

# WMU Landscape Services Best Management Practices



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*WMU Landscape Services complies with all environmental laws and regulations.*

## A. Irrigation

### Management Responsibility

1. Assign management responsibilities (scheduling, evaluation, and repairs) for the irrigation system.
2. Ensure system managers have received necessary training on proper use, operation, and capacity of the system.
3. Ensure system managers have received necessary training to adjust or shutdown the system based on prevailing or impending weather conditions.
4. Ensure system managers stay current with the technological improvements and investigation those that optimize efficiency and the conservation of water.

### Scheduling

1. Establish a base irrigation schedule to determine the initial frequency of operation.
2. Decide daily whether or not irrigation is necessary.
3. Determine application rate by:
  - ET calculation, on-site data
  - ET calculation, off-site data
  - Soil moisture probing (not available at this time)
  - Visual observation
  - Weather prediction
  - Accounts for daytime water use (syringing, watering in applications, etc.)
  - Consider pest related stress
4. Observe for the presence of puddles during and after irrigation cycles. (Water application rate does not exceed soil infiltration rate.)
5. Ensure the irrigation cycle maximizes output to compress "water window," and takes advantage of "off-peak" electricity costs.
6. Use programming software to help calculate irrigation rates.
7. Ensure all schedule changes and data entries are *double-checked*.

### Monitoring

1. Check the central control computer after each irrigation event to ensure the system ran as expected.
2. Perform a field check after each irrigation event to evaluate the effectiveness of the schedule by assessing plant health and soil moisture. Adjust the irrigation schedule to avoid applying excessive irrigation water.
3. Check booster pump station daily. (Pump station located off site, owned by city.)
  - Water-use record is reviewed regularly to monitor for excessive water use, indication potential leaks. Rapid pressure loss from system, during non-watering periods may also indicate a leak.
  - Control panel is checked for electrical faults or errors.
  - Routinely inspect pumps, piping, and backflow preventers.
4. Routinely verify proper operation and performance of irrigation components several times per season.

### Record Keeping

1. Record changes or repairs to the irrigation system. (See document on page 16.)
2. Keep a record of volume of water used every month the system is running. Note water use after each irrigation event.
3. Submit all mandated reports when required to do so.

### System Maintenance

1. Perform a daily field check to look for system leaks and problems.
2. Perform minor repairs quickly. Keep spare heads and common repair parts on hand.
3. Trim turf around valve boxes.
4. Remove obstructions to sprinkler heads quickly.
5. Test all sprinkler heads from a central control several times a year.
6. Apply water only where needed. Avoid overthrow to hardscapes, natural areas, etc. Part-circle heads or smaller nozzles are installed and individual heads turned off as needed.
7. Ensure test equipment is available for trouble-shooting electrical and wiring problems.
8. Check grounding of pump station, field satellites, supply wells, and other components at least once per season, or after lightening strike or significant electrical surges.
9. Follow proper winterization procedures.
10. Follow proper spring start-up procedures.

### Conservation Practices

1. Decide daily whether or not to irrigate, based on turf requirements and anticipated weather conditions.
2. Observed turf conditions after every irrigation event to evaluate water use efficiency. Modify irrigation schedule accordingly.
3. Take advantage of "cycle and soak" programming features where water requirements exceed infiltration rates.
4. Use cultural practices to improve infiltration rates and maximize water use efficiency.
  - Raise mowing height during drought
  - Top dress soil
  - Dethatch
  - Aerate
5. Use soil amendments to improve soil moisture balance.
6. Apply appropriate nutrients to maximize turf grass vigor and minimize excess shoot growth.
7. Use supplemental hand-watering to precisely apply water only where needed.
8. Ensure irrigation system is connected to rain sensors that automatically suspend irrigation cycle.
9. Use local or on-site weather station data to accurately determine ET.
10. Use drought tolerant plants where possible.
11. Ensure a water audit has been performed on the system.
  - In-house or contractor
  - Small sampling of system

- Large sampling of system
  - Problematic area
12. Investigate and research a system which includes alternative water delivery technologies (e.g. drip or weep systems) for difficult-to-irrigate areas.
  13. Investigate and research reclaimed water for irrigation.

## **B. Pesticides**

### Storage

1. Store all chemical pesticides in a separate building.
2. Provide secondary containment if floors of storage unit are pervious.
3. Ensure storage area is secured from the public and employees without proper training.
4. Post emergency phone numbers in an accessible spot with all appropriate numbers.
5. Ensure storage area is properly vented.
6. Dedicate a spill kit to the storage area. Ensure it is easily accessible.
7. Store pesticides and fertilizers separately from each other to prevent vapor or spill cross contamination.
8. Ensure an eyewash station is available.

### Mixing and Loading and Operating Procedures

1. Ensure mixing and loading pad is designed to contain spills, leaks, releases, and other discharges.
2. Ensure mixing and loading pad is constructed with impervious materials and free of unsealed cracks.
3. Ensure mixing and loading pad can handle one minute of discharge.
4. Ensure material collected on the pad is either contained on the pad or transferred to another impervious, above ground holding tank until used or properly disposed.
5. Ensure a spill kit is available on the sprayers and in the mixing and loading area.
6. Attend the equipment the entire time it is being filled.
7. Locate primary shutoff valve within reach of the operator.
8. Locate emergency valve upstream of the primary shutoff valve positioned within 30 seconds of the operator.
9. Ensure there is a properly functioning anti-siphoning device on all water drawing equipment.
10. Close containers immediately after each use to prevent spills.
11. Triple or power rinse pesticide containers after being emptied.
12. Store pesticide containers in a secured area until they can be recycled or properly disposed of according to label directions.
13. Read entire pesticide label prior to actually opening and handling the formulated product.
14. Always wear all the necessary PPE when mixing and loading.
15. Wear additional PPE when the likelihood of pesticide exposure exists.
16. Keep container below eye level when pouring pesticides.

### Handling and Application

1. All applicators must have the proper credentials (pesticide certification.)
2. Keep all MSDS sheets on file for all chemicals used by employees.

3. Keep drift management plan on file.
4. Postpone application if weather conditions favor off-target drift.
5. Identify sensitive areas adjacent to the application site. (See Appendix A)
6. Use precautionary measures to prevent discharge of pesticides.
7. Check Registry of Persons Requiring Notification before applying pesticides.
8. Correctly identify pest problem.
9. Ensure pest is in a vulnerable life stage before spraying.
10. Measure treatment area accurately.
11. Consider and account for soil conditions that might impact the efficacy or stability of the pesticide.
12. Account for special features of the site when planning pesticide application. Leave a buffer between your application area and special features.
13. Consider the following during the selection of a pesticide:
  - Formulation
  - Packaging
  - Signal word
  - Run-off and leaching potential
  - Efficacy
  - Treatment intervals
  - Persistence
  - Availability of PPE required by pesticide label on Reg. 637, Rule 9
14. Verify that the application site is listed on the pesticide label.
15. Read pesticide label completely.
16. Introduce staff members to new products, and provide an in-house educational Pesticide Program for staff members each spring before pesticides are used for the season.
17. Host yearly training event in collaboration with Environmental Safety & Emergency Management on Emergency Spill Response and Stormwater BMPs.
18. Maintain records of the following information for all general-use pesticide applications for at least three years from the date of application:
  - EPA Registration Number
  - Pesticide product name and concentration
  - Amount of pesticide applied
  - Target pest, purpose, or crop site
  - Date of application
  - Address or location of application
  - Method and rate of application
19. Do not spray pesticides if wind is over 7mph.
20. Maintain records of when and where a drift management plan was used. Maintain general-use records for at least one year and restricted-use pesticides (RUP) for at least three years.
21. Keep application equipment in good mechanical condition.
22. Routinely calibrate the application equipment. (See document on page 17.)
23. Ensure there are shut-off valves on the application equipment to prevent discharge.
24. Include a spill kit (shovel and absorbent material) on the application equipment.
25. Ensure application equipment meets the pesticide label requirements.

**Criteria**

*Institution's grounds are developed and maintained in accordance with an integrated pest management plan that adheres to the following four-tiered approach:*

1. *Set action thresholds*
2. *Monitor and identify pests*
3. *Prevention*
4. *Control*

The size of the campus grounds            1,233 acres

The size of campus grounds  
that is maintained in accordance  
with a four-tiered IPM plan            1,233 acres

A brief description of the Integrated Pest Management (IPM)  
plan(s)

- Use of IPM Practices for all pest control activities:
  - o We apply the least toxic pesticide only after proper protocols are followed using all strategies of IPM practices first and foremost. All pesticides are scrutinized by our Environmental Health and Safety department and the director's approval is needed before we are allowed to use a product. Two major factors determine whether or not a product can be used; human toxicity and environmental effects. When a chemical is approved, everyone involved receives safety training.
  - o We have never applied pesticides on a regular schedule. It's always done on an "as needed" basis, and we always follow IPM tactics. All chemical applications are documented and copies are kept in our files as required by the Natural Resources and Environmental Protection Act 451, Part 83, Pesticide Control and Regulation 636.
  - o *Please see the attached pesticide application record form.*

Guiding Principles for the Use of Herbicides at WMU Grounds and Natural Areas:

1. Herbicide should be used when appropriate and only after careful consideration of alternate methods.
2. Herbicide use and application must occur at a time in which the herbicide is selective as possible for the target species.
3. The lowest dose of the least toxic and least persistent herbicide consistent with effective selective control must be used.
4. Follow all safety and ecological precautions per MSDS label instructions.
5. Use all-natural herbicides (containing vinegar, clove oil, etc.) when effective.

Guidelines for Herbicide Application by WMU Employees:

- WMU employees must have up-to-date pesticide certification.
- Herbicide may be applied using the cut and daub method.
- Herbicide may be applied by injective Glyphosate pellets into tree trunks.
- **Only** Glyphosate may be used unless scientific literature and/or field evidence supports the use of another herbicide for a specific invasive. Use of any other herbicide must be pre-approved by WMU's Natural Areas Manager and the Landscape Services Director.
- Broadcast spraying is only allowed under special circumstances:
  - o Only Glyphosate or all-natural herbicide may be used
  - o Appropriate signage must be posted
  - o A plan for planting native vegetation in the area sprayed must be in place
  - o This method must be pre-approved by WMU's Natural Areas Manager and Landscape Services Director

Herbicides Permanently Banned from use at WMU:

- Diquat dibromide
- Paraquat
- 2,4-D
- Rotenone

The website URL where  
information about the IPM plan  
is available

[http://www.fm.wmich.edu/lss/governing\\_documents](http://www.fm.wmich.edu/lss/governing_documents)



# PESTICIDE APPLICATION RECORD

DATE: \_\_\_\_\_

APPLICATOR: \_\_\_\_\_ CERTIFICATION# \_\_\_\_\_

SUPERVISOR OF APPLICATOR: \_\_\_\_\_ CERTIFICATION# \_\_\_\_\_

## PESTICIDE INFORMATION:

Product \_\_\_\_\_ EPA Registration# \_\_\_\_\_

Brand Name \_\_\_\_\_ Case & Lot# \_\_\_\_\_

Formulation (% Active Ingredient) \_\_\_\_\_

Total Amount of Concentrate Applied \_\_\_\_\_

Form: Soluble \_\_\_\_\_ Flowable \_\_\_\_\_ Wettable Powder \_\_\_\_\_

EC \_\_\_\_\_ Granular \_\_\_\_\_ WDG \_\_\_\_\_ RTU \_\_\_\_\_

Signal Words on Label: Danger/Poison \_\_\_\_\_ Warning \_\_\_\_\_ Caution \_\_\_\_\_

## APPLICATION INFORMATION:

Target Pest \_\_\_\_\_

Species Treated \_\_\_\_\_

Area#/Description
Start Time
End Time
Air Temperature
Wind Direction
Wind Speed
Relative Humidity

Type of Area Treated (Pavement, Beds, Lawn, etc)

Total Area Treated (Acre, Square Footage)

Total Amount of Mixture Applied \_\_\_\_\_

Application **Equipment** \_\_\_\_\_

Applicator Signature \_\_\_\_\_ Date \_\_\_\_\_

Supervisor Signature \_\_\_\_\_ Date \_\_\_\_\_ 7

### Disposal

1. Dispose of pesticide containers as directed on the pesticide label.
2. Enforce a procedure for handling pesticide containing materials (PCMs).

## C. Fertilizer

### Storage

1. Store all chemical fertilizers in a separate building.
2. Provide secondary containment if floors of storage unit are pervious.
3. Ensure storage area is secured from the public and employees without proper training.
4. Post emergency phone numbers in an accessible spot with all appropriate numbers.
5. Ensure storage area is properly vented.
6. Dedicate a spill kit to the storage area. Ensure it is easily accessible.
7. Store pesticides and fertilizers separately from each other to prevent vapor or spill cross contamination.
8. Ensure an eyewash station is available.

### Handling and Application

1. Use only non-phosphorous fertilizer in all lawn areas. Special exceptions may be made in cases where lawn/turf is phosphorous deficient or is in its first growing season (see Public Act 299).
2. Apply a maximum of 2 pounds of Nitrogen per season per LEED certified areas.
3. All fertilizers must meet the approval of Landscape Services Director before being purchased and applied. (Includes all contracted lawn fertilization program products.)
4. Areas where fertilizer is sprayed onto impervious surfaces must be blown/swept into lawn area in a timely fashion.
5. Applicators must read and understand all label instructions for application and calibration rates.
6. Clean equipment after every use.

## D. Mowers

### Operation & Guidelines

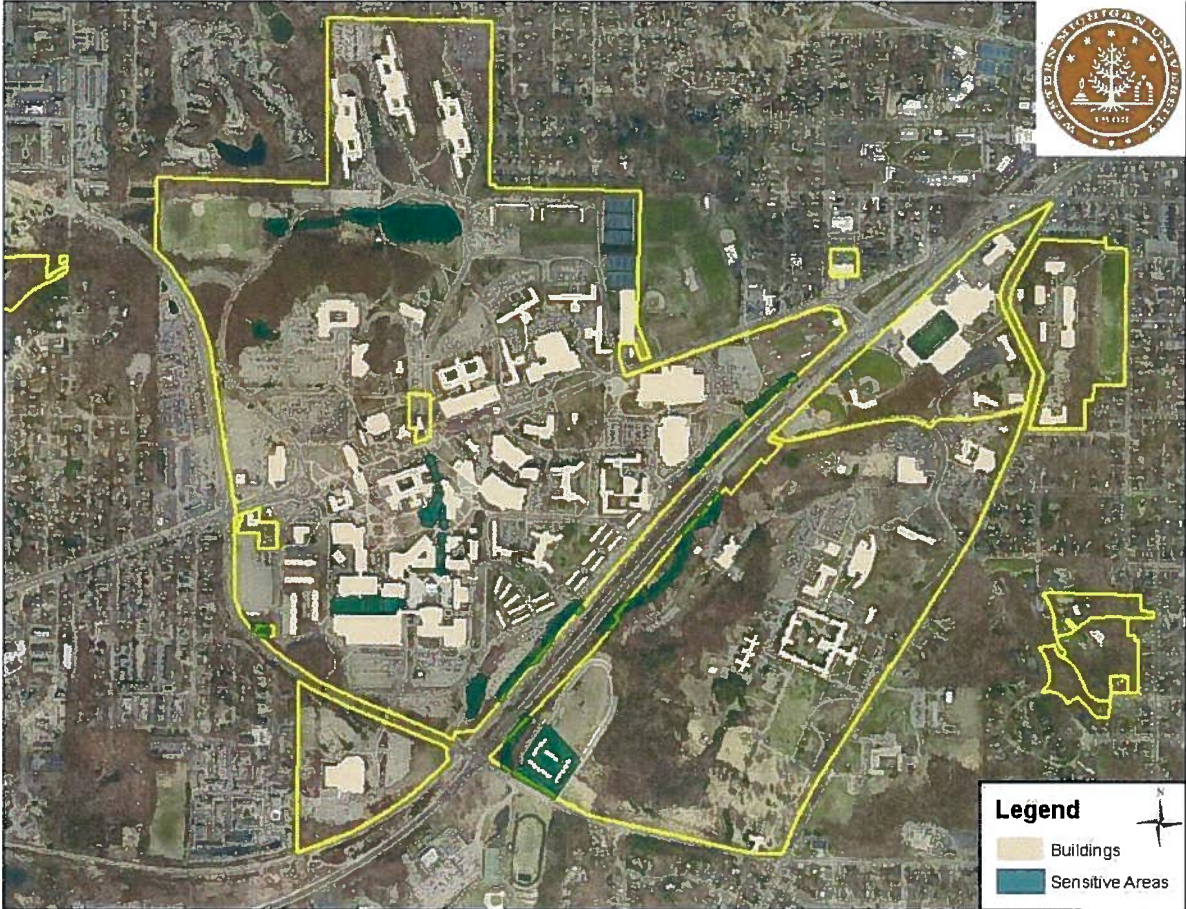
1. Use mulching mowers for routine mowing and mulching of leaves during the fall season.
2. Do not mow within 12 to 25 feet around water bodies where possible. **If** mowing within 12 feet or less is unavoidable, ensure no debris enters water body. Always mow with chute side in, and complete two passes around the perimeter and then proceed with mowing pattern.

### Curblines, Roadways, Parking Lots, and Sidewalks

1. Mow with chute side in.
2. Complete two passes around the perimeter and then proceed with mowing pattern.
3. !flittering of impervious surfaces with grass clippings is unavoidable, clippings must be blown/swept back into the lawn area in a timely fashion.
4. Sweep mower clean-up area daily and place grass clippings in yard waste dumpsters.
5. Replace all yard waste/composting.

# E. Appendix A: Maps

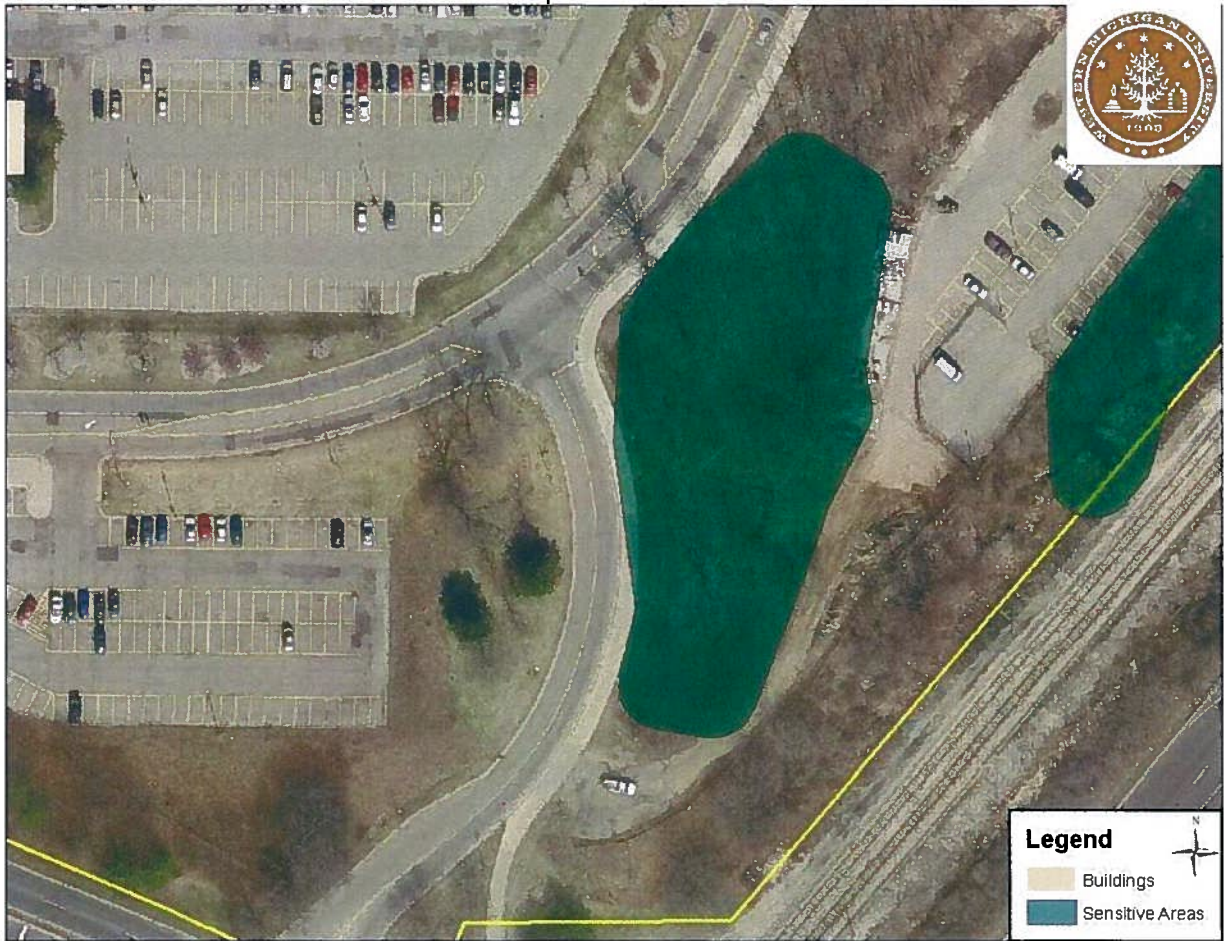
Sensitive Landscape Areas- 25 Foot Buffer





Lot 23

Sensitive Landscape Areas- 25 Foot Buffer



# Arcadia Creek

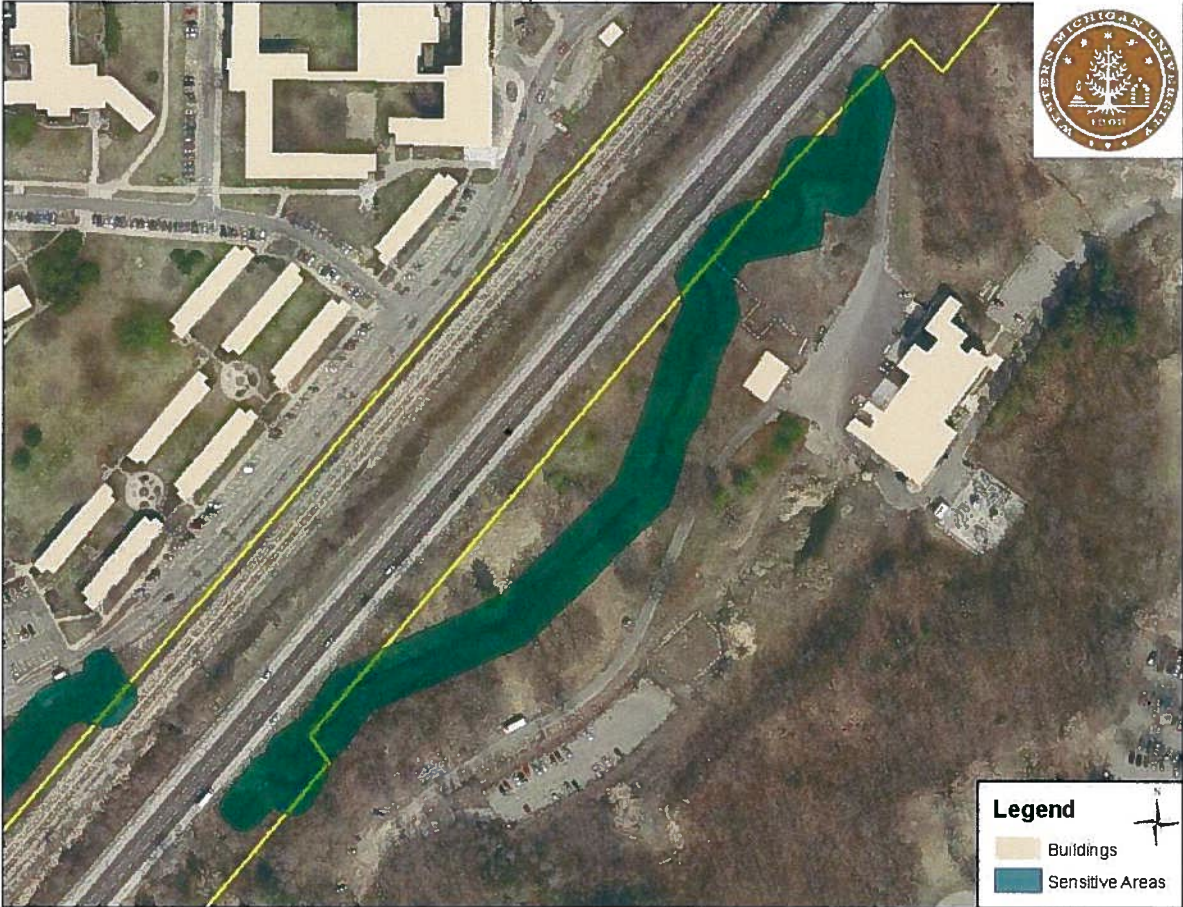
Sensitive Landscape Areas- 25 Foot Buffer



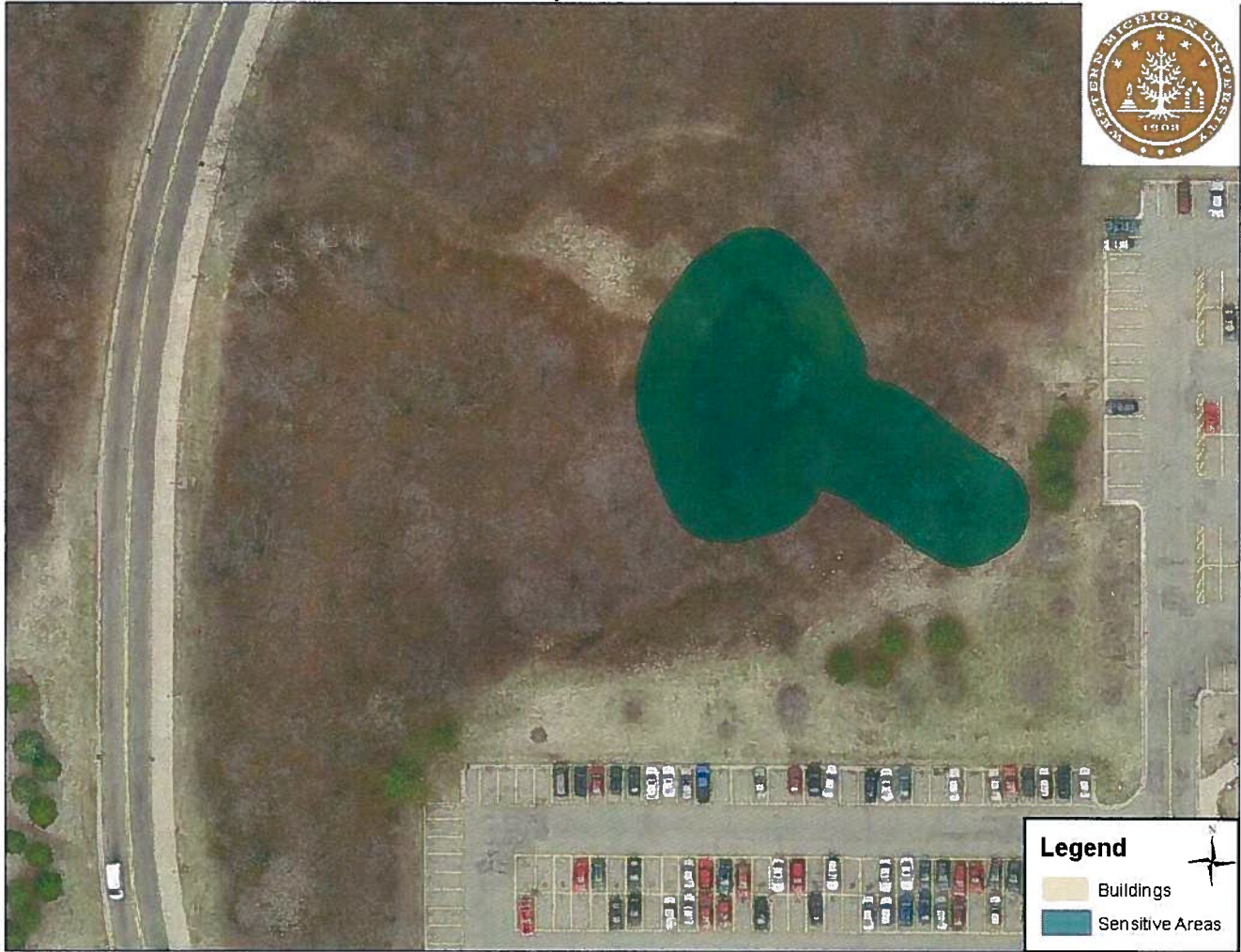


# Arcadia Creek/Stadium Drive

Sensitive Landscape Areas- 25 Foot Buffer



Business College Retention Sensitive Landscape Areas- 25 foot buffer



**Legend**

- Buildings
- Sensitive Areas



# Chemistry Detention

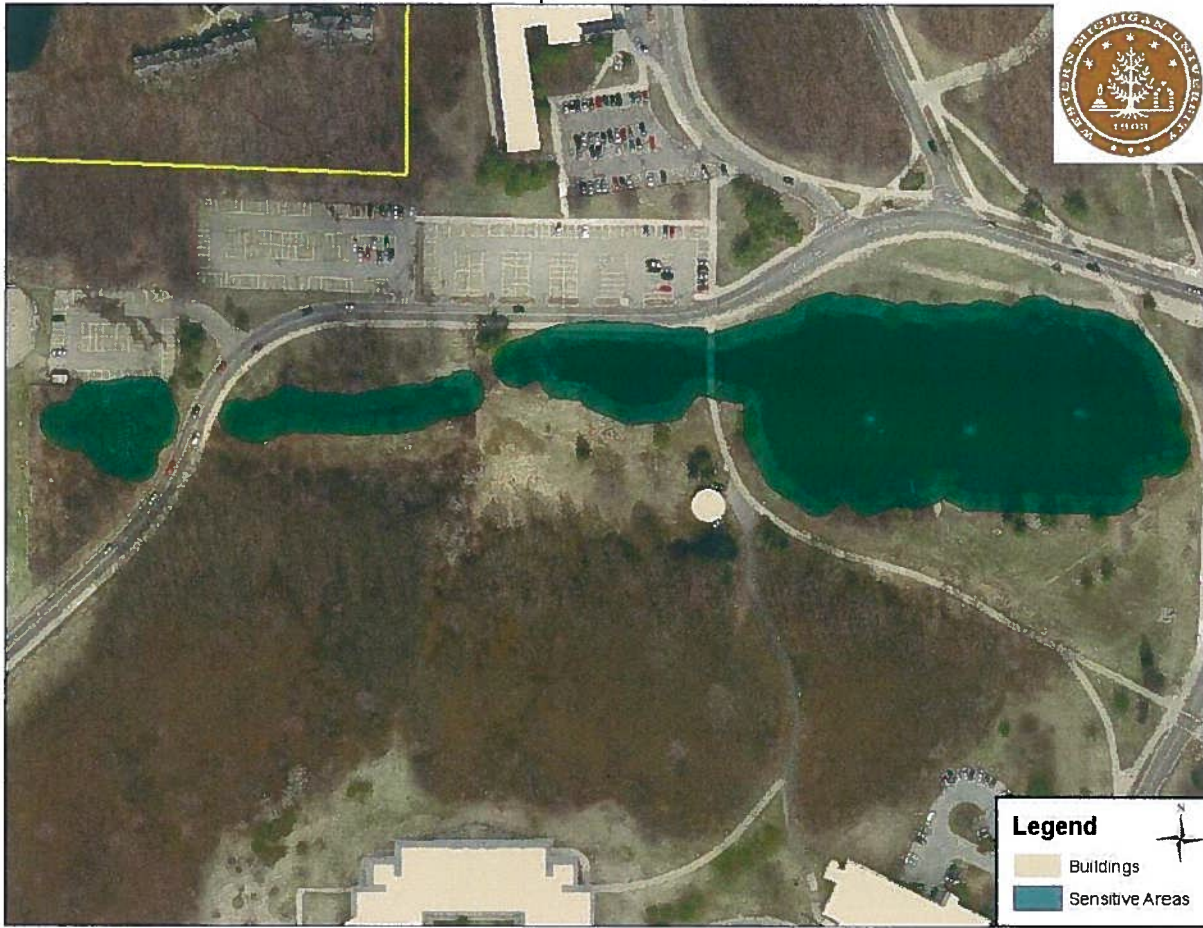
Sensitive Landscape Areas- 25 Foot Buffer





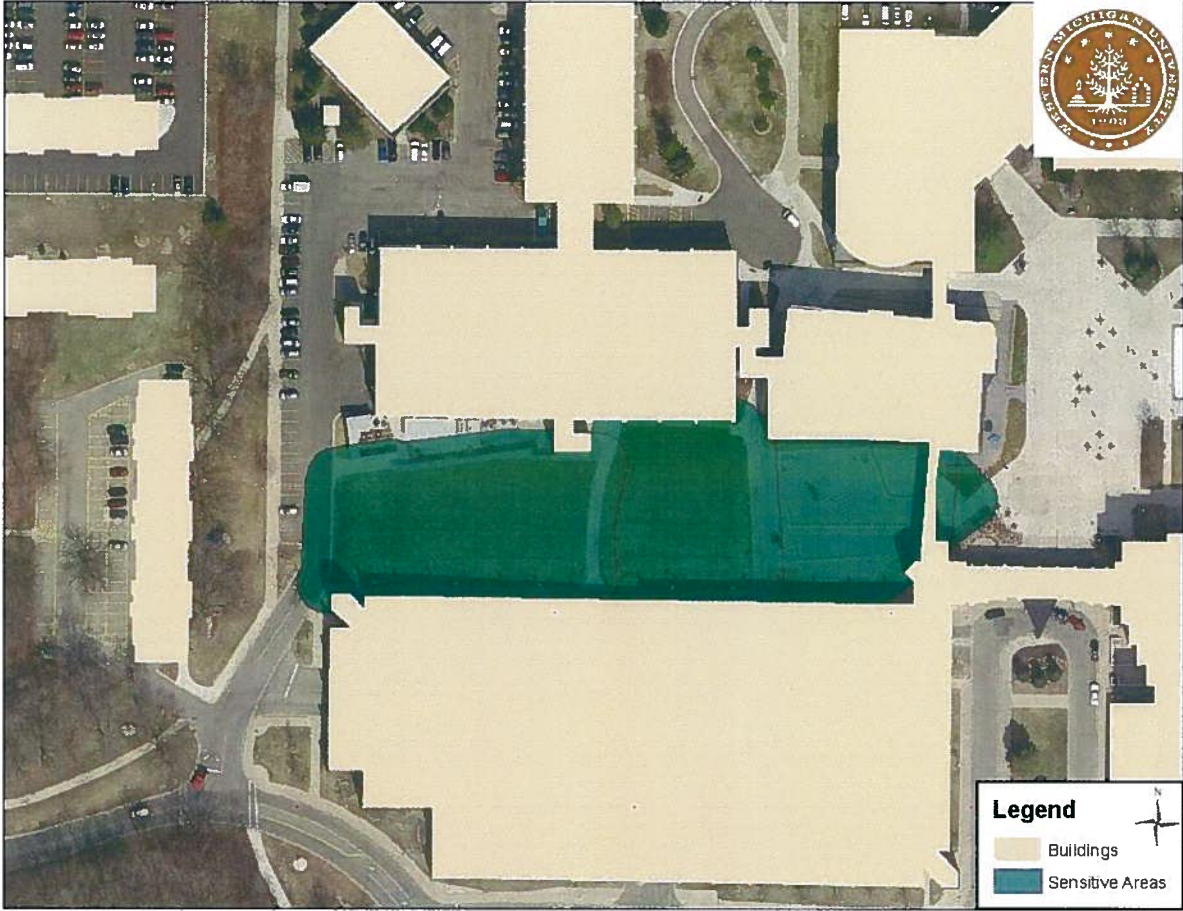
# Goldsworth Valley Pond

Sensitive Landscape Areas- 25 Foot Buffer



RCVA

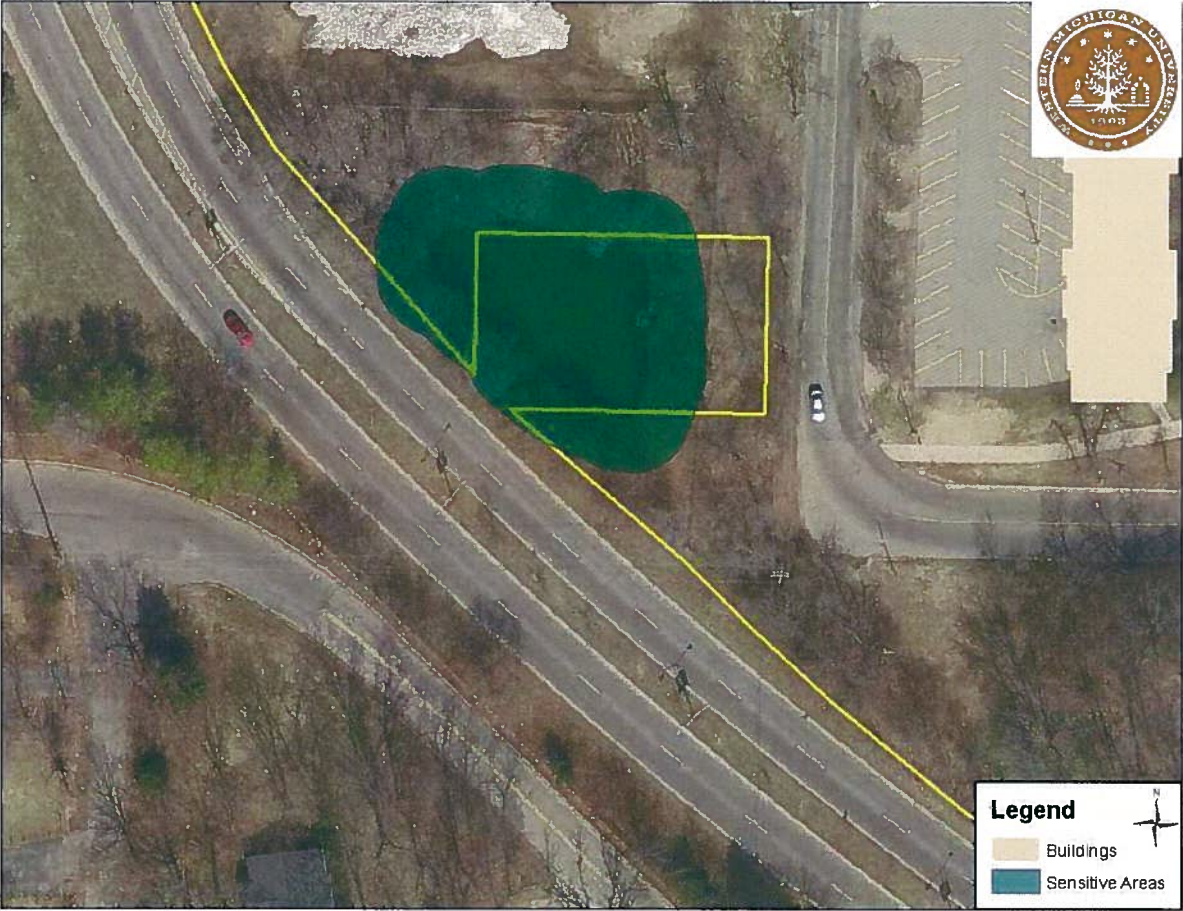
Sensitive Landscape Areas- 25 Foot Buffer





# WVA Retention

Sensitive Landscape Areas- 25 Foot Buffer



All maps can be found at L:\Shared\LSshared\LS Policies and Procedures\Sensitive Areas Maps

# F. Appendix B: Records



## Irrigation System Repairs & Alterations

WMU Landscape Services

Date	Time	System	Repairs/Alterations

# Pesticide Equipment Calibration Record

WMU Landscape Services

Date	Equipment Calibrated	Calculations Used	Description of Calibration Methods Used

All records can be found at L:\Shared\Lshared\LS Policies and Procedures\Records