

EQUIPMENT WASHING ON GOLF COURSE PROPERTIES

Cleaning mowing equipment after each use is a common practice at golf facilities.

The primary objective of the equipment washing operation is to remove grass clippings and debris from the decks, reels, wheels and carriage of the mowers. Petroleum products can also be dislodged from grease fittings, engines or hydraulic systems, however, the amount of petroleum products removed is considered incidental.

Golf course mowing equipment is expected to operate with a high level of precision. Cleaning after each use helps to maintain high performance standards.

Well-designed equipment washing areas can perform many valuable functions including:

- Minimizing environmental impacts
- Limiting facility liability by complying with applicable laws
- Improving employee productivity
- Maintaining equipment performance
- Improving worker safety



EQUIPMENT WASHING: WHAT IS THE PROBLEM?

It is common to find equipment-washing stations located near surface water bodies. Early designs provided for wastewater, clippings and soil to be discharged from the wash area directly into a drainage ditch, stream, pond, or stormwater catch basin. The watercourse provided the means to dilute the waste and move it away from the wash area.

Grass clippings along with the soil washed from the machinery represent a significant organic load with the potential to contaminate surface water resources. The primary contaminants of issue in grass clippings are the nutrients nitrogen and phosphorus.

Nitrogen and phosphorus deposited in natural surface water systems are problematic as they can promote growth of aquatic vegetation. Aggressive aquatic plant growth can change other characteristics of a water system and lead to overall degradation for wildlife and recreational uses.

- Equipment washing areas are being closely scrutinized for their possible environmental impact.
- If you currently have a wash area that allows water to flow freely into a waterway, you are facing a potential problem.
- Washing oil, grease, solvents, fuels, grinding compounds, detergents, pesticides or nutrients down the drain, into the ground or into a waterway is neither legal or environmentally responsible.
- Steps should be taken NOW to improve your situation!



EQUIPMENT WASHING: A REGULATORY OVERVIEW

EPA considers wash water as a source of Industrial Waste. If wash water is allowed to soak into the ground or go into a storm drain or drain into any surface water such as a river or lake, it must meet the Clean Water Act's contamination requirements, which simply state that it must be as clean as drinking water.

Wastewater running off of property into a water body is considered an illegal, unpermitted discharge under the federal Clean Water Act. If this occurs, individuals must apply for a National Pollutant Discharge Elimination System (NPDES) permit. To avoid conflicts, all water used needs to be picked up and disposed of properly. If this is not practical, then zero discharge reclamation is required. This means all water is picked up, cleaned and reused so as not to pollute any ground or surface waters. Left over water must be hauled away or cleaned for discharge to local sanitary sewer standards.

Any cleaning, maintenance or other service that does not follow a practice that prevents ground or surface water contamination during its operation is typically in violation of the Clean Water Act. Both the owner of the property and the operator can be liable and face legal penalties and be responsible for damages and clean-up costs.

Today, technologies and equipment are available to enable golf facilities to be compliant. Operators utilizing equipment which cleans and reuses wash water and/or picks up wash water and removes it from the site or processes it to meet sanitary sewer discharge requirements, are generally considered compliant -- they are utilizing "best management practices" to control contamination to ground and surface water. Those who utilize these "best management practices" limit their exposure and risk of running afoul of EPA regulations.

- Laws and regulations regarding the disposal of wash water vary by state.
- State policies, guidelines and regulations are not very well developed to address golf facility equipment washing operations.
- Facility operators should become familiar with local and state laws and regulations.
- Contact GCSAA for compliance assistance or local, state and/or federal wastewater officials in your area.

Information printed with permission from Roger K. Tychsen in his July 2003 article "Defining Problems and Solutions of Wash Water Recovery for Golf Courses".



EQUIPMENT WASHING REGULATIONS: MICHIGAN CASE STUDY

Each state regulates equipment washing differently. It is critical that golf facilities consult local and state environmental officials specializing in wastewater management to identify those laws, regulations, policies and guidance documents which affect this area of operation at the golf facility. The following represents how one state -- Michigan -- has chosen to regulate equipment washing at golf facilities.

Michigan is unique in that it administers both surface water discharge and groundwater discharge permits. The groundwater discharge statutes are found in “Part 22 – Groundwater Quality” of the state’s administrative rules.

Part 323.2210 covers items permitted to be discharged without a permit. County, district or city health departments oversee these exemptions.

The Michigan rule offers three options under Part 323 for the discharge of wash water. Only one of the options allows for discharge of wash water without a permit. It has rather strict guidelines, yet is generally considered to be the most desirable option for golf course facilities. Section 323.2210 is listed below along with an interpretation of how this is being adopted by golf course superintendents.

323.2210 (m)(ii) – items permitted to be discharged without a permit

(m) Wastewater from a portable power washer when used in either of the following circumstances:

(ii) by a commercial operator or in a commercial or industrial setting to remove nonpolluting substances from vehicles or surfaces where no additives are used and the washing process does not add significant pollutants to the water.

Practical interpretation for Michigan golf course facilities:

- Basically, water is directed to the exterior of the machinery using no additives in the wash water (soaps, degreasers)
- Water flowing off a pad must not be connected to surface water bodies
- No permit fee and no application fees are required as long as petroleum byproducts are not added to the wash water
- The objective is to remove dirt/grime/grass clippings only
- The MDEQ supports innovation – there are no restrictions on size of wash pad



EQUIPMENT WASHING OPTION 1: MICHIGAN CASE STUDY

There are several options available to discharge wastewater from wash stations in an environmentally sound manner. The options are categorized into systems where the water is treated or systems where the grass clippings are separated and the water is discharged on-site.

Treatment systems involve on-site equipment that cleans the water or where the water is discharged to a local treatment facility via a sanitary sewer connection. One type of treatment system is:

Off Site Treatment – Discharge to Sanitary Sewer

Wash systems can be connected directly to a sanitary sewer. Since the water is being treated by a wastewater treatment facility downstream, the water can contain some grass clippings, soil or even minor amounts of petroleum products. Before your wash station is hooked into a sanitary sewer system, you must have authorization from the treatment facility. It is optimum to have some type of screening mechanism to separate the grass clippings from the water stream.

Key points:

- Must have authorization from treatment facility
- Most will accept some clippings, nutrients, limited petroleum sludge and soaps/degreasers



Off Site Treatment – Discharge to Sanitary Sewer



EQUIPMENT WASHING OPTION 2: MICHIGAN CASE STUDY

There are several options available to discharge wastewater from wash stations in an environmentally sound manner. The options are categorized into systems where the water is treated or systems where the grass clippings are separated and the water is discharged on-site.

Treatment systems involve on-site equipment that cleans the water or where the water is discharged to a local treatment facility via a sanitary sewer connection. One type of treatment system is:

On-Site Closed Loop Treatment Systems

“Closed loop” means no effluent is discharged back into the environment. Wash water is reclaimed and then recycled.

There are several wash systems available on the market that offer a “closed loop” whereby the same water is used over and over and there is no discharge from the system. They offer a variety of processes ranging from mechanical screens, filters, and ozone treatment, to the use of microorganisms to biologically digest the impurities in the water.

Advantages to this system:

- Designed to trap or treat a variety of wastes including petroleum, pesticides and nutrients
- They could be used for everyday equipment washing, can handle petroleum products from engine cleaning and could be used as pesticide mixing and loading pad
- Long term benefits include water conservation

Disadvantages to this system:

- Initial and maintenance costs are higher than other systems.

Key points:

- High tech system using mechanical filters, chemical filters, ozone or and/or biological digestion
- No discharge from the system allowed
- Can be engineered for clippings, nutrients, petroleum, pesticides
- Can also be used as pesticide mix/load pad
- Higher initial costs
- Maintenance costs



On-Site Closed Loop Treatment Systems



EQUIPMENT WASHING OPTION 3: MICHIGAN CASE STUDY

There are several options available to discharge wastewater from wash stations in an environmentally sound manner. The options are categorized into systems where the water is treated or systems where the grass clippings are separated and the water is discharged on-site.

Separation systems are designed to separate the clippings from the water and then discharge the water on-site. The primary criteria that must be followed for this use to be allowed without a permit include:

- Do not discharge the water to a surface water body -- includes wetlands, ponds, lakes, streams and stormwater catch basins.
- Do not use soaps or degreasers in the water stream.
- Do not wash motors or directly discharge petroleum products into the wash water.
- Wash water must be directed toward grass clippings and machine exterior.

One type of separation system is:

Dog Leash System

This system is simple. Just use a connection to the irrigation system and wash the equipment over a turfed area where the water will infiltrate and will not flow across the surface into a water body. The spot where the equipment is washed should be moved around like a “dog on a leash” so the area does not become muddy and problematic. The need to move the wash spot will depend on the amount of water used and the percolation rate of the soil.

Advantages to this system:

- Low cost
- No need to handle the clippings -- they can settle into the existing turf.

Key points:

- Wash equipment over turfed area
- Clippings/soil returned to turf
- Move to alleviate excessive water and clipping buildup



Dog Leash System



EQUIPMENT WASHING OPTION 4: MICHIGAN CASE STUDY

There are several options available to discharge wastewater from wash stations in an environmentally sound manner. The options are categorized into systems where the water is treated or systems where the grass clippings are separated and the water is discharged on-site.

Separation systems are designed to separate the clippings from the water and then discharge the water on-site. The primary criteria that must be followed for this use to be allowed without a permit include:

- Do not discharge the water to a surface water body. This includes wetlands, ponds, lakes, streams and stormwater catch basins.
- Do not use soaps or degreasers in the water stream.
- Do not wash motors or directly discharge petroleum products into the wash water.
- Wash water must be directed toward grass clippings and machine exterior.
- Utilizing compressed air to blow grass clippings prior to washing will reduce the amount of water needed.

One type of separation system is:

Catch and release – above ground

In a catch and release system, grass clippings are captured through a screening mechanism and water is released to the ground surface for infiltration. There must be no connection to surface water in this system. The clippings are collected and returned to a turfed area or composted. Advantages to this system are relatively low cost but it demands handling of captured grass clippings.

Catch and release – below ground

This system is similar to above ground Catch and Release process, but the water is discharged to an underground infiltration network like those used in a septic system. The clippings can be captured via an above ground screening system or a tank containing separation baffles that trap the clippings from the water (septic tank or oil/water separator). If a tank is used, the grass clipping sludge must be removed and disposed of by a licensed liquid industrial waste hauler. This waste does not meet the definition of “septage” so a conventional septage tank hauler is not authorized to dispose of this material.



Key points:

- Consider using compressed air
- Screen clippings from water
- Design water release above ground
- Compost clippings

Catch and release – above ground



Catch and release – below ground

