University of Washington Integrated Pest Management Plan for Outdoor Landscapes

Guidelines for Contractors: 2019

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Introduction:

The University of Washington spans approximately 703 acres, of which there are an estimated 100 acres of turf, 41 acres of bed space, and 110 acres of natural areas. The diversity of the campus landscape is one of the qualities that make this institution extremely unique. Integrated Pest Management strategies are tailored to target specific pests and weeds within the outdoor landscape. This guideline was generated for contractors with maintenance plans on the University grounds.

University of Washington IPM Outline:

The University expects the contractor will meet with the lead gardener for each area at the onset of maintenance to discuss maintenance plans and future scheduling. Contractors are expected to follow the University's IPM plan.

The first step of the University's IPM plan is prevention. Known or potential pests are prevented using cultural practices; no preventative pesticide application occurs. When a pest has been detected and exceeds the established level of tolerance, a management approach is chosen based on the following: evaluation of the priority, size and topography of the area, species in question, resources available, proximity to environmentally or culturally sensitive areas, cost, timing, and best management practices available.

Once weeds are detected manual and mechanical methods of weed control are the most commonly used methods on campus. Hand pulling, mowing, line trimming, flame weeding, and sheet mulching are done on a regular basis to prevent the spread of weeds. Pre-emergent chemicals should be used sparingly and grounds staff must be notified prior to use. For ornamentals, maintenance pruning and other care is performed to prevent and control diseases and pests.

When chemicals are used, care is taken regarding the application method, location, rate and timing to reduce the negative effects towards the environment and minimize the risk of non-target contamination via runoff or drift. Applicators are trained in IPM techniques and hold Washington State Pesticide Applicator licenses.

All chemical applications are performed in a manner that minimizes drift and runoff. Applications of liquid herbicides are done during weather and temperature appropriate times in accordance with state guidelines and the product label. Chemical run off is prevented by limiting applications to days when chemicals have ample time to dry. When using a sprayer, a heavier and larger droplet size is preferred, with the applicator wand being held close to the target weed. The cutting and painting of weed stems with concentrated herbicide or the injection of herbicide into the canes of invasive species also prevents run off and drift.

Application Notification

Any pesticide application shall comply with the posting requirements in RCW 17.21.415. A marker flag must be placed prior to the application and at minimum be placed at the primary point of entry in the spray area. These markers must be up for a minimum of 24 hours after the application (WAC 16-228-1322).

Pesticide Application Reports

All applications performed on campus must be recorded (https://docs.google.com/spreadsheet/embeddedform?formkey=dG9kdkY0cHVTdHd5VnRubHdvU2ZZSXc6MQ). When

applications take place an email should be sent to the IPM coordinator (mjb34@uw.edu) day off application. Pesticide application forms are filled out by the applicator after every application of a pesticide and ***these records are kept for seven years***. The requirement for application records and WSDA approved forms are found in RCW 17.21.100 of the Washington Application Act and WAC 16-228-1320 of the Rules relating to General Use Pesticides.

Fertilizer Applications

The University is conservative with its fertilizer use primarily using organic methods such as compost and compost tea as an initial method. In beds, soil tests are recommended before supplemental fertilizers are applied. When fertilizers are deemed necessary, slow release are preferred. UW lawns does not exceed 1 pound of nitrogen per 1000ft2. Soluble fertilizer applications can never surpass the Salmon Safe standards of 0.5 pounds/1000ft2.

Salmon Safe Requirements

UW Grounds and contractors do not use chemicals that are on the Salmon Safe High Risk (Figure 1) list without permission from Salmon Safe.

If in the immediate vicinity of a storm drain (Figure 2), only aquatically safe labeled pesticide such as Aquamaster can be used.

Common Weeds on Campus and their Control

Weeds on campus will be controlled through prevention, manual removal and chemical treatments. Weed control timing needs to most effective to ensure the plant does not go to seed. When controlling a weed on campus we will ensure that the roots have been completely removed or the herbicide has been adequately translocated throughout the plant. Below is a list of some of the most common weeds occurring on campus and methods for their control.

***Rubus armeniacus.* Himalayan Blackberry**

Himalayan blackberry is a Eurasian species introduced for fruit production that is highly invasive and difficult to control. It forms impenetrable thickets, spreads aggressively and has significant negative impacts to native plants, wildlife, recreation and livestock. Due to the deep roots, digging up large established plants is difficult and may need to be repeated if not all the roots are removed.

Prevention: None; too prevalent and spread by birds.
Manual: Removal can be best performed in the winter, when soil is soft and most of the roots can be removed fairly easily. Cutting stems without chemical treatment gives the best results in the fall when plants are fruiting.
Chemical: Treatment can be performed in the winter, summer and fall by mowing or hand cutting followed immediately by spot spraying or painting.

***Calystegia sepium:* Hedge bindweed**

Hedge bindweed, commonly called morning glory, is not listed as a noxious weed but persistent and problematic on campus. Control is recommended but not required. It is ubiquitous in many campus flower beds and very difficult to control.

Prevention: Nursery stock should be inspected and weeded for bindweed prior to installation.

Manual: Control requires diligent removal of as much above- and below-ground biomass as possible. Remove flowers before they set seeds. Achieved by controlling existing populations and inhibiting transport of viable seed and vegetation. Bag root fragments to prevent further spread.
Chemical: The tendency for this weed to intertwine with desirable ornamentals means that care must be taken to avoid off-target damage. Foliar treatment with glyphosate is the only way to get adequate uptake of herbicide and should be performed when plants are near flowering (late summer). Vegetation can be removed from valuable plants and sprayed on the ground.

***Ranunculus repens:* Creeping Buttercup**

Creeping Buttercup is an invasive weed that is recommended but not required for control. It appears all over campus and creates a problem when infestations cover and choke out desirable plants.

Prevention: Nursery stock should be inspected and weeded for buttercup prior to installation. Avoid spreading buttercup seeds by cleaning mowers and other equipment. Reduce compaction and improve drainage by aerating and keeping traffic off areas when soil is wet. In lawns, overseed and fertilize to promote healthy grass. Adding lime can improve grass health and keep buttercup from re-establishing. However, lime won't control buttercup that is already well established. Avoid having bare areas either by mulching or intensive planting.
Manual: Dig out, removing all runners and roots. Most effective fall-spring when soil is moist and roots are less apt to break. After removing buttercup, reseed or replant areas to keep it from reinfesting the area. Pull up any new seedlings before they establish runners.
Chemical: Systemic herbicides can be effective on creeping buttercup, especially if combined with monitoring for surviving plants. Choose a formulation that is appropriate for the site: either aquatic or terrestrial. Follow the label exactly as written and use only at the prescribed rate. Herbicides can be painted or brushed on leaves to avoid drift onto desirable plants. Repeat on regrowth as needed. Products containing glyphosate are effective when applied in summer and fall before leaves die back. However, glyphosate is "non-selective" and will injure any foliage that it comes in contact with, including grass. Aminopyralid is effective on buttercup.

Other woody weeds

Woody shrubs such as English holly and volunteer laurels or cotoneasters are a nuisance. These can be manually removed when small by hand digging or using a weed wrench. Cut stump treatment is effective for mature plants.

Other herbaceous broadleaf weeds

Prevention requires significant effort to create a non-competitive environment by avoiding open beds and bare soil. Intensive planting and sheet mulching are effective ways to discourage germination. Care also must be taken to remove plants before they reach reproductive age in order to reduce the build-up of a viable seedbank.
Manual removal can be performed by hand or with any preferred tool such as a weed wrench or hori hori. It is important to remove as much of the root as possible. Flame weeders can also be used, but are most effective when plants are at the small seedling stage. A hotwork permit is required for flame weeder use on campus. Contact the Grounds Department if this method is being considered.
Chemical treatment is most effective in the spring, when weeds are soft and actively growing. Drought-stressed plants are less responsive to chemical applications.

Conclusion:

It is the goal of the University of Washington IPM program to provide a safe sustainable campus. By limiting pesticide use, following environmentally friendly practices, educating applicators, and choosing alternatives to pesticides, we meet this goal year after year.

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APPENDIX A: SALMON-SAFE URBAN HIGH RISK PESTICIDE LIST

Certain pesticides are a serious threat to salmon and other aquatic life. In addition to killing fish, these pesticides at sub-lethal concentrations can stress juveniles, alter swimming ability, interrupt schooling behaviors, cause salmon to seek sub-optimal water temperatures, inhibit seaward migration and delay spawning. All of these behavioral changes ultimately affect survival rates.

The following chart lists many of the pesticides known to cause problems for salmon and other fish. The list includes chemicals that could be used in urban applications that are listed with the EPA in various risk categories. Use this chart to help identify pesticides that require special consideration. Please note that this chart lists only some of the currently available pesticides in common usage.

A using any of the pesticides indicated as "High Risk" below may be certified only if written documentation is provided that demonstrates a clear need for use of the pesticide, that no safer alternatives exist, and that the method of application (such as timing, location, and amount used) represents a negligible risk to water quality and fish habitat.

PESTICIDES USED IN URBAN APPLICATIONS THAT POSE HIGH RISK TO SALMON AND AQUATIC LIFE

1,3-dichloropropene
2,4-D
Abmectin
Acephate
Altacor
Atrazine
Bensulide
Bentazon
Bifenazate
Bifenthrin
Bromoxynil
Carbaryl
Carbofuran
Carfentrazone-ethyl
Chlorothalonil
Chlorpyrifos
Copper Sulfate[1]
Cyhalothrin
Cypermethrin
Diazinon
Dicamba
Dichlobenil
Diclofop-methyl
Diflubenzuron
Dimethoate
Disulfoton
Diuron
Esfenvalerate
Ethoprop
Extoxazole Technical
Fenamiphos
Fenpyroximate
Fenbutatin-Oxide
Folpet
Imidacloprid
Iprodione
Linuron
Malathion
Mancozeb
Maneb
Metolachlor
Metribuzin
Naled
Norflurazon
Oryzalin
Oxyfluorfen
Paraquat Dichloride
Pendimethalin
Permethrin
Phosmet
Prometryn
Propargite
Propiconazole
Rimon
Quintozene
Rimon
Simazine
Spinosyn
Tebuthiuron
Thiram
Triclopyr
Trifluralin

[1] Salmon-Safe restrictions apply to any copper-containing pesticide including copper hydroxide, copper ammonium hydroxide, copper carbonate, and copper oxide, and others.

SALMON SAFE

Pending Review. This list is based on EPA hazard level for fish and fish habitat. It is revised as pesticide registrations are updated and as more environmental data becomes available.

Figure 1: A list of Salmon Safe High Risk Pesticides that are not to be used on campus.

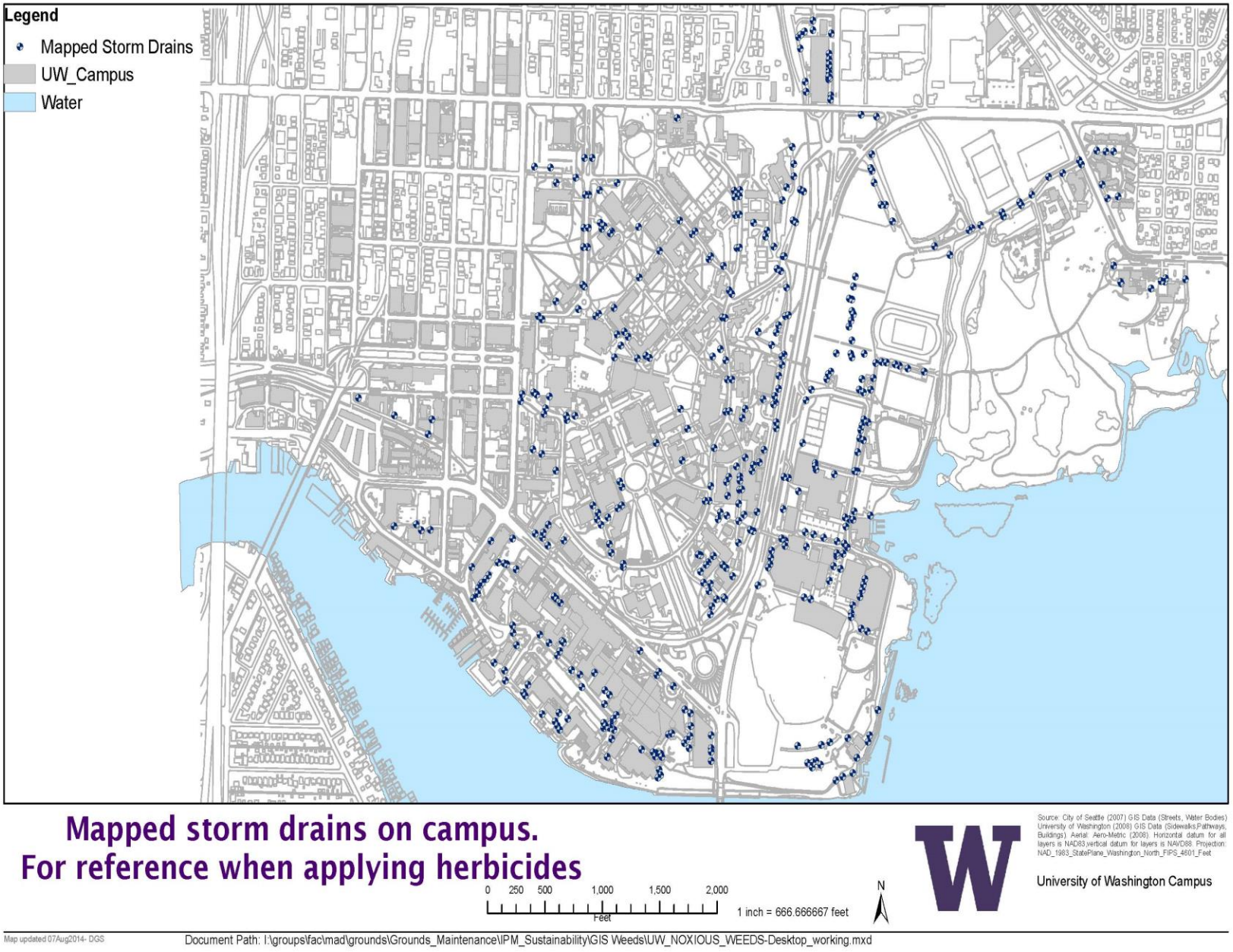

Figure 2: A map of the storm drains on campus. Only Aquatically safe labeled pesticides should be applied when in the immediate vicinity of a storm drain.