into Clallam county noxious weed control program database: In progress
✓	Identify any additional equipment needs and take steps to incorporate any available resources, including; vehicles, application equipment, water tanks, or technical equipment: Received a dedicated vehicle for noxious weed control that improved water and equipment carrying capacity as well as crew visibility and safety.
✓	Post annual project list and treatments online. Update as often during season as resources allow: NWCB staff periodically posted updated list of herbicide treatment locations and dates to website.
✓	Monitor at least 10% of all treatments, retreat as needed and as resources allow: Volunteer Master Gardener Roadside Weed Monitoring Team monitored 45% of treated roads. Re-treatments occurred on several roads where necessary, including a portion of the Olympic Discovery Trail where several high priority species were identified.
✓	Provide WSU Master Gardeners Roadside Weed Monitoring Team (RWMT) with safety equipment, additional training opportunities, and technical support for monitoring projects: Provided a pre-season technical training and an in-season field training for RWMT. Provided appropriate vehicle identification lights. Post-season meeting included offering a new shared map system to enable RWMT to more efficiently find specific treatments during their monitoring activities.
✓	Develop protocols to monitor treatments in county pits: Pit locations were determined to be poorly suited for

	monitoring by RWMT volunteers. Pits were monitored by NWCB and Roads staff.
✓	Conduct a weed inventory on at least 25% of all county roads annually: In the course of treatment NWCB staff surveyed nearly 40% of County roadsides. We are not quite ready to assume a 4 year maintenance schedule.
✓	Identify, document and map additional species, location, size and density: Mapped and recorded information on all regulated weed species encountered on county roadsides and rock sources during 2019 activities.
✓	Update survey data of county roadsides and catalog infestations over time: All survey and treatment data has been compiled for this report. Infestations and survey results will be recorded in NWCB database this winter.
✓	Identify and compile a list of high priority infestations for following year. Create map: In process.
✓	Identify and compile a list of sites for revegetation appropriate opportunities: List of possible pollinator "Islands" identified and in process with Road department to determine long-term feasibility.
✓	Support four, volunteer-based projects either on or adjoining county property that protects county property from weed infestations. This may include monitoring, road-typing for re-vegetation, and re-vegetation projects: Completed two planting events to implement pilot-pollinator projects. Volunteer Master Gardener RWMT recorded over 500 volunteer hours dedicated to the 2019 IWM Plan.
✓	Compile locations and instructions for special management areas. Include and update field maps as frequently as needed: No new special management areas identified in 2019. The 2019 IWM planning process included substantial outreach to individuals at locations with the potential for extraordinary concerns. Outreach data and maps were included in the plan and utilized in the field by crew over the course of treatments.
✓	Promptly respond to all public inquiries. Address any public concerns regarding applications: Provided project information and specific activity information to over 92 individuals in the field. Answered and responded to inquiries directed to the phone number listed on "Herbicide Notice" (Appendix J). Contacted all registered sensitive persons relevant to control activities (2); in addition to RCW requirements we provided periodic updates, alternate route information and additional accommodations.
✓	Manage "Owner Will Control" agreements: Complete. No applicants at this time.
✓	Review "Owner Will Control" application process and forms to ensure all public involvement opportunities are readily accessible online: Complete.
✓	Maintain current list and map of "Owner Will Control" locations for both office and field use: Complete.
✓	Review and update on-line weed control request application process and forms as necessary: Contact form available online at: http://www.clallam.net/features/emailClallam.asp?em=weed
✓	Develop on-line, Report It! process and forms for interdepartmental communication: Contact information and training material distributed to Departments.
✓	Compile annual report summarizing accomplishments, effectiveness, and recommendations for subsequent year. Brief the Road Department and County Commissioners by December 31st: Complete.
✓	Draft IWM plan and submit to the Clallam County Noxious Weed Control Board and Road Department Supervisor for approval prior to the Weed Board's first meeting of the year. Submission of the IWM plan should occur 20 days before the meeting, and should be posted online. Provide public notice that plan will be discussed, with weed board meeting announcements. The finalized plan and a map of proposed treatment locations should be posted online and made available upon public request: In process.

¹Blue check marks indicate task completed in 2019; Orange check marks indicate partial completion.

Appendix B: Weed Species Treated on County Roadsides and Rock Sources 2019

The table below alphabetically lists all weed species controlled in 2019 on County roadsides or rock sources/soil disposal sites (Pits). The species listed in Green were treated on **roadsides** only; species listed in Pink were treated in **Pits** only. Species without color coding were treated on both roadsides and pits. The 4-letter Weed Code is the first two letters of the genus and the first two letters of the species. Weed Category is determined in the 2019 IWM Plan to prioritize control. Definitions of headings can be found at the end of the table. Clallam County Noxious Weed List available online: <http://www.clallam.net/weed/doc/ClallamWeedList2019.pdf>

Common Name	4-Letter Weed Code	Scientific Name	Life Cycle ¹	Growth Form	Threat	Category	Status
bindweed, field	COAR	<i>Convolvulus arvensis</i>	P	Forb	Out competes native plants species and can reduce crop yields; forms an extensive root system, often climbing or forming dense tangled mats.	1	NR
bindweed, hedge	CASE	<i>Calystegia sepium</i>	P	Forb	Competes with native plants; difficult to eradicate once established	3	WW
mustard, bird's rape	BRRA	<i>Brassica rapa</i>	B	Forb	Can be toxic to livestock, can degrade agricultural seed production	2	WW
Bishop's weed	AEPO	<i>Aegopodium podagraria</i>	P	Forb	Forms dense stands; unpalatable;	2	WR
blackberry, evergreen	RULA	<i>Rubus laciniatus</i>	P	Shrub	Dense canopies crowd out native species; impenetrable barrier	2	NW
blackberry, Himalayan	RUAR	<i>Rubus armeniacus</i>	P	Shrub	Dense canopies crowd out native species; impenetrable barrier	2	NW
broom, Scotch	CYSC	<i>Cytisus scoparius</i>	P	Shrub	Forms dense stands; unpalatable; interferes with forest regeneration; fire hazard; scent can exacerbate human grass allergies; seeds are toxic to horses and livestock	2	NW
butterfly bush	BUDA	<i>Buddleia davidii</i>	P	shrub	Invades natural areas; dense stands crowd out native vegetation in riparian areas and interfere with natural succession	1	NR
canary grass, reed	PHAR	<i>Phalaris arundinacea</i>	P	grass	Unpalatable unless young, forms dense stands that crowd out native plants; especially difficult to control; serious wetland invader; can stop the process of succession in riparian sites, impedes tree seedling establishment	2	NW
carrot, wild	DACA	<i>Daucus carota</i>	B	Forb	Damages agricultural commodity as it may cross pollinates with domestic carrot, seriously degrading the quality of commercial carrot seed production	2	NW
chicory, common	CIIN	<i>Cichorium intybus</i>	P	Forb	Only found in the Dungeness Valley where it is starting to spread	1	ISSC
cinquefoil, sulfur	PORE	<i>Potentilla recta</i>	P	Forb	Not readily grazed by livestock and wildlife; forms dense stands	1	NCR
mullein, common	VETH	<i>Verbascum thapsus</i>	B	Forb	Unpalatable	3	WW
comfrey, common	SYOF	<i>Symphytum officinale</i>	P	Forb	Aggressive invader, unpalatable, mildly toxic to livestock	2	WR
daisy, oxeye	LEVU	<i>Leucanthemum vulgare</i>	P	Forb	Aggressively invades fields and forms dense populations, out competes desirable plants	3	WW
hawkweed, orange	HIAU	<i>Hieracium aurantiacum</i>	P	Forb	Aggressive invader forming dense mats, unpalatable, competitor of pasture and range plants	1	NR

Common Name	4-Letter Weed Code	Scientific Name	Life Cycle ¹	Growth Form	Threat	Category	Status
hawkweed, yellow	HICA	<i>Hieracium caespitosum</i>	P	Forb	Aggressive invader forming dense mats, unpalatable, competitor of pasture and range plants	1	NR
hawthorne, English	CRMO	<i>Crataegus monogyna</i>	O	Tree	Dense thickets can dominate shrub layer and suppress desirable vegetation	2	NR
hoary alyssum	BEIN	<i>Erteroa incana</i>	A, B	Forb	Can be toxic to horses; spreads aggressively in disturbed areas	1	NR
holly, English	ILAQ	<i>Ilex aquifolium</i>	P	Shrub	Dense thickets can dominate shrub layer and suppress desirable vegetation	3	WW
fennel, common*	FOVU	<i>Foeniculum vulgare</i>	P	Forb	Dense stands exclude native vegetation	1	NCR
fox glove	DIPU	<i>Digitalis purpurea</i>	B	Forb	Can be toxic to livestock; spreads aggressively in disturbed areas	3	WW
nightshade, hairy	SOPH	<i>Solanum physalifolium</i>	P	Forb	Can be toxic to humans and livestock; limited distribution	1	WR
herb Robert	GERO	<i>Geranium robertianum</i>	A, B	Forb	Rapid spreading; displaces native herbaceous plants; allelopathic, inhibits the germination of small seeded forbs in forest understory	1	NW
Ivy, English	HEHE	<i>Hedera helix</i>	P	Shrub - vine	Aggressive invader, competes understory species, degrades wildlife habitat, can cause tree collapse due to added canopy weight and surface area.	2	NW
knapweed, meadow	CEMO	<i>Centaurea x moncktonii</i>	P	Forb	Outcompetes pasture species; degrades wildlife habitat; interferes with agriculture	1	NCR
knapweed, spotted	CEST	<i>Centaurea stoebe</i>	B	Forb	Allelopathic plant that can inhibit the germination of grasses; forms dense stands that exclude desired plants and wildlife	1	NCR
knotweed, Bohemian	POBO	<i>Polygonum x bohemicum</i>	P	Shrub	Easily spreads by disturbance; dense colonies eliminate other plant species and can degrade fish habitat; causes structural damage to human structures	1	NCR
laurel, spurge	DALA	<i>Daphne laureola</i>	P	Shrub	Toxic to humans and animals; contact with plants can cause dermatitis	1	NR
lupine, tree	LUAR	<i>Lupinus arboreus</i>	P	Shrub	Aggressive invader forming dense monocultures, potentially toxic to livestock	2	WR
peavine, everlasting	LALA	<i>Lathyrus latifolius</i>	P	Forb - vine	Forms dense thickets; seeds can be toxic to livestock; seriously interferes with forest regeneration where it invades from edges of timber units	2	ISSC
periwinkle, greater	VIMA	<i>Vinca major</i>	P	Shrub - vine	Rapidly spreading, invades and displaces native or desirable vegetation	2	WR
poison hemlock	COMA	<i>Conium maculatum</i>	B	Forb	Highly toxic to humans and animals; all parts of the plant are toxic; severe birth defects	1	NCR
St Johnswort, common	HYPE	<i>Hypericum perforatum</i>	P	Forb	Causes photo-sensitization when grazed; toxic at all stages of growth	3	NW
tansy ragwort	SEJA	<i>Senecio jacobaea</i>	B	Forb	Poisonous to horses, cattle, and pigs; animals grazing tansy can produce tainted milk, may result in potentially toxic residue in honey	1	NCR
tansy, common	TAVU	<i>Tanacetum vulgare</i>	P	Forb	Dense stands degrade forage value; toxicity issues for humans and livestock	1	NR
teasel, common	DIFU	<i>Dipsacus fullonum</i>	B	Forb	Forms dense stands of prickly, unpalatable plants; degrades habitat and reduces accessibility	1	NR

Common Name	4-Letter Weed Code	Scientific Name	Life Cycle ¹	Growth Form	Threat	Category	Status
thistle, bull	CIVU	<i>Cirsium vulgare</i>	B	Forb	Aggressive competitor, unpalatable for cattle	2	NW
thistle, Canada	CIAR	<i>Cirsium arvense</i>	P	Forb	Aggressive competitor, unpalatable; decreases forage; host species for several agricultural pests	2	NW
thistle, Italian	CAPY	<i>Carduus pycnocephalus</i>	A	Forb	Spiny, unpalatable, and excludes native vegetation and degrades habitat. Spreads quickly and can be a fire hazard in summer season.	1	NR
whitetop, hairy	LEAP	<i>Lepidium appelianum</i>	P	Forb	Monocultures displace desirable plants; unpalatable; can be form toxic to cattle	1	NR
wormwood, absinth	ARAB	<i>Artemisia absinthium</i>	P	Shrub	Aggressive invader, will outcompete desirable forbs and grasses in pastures, fields and native grasslands; plants have a strong bitter taste and odor, may affect milk quality	1	NR
yellow archangel	LAGA	<i>Lamium galeobdolon</i>	P	Forb - vine	Aggressive invader, competes understory species, degrades wildlife habitat	1	NCR
white sweet clover	MEAL	<i>Melilotus albus</i>	A	Forb	Toxicity issues for livestock; aggressive invader. County piles cleared	3	WW
wild basil savory	CLVU	<i>Clinopidium vulgare</i>	P	Forb	Aggressive invader, competes understory species, degrades wildlife habitat	2	WR

¹ A - annual; B - biennial; P - perennial

ISSC = Invasive Species of Special Concern, **NCR** = Noxious, Control Required, **NR** = Noxious, Rare **NW** = Noxious, Widespread

WR = Weedy, Rare, **WW** = Weedy, Widespread

Appendix C: 2019 Roadside Treatment Activities:

This table includes all county roadsides managed for noxious weeds in 2019 under the Clallam County Road Department IWM Plan. The table is sorted alphabetically by road name. Names shown in *italics* are roads that were also treated in 2017, names both **bolded** and *italicized* were treated in 2017 and 2018 names that are only **bolded** were also treated in 2018. The table contains the **Species Treated**, **Examined Acres**, **Treated Acres**, **Solid Treated Acres**, and **Solid Manual Acres** for each day work occurred on a road; definitions of these headings can be found at the end of the table. Species treated are listed alphabetically by the assigned 4-letter code (see appendix B); 4-letter codes shown in **bold** are regulated noxious weeds and required for control in Clallam County.

We treated **105** roads (2 surveyed, required no treatment) and completed a total of **233 miles (403 examined acres)** of county roadside comprised of **91.02 miles** manual only, **68 miles** of manual/ chemical, and **74.95 miles** chemical only. Treatments occurred within a total **274 acres** and included **35 species**. We treated **1.2 solid acres** of weeds with manual methods only and **13.4 solid acres** of weeds chemically. "Solid acres" represent the area that would be covered 100% with noxious weeds if the plants were clumped together; area is estimated in the field or calculated with recorded data. See table footer for further explanation.

Road Name	Treatment Method	Date	Total Miles	Acres Examined	Acres Treated	Solid Acres Treated (chemically)	Solid Acres Treated (manually)	Species Treated
3 CRABS RD	M	6/19/2019	1.4	NR	4.6E-05	0	5.0E-05	COMA
ASTER RD	M	8/7/2019	0.05	0.08	0.0001	0	0.0002	SEJA
ATTERBERRY RD	M	7/3/2019	2.7	0		0	9.2E-05	COMA
BLACK DIAMOND RD	M, H	6/24/2019	0.12	0.5	0.5	0.0574	0.0200	CIAR, CIVU, CYSC, HYPE
		8/19/2019	2.23	2.25	2.25	0.0689	0.0016	DIFU, LAGA
BLUE MOUNTAIN RD	H	9/11/2019	4.14	8	8	0.5165	0	CEMO, CYSC, LALA, POBO, PORE, SEJA
BUSINESS PARK LOOP	M	7/10/2019	0.4	4.2	0.02	0	0.0007	CEST
	M, H	4/17/2019	0.4	1	0.1	0.0023	0.0043	COMA
CAMP HAYDEN RD	M	8/21/2019	3.5	7	3.5	0	0.0035	SEJA
CARLSBORG RD	M	6/20/2019	0.1	0.01	0.01	0	0.0010	COMA
		7/10/2019	0.5	3.4	3.4	0	0.0007	CEST
CAYS RD	H	1/14/2019	0.25	1.3	0.5	0.1837	0	CAPY
		4/17/2019	0.25	2.25	2.25	0.1263	0	CAPY
CHARLEY CREEK RD	H	9/18/2019	0.7	1.4	0.4	0.0057	0	LAGA, POBO
CHICKEN COOP RD	M	8/14/2019	3.5	6.8	0.68	0	0.0003	SEJA

Road Name	Treatment Method	Date	Total Miles	Acres Examined	Acres Treated	Solid Acres Treated (chemically)	Solid Acres Treated (manually)	Species Treated
CHICKEN COOP RD cont'd	M	7/11/2019	3.5	3.5	1	0	0.0050	DIFU, SEJA
CLINE SPIT RD	M	4/25/2019	0.05	0.25	0.001	0	0.0001	COMA
COOPER RANCH RD	H	8/15/2019	0.1	0.0014	0.001	0.0001	0	POBO
DAN KELLY RD	M	8/21/2019	3.1	4.5	3	0	0.0011	SEJA
DEER PARK RD	M, H	9/4/2019	8	16	0.5	0.0230	0.2400	CEST, HICA, SEJA
	H	9/3/2019	1.5	3	3	0.2181	0	HICA
DERWATCHER RD	M	8/21/2019	0.75	1.5	0.5	0	0.0004	SEJA
DIAMOND POINT RD	M	8/1/2019	0.9	2.2	2.2	0	0.0018	CEMO, SEJA
		8/7/2019	0.9	2.3	2.3	0	0.0006	SEJA
		7/11/2019	2.8	6	6	0	0.1500	CYSC*, SEJA
DISCOVERY VIEW DR	M	8/1/2019	0.1	1	6.9E-05	0	7.5E-05	SEJA
		5/8/2019	0.1	NR	0.002	0	0.0004	SEJA
DUNGENESS DIKE TRAIL*	M,H	6/19/2019	0.1	3.75	3.75	0.1205	0.0750	COMA, DIFU
	H	4/2/2019	1.8	4.5	4.5	0.2525	0	COMA, DIFU, GERO
E EAST SEQUIM BAY	M	8/14/2019	0.77	1.5	1.5	0	0.0007	SEJA
		8/21/2019	4.5	6.6	6.6	0	0.0014	SEJA
EAST BEACH RD	M, H	8/13/2019	0.6	1.2	1.2	0.1607	0.0480	CEMO, CYSC*, GERO, HYPE
EAST LYRE RIVER RD	M, H	8/1/2019	0.5	1	1	0.1205	0.0463	CEMO, CIVU, GERO, SEJA
EASTERLY RD	H	8/20/2019	0.2	0.4	0.4	0.0172	0	CEMO, CIAR, CIVU, HYPE
EDEN VALLEY RD	M	8/21/2019	1.8	1.8	0.5	0	0.0005	DIFU, SEJA
EVANS RD	M	7/10/2019	0.6	0.5	0.5	0	0.0050	DIFU
		4/25/2019	1.7	2	2	0.0029	0	COMA
EVERGREEN PKWY	M	8/21/2019	0.5	1	0.01	0	0.0004	SEJA
FARRINGTON RD	M	8/30/2019	0.9	1.5	6.0E-05	0	3.4E-07	SEJA
	M, H	8/1/2019	0.9	1.8	1.8	0.0459	0.0006	CASE, CIAR, CIVU*, HYPE*, SEJA, RUAR

Road Name	Treatment Method	Date	Total Miles	Acres Examined	Acres Treated	Solid Acres Treated (chemically)	Solid Acres Treated (manually)	Species Treated
FASOLA RD	H	4/16/2019	1	2	0.6	0.0029	0	COMA
FISHER COVE RD	H	8/13/2019	0.8	1.6	1.6	0.0069	0	CEMO
	M, H	4/29/2019	0.8	1.8	1.8	0.1377	0.1350	CEMO, CIAR, CIVU, CYSC, GERO
FLEMING DR	M	8/12/2019	0.5	1	1	0	0.0005	SEJA
FRESHWATER BAY RD	M	8/21/2019	2.5	5	2.5	0	0.0022	SEJA
GOSSET RD	M, H	10/14/19	1.2	1.75	1.75	0.006	0.000525	CEMO, SEJA
GRAUL RAMAPO RD	M	8/21/2019	1.4	2.8	1	0	0.0007	SEJA
HAPPY VALLEY RD	M	7/10/2019	3.8	7.6	0.5	0	0.0200	DIFU
	H	8/27/2019	2	4	4	0.2525	0	CEMO, CEST, CIAR*, CIVU
	M, H	8/22/2019	3.7	7.4	7.4	0.4890	0.0425	CEMO, DIFU, SEJA
HERMISON RD	M, H	8/15/2019	0.8	0.8	0.8	0.0029	5.0E-05	POBO, SEJA
HOKO-OZETTE RD	M, H	8/8/2019	17.9	35.8	35.8	0.3168	0.0088	CYSC*, POBO, SEJA
HOLLAND RD	M	9/5/2019	0.1	3.2	0.002	0	5.0E-05	DIFU
	H	4/16/2019	1.75	3.5	0.1	0.0115	0	COMA
HUCKLEBERRY HILL RD	M	8/21/2019	0.3	0.6	0.2	0	0.0001	SEJA
JAMESTOWN RD	M	4/25/2019	1.2	1.2	4.6E-05	0	5.0E-05	COMA
JIMMY COME LATELY RD	H	7/16/2019	0.5	2.2	1	0.0918	0	CEMO, CIAR, CIVU, CYSC, GERO*, HYPE*, LALA, POBO, PORE, RUAR, RULA, SEJA
JOHNSON CREEK RD	H	8/20/2019	0.5	1.2	1.2	0.1791	0	CEMO, CIVU, DIFU
JOYCE-PIEDMONT RD	M	8/30/2019	4.2	5.5	6.0E-05	0	3.4E-07	SEJA
	H	8/13/2019	0.5	0.25	0.25	0.0517	0	GERO*, LAGA, POBO
KITCHEN-DICK RD	H	7/3/2019	2.9	6	6	0.8953	0	ARAB, BEIN, BUDA, CIAR, CEST, CIAR, CIVU, COAR, CYSC, LEAP, PORE, LEVU, LALA, TAVU, CRMO, SOPH
LAIRD RD	H	9/11/2019	0.9	1.8	1.8	0.1779	0	CEMO, CIAR, CIVU, CYSC
LAKE DAWN RD	H	6/12/2019	0.3	0.3	0.1	0.0014	0	CYSC, HIAU

Road Name	Treatment Method	Date	Total Miles	Acres Examined	Acres Treated	Solid Acres Treated (chemically)	Solid Acres Treated (manually)	Species Treated
LAMAR LN	M	6/4/2019	0.2	0.25	0.003	0	0.0003	COMA
LILJEDAHN RD	M	8/21/2019	1	1.5	0.5	0	0.0004	SEJA
LITTLE RIVER RD	H	6/13/2019	0.5	1	1	0.1033	0	CEMO, CIVU, GERO, LALA
		6/24/2019	0.6	1.5	1.5	0.4821	0	CEMO, CIAR, CIVU, HYPE, GERO
		7/23/2019	1.7	3.4	3.4	0.1377	0	CEMO, CLVU, CRMO, GERO, HYPE
LOST MOUNTAIN RD	M	9/6/2019	3.9	3.9	1	0	0.0050	SEJA
	H	10/8/19	0.02	.1	0.04	0.0688	0	CEMO
LOTZGESELL RD	H	4/25/2019	3.3	6.6	0.8	0.0029	0	COMA, DIFU
		7/22/2019	1.6	3.2	3.2	1.0790	0	CEMO, CEST, CIAR, CIVU, DIFU
LOWER ELWHA ROAD	M, H	7/23/2019	0.45	1.6	1.6	0.1607	0.0009	CIAR, CIVU, CYSC, HYPE, SEJA
LUPINE DR	M	8/7/2019	0.5	1	0.0003	0	0.0003	SEJA
MADRONA WAY	M	8/12/2019	1.1	2	2	0	0.0006	SEJA
MARINE DR	M	4/25/2019	1.5	3	0.003	0	0.0001	COMA
MCGARVIE RD	M	8/21/2019	0.3	0.6	0.6	0	0.0003	SEJA
	M,H	10/14/19	0.3	0.64	0.64	0.0058	0.0002	SEJA
MINA SMITH RD	M, H	8/22/2019	3.2	6.4	0.01	0.0057	0.0320	CYSC*, LAGA, SEJA
N BARR RD	M, H	4/17/2019	1.3	0.3	0.01	0.0023	0.0008	COMA
NORTH ST	M	8/7/2019	0.5	1.25	0.07	0	0.0009	SEJA
OLYMPIC DISCOVERY TRAIL/ADVENTURE ROUTE**	M	6/20/2019	0.3	0.4	0.4	0	0.0010	CEST
	M, H	8/6/2019	0.6	1.5	1.5	0.6887	0.0025	CIAR, CIVU, GERO, PHAR, SEJA
		9/5/2019	4.8	7	7	0.1492	0.0205	CEMO, CEST, COMA, DIFU, POBO, SEJA
	H	6/17/2019	1.6	2.4	2.4	0.5624	0	CEMO, CIAR, CIVU, CYSC, DIPU*, GERO, SEJA

Road Name	Treatment Method	Date	Total Miles	Acres Examined	Acres Treated	Solid Acres Treated (chemically)	Solid Acres Treated (manually)	Species Treated
ODT/AR cont'd	H	7/30/2019	1.9	1.25	1.25	0.8035	0	CEMO, CIAR, PHAR
O'BRIEN RD	H	6/10/2019	0.15	0.15	0.15	0.0344	0	PORE
		9/3/2019	3.8	7.6	7.6	0.0344	0	CEMO, CIAR*, CYSC*, PORE, TAVU
OLD BLYN HWY	M	6/19/2019	2.5	4.3	0.0005	0	0.0005	COMA
		8/14/2019	2.1	4	4	0	0.0018	SEJA
	H	4/1/2019	2.5	4.3	0.5	0.0803	0	COMA, GERO
OLD OLYMPIC HWY	M	7/10/2019	0.12	0.2	0.2	0	0.0040	DIFU
	M, H	7/30/2019	3.8	6.25	6.25	1.0101	0.0313	BUDA, CIAR, CEST, CIVU, DIFU, TAVU, VETH
OLYMPIC HOT SPRINGS RD	H	8/6/2019	0.85	1.7	1.7	0.5051	0	AEPO, CEMO, CIAR, CIVU, HIAU, GERO
		8/13/2019	0.9	2	2	0.4017	0	CEMO, CIVU, GERO*, LALA, SEJA, TAVU
PALO ALTO RD	M	8/14/2019	4.6	9.2	9.2	0	0.0004	SEJA
	M, H	8/29/2019	7.8	15.6	14	0.1607	0.0700	CEMO, CIAR*, HYPE*, SEJA
PANORAMA BLVD	M	8/21/2019	0.2	1.5	1.5	0	0.0008	SEJA
PARISH RD	M	7/3/2019	NR	NR	NR	0	4.0E-06	COMA
PAVEL RD	M, H	9/18/2019	1.3	2.6	2.3E-05	0	2.5E-05	SEJA
PILLAR POINT RD	M, H	9/18/2019	0.25	1	0.05	0.0459	0	CIVU, SEJA, SOAR
QUILLAYUTE AIRPORT RD	M	8/29/2019	0.3	0.6	0.6	0	0.0120	CYSC
RHODODENDRON DR	M	8/7/2019	0.8	1.6	1.6	0	0.0002	SEJA
RIVER PARK RD	S	8/22/2019	NR	NR	NA	0	0	NA
RIVER RD	H	8/29/2019	1.1	2.2	2.2	0.2181	0	CEMO, CEST, PORE
		8/27/2019	1.4	2.8	2.8	0.1033	0	CEMO, CIAR*, CIVU*, CYSC*, GERO*, SEJA
S BAGLEY CREEK RD	H	9/11/2019	0.1	0.1	0.1	0.0014	0	COMA
		4/1/2019	0.5	1	0.1	0.0029	0	COMA
S SOUTH SHORE RD	M, H	6/12/2019	2.6	5	0.15	0.0057	6.0E-05	HIAU
SALT AIR ST	M	9/18/2019	0.25	0.5	0.5	0	0.0200	CYSC, SEJA

Road Name	Treatment Method	Date	Total Miles	Acres Examined	Acres Treated	Solid Acres Treated (chemically)	Solid Acres Treated (manually)	Species Treated
SCHMITT RD	M	8/21/2019	0.4	0.8	0.1	0	7.5E-05	SEJA
	M,H	10/14/19	0.	0.97	0.97	0.0115	0.0003	SEJA
SEKIU RIVER RD - EDRR	H	9/18/2019	0.7	1.4	0.25	0.0115	0	LAGA, POBO
SEQUIM-DUNGENESS WAY	M	6/20/2019	0.1	0.01	0.01	0	0.0003	CEST
		7/10/2019	0.2	0.2	0.2	0	0.0080	DIFU
	M, H	4/25/2019	3.8	7.5	6	0.1377	0.0390	COMA, DIFU
SHERWOOD RD	M	8/12/2019	0.3	0.6	0.02	0	0.0004	SEJA
SIEBERTS CREEK RD	M, H	6/10/2019	0.15	0.2	0.2	0.0230	2.5E-05	CIAR*, COMA, CYSC*, PORE
SLAB CAMP RD	M	9/9/2019	0.7	1.4	1.4	0	0.0050	CIVU*, CYSC*, SEJA
SUNSHINE AVE	M	8/7/2019	0.6	0.66	0.66	0	0.0008	SEJA
SWAN BAY RD	M, H	8/8/2019	0.7	1.7	1.5	0.0482	0.0300	SEJA
TAYLOR RANCH RD	H	4/25/2019	0.1	0.05	0.006	0.0023	0	SEJA
	M	8/21/2019	0.8	1.6	1.6	0	0.0051	SEJA
TIMBER RD	M	8/1/2019	0.1	0.24	0.24	0	0.0001	SEJA
TOWNE RD	H	4/16/2019	2.1	4.2	4.2	0.1607	0	COMA
	M	6/6/2019	2.1	5.5	5.5	0	0.0007	CEST, COMA
TOWNSHIP LINE RD	H	9/3/2019	1.6	3.2	1.6	0.0459	0	CEMO, SEJA
TRIPP RD	H	7/1/2019	0.15	0.3	0.25	0.0023	0	CIAR*, LALA*, HIAU
TURNSTONE LN	H	6/19/2019	0.3	0.75	0.75	0.1492	0	CEST, CYSC
		5/6/2019	0.3	1.2	2.1	0.0803	0	CEST, CYSC, HYPE
VOICE OF AMERICA RD	H	4/16/2019	0.7	0.25	0.25	0.0115	0	COMA
W EDGEWOOD DR	H	9/11/2019	2.2	5	5	0.2927	0	CEMO, CIAR, CIVU, CYSC*, GERO, SEJA, TAVU
W HENDRICKSON	M	7/10/2019	0.5	0.75	0.75	0	0.0106	COMA, DIFU
W LAURIDSEN BLVD	H	9/11/2019	0.7	2.8	2.8	0.1033	0	CEMO, CIAR, CIVU, CYSC*, TAVU
W WASHINGTON ST	H	7/31/2019	0.2	0.5	0.5	0.0344	0	BUDA, CEST

Road Name	Treatment Method	Date	Total Miles	Acres Examined	Acres Treated	Solid Acres Treated (chemically)	Solid Acres Treated (manually)	Species Treated
W WASHINGTON ST cont'd	H	5/6/2019	0.5	0.6	0.6	0.2410	0	CEST, CIAR*, DALA, HYPE, PORE, RUAR
		6/19/2019	0.5	1.6	1.6	0.2181	0	CEST
W WEST SEQUIM BAY RD	M	6/3/2019	0.1	0.1	0.002	0	0.0014	COMA
		9/5/2019	2.6	5	5	0	0.0008	SEJA
WARD RD	H	4/16/2019	1.6	2.5	2.5	0.0459	0	COMA
WASANKARI RD	S	8/21/2019	NR	NR	NA	0	0	NA
WASHINGTON HARBOR RD	M	7/10/2019	0.1	0.25	0.25	0	0.0002	COMA
WENTWORTH RD	M	8/29/2019	1.2	2.6	0.0001	0	5.7E-07	SEJA
WEST LAKE PLEASANT RD	H	9/18/2019	1.2	2.4	2.3E-05	0.0002	0	POBO
WEST LYRE RIVER RD	H	8/1/2019	0.6	1.2	1.2	0.1664	0	CEMO, CIAR, CIVU, SEJA
WEST ST	M	8/7/2019	0.15	3	3	0	0.0034	SEJA
WHISKEY CREEK BEACH RD	M	8/21/2019	0.5	1	1	0	0.0022	SEJA
	M/H	10/14/19	0.5	0.97	0.97	0.0057	0.0174	SEJA
WILSON RD	M, H	8/29/2019	0.75	1.5	0.1	0.0010	1.1E-06	CIVU, GERO
WOODCOCK RD	M	6/19/2019	0.15	0.15	0.15	0.0574	0	COMA, CIAR
	H	4/16/2019	6.2	12	7	0	0	COMA
WOODS RD	H	7/22/2019	0.9	1.8	1.8	0.2755	0	CIVU, CLVU, CYSC, LALA, SEJA
WYE RD	M	8/21/2019	0.5	1	1	0	0.1050	SEJA
Total: 107 roads		54 days	233 mi	403 ac.	274 ac.	13.4 ac.	1.2 ac.	35 species

NA – Not applicable, NR – Not recorded

*Species treated intermittently treated**Multi-use trail operated and maintained by Clallam County Road Department.

¹**Italicized only** =road was also treated in 2017, **bold and italicized**=road was also treated in 2017 and 2018, **bold** indicates road was also treated in 2018

²**M** – Manual control; **H**- Chemical control; **M, H** – Combination of manual and chemical Control

³**Examined Acres** - The total area searched for noxious weeds while crew was involved in treatment activities

⁴**Treated Acres** - The total area encompassing all herbicide treatments per road per day

⁵**Solid Treated Acres**- The estimated area that would be covered 100% with noxious weeds if the plants were “clumped” together; calculated using the tank mix volume applied and calibrated sprayer output

⁶**Solid Manual Acres** - The area controlled by any manual means (pulling, digging, cutting, etc.) and does not include the spaces between weeds; area is either estimated in field and recorded on

“Herbicide/Manual Treatment Data Form” or calculated by infestation data (infested area * cover class) or by number of plants pulled (1000 CYSC = 0.1 ac, 1000 SEJA = 0.025 ac.)

⁷**Species Treated** - The 4-Letter Weed codes correspond to the species scientific name and can be found in Appendix. Bolded species are regulated noxious weeds.

Appendix D: County Rock Sources/Soil Disposal Site Treatment Activities

This table includes all County rock sources/spoil disposal sites (pits) managed for noxious weeds in 2019 under the Clallam County Road Department IWM Plan. The table is sorted alphabetically by pit name. The table contains the **Species Treated**, **Examined Acres**, **Treated Acres**, **Manual Acres**, and **Solid Treated Acres** for each day a pit was worked; definitions of these headings can be found at the end of the table. Species treated are listed alphabetically by the assigned 4-letter code (see appendix B); 4-letter codes shown in bold are regulated noxious weeds and required for control in Clallam County.

We completed work in **26 pits (194 examined acres)** over **31 days** to control **32 species**. We controlled **0.9 solid acres** of weeds with manual methods only and **26.5 solid acres** of weeds chemically. "Solid acres" represent the area that would be covered 100% with noxious weeds if the plants were "clumped" together and are estimated in the field or calculated using recorded data. The Sheriff Department Chain Gang partnered to assist with weed control in **8 pits**. Chain Gang crew worked under the direct supervision of Noxious Weed Control Board staff or independently by manual control means only.

Pit Name	Treatment Method	Date	Total Acres Examined	Total Acres Treated	Solid Acres Treated (chemically)	Solid Acres Treated (manually)	Species Treated
Blue Mountain Transfer Station	H	9/11/2019	0.0	0.01	0.0014	0	CEMO, COMA, PORE
Blyn Pit	H	5/2/2019	5.3	5.3	0.9183	0	CYSC, DIFU, LALA, RUAR, SEJA
		5/30/2019	12.0	12.0	1.9284	0	BUDA, COMA, CYSC, GERO, IMCA, RUAR, SEJA
		9/5/2019	10.2	10.2	0.0803	0	BUDA, CEMO, CYSC*, DIFU, POBO, POSA*, SEJA
Clallam Bay Storage Yard	M, H	9/18/2019	1.3	1.3	0.0459	0.0309	CYSC, CIVU, DIPU, PHAR, POBO
District 1 Shop	M	5/2/2019	2.5	2.5	0.3673	0	CEST, COMA, LEVU*, RUAR*
District 2 Shop	H	5/22/2019	4.4	4.4	0.3673	0	CIAR, CIVU, CYSC, DALA, GERO, RUAR
Herrick Gravel	H	5/22/2019	5.7	5.7	1.3545	0	CEMO, CIAR, CIVU, CYSC, HIAU, RUAR
		6/13/2019	1.5	1.5	0.2410	0	CEMO, CIAR, CIVU, HIAU, GERO
Hogback Pit	S	7/22/2019	NA	NA	NA	NA	NA
Hoko-Ozette Rd MP 4.5	H	6/18/2019	1.1	1.1	0.1492	0	CYSC, GERO, HIAU, LEVU*
		8/8/2019	1.0	1.0	0.0287	0	HIAU, GERO, SEJA
Hoko-Ozette Rd MP 10	M, H	8/8/2019	1.5	1.5	0.0459	0.0325	CASE*, CIAR, CIVU, CYSC, SEJA
Hoko-Ozette Rd MP 13	M, H	6/18/2019	1.6	1.6	0.3673	0.0320	CASE, CYSC, DIPU*, GERO, RUAR, RULA, SEJA
Hwy 101 Storage Yard	H	4/1/2019	1.2	0.1	0.0459	0	BRRA*, COMA, GERO*
Kirner Pit	H	3/29/2019	17.5	17.5	0.6657	0	COMA
		5/1/2019	20.0	20.0	2.2727	0	CEST, COMA, CYSC, LEVU*, LUAR, RUAR*

Kirner Pit cont'd		5/23/2019	13.4	13.4	2.2039	0	CEST, CIAR, CYSC, COMA, LUAR, RUAR
	M, H	7/9/2019	15.9	15.9	0.7346	0.0795	CEST, CIAR, CIVU, COMA, CYSC, DIFU, GERO, LALA, LUAR, RUAR*, VIMA
		9/23/2019	0.5	0.5	0.1148	0.088	COMA, DIFU, RUAR, SEJA
La Push "Ballard" Pit	H	5/13/2019	0.6	0.6	0.0459	0	CYSC, LAGA, PHAR*,
	M, H	8/15/2019	1.7	1.7	0.0689	0.0083	CYSC, LAGA, RUAR*, RULA*, SEJA
Lake Creek Pit	M, H	5/28/2019	8.0	8.0	2.2039	0.1600	CYSC, MEAL, RUAR, SEJA
		9/18/2019	3.0	3.0	0.0459	0.2250	CYSC*, POBO, SEJA
Little River Pit	H	6/13/2019	0.8	0.8	0.1377	0	CASE, CEMO, CIVU, CYSC, SEJA
		8/5/2019	0.3	0.3	0.0230	0	CEMO
Lower Elwha-Elwha Pit	M, H	7/23/2019	0.3	0.3	0.0002	1.4E-06	COMA, SEJA
McInnes Pit	H	1/14/2019	2.8	2.8	0.1837	0	CAPY, COMA, PHAR
		4/2/2019	1.0	1.0	0.0230	0	CAPY, COMA
	M, H	7/1/2019	3.0	3.0	0.4591	0.1200	CAPY, CEMO, CEST, CIAR, CIIN*, CIVU, COMA, DIFU
		9/23/2019	1.5	1.5	0.2296	0.0750	CEMO, CIAR, CIVU, COMA, DIFU, RUAR*
Morse Creek Pit	H	3/29/2019	3.0	3.0	0.3444	0	BRRA, COMA, GERO
		5/21/2019	15.0	15.0	1.5611	0	CIAR, CIVU, CYSC, RUAR*, TAVU
Olympic Wetland Mitigation**	H	6/10/2019	2.0	2.0	0.3328	0	CIAR, CIVU, CYSC, PORE
Piedmont Pit	H	6/4/2019	2.0	2.0	0.4247	0	CEMO, CIAR*, CIVU*, CYSC, GERO, PHAR, RUAR*, SEJA
Place Pit	H	6/4/2019	0.9	0.9	0.0459	0	CIAR*, GERO*, SEJA*
Quilayute Pit	H	5/13/2019	8.0	8.0	2.7089	0	CIVU, CYCS, DIPU*, PHAR*, RUAR*, SEJA
Ranger Pit	H	5/6/2019	11.2	11.2	1.7103	0	CEMO, CYSC, GERO, PHAR, RUAR
		5/21/2019	0.3	0.3	0.0023	0	CYSC
		7/8/2019	30.1	30.1	0.3903	0	CEMO*, CIAR*, CIVU*, CYSC*, GERO*, RUAR*
Sequim Storage Yard	H	4/17/2019	0.8	0.8	0.0115	0	CEMO*, CEST*, CIAR*, CIVU*, DIFU
		5/2/2019	2.1	2.1	1.0101	0	CEMO, CEST, CIAR, CIIN, CIVU, DALA*, DIFU, PHAR
		7/31/2019	0.8	0.8	0.0287	0	CEMO, CEST
Umbrella Creek Pit	H	6/18/2019	2.7	2.7	0.5510	0	CIAR*, CIVU*, CYSC, GERO, PHAR*, RUAR*, SEJA
		8/8/2019	2.5	2.5	0.2204	0	CASE*, CYSC, GERO, POBO, RUAR*, RULA*, SEJA
Whitcomb Diimmel Pit	H	5/29/2019	6.9	6.9	1.8365	0	CYSC, DIPU*, PHAR, RUAR, SEJA
Total: 26 pits		31 days	226 ac.	226 ac.	26.5 ac.	0.9 ac.	32 Species

* Species intermittently treated, ** Olympic Wetland Mitigation listed as a "specialty site" in 2019 IWM Plan; Olympic Wetland Mitigation is not a site of material extraction or storage.

¹**M** – Manual Control; **H**- chemical Control; **M, H** – Both Manual and chemical Control

²**Examined Acres** - The total area searched for noxious weeds while crew was involved in treatment activities; NR- not recorded

³**Treated Acres** - The total area encompassing all herbicide treatments per road per day; NR - not recorded

⁴**Solid Acres Treated** - The estimated area that would be covered 100% with noxious weeds if the plants were “clumped” together; calculated using the tank mix volume applied and calibrated sprayer output; NR - not recorded

⁵**Solid Manual Acres** - The area controlled by any manual means (pulling, digging, cutting, etc.) and does not include the spaces between weeds; area is either estimated in field and recorded on “Herbicide/Manual Treatment Data Form” or calculated by infestation data (infested area * cover class) or by number of plants pulled (1000 CYSC = 0.1 ac, 1000 SEJA = 0.025 ac.)

⁶**Species Treated** - The 4-Letter Weed codes correspond to the species scientific name and can be found in Appendix; Bolded species are regulated noxious weeds; UNKNOWN – species unable to be identified by Chain Gang

Appendix E: Herbicide Volumes by County Roads and Rock Sources

The table alphabetically lists the county roads and rock sources that received chemical treatment in 2019. Roads included in treatments as “early Detection, Rapid Response” locations (3) are show in italics.

The table includes the trade name of herbicides used and amounts applied in ounces per treated road section (Note: 1 oz. equals 2 tablespoons). The Treated Road Section lists the portions for each road where herbicide application may have occurred. Herbicide applications within the listed boundaries were only made to noxious weeds and exact treatment locations varied with individual plant locations.

In 2019 we applied a total of **7.24 gallons** and **13.1 gallons** of herbicide on County roadside and in County pits, respectively. A combination of Milestone® and Vastlan® or Element 3A® was used on most roads included in chemical treatment; a mix that was chosen for its efficacy on expected weed species. Polaris® was almost used exclusively for Knotweed (sp.) and AquaNeat® was only used on a small portion of the Olympic Discovery Trail to assist with site preparation to clear noxious weeds in advance of pollinator-friendly native plantings. All treatment locations were posted and signs left in place for 24 hours. An online table of treated roads and treatment dates was maintained and updated throughout the season.

Road Name	Road Segment Treated	Total Miles	Milestone (Oz)	Vastlan (Oz)	Element 3A (Oz)	Polaris (Oz)	Transline (Oz)	Aquaneat (Oz)
BLACK DIAMOND RD	Hwy 101 overpass to JCT w/ Baskins Rd	6.37	0.5	6.1	3	-	-	-
BLUE MOUNTAIN RD	Blue Mountain Transfer Station to JCT w/ Indigo Eagle Rd	4.14	3.5	-	42.2	0.6	-	-
BUSINESS PARK LOOP	Entire Rd	0.4	-	0.1	-	-	-	-
CAYS RD	JCT w/ Lotzgesell Rd to JCT w/ Hogback Rd	0.25	-	7	-	-	4	-
CHARLEY CREEK RD	Entire Rd	0.7	0.04	0.3	-	0.04	-	-
COOPER RANCH RD	Mile Post 1.7	0.1	-	-	-	0.004	-	-
DEER PARK RD	JCT w/ Township Line Rd to Olympic National Park Boundary	4.25	1.7	12.2	2	-	-	-
DUNGENESS DIKE TRAIL*	Entire Trail	1.8	0.90	20.35	-	-	-	-
EAST BEACH RD	JCT w/ Hwy 101 to East Beach Rec Area	0.6	1.2	14	-	-	-	-
EAST LYRE RIVER RD	Entire Rd	0.5	0.9	6.6	-	-	-	-
EASTERLY RD	Entire Rd	0.2	0.1	1.5	-	-	-	-
FARRINGTON RD	Entire Rd	0.9	0.3	2.5	-	-	-	-
FASOLA RD	JCT w/ Woodcock to North Terminus	0.33	-	0.2	-	-	-	-
FISHER COVE RD	Entire Rd	0.8	-	7.5	-	0.4	-	-
GOSSETT RD	Entire Rd	1.2	0.04	0.5				
HAPPY VALLEY RD	Entire Rd	5.9	5.3	61	-	-	3.5	-
HERMISON RD	Entire Rd	0.8	-	-	-	0.2	-	-
HOKO-OZETTE RD	Entire Rd	17.9	2.1	15.6	-	1.7	-	-
HOLLAND RD	Entire Rd	1.75	-	0.6	-	-	-	-
JIMMY COME LATELY RD	JCT w/ Palo Alto Rd to USFS Boundary	0.5	0.7	5	-	-	-	-

Road Name	Road Segment Treated	Total Miles	Milestone (Oz)	Vastlan (Oz)	Element 3A (Oz)	Polaris (Oz)	Transline (Oz)	Aquaneat (Oz)
JOHNSON CREEK RD	JCT w/ Happy Valley Rd to DNR Boundary	0.5	1.3	15.6	-	-	-	-
JOYCE-PIEDMONT RD	JCT w/ East Beach Rd to MP 0.5, Hwy 112 south 3.8 mi.	4.3	0.38	4	0.1	0.3	-	-
KITCHEN-DICK RD	JCT w/ Hwy 101 to Lotzgesell Rd	2.9	6.4	48.8	-	-	-	-
LAIRD RD	Entire Rd	0.9	1.2	-	14.9	-	-	-
LAKE DAWN RD	JCT w/ Little River Rd to JCT w/ Hurricane Ridge Rd	0.3	0.01	0.1	-	-	-	-
LITTLE RIVER RD	Entire Rd	7	11.7	31.9	-	-	-	-
LOST MOUNTAIN RD	From Lost Mountain Ln, north 100ft.	0.02	0.5	3.84				
LOTZGESELL RD	Entire Rd	3.3	7.3	58.9	-	-	-	-
LOWER ELWHA ROAD	JCT w/ Edgewood Dr to JCT w/ Mapleton Way	0.45	1.2	8.8	-	-	-	-
MCGARVEY RD	Entire Rd	0.3	0.04		0.48			
MINA SMITH RD	Entire Rd	3.2	0.04	0.3	-	-	-	-
N BARR RD	JCT w/ Hwy 101 to JCT w/ Loafer Ln	0.2	-	0.1	-	-	-	-
O'BRIEN RD	Entire Rd	3.8	0.5	3.8	-	-	-	-
OLD BLYN HWY	Entire Rd	2.5	-	9	-	-	-	-
OLD OLYMPIC HWY	JCT w/ Hwy 101 to JCT w/ Cameron Rd	3.8	7.3	10	-	-	-	-
OLYMPIC DISCOVERY TRAIL/ADVENTURE ROUTE*	JCT w/ Spring Rd to JCT w/ Wild Currant Way, JCT w/ Carlsborg Rd to JCT w/ Banana Way, JCT w/ Rhodefer Rd to JCT w/ Dawley Rd, JCT w/ Gossett Rd to JCT w/ JCT w/ Waterline Rd	10.4	13.5	133.4	12	0.8	-	21.3
OLYMPIC HOT SPRINGS RD	Entire Rd	2.1	6.5	62.5	-	-	-	-
PALO ALTO RD	JCT w/ Vista Del Mar Rd to USFS Boundary	6.25	1.2	14	-	-	-	-
PAVEL RD	Entire Rd	1.3	-	-	-	-	-	-
PILLAR POINT RD	Entire Rd	0.25	-	-	-	-	-	-
RIVER RD	Entire Rd	2.7	2.2	28	-	-	-	-
S BAGLEY CREEK RD	JCT w/ Hwy 101 to 0.5 mi South	0.5	0.01	0.2	0.1	-	-	-
S SOUTH SHORE RD	JCT w/ Yew Tree Dr to 0.5 mi East	0.5	0.04	0.3	-	-	-	-
SEKIU RIVER RD - EDRR	JCT w/ Hwy 112 to 0.5 mi West	0.5	-	-	-	0.6	-	-
SEQUIM-DUNGENESS WAY	JCT w/ Sanford Ln to JCT w/ E Anderson Rd	3.8	-	7.5	-	-	-	-
SCHMIDT RD	Entire Rd	0.4	0.08		0.1			
SIEBERTS CREEK RD	JCT w/ Hwy 101 to JCT w/ Shamrock Ln	0.15	0.2	1.3	-	-	-	-
SWAN BAY RD	Entire Rd	0.7	0.3	2.5	-	0.1	-	-
TAYLOR RANCH RD	JCT w/ Sequim-Dungeness Way to 0.1 mi East	0.1	-	0.1	-	-	-	-
TOWNE RD	Entire Rd	2.1	-	8.9	-	-	-	-
TOWNSHIP LINE RD	JCT w/ Deer Park Rd to JCT w/	0.8	0.3	2.6	-	-	-	-

Road Name	Road Segment Treated	Total Miles	Milestone (Oz)	Vastlan (Oz)	Element 3A (Oz)	Polaris (Oz)	Transline (Oz)	Aquaneat (Oz)
	Runamuck Ln							
TRIPP RD	JCT w/ Atterberry Rd to JCT w/ Some Day Way	0.15	-	0.1	-	-	-	-
TURNSTONE LN	Terminus to Rondale Dr	0.3	1.6	12.6	-	-	-	-
VOICE OF AMERICA RD	JCT w/ Lotzgesell Rd to Parking Lot	0.7	-	0.6	-	-	-	-
W EDGEWOOD DR	Entire Rd	2.2	2.2	-	25.5	-	-	-
W LAURIDSEN BLVD	Entire Rd	0.7	0.7	-	8.6	-	-	-
W WASHINGTON ST	Terminus to JCT w/ S 14th Ave	0.5	3.7	27.2	-	0.5	-	-
WARD RD	Entire Rd	1.6	-	2.5	-	-	-	-
WEST LAKE PLEASANT RD	Entire Rd	1.2	-	-	-	0.01	-	-
WEST LYRE RIVER RD	Entire Rd	0.6	1.2	9.1	-	-	-	-
WHISKEY CR	Entire Rd	0.5	0.04		0.48			
WILSON RD	Entire Rd	0.75	0.01	0.04	-	-	-	-
WOODCOCK RD	Entire Rd	6.2	-	7.0	-	-	-	-
WOODS RD	JCT w/ Hwy 101 to USFS Boundary	0.9	2.0	15	-	-	-	-
Total: 62 Roads	Total:	130.1 (mi)	90.3 (oz.)	690.8 (oz.)	109.6 (oz.)	5.4 (oz.)	7.5 (oz.)	21.3 (oz.)
			0.71 (gal)	5.4 (gal)	0.86 (gal)	0.04 (gal)	0.06 (gal)	0.17 (gal)

Pit Name	Total Acres	Milestone (Oz)	Vastlan (Oz)	Element 3A (Oz)	Polaris (Oz)	Aquaneat (Oz)
Blue Mountain Transfer Station	2.7	-	-	-	0.08	-
Blyn Pit	14.3	0.3	117.5	4	26.3	-
Clallam Bay Storage Yard	1.2	-	-	-	1.97	-
District 1 Shop	3.7	-	-	-	10	-
District 2 Shop	4.7	-	-	-	10	24
Forks Pit	3.8	-	-	-	-	-
Herrick Gravel	6.6	1.7	83.1	-	36.9	4.5
Hogback Pit	1.7	-	-	-	-	-
Hoko-Ozette Rd MP 4.5	1.2	1.4	9.7	-	-	-
Hoko-Ozette Rd MP 10	2.9	0.3	2.5	-	-	-
Hoko-Ozette Rd MP 13	1.5	2.4	20	-	-	-
Hwy 101 Storage Yard	1.2	-	2.5	-	-	-
Kirner Pit	15.6	5.3	155	-	131.7	86.4
La Push "Ballard" Pit	2.1	0.5	4.5	4	1.25	-
Lake Creek Pit	15.1	-	123	-	15.1	-
Little River Pit	1	1.4	8.8	-	-	-
Lower Elwha-Elwha Pit	1	0.001	0.01	-	-	-
McInnes Pit	3.6	2.6	26.3	-	20	-
Morse Creek Pit	25.3	-	85	-	51.9	9.4
Olympic Wetland Mitigation*	23.6	2.4	18.5	-	-	-
Piedmont Pit	2	1.7	5	-	-	-
Place Pit	4.6	0.3	-	-	-	-
Quilayute Pit	13.5	-	147.5	-	73.4	-
Ranger Pit	48.6	0.8	95.35	-	12.5	-
Sequim Storage Yard	2.1	0.2	2.2	-	27.5	-
Umbrella Creek Pit	5.5	4.9	36.9	-	5.1	-
Whitcomb Diimmel Pit	5.8	-	95	-	47.5	-
Total: 26 Pits	Total: 191.3 ac.	26.2 (oz.)	1038.4 (oz.)	8 (oz.)	471.1 (oz.)	124.3 (oz.)
		0.20 (gal)	8.1 (gal)	0.06 (gal)	3.7 (gal)	1.0 (gal)

*Olympic Wetland Mitigation listed as a “specialty site” in 2019 IWM Plan; Olympic Wetland Mitigation is not a site of material extraction or storage.

¹**Treated Road/Pit Section** - the approximate linear extent of road where herbicide application may have occurred; herbicide was only applied to designated noxious weeds and exact locations of applications varied with individual plant locations. Treatment Extent not included for County Rock Source and treatment may have occurred anywhere within pit boundaries

²**Milestone®** - Active ingredient: aminopyralid; in 0.125% solution.

³**Vastlan®** - Active ingredient: triclopyr; in 0.5-1% solution, 25-50% solution for cut-stump application only.

⁴**Element 3A®** - Active ingredient: triclopyr; in 1-2% solution on roadsides, 25-50% solution for cut stump only.

⁵**Polaris®** - Active ingredient: imazapyr in 1% solution

⁶**AquaNeat®** - Active ingredient: glyphosate in 0.5-2% solution on Quilayute Rd and select pits only.

⁷**Road Name** – Italicized roads were included in treatments as Early Detection, Rapid Response sites.

Appendix F: Pilot Pollinator Plantings

The table below shows all plants included in Pollinator Planting projects this year. The table is arranged alphabetically by the scientific name. All of the plants were grown by the Olympic National Park's Matt Albright Native Plant Center and were locally sourced from existing populations on the Olympic Peninsula. The species included will provide native pollinator resources with a continuous bloom period ranging from late February to late October. The species represent a mixture of native shrubs and forbs that meet roadside criteria, provide desirable habitat, and through competition, help prevent the establishment of noxious weeds and undesirable vegetation.

In 2018, portions of Black Diamond and Old Olympic Hwy were chosen as pilot projects. In 2019, these initial projects were monitored, treated for noxious weeds, and augmented. Rows highlighted in grey indicate species planted only at the Old Olympic site this year; rows highlighted in pink indicate species used at both Old Olympic and Black Diamond Rd.

In 2019 we planted a portion of the Deer Park Overpass with the assistance of road department staff, the Sheriff's chain gang and volunteers. Master Gardener volunteers undertook a planting along Wood's Rd adjacent to the Master Gardener Demonstration Garden. The majority of available plants were used at the Deer Park Underpass; these species are shown in rows not highlighted. Species used at the Master Gardener site (a mix of 50 plants) are not specifically called out.

Common Name	Scientific Name	Quantity Planted
pearly everlasting	<i>Anaphalis margaritacea</i>	36
sea-watch	<i>Angelica lucida</i>	250
western red columbine	<i>Aquilegia formosa</i>	250
kinnikinnick	<i>Arctostaphylos uva-ursi</i>	138
goat's beard	<i>Aruncus dioicus</i>	150
fireweed	<i>Chamaenerion angustifolium</i>	200
Oregon sunshine	<i>Eriophyllum lanatum</i>	500
woodland strawberry	<i>Fragaria vesca</i>	360
salal	<i>Gaultheria shallon</i>	500
ocean spray	<i>Holodiscus discolor</i>	89
tall Oregon grape	<i>Berberis aquifolium</i>	500
falsebox, Oregon boxwood	<i>Pachistima myrsinites</i>	200
coast penstemon	<i>Penstemon serrulatus</i>	250
mock orange	<i>Philadelphus lewisii</i>	100
pacific nine-bark	<i>Physocarpus capitatus</i>	50
wild currant	<i>Ribes sanguineum</i>	250
bald-hip rose	<i>Rosa gymnocarpa</i>	250
Henderson's checkermallow	<i>Sidalcea hendersonii</i>	150
Canada goldenrod	<i>Solidago canadensis</i>	244
common snowberry	<i>Symphoricarpos albus</i>	150
Douglas aster	<i>Symphyotrichum subspicatum</i>	150
evergreen huckleberry	<i>Vaccinium ovatum</i>	250
Total: 22 species	Total:	5017 plants

Appendix G: Protocols

Project selection:

The focus of the Clallam County Road Department 2019 IWM was the control of regulated noxious weeds and invasive, non-native weeds of special concern on Clallam County rights-of-way. The 2018 IWM Plan treatment priorities were:

1. Control of Category 1, regulated weeds on county roadsides in accordance with state law.
2. Control of Category 1, regulated weeds and select weeds in all county rock sources.
3. Control of Category 1 and 2 weeds at locations with most impact to local agriculture.
4. Control of Category 1 and 2 weeds at locations with most impact to local forestry.
5. Control of non-native, invasive weeds that interfere with the safety or function of County roadsides or additional non-roadside management areas
6. Control of Category 1 and 2 weeds at locations requested by the public and local agencies.

In addition to the prioritized locations listed in the 2019 Plan, locations suitable for manual control during periods of inclement weather and locations discovered to fit “early detection, rapid response” criteria were added to 2019 projects.

Control Methods:

Chemical:

- Used only EPA and WSDA approved formulation herbicides; all are aquatically approved formulations with the exception of Transline. The products chosen offered the greatest weed selectivity, maximized worker and public safety, offered lowest rates, and posed the lowest risk for wildlife and environment.
 - Milestone® - Active ingredient: aminopyralid; in 0.125% solution.
 - Vastlan®- Active ingredient: triclopyr; in 0.5-1% solution foliar application, 25-50% Cut-Stump application ONLY
 - Element 3A®- Active ingredient: triclopyr; in 1-2% solution
 - Polaris® - Active ingredient: imazapyr in 1% solution
 - AquaNeat® - Active ingredient: glyphosate in 0.5% solution at select pit locations; 1.5% solution Quillayute Rd only
 - Transline®-Active ingredient: clopyralid in 0.5% solution, at 2 sites; Happy Valley and Cays Rd
- All proposed roadside application locations included in Plan, the plan was published online and notice placed in local newspaper in advance of treatments.
- Offered adjacent landowner agreements/volunteer alternatives to herbicide applications.
- Posted Herbicide Application Notices (Appendix I) to clearly mark treatment areas prior to all herbicide activity. Posted at all public intersections and at intervals of approximately ½ mile or less depending on the road's length.
- Herbicide Application Notices included name and mobile contact number to reach control crew in the field during treatments.
- All roadside applications completed by licensed applicators and were conducted on foot without the use of any mechanized equipment
- Used spot treatments ONLY (no broadcast treatments), for specific weeds and included marker dye to aid in identification of treatment areas.
- Mixed and loaded herbicides in locations that minimized risk of public exposure to concentrated chemicals and potential for spills.
- Observed strict compliance to product labels and to state and local regulations; including the use of appropriate personal protective equipment as described by product labels.

Physical:

- Dug up newly established infestations of plants wherever practical and conditions favorable.
- Cut and bagged heads of flowering biennial plants wherever feasible.

Spatial Data collection and Mapping:

- NWCB staff carried a Garmin 78 pre-loaded with Montana Hunt Chip, which identified landowners (Meta data was set to NAD83 Harn, State Plane North 4601, and statute feet).
- GPS points were taken for all regulated weed species, priority species, or significant observations.
- Carried an iPhone 6 (provided by WSDA) with ArcCollector Application with current Clallam County Parcel data, spatial notes and past infestation information.
- Data was mapped and symbolized to Treatment Area Maps (Page 4).

Data Reporting and Monitoring:

- Supported WSU Master Gardener's RWMT with completed Herbicide/Manual Treatment Form and details.
- Published and routinely updated herbicide application information by road section to NWCB website. Detailed activity data published in the appendices to this report.

Appendix H: WSU Extension Master Gardener Roadside Weed Management Monitoring Report

The following report document is a scanned copy of the report created by WSU Extension program's Master Gardeners Roadside Weed Monitoring Team (RWMT). The WSU Master Gardener program was established in 1971 to assist Extension professionals in the delivery of research-based horticultural information to communities. Today, Master Gardeners undergo 100 hours of training in topics such plant biology and species identification training to become certified Master Gardeners and provide for a variety of community services including educational programs, diagnostic services and answers to home gardening questions.

The RWMT are Master Gardeners engaged as citizen scientists to collect data and provide an independent assessment of the IWM Program and its treatment activities. Master Gardener's unique qualities as an educated, highly-trained volunteer group make the RWMT an extremely valuable asset to the IWM Program.

The 2019 RWMT consisted of seven certified Master Gardeners with a particular interest in environmental stewardship and research. Individually, the team members come from a variety of professional and academic backgrounds, including, resource management, applied sciences and natural science. The team logged over 500 volunteer hours during which they assessed 45% of the treated roads as well as assisted in the development and implementation of a variety of research projects, each of which is described in the following report.

2019

ROADSIDE WEED MANAGEMENT REPORT



WASHINGTON STATE UNIVERSITY
CLALLAM COUNTY EXTENSION
Master Gardener Program

Clallam County Master Gardener Roadside Weed Monitoring Report – 2019

EXECUTIVE SUMMARY:

The Washington State University Clallam County Extension Master Gardener's Roadside Weed Monitoring Team (RWMT) continued its Clallam County roadside monitoring activity in 2019, for the seventh year, surveying 49 roadsides in the East and Central Road Commission Districts. Fifty-eight (58) Herbicide/Manual treatment forms were analyzed. Numbers were down this year due to the variances of the weather and the decisions not to monitor in the West District nor monitor strictly manual treatment sites. Overall, 2019 weed control efficacy was 74%, down slightly. No instances of off-target herbicide application were noted.

The two native planting sites that were established in 2018 were monitored in 2019 for plant survival. Some species did very well and some did not. A case of potential off-target damage in 2018 documented by RWMT was reexamined several times this year. Since the symptoms observed could be caused by a number of factors, we could not conclude any damage occurred from herbicide application.

Two new projects were initiated this year by RWMT. The first is the No-Mow Pilot Area Project, which will be a long-term project. Two roads were selected: Place Road and Diamond Point Road. The objective is to determine if roadside back-slopes left un-mowed develop fewer tree seedlings if the low growing native roadside vegetation is allowed to flourish. Secondly, the Olympic Discovery Trail weed species evaluation was started with a survey of the noxious weeds. Approximately two-thirds of the completed trail that is outside the city limits of Port Angeles and Sequim was surveyed. The RWMT's reports on the above projects and surveys have also been delivered to the Noxious Weed Office which are available from said office upon request.

The RWMT volunteered about 500 hours this year. We have enjoyed the projects, expanded our knowledge base, and look forward to next year's activities guided by the forward-looking County Commissioners and Road Department. Many noxious weed species seeds are viable for numerous years, and we hope that our collaboration with the involved County Departments will continue.

PROJECT OVERVIEW:

Entering the third year of the Clallam County Integrated Weed Management Plan, Master Gardeners continued our role as an impartial monitor of the weed control efficacy along Clallam County roadsides. Master Gardeners have been monitoring Clallam County roadsides since 2012, noting specific noxious weeds. In 2017, the objective changed to monitoring undesirable weeds treated (herbicide and/or manual) by the noxious weed staff. The primary purpose was to evaluate the efficacy of treatment. This emphasis continued in 2018. Additionally, a new phase of the Integrated Weed Management Plan was introduced: find potential native planting sites that would enhance pollinator habitat. Two sites were selected for planting by noxious weed staff, Master Gardeners, and volunteers.

Continuing the emphasis of the two prior years, the Master Gardener team monitored herbicide-treated roadsides. However, a significant portion of the volunteer hours in 2019 were devoted to several new associated projects in conjunction with the Noxious Weed Control Office. To follow up on last year, the RWMT monitored the condition of the 2018 plantings through 2019.

The No-Mow Pilot Project was begun. The objective is to determine if roadside back slopes left un-mowed over an extended time period enhance the native shrub vegetation, thus limiting tree seedling development. Surveying of the Clallam County Park land for the presence of noxious and invasive weeds was also begun with the canvassing of the Olympic Discovery Trail commencing at the east County line and continuing west to the Elwha River. Approximately two-thirds of the completed trail that is outside the city limits of Port Angeles and Sequim was surveyed. Pollinator work in 2018 continued this year.

RWMT reports on the above activities submitted to the Noxious Weed Office are available upon request.

MONITORING:

Commencing at the end of May, seven Master Gardeners launched the 2019 treatment site monitoring. During the season, the team was given completed 2019 Herbicide/Manual Treatment Data Forms (TDF) for treated sites (Table 1).

Table 1: Treatment Forms

Treatment forms received: -----	105
Herbicide treatment: -----	59
Manual or out of monitoring area and pits: -----	45
Treatment forms monitored: -----	58

Forty-three (43) roadsides were monitored during the 2019 season (Appendix A) with 25 in the East Clallam Road Department District and 18 in the Central District. No roadsides were monitored in the West District this year as it was deemed an inefficient use of resources. Eleven (11) previously un-monitored roadsides were newly evaluated. In addition to roadsides, a portion of the Dungeness Dike, part of the Olympic Discovery Trail near Agnew, Voice of America, and the Lake Sutherland access site were monitored. Total area monitored accumulated to 95 acres.

Thirty-four (34) Clallam County noxious weed species were monitored (Appendix B). Category 1 weeds remained the highest priority for control in 2019. Most of the commonly monitored weeds of 2017 still make the top ten list of monitored weeds in 2019 (Table 2). The knapweeds (meadow, spotted, and diffuse) were a high priority in 2017 and remained such for 2019. Meadow knapweed was the most commonly monitored in 2019 being noted on 26 of the 59 TDFs. It is still more prevalent in the Central District than the East. Spotted knapweed was confined to east of Port Angeles with 9 TDFs noting the presence compared to 16 last year. Diffuse knapweed was not documented this year, only once last year and 9 times in 2017. There are a number of knapweed species and cross pollination leads to hybridization (black and brown leads to meadow) thus causing field identification difficulties.

Table 2: Most Commonly Monitored Weeds

<u>Rank</u>	<u>2017</u>	<u>Rank</u>	<u>2018</u>	<u>Rank</u>	<u>2019</u>
1	Tansy Ragwort	1	Canada thistle	1	Meadow Knapweed
2	Canada Thistle	2	Bull Thistle	2	Canada Thistle
3	Meadow Knapweed	3	Scotch Broom	3	Bull Thistle
4	Scotch Broom	4	Meadow Knapweed	4	Herb Robert
5	Diffuse Knapweed	5	Tansy Ragwort	4T	Poison Hemlock
6	Bull Thistle	6	Herb Robert	4T	Scotch Broom
6T	St. Johnswort	7	Everlasting Peavine	4T	Tansy Ragwort
8	Herb Robert	7T	Poison Hemlock	8	St. Johnswort
9	Everlasting Peavine	9	Spotted Knapweed	9	Spotted Knapweed
10	Spotted Knapweed	10	Himalayan Blackberry	10	Fuller's Teasel

Canada thistle remains high on the list of treated and monitored weeds but there is a noticeable decrease in some areas. However, it is present in many of the same places on private land where it has been minimized on the public right of way. A third of the treated and monitored Canada thistle sites, apparently because of the proliferation of individuals, were partial treatments. Partial treatments were also common with Herb Robert with half of the sites partially treated. Densities were usually high and large patches were common. It is a more common weed in the Central District than the East since it prospers in a shaded habitat. Poison hemlock is found only east of Port Angeles and is a weed that is treated early and often. These sites are usually monitored early in the season and seemed to be mostly repeat sites from 2018.

Half of the 34 monitored weeds had only one or two locations to be monitored, and the area coverage of these was minimal, usually less than a tenth of an acre (Appendix C). Without specific locations of small infestations, it was impossible to determine if the weed was eliminated or if the original small area simply wasn't found. For example, locating a 10-foot-long patch of hoary alyssum along the entire stretch of Kitchen Dick or a small patch of St. John's-wort with a density of 1 besides Little River Road is difficult.

The primary concern in the monitoring process was the efficacy of the noxious weed treatments. The developed efficacy data from our monitoring corresponds to the prescribed codes

found on the weed treatment monitoring form (WTMF) provided by the noxious weed office. Monitoring of herbicide treated sites was done at least 4 weeks after treatment but not long after that time period had elapsed. Since the weather was not as co-operative this year, herbicide treatments were more sporadic in application, resulting in a clustering of monitoring sites late in the season.

While efficacy ratings are somewhat subjective, they are determined by consensus. Efficacy ratings vary noticeably from road to road and weed to weed. The developed efficacy data from our monitoring evaluation corresponds to the prescribed codes found on the WTMF (Table 3).

Table 3: Code for Percent Efficacy of Treatment & Monitoring Evaluations

Code	% Efficacy	Rating	Monitoring Evaluation Total
0	0	No effect	7
03	1 – 5	Failure	0
15	6 – 25	Poor	12
35	26 – 50	Marginal	12
65	51 – 75	Fair	20
85	76 – 90	Good	30
95	91 – 99	Excellent	31
100	100	Complete	38
UN	UNK	Unknown	36

The combined overall average efficacy was 74% (Fair), down a bit from 79% (Good) in 2018. Part of the decrease may be explained by the elimination of rating manually only treatment sites, which commonly received Complete or Excellent ratings. A total of 214 efficacy ratings were given with 114 in the East District and 100 in the Central. The RWMT monitored 184 herbicide-only applications, 16 combination manual/herbicide applications, and 3 manual treatments. The manual treatment area monitoring was part of the herbicide application at a specific site. This total does not add up to 214 since some information was lacking on the TDFs. Included in the 214 were 25 partial treatment applications, and those 25 treatment evaluations are not reflected in the overall efficacy and species ratings. Of the unknowns, most were associated with weed species that were treated only once or twice. Seven (7) weed species that were listed as treated only once on the TDFs received unknown efficacy ratings. These were normally isolated patches on longer stretches of treatment sites.

The more commonly monitored weed species had an occasional unknown, but several were subject to sites that were only partially treated – Canada thistle and Herb Robert are good examples. Half of the Herb Robert sites and a third of the Canada thistle sites were partial treatment sites. Star efficacy ratings were earned on several common weed species (Table 4). Bull thistle applications, with a mean efficacy rating of 87, most commonly received a 100 percent rating. St. John's-wort and tansy ragwort, with a few low efficacy ratings, also most commonly received complete efficacy ratings.

Table 4: 2019 Efficacy ratings for the Most Commonly Monitored Roadsides

Weed	Treatments*	Mean	Median	Mode
Meadow knapweed	24	77	90	95
Spotted knapweed	8	76	95	95
Canada thistle	16	78	95	95
Bull thistle	20	87	95	100
Poison hemlock	14	63	85	85
Scotch broom	10	77	85	85
Fuller's teasel	6	80	75	65
Herb Robert	8	49	35	15
St. Johnswort	13	77	95	100
Everlasting peavine	5	70	65	65
Tansy ragwort	11	76	95	100

*Unknown ratings or partial treatments not included

Conversely, Herb Robert had poor efficacy ratings on the completely treated sites. Fuller's teasel had widely variable ratings. Poison hemlock had the second lowest mean efficacy ratings of the common treated weed species. Overall, efficacy ratings showed a wide range for individual species (Appendix C).

HERBICIDE RETREATMENT NEEDS:

Other data gathered by the monitoring team on the WTMF included retreatment needs for this year and next. Retreatment needs for this year were communicated to the Noxious Weed staff shortly after monitoring, usually the day of monitoring. Communication was common between the Noxious Weed staff and the Master Gardeners during the season. Poison hemlock that was missed or recently exposed was sure to be reported. It proved to be a troublesome weed in this year's eradication efforts. Any priority weed for treatment that had less than half of the target population controlled was quickly reported.

ENVIRONMENTAL SITE TYPING:

Environmental site typing characterizes the immediate surroundings along the roadside and classifies the section into areas that are open, wet/dry, forest, or other. Open and forest are the two common land cover types. Since no significant changes occurred, except for anthropogenic modification, reporting for 2019 will be limited to the eleven newly monitored roadsides (Appendix A). Of these newly monitored sites, only Lower Elwha and Tripp roads were considered open. A mixed vegetational type was found along four roadsides with the same number being primarily forest lined roads.

Environmental site typing serves two main functions: it gives a good indication of the invasive and noxious weeds that possibly are present and which native plantings have a better success potential.

NATIVE PLANTING:

The cultural weed control aspect of the Integrated Weed Management Plan is to foster native plant communities built off the RWMT's environmental site typing data. During the monitoring activity of 2017 and 2018, eighteen (18) potential native planting sites were identified to establish future islands for pollinators. One (1) additional native planting site (Cays and Lamar intersection) was added to the list in 2019. These islands would enhance the identified corridors established in 2018.

Two (2) pilot sites were planted in the fall 2018: a section along the Olympic Discovery Trail in Agnew, and the County right of way near Hillside Baptist Church on Black Diamond Road. We also piloted use of a modified version of the Xerces Society for Invertebrate Conservation's "Pollinator Habitat Assessment Form" to be able to assign a numerical value of pollinator habitat improvement after native plantings. Both sites increased their pollinator habitat score by over 25%, due primarily to improved foraging habitat scores by increasing the bloom period across the entire growing season.

While some of the plants did not do very well, we communicated our suggestions for future plantings. For 2019, the weed office staff added additional plants to both previously planted sites. The RWMT assisted with native plantings at the Deer Park Interchange and added native plants along the roadside in front of the Master Gardener Foundation Demonstration Garden on Woodcock Road. For follow-up information on the trial planting sites, see the submitted Pollinator Plantings Monitor report available upon request from the Noxious Weed Office.

OFF-TARGET DAMAGE:

Assuring chemical weed control activities do not impact native plants is an important role for our impartial RWMT. Immediate feedback helps determine if chemicals or application methods need to be modified. We continue to assess this on every WTMF. A case of potential off-target damage documented by RWMT in 2018 was followed up several times this year. Since the symptoms observed could be caused by a number of factors, we could not conclude it was from herbicide application. RWMT provided a 2019 report to the Noxious Weed Office which is available upon request.

OLYMPIC DISCOVERY TRAIL WEED SURVEY:

Weed species, Global Positioning Satellite (GPS) coordinates, and other weed location data along the Olympic Discovery Trail from the Elwha River to the East Clallam County line were provided in a 2019 report to the Noxious Weed Office. The report is available upon request. This will assist them in prioritizing future work.

NO-MOW PILOT:

Data gathering to determine if some low growing native shrubs can help suppress roadside tree growth, which could reduce the County roadside mowing burden while enhancing pollinator habitat. Preliminary results are that the vast majority of tree seedlings were proximate to the ditch, which will continue to be mowed. While the No-Mow Pilot Project is expected to continue for several years, the RWMT provided a 2019 report to the Noxious Weed Office which is available upon request.

OBSERVATIONS AND CONCLUSIONS:

Driving along the rural lanes, some changes over the three-year period were obvious this year, but not many meaningful conclusions can be drawn when one analyzes the collected data. One of the more conspicuous changes is along Old Olympic Highway from Siebert's Creek to Carlsborg Road. In 2015, when the stretch of road was first surveyed, one was never out of sight of Canada thistle along the roadside. Now, a sighting of Canada thistle in the right of way is an uncommon one, but clusters can still be seen on adjacent property. Everlasting peavine was dominating portions of Little River Road in 2017, creating spectacular masses clambering up any supporting vegetation. It is not gone as yet but there is much less and one does need to actually look for it in this location. Chicory, though not a nasty weed, was treated along Happy Valley Road for several years, and this year, very little remains.

The knapweed species have remained a high priority weed. In 2017, it seemed that there was a lot of dead knapweed biomass. This year, dead knapweed biomass was much harder to find; plants were younger and smaller, and there was more specific site herbicide application. Table 5 notes meadow knapweed densities and efficacies for the three-year period. Note that Olympic Hot Springs Road had low efficacy ratings this year and density was up. This is expected since there is an adjacent field full of meadow knapweed. River Road is another example where seeds keep germinating.

There are roadsides where the area needing treatment decreased and the treatment efficacy increased that don't show up in Table 5 since they do not yet meet the table criteria. To make viable comparisons for weed species over the period, one needs to compare the same application sites with significant numbers and areas. Meadow knapweed is the only weed to viably meet the data criteria as yet. More noxious weed species should meet the analysis criteria in the coming years.

Table 5: Three Year Meadow Knapweed Analysis

Sites Monitored		2017	2018	2019
East		3	16	10
Central		13	19	16
Acreage Treated		17.2	27.0	39.6

		DENSITY/EFFICACY		
Road		2017	2018	2019
East				
Happy Valley		2/85	4/65	4/65
Palo Alto		1/35	2/35	2/85
Central				
East Beach		8/95	8/95	2/85
East Lyre River		1/85	3/95	2/85
Farrington		4/100	2/95	3/100
Fisher Cove		2/100	4/85	4/85
Laird		3/95	2/95	2/65
Little River		2/95	2/03	2/65
Olympic Hot Spring		5/65	2/15	4/15
Power Plant		6/100	8/100	8/15
West Lyre River		6/85	4/15	4/15

Sulphur cinquefoil is a possible candidate for three-year analysis next year; River Road treatment needs decreased and the treatment efficacy increased. Comparing 2018 to 2019, the treatment efficacy improved from fair to excellent.

Canada thistle and bull thistle treatment efficacies have increased from fair to good since 2017, but the number of partial application sites is high.

Scotch broom treatment efficacies have improved from marginal to fair since 2017, with a decrease in area and a pleasing increase in efficacy. Scotch broom usually needs both manual removal and herbicide application – typically, stump cut. Herbicides are not completely effective on the larger plants with many still showing signs of green. Additionally, mature plants are prolific seed producers, and many small plants are found sprouting later in the same or next year.

Himalayan blackberry is another obvious weed on the landscape that presents treatment problems. Overall treatment efficacies have improved from marginal to good this year. However, many of the plants grow in masses covering adjacent private land and roadside. They remain difficult to treat with herbicide.

Some of the less numerous noxious weed species may never have enough collected data to draw significant conclusions. Catching these small invasions early (Early Detection – Rapid Response) is a cost saving activity and one that will limit environmental and economic damage.

Since the Integrated Weed Management Plan has only been in effect since 2017 and noxious weed seeds can survive several years, even decades, it is important to continue to appropriately resource the County's efforts in order to comply with Washington State weed laws. Supported activity by the Clallam County Road Commission and the Clallam County Commissioners illustrates an awareness of the "big picture" and a view to a sustainable future.

The greatly increased RWMT activity has been a tremendous learning experience for the Master Gardeners. Progress is being made towards the stated goals, and each year builds on the previous and in the process, we find continuous improvement opportunities. We are looking forward to continuing our projects in 2020 and proceeding with any new endeavors. Cathy Lucero is knowledgeable, conscientious, passionate, and a valued treasure for our County.

RWMT:

In 2019, seven (7) Master Gardeners participated in the activities associated with the Noxious Weed Office. They were: Brick Ayola, Peggy Goette, Bev Hetrick, Brenda Lasorsa, Janet Oja, John Viada, and Bruce Pape. When at least 6 people could assemble for a monitoring session, it was possible to split into 2 teams. Monitoring was mainly accomplished from a slow-moving vehicle, but occasionally it was necessary to examine a site on foot. Safety was always a priority. It was decided that last year's foray to the Pacific Coast was an inefficient use of effort, thus, activities were limited to the East and Central Clallam Road District areas. During the monitoring, the teams documented post-treatment live noxious weeds and provided point notations for the Noxious Weed staff. Being out and about, we occasionally had people inquire about our purpose. Contacts were overwhelmingly positive, and to concisely present our story, last year's handout was updated to reflect the wider scope of activities (Appendix D).

Monitoring commenced at the end of May and ended in early October. Roadside monitoring activity occurred on May 31st; June 7th, 10th, 22nd; July 26th; August 18th, 28th; September 13th, 18th, 20th, 27th; and Oct. 2nd (total = 105 hours). Due to this year's weather, herbicide application was sporadic, and the number of herbicide monitoring forms completed was significantly lower this year (59) compared to last year (99). A few solely manually treated sites were monitored last year, but it is difficult to monitor nothing if the treatment was successful; thus, it was decided not to evaluate treatment forms that were strictly manual treatments. Pits are not monitored for safety reasons.

Field work for the No-Mow project began on a rainy May 14th with further work on June 26th, 29th; and September 11th, 18th, 27th (total = 39 hours).

Off-Target Damage group field monitoring was done on May 10th, July 11th, and in September, with additional individual visits (total = 35 hours).

The Pollinator Plantings assessments at Black Diamond and the Agnew portion of the Olympic Discovery Trail were field checked on April 23rd, June 28th, and September 6th and 13th (total = 35 hours). Surveying along the ODT was done either individually or in pairs and was thus sporadic as to dates but did not start until late August. Co-ordination, administrative activity, and report writing contributed over 150 hours, an increase due to more reports. Total volunteer hours increased this year to 500 recorded hours.

This report was developed by Brick Ayola and Bruce Pape and edited by the above-named Master Gardeners.

APPENDIX A: Roadsides and Non-Road Areas Monitored

EAST

Business Park Loop
Cays & Lamar
Easterly*
Evans
Fasola^
Happy Valley*
Holland
Jimmy-Come-Lately^
Johnson Creek*
Kitchen Dick
Lotzgesell
N. Barr^
Old Blyn^
Old Olympic
Palo Alto*
River*
Sequim Dungeness
Taylor Ranch^
Towne
Tripp^
Turnstone
Ward
Washington
Woodcock
Woods

CENTRAL

Black Diamond*
Deer Park^
East Beach*
East Lyre River*
Farrington
Fisher Cove*
Joyce Piedmont
Laird*
Lake Dawn
Lake Sutherland Access
Little River*
Lower Elwha^
O'Brien^
Olympic Hot Springs*
Power Plant*
Siebert's Creek^
South Shore
Township Line^
West Lyre River*

Berm on Old Olympic
Dungeness Dike
Voice of America

* Third year monitored

^ First year monitored

APPENDIX B: Noxious Weeds Monitored

Code	Scientific name	Common name
AEPO	<i>Aegopodium podagraria</i>	bishop's weed
ARAB	<i>Artemisia absinthium</i>	absinth wormwood
BEIN	<i>Berteroa incana</i>	hoary alyssum
BUDA	<i>Buddleja davidii</i>	butterfly bush
CAPY	<i>Carduus pycnocephalus</i>	Italian thistle
CASE	<i>Calystegia sepium</i>	hedge bindweed
CEMO	<i>Centaurea x moncktonii</i>	meadow knapweed
CEST	<i>Centaurea stoebe</i>	spotted knapweed
CIAR	<i>Cirsium arvense</i>	Canada thistle
CIVU	<i>Cirsium vulgare</i>	bull thistle
CLVI	<i>Clematis vitalba</i>	old man's beard
CLVU	<i>Clinopodium vulgare</i>	wild basil
COAR	<i>Covolvulus arvensis</i>	field bindweed
COMA	<i>Conium maculatum</i>	poison hemlock
CRMO	<i>Crataegus monogyna</i>	English hawthorn
CYSC	<i>Cytisus scoparius</i>	Scotch broom
DALA	<i>Daphne laureola</i>	spurge laurel
DIFU	<i>Dipsacus fullonum</i>	teasel
GERO	<i>Geranium robertianum</i>	Herb Robert
HIAU	<i>Hieracium aurantiacum</i>	orange hawkweed
HICA	<i>Hieracium caespitosum</i>	yellow hawkweed
HYPE	<i>Hypericum perforatum</i>	St John'swort
LAGA	<i>Lamium galeobdolon</i>	yellow archangel
LALA	<i>Lathyrus latifolius</i>	everlasting peavine
LEAP	<i>Lepidium appelianum</i>	hairy whitetop
LEVU	<i>Leucanthemum vulgare</i>	oxeye daisy
PHAR	<i>Phalaris arundinacea</i>	ribbon grass
POBO	<i>Polygonum bohemicum</i>	bohemian knotweed
PORE	<i>Potentilla recta</i>	sulphur cinquefoil
RUAR	<i>Rubus armeniacus</i>	Himalayan blackberry
RULA	<i>Rubus laciniatus</i>	evergreen blackberry
SEJA	<i>Senecio jacobaea</i>	tansy ragwort
TAVU	<i>Tanacetum vulgare</i>	common tansy
VETH	<i>Verbascum thapsus</i>	common mullein

APPENDIX C: Efficacy Ratings

WEED	EFFICACY	ROAD
AEPO	UN	Olympic Hot Springs
ARAB	UN	Kitchen Dick
BEIN	UN	Kitchen Dick
BUDA	UN	Kitchen Dick
	0	Old Olympic
	100	Turnstone
	0	West Washington
CAPY	65	Cays and Lamar
CASE	UN	Farrington
CEMO	95	Easterly
	65	Happy Valley (8/22)
	95	Happy Valley (8/27)
	85	Jimmy Come Lately
	65	Johnson Creek
	95	Lotzgesell (7/22)
	85	Palo Alto
	95	River (8/27)
	95	River (8/29)
	100	Olympic Discovery Trail
	85	East Beach
	95	East Lyre River
	100	Farrington
	85	Fisher Cove
	65	Laird
	100	Little River (6/13)
	95	Little River (6/24)
	65	Little River (7/23)
	100	O'Brien (9/03)
	35	Olympic Hot Springs (8/06)
	15	Olympic Hot Springs (8/13)
	15	Power Plant
	100	Township Line
	15	West Lyre River

Date (x/xx) indicates date of treatment on segmented or multi-treated roadsides

APPENDIX C, *continued*

WEED	EFFICACY	ROAD
CEST	95	Happy Valley (8/27)
	85	Kitchen Dick
	95	Lotzgesell (7/22)
	UN	Old Olympic
	95	River (8/29)
	35	Turnstone
	15	West Washington (5/06)
	95	West Washington (7/31)
	95	Deer Park (9/04)
CIAR	95	Easterly
	95	Happy Valley (8/27)
	85	Jimmy Come Lately
	35	Kitchen Dick
	95	Lotzgesell (7/22)
	85	Old Olympic
	15	Palo Alto
	65	West Washington (5/06)
	85	Olympic Discovery Trail
	100	Black Diamond (6/24)
	100	Farrington
	95	Fisher Cove (4/29)
	65	Laird
	100	Little River (6/24)
	95	Lower Elwha
	UN	Olympic Hot Springs (8/06)
	65	Power Plant

Date (x/xx) indicates date of treatment on segmented or multi-treated roadsides

APPENDIX C, *continued*

WEED	EFFICACY	ROAD
CIVU	100	Easterly
	85	Happy Valley (8/27)
	85	Jimmy Come Lately
	65	Johnson Creek
	65	Kitchen Dick
	100	Lotzgesell
	85	Old Olympic
	100	Woods
	100	Black Diamond (6/24)
	100	East Lyre River
	100	Farrington
	95	Fisher Cove (4/29)
	85	Laird
	100	Little River (6/24)
	95	Little River (6/13)
	95	Lower Elwha
	85	Olympic Hot Springs (8/06)
	65	Olympic Hot Springs (8/13)
	35	Power Plant
	95	West Lyre River
CLIV	100	Little River (7/23)
CLVU	UN	Woods
COAR	65	Kitchen Dick
COMA	85	Business Park Loop
	85	Evans
	100	Fasola
	85	Lotzgesell (4/25)
	35	North Barr
	85	Old Blyn
	95	Sequim Dungeness
	0	Towne
	35	Ward
	15	Woodcock
	15	Voice of America
	85	Dungeness Dike
	100	Siebert's Creek

Date (x/xx) indicates date of treatment on segmented or multi-treated roadsides

APPENDIX C, *continued*

WEED	EFFICACY	ROAD
CRMO	15	Kitchen Dick
CYSC	85	Jimmy Come Lately
	85	Kitchen Dick
	65	Turnstone
	85	Woods
	95	Black Diamond (6/24)
	85	Fisher Cove (4/29)
	65	Laird
	100	Lake Dawn
	85	Lower Elwha
	15	Power Plant
DALA	95	West Washington
DIFU	100	Happy Valley (8/22)
	100	Johnson Creek
	65	Kitchen Dick
	65	Lotzgesell (4/25)
	UN	Lotzgesell (7/22)
	UN	Old Olympic (7/30)
	65	Sequim Dungeness
	UN	Black Diamond (8/19)
	85	Dungeness Dike
GERO	95	Dungeness Dike
	UN	East Beach
	0	East Lyre River
	UN	Fisher Cove (4/29)
	35	Joyce Piedmont
	95	Little River (6/24)
	85	Little River (7/23)
	85	Little River (6/13)
	15	Olympic Hot Springs (8/06)
	15	Olympic Hot Springs (8/13)
	15	Power Plant
HIAU	100	Lake Dawn
	95	Lake Sutherland
	UN	Olympic Hot Springs (8/06)
	100	South Shore

Date (x/xx) indicates date of treatment on segmented or multi-treated roadsides

APPENDIX C, continued

WEED	EFFICACY	ROAD
HICA	UN	Deer Park (9/03)
	100	Deer Park (9/04)
HYPE	100	Easterly
	15	Jimmy Come Lately
	15	Palo Alto
	100	Turnstone
	65	West Washington (5/06)
	100	Black Diamond (6/24)
	95	East Beach
	95	Farrington
	65	Fisher Cove (4/29)
	95	Laird
	100	Little River (6/24)
	100	Little River (7/23)
	UN	Lower Elwha
	UN	Olympic Hot Springs (8/06)
	35	Power Plant
LAGA	UN	Black Diamond (8/19)
	UN	Joyce Piedmont
LALA	35	Jimmy Come Lately
	65	Kitchen Dick
	100	Woods
	85	Laird
	65	Little River (6/13)
	UN	Olympic Hot Springs (8/13)
LEAP	UN	Kitchen Dick
LEVU	0	Kitchen Dick
PHAR	85	Olympic Discovery
POBO	35	Jimmy Come Lately
	UN	Joyce Piedmont
	UN	Power Plant
PORE	UN	Jimmy Come Lately
	UN	Kitchen Dick
	100	River (8/29)
	UN	West Washington (5/06)
	100	O'Brien (6/10)
	95	Siebert's Creek

Date (x/xx) indicates date of treatment on segmented or multi-treated roadsides

APPENDIX C, *continued*

WEED	EFFICACY	ROAD
RUAR	85	Jimmy Come Lately
	15	Kitchen Dick
	35	West Washington (5/06)
	95	Olympic Discovery Trail
RULA	UN	Jimmy Come Lately
	0	Farrington
SEJA	65	Happy Valley (8/22)
	95	Happy Valley (8/27)
	UN	Jimmy Come Lately
	65	Palo Alto
	100	River (8/27)
	0	Taylor Ranch
	85	Woods
	95	Deer Park (9/04)
	100	East Lyre River
	35	Farrington
	UN	Olympic Hot Springs (8/13)
	100	Township Line
	100	West Lyre River
TAVU	35	Old Olympic (7/30)
	100	O'Brien
	UN	Olympic Hot Springs (8/13)
VETH	100	Old Olympic (7/30)

Date (x/xx) indicates date of treatment on segmented or multi-treated roadsides

APPENDIX D: Public Handout

WHAT'S GOING ON?



Who are we? Washington State University Clallam County Extension Master Gardener volunteers

What are we doing and why? Monitoring our County's annual Integrated Weed Management Plan

- Determining efficacy of physical (hand-pulling) and chemical (herbicides) weed control activities by County employees. Weed control efficacy helps determine if immediate retreatment is necessary, next year's activities need to be modified, or the Plan is effective.
- Assuring chemical weed control activities do not impact native plants. Immediate feedback helps determine if chemicals or application methods need to be modified.
- Assisting with cultural weed control activities such as planting native flowers and shrubs. This includes providing data for site assessments for consideration of future plantings and determining how successfully plantings survived and are helping to control noxious weeds.
- Data gathering to determine if some low growing native shrubs can help suppress roadside tree growth, which could reduce the County roadside mowing burden while enhancing pollinator habitat.
- Data gathering on the Olympic Discovery Trail for noxious weeds and site assessments for consideration of future weed control and native plantings.

Who else is involved?

- Clallam County Road Department,
- Noxious Weed Control Board,
- Matt Albright Native Plant Nursery, and
- Community Volunteers

If you are interested in finding out more about this effort or would like to help, possibly by hosting some pollinators or native plantings, please contact:

- the Noxious Weed Control office at 360-417-2442.
- additional information can be found at <http://www.clallam.net/weed/>.

Classified Proof

PUBLIC HEARING NOTICE

Clallam County is beginning the 2019 Integrated Weed Control program which may include spot treatments of herbicide to control specific noxious weeds and invasive species of special concern along selected portions of county right-of-way. Notices indicating which herbicide has been applied, the application date, and the target weed species will be posted onsite. The Integrated Weed Management Plan, which contains information about target weeds, locations, and treatment methods, can be viewed online at http://www.clallam.net/weed/RD_IWMP.html.

Property owners who do not wish to have their adjoining right-of-way treated with herbicide have the option of keeping the right-of-way abutting their property weed free by applying for an Owner Will Control Agreement with Clallam County available online. Contact the County for further information at 360-417-2442.
PUB: February 20, 2019
Legal No. 844439

NOTICE

The herbicides aminopyralid, glyphosate, imazapyr, triclopyr, or clopyralid will be applied to this site to control noxious weeds, which threaten native vegetation and habitat in this area.

Planned / Actual application date^{*} : _____

^{*}Actual date of application contingent upon weather conditions.

Targeted Noxious Species^{} :** _____

^{**}Other weed species in this area may also be treated at this time.

NO USE RESTRICTIONS ARE IN PLACE

Avoid contact with treated vegetation until after it has dried.

**Clallam County Noxious Weed Control Board
Jim Knappe, noxious weed control specialist
223 East Fourth Street, Suite 15
Port Angeles, WA 98362
(360) 417-2000 ext 2703
(360) 999-6734**

Appendix K: Sample Herbicide/Manual Treatment Data Form (Side 1)

2019 CLALLAM COUNTY-ROADS Herbicide/Manual Treatment Data Form

Project ID #:

Project Complete? **Y** or **N** (add notes)

5m 4-25-19

Name of Entity/Person for whom Treatment was applied: Clallam County

Street Address: 223 E 4 th St

City: Port Angeles

State: WA

Zip: 98362

Address or Exact Location of Site: Old Blyn Hwy (2.15 mi) entire road

PIN#:

General Activity Fields

County (circle one)	WRIA (circle one)	Project Name (from project list)	Department (circle one)	Workforce**
<u>Clallam</u>	15 16 17 18 19		<u>Roads</u> DCD Parks Other	<u>NWCB - Z</u>

**Workforce: County Name, WCC Crew Name, County Weed Board

Crew Members Present:

Jim, Cathy

Site/Inventory Fields

Start Date	Stop Date	acres examined for weeds	Treatment Site (circle one)	Total <u>Manual</u> Infested Area Treated: (DO NOT lump plants together)	
<u>4/1/19</u>	<u>4/1/19</u>	<u>4.3 acres</u>	<u>Road edge/ROW</u> Park Other	acres	
Weeds Treated (Just the PLANTS code is OK)	Infested Area Treated (DO NOT lump plants together)		% of area examined for weeds infested with this species (lump plants together – use cover classes 1 - 9 listed below)	Manual/Herbicide or Survey	
<u>COMA</u>	<u>20,000 + 1 plant</u>	sq ft	<u>4</u>	<u>H</u>	
<u>GERD*</u>	<u>10,000</u>	sq ft	<u>4</u>	<u>H</u>	
		sq ft			
		sq ft			
		sq ft			

* Cover Classes: 1 = Trace, 2 = 1 – 3%, 3 = 3 – 5%, 4 = 5 – 10%, 5 = 10 – 25%, 6 = 25 – 50%, 7 = 50 – 75%, 8 = 75 – 95%, 9 = 95 – 100%

Note: Cover classes are meant to be approximations only.

Appendix K: Sample Herbicide/Manual Treatment Data Form (Side 2)

All Licensed Applicators: Name and License # James Winthrop Knap 87945, Cathleen Lucas 56527

Firm Name: Clallam County Noxious Weed Control Board Phone # 360-417-2442

Firm Address: 223 E 4th St, Suite 15 City: Port Angeles State: WA Zip: 98362

Application Date	Time Start	Time Stop	Temp (F)	Wind Speed (MPH)	Wind Direction	Cloud Cover	Remarks – Weather forecast
4/1/2019	2:00	3:30	58°F	5 mph	N		

Application Area (acre)	Total Volume of Mix Applied (gal)	Diluent	Special comment
0.5 acres	3.5 gal	Water	

Product Name	EPA Registration #	Amount of herbicide used (oz)	Herbicide Applied/Acre or other measure	Concentration Applied
Vestlan	62719-687	4.5 oz	9 oz/acre	1%
Liberate	WA: 34704-04008	1.8 oz	3.5 oz/acre	0.4%
Bleaze-blue		1.2 oz	2.3 oz/acre	0.25%

Was this application made as a result of a permit? Yes ☒ No ☐
If yes, Permit # _____

WA State NPDES Acres:
0

Notes: Spoke w/ Joe - Homeowner at 2111 Old Blyn w/ extensive path on ROW next to his Horse pasture; he was extremely pleased w/ our control. He has been controlling his for years w/out any improvement on ROW. COMA spotty from 2111 Old Blyn to approx. 1535 Old Blyn Hwy. GERD partially treated here as well. 1 COMA plant dug adjacent to 652 Old Blyn Hwy near gate. 1 COMA patch between ODT/Old Blyn Intersection at Blyn Rd.
Follow-up for GERD is possible.

Interactions: 3
Page 2

Appendix L: Sample Owner Will Control

Program details and forms available online at: http://www.clallam.net/weed/RD_IWMP.html



OWNER WILL CONTROL AGREEMENT

By entering into this agreement an adjacent property owner (hereinafter referred to as "Owner") will agree to control noxious weeds and other weeds of concern as described in Appendix A of this agreement on county right-of-way adjacent to property located at:

(Street)

(City)

(Zip)

The County will send a confirmation email upon receiving a completed application and return a copy of the finalized Owner Will Control Agreement (hereinafter referred to as "Agreement").

For the purpose of this Agreement, 'control' will consist of complete removal of all above ground biomass and as much of the root system as is feasible of weeds listed in your packet, as well as any additional weeds of concern as determined by the County.

If noxious or other weeds of concern are observed on right-of-way adjacent to above named address, County will notify property owner of their presence. Owner will then have ten (10) days to completely remove weeds as required by this Agreement. If Owner fails to control weeds in that timeframe, this Agreement will be terminated and weeds will be controlled as determined by the County, including the use of herbicides.

This Agreement is valid from the date signed by both parties until December 31 of the same year.

If the Owner Will Control Agreement is terminated as described above the Owner may apply to re-enter into a new Owner Will Control Agreement the following calendar year.

* _____ * _____ *

Owner Name (Print)

(Signature)

Date

* _____ *

(Owner Email)

(Owner Phone #)

Interested in Native Plant Enhancement Program? (circle one)

YES

NO

* _____ * _____ *

County Representative

(Signature)

Date

*Required Field

Appendix M: Sample Adopt-a-Patch Permit

Program details and forms available online at: http://www.clallam.net/weed/RD_IWMP.html

Clallam County Public Works Department

223 East Fourth Street, Suite 15 Port Angeles, WA 98362
360-417-2703 Phone 360-417-2414 Fax

\$160 plus all costs beyond public use**

**See C.C.C. 5.100.245 – Fee Schedule 245-A

PROJECT NO. _____

ROAD NAME _____

PERMIT NO. _____

COUNTY USE ONLY

APPLICATION FOR SPECIAL USE OR EVENT ALONG CLALLAM COUNTY RIGHT OF WAY

In Clallam County, a "Right-of-Way" permit is required to work along a county-owned road within the county right of way.

PLEASE PRINT

Name of Applicant: _____

County Road: _____

Mailing Address: _____

Address/ Milepost of Project Site: _____

Phone: _____

Cell Phone: _____

Fax: _____

When the project is approved:

(check one item below)

☐ Mail permit when approved

☐ Call when approved

☐ Fax when approved

USE PROPOSED & PURPOSE

Name of Event Coordinator: _____

Special Use: NOXIOUS WEED CONTROL

Start Date _____

End. Date _____

IMPORTANT:

Project Location Description: _____

(Reference "Adopt-A-Patch Site List" for location")

THE EXACT LOCATION OF THE ENTIRE EVENT/USE AREA MUST BE CLEARLY MARKED SO AS TO BE EVIDENT TO COUNTY PERSONNEL. FAILURE TO COMPLY WILL RESULT IN A DELAY OF THE PROCESSING OF THIS PERMIT.

It is the responsibility of the applicant to notify all utilities and private property owners when such property is liable to injury or damage through the performance of the permitted work. The applicant shall make all necessary arrangements relative to the protection of such property and/or utilities.

By signing this permit, the applicant agrees to comply with all conditions as stated on the PERMIT, Form RWPCOND041604, Permit Conditions Addendum and C.C.C. 5.100.245 – Fee Schedule 245-A. Applicant has 10 days from permit approval date to request clarification or modification to permit conditions attached.

Signed _____

Date _____

COUNTY USE ONLY

PERMISSION IS HEREBY ☐ GRANTED ☐ DENIED

Call 360-417-2703 for the following:

☒ Start Date ☐ _____ ☐ _____ ☒ Final

The Approved Permit Must be Posted on Site Until Final Inspection.

COMMENTS: _____

FEE CALCULATION

AMT WAIVED: _____

NET FEE: _____

DATE: _____

RECEIPT# _____

CHECK# _____

REC'D BY: _____

This permit shall be void unless the work herein contemplated is completed before the following date: _____

Area Supervisor/Design Review Engineer _____

Date _____

Final Inspection By: _____

Date: _____

Appendix N: Sample Adopt-a-Patch Activity Report

Program details and forms available online at: http://www.clallam.net/weed/RD_IWMP.html



Adopt-A-Patch Activity Report

Permit#: _____ Permittee Name: _____

Permittee Phone #: _____

Dates included in this report: _____ (mm/dd/yy)

_____ (mm/dd/yy)

_____ (mm/dd/yy)

_____ (mm/dd/yy)

Target Species: _____

Estimated Total Removed:

Species 1 _____ #plants _____ lbs of flowers/seeds

Species 2 _____ #plants _____ lbs of flowers/seeds

Species 3 _____ #plants _____ lbs of flowers/seeds

Species 4 _____ #plants _____ lbs of flowers/seeds

Total Distance Covered: shoulder 1 _____ miles/feet shoulder 2 _____ miles/feet

Total # in Workforce: _____ Total # Hours Worked: _____

Comments? _____

Submit reports as often as desired but no later than October 31.

Email to jknape@co.clallam.wa.us or Mail to Adopt-A-Patch Coordinator
223 E Fourth St, Suite 15
Port Angeles, WA 98362

Appendix O: Sample Adopt-a-Patch Waiver

Program details and forms available online at: http://www.clallam.net/weed/RD_IWMP.html

Adopt-A-Patch Waiver

Name of Grantee		Permit #	
Name of Volunteer/Assignee			
Address	City	Zip Code	Telephone Number
Person to notify in case of emergency		Relationship	
Address	City	Zip Code	Telephone Number
Clallam County's Adopt-a-Patch Program issues permits that allow permit holders, hereinafter known as "Grantees" to enter onto County owned lands for the purpose of controlling noxious and invasive plants of special concern. Grantees and their participants, hereinafter known as "Volunteers" or "Assignees" are advised that working adjacent to a county road can be hazardous and shall exercise due care in performing weed control activities. Grantees and their Assignees must receive safety training prior to participating in any weed control activities. 1. I understand that working within right-of-ways and performing noxious weed control can be hazardous. 2. I hereby verify that I am 18 years of age or older, have viewed the Adopt-a-Highway Safety Video and read the Adopt-a-Patch Safety Tips. I understand the conditions, responsibilities, and privileges of participation in the Adopt-a-Patch Program. 3. By signature below I verify that I am operating on Clallam County right-of-way as a Volunteer/Assignee for Grantee _____ under a valid Clallam County permit and therefore agree to defend, indemnify, and save harmless the County from all claims, actions or damages of every kind and description which may accrue to or be suffered by any person or persons, corporation or property by reason of the performance of any such work, character of materials used or manner of installation, maintenance and operation or by the improper occupancy of rights of way or public place or public structure, and in case any such suit or action is brought against said County for damages arising out of or by reason of any of the above causes, the grantee, his agents, successors, assigns, or volunteers will upon written notice to him or them or commencement of such action defend the same at his or their sole cost and expense and will fully satisfy any judgment after the said suit or action shall have finally been determined if adversely to the County.			
Signature of Assignee		Date	
Number of hours worked			