



Best Practices for ADOT Vehicle and Equipment Wash Facilities

ADOT Guidance Document
6/25/2015



REVISION RECORD

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Emergency phone numbers

- **Notify Facilities Maintenance immediately of any of the following:**
 - a. Any leaks, blockages of drains, or other malfunctions with your vehicle wash facility.
- **Notify Groundwater Protection Coordinator (GPC) immediately of any of the following:**
 - a. Any announced or unannounced on-site inspections.
 - b. All scheduled pumpouts.
- **Spill – Consult Facility Pollution Prevention Plan (FPPP) Section 4 or call District Environmental Coordinator (DEC)**

Oil-Water Separator (OWS) Malfunction

Contact	Phone
Facilities Maintenance North – Zack Gammill	928-779-7572
Facilities Maintenance Central – David Castro	602-712-7179
Facilities Maintenance South – Pat Terry	520-838-2851
ADOT Groundwater Protection – Kent Haugerud	602-376-8532

Other important phone numbers:

Klimentina (Tina) Risteska, Equipment Services, 602-712-6177

David Mack, ADOT Industrial Stormwater, 602-376-7935

DEC Contact List:

Northcentral – Temp contact; Kent Haugerud, 602-376-8532

Northeast – Temp contact; Kent Haugerud, 602-376-8532

Northwest – Chuck Budinger: W. 928-777-5966; M. 928-499-8660

Central – Lisa Anderson; W. 602-361-3227

Southeast – Temp contact; Pat Terry: W. 520-838-2851; M. 520-349-1651

Southcentral – Temp contact; Pat Terry: W. 520-838-2851; M. 520-349-1651

Southwest – Coby Teal; W. 928-317-2101

M = Mobile

W = Work

1.0 Introduction

The Arizona Department of Transportation (ADOT) is committed to the development of safe, efficient, and cost effective transportation infrastructure. The construction and maintenance of transportation infrastructure requires a large inventory of vehicles and heavy equipment. This equipment must be cleaned and maintained regularly so it is safe and reliable. The wash water associated with cleaning equipment and vehicles can contain petroleum products (i.e. oil and grease), sediment, detergents, and other potential pollutants. Best practices are necessary to maintain safety and minimize water use, while controlling potential pollutants generated at vehicle wash facilities. Equipment maintenance and good operational practices result in less cost and more efficiency for ADOT.

This manual has been prepared as guidance for ADOT employees who manage and maintain ADOT vehicle wash facilities (wash bays) across the state. It provides best practices regarding operation and maintenance as well as compliance with state and federal regulations concerning discharged wastewater from vehicle wash facilities.

Wash bays have been constructed at many maintenance yards across the state to maintain ADOT vehicles and equipment. Rinsing of snowplows in some areas of Arizona will pose the most intense usage of the wash bays. Other uses include rinsing of haul trucks, Department of Public Safety (DPS), and other State owned vehicles and equipment. ADOT wash bays are designed for exterior wash down only. It is important not to clean vehicle interiors or engine compartments unless the facility is designed for that purpose. Most wash bays are not designed for that purpose. ADOT does maintain a few steam cleaning areas for engine degreasing which can generate a higher concentration of pollutants.

1.1 Safety

1. Confined Space: The oil water separator (OWS) is a confined space and should only be entered by a person qualified in Confined Space Entry.
2. Always wear protective gear: ear, eye, body (feet, face and hands), as necessary to protect against excessive noise, high pressure water, or any other hazard in this work space.
3. Always check the clearance around the truck or equipment to ensure proper freedom of movement while using spray wand.
4. Never point the spray wand toward anyone. It is extremely high pressure and can cause injury.
5. Do not climb on equipment when wet. It can be very slick.
6. Maintain soaps, detergents, and operating tools in the proper place.

Safety reminders

1. Always stay alert.
2. Always use common sense.
3. Always be aware of the dangers of operating this type of equipment.

1.2 Regulations pertaining to Vehicle Wash Facilities

Properly designed vehicle wash facilities discharge dirty wash water to an existing sanitary sewer or a designed on-site disposal system. Local municipalities have requirements for vehicle wash facilities that discharge to regulated sanitary sewer systems. The local sanitary district must be contacted prior to initial discharge from the wash facilities. A local permit or discharge authorization is usually required. Some municipalities also conduct periodic inspections. It is important for the operator to be familiar with local requirements for their wash facility if they discharge to the sanitary sewer.

Wash facilities on State land in Arizona that discharge to an on-site disposal system can be permitted under a general aquifer protection program (APP) permit from the Arizona Department of Environmental Quality (ADEQ). On-site disposal may include discharge to a lined impoundment or leachfield. Prior to discharge, a Notice of Intent (NOI) for a Type 3 general permit, and a Type 3.03 Supplemental NOI for Vehicle and Equipment Washes must be submitted to ADEQ. All wash bays must comply with the requirements of the general permit or an Individual Aquifer Protection Program (APP) permit may be required. The Individual APP is costly and extensive. A copy of the Type 3 general permit is included in the Appendix I (Arizona Administrative Code R18-9-D303).

On tribal lands, either the US Environmental Protection Agency (EPA) or the designated tribal agency has regulatory authority over vehicle wash facilities. The regulating agency in these areas should be contacted prior to construction. On the Navajo Nation, a construction authorization is required prior to construction. After construction an operational permit and operation and maintenance manual is required.

1.3 Pesticide Trucks

All pesticide / herbicide trucks are required to decontaminate prior to leaving the application site. Emptying, rinsing or cleaning of chemical storage tanks or pesticide / herbicide containers is strictly forbidden at all ADOT wash facilities. The wash bays are designed for exterior wash down only. The exterior of pesticide trucks may be washed in the wash bays by registered pesticide / herbicide applicators only. The OWS is not designed to treat pesticides and herbicides.

2.0 Description of the Vehicle Wash Facility



Photo 1: Vehicle wash facility completed 2015

ADOT constructs wash facilities incorporating best practices for efficiency and to avoid comingling of stormwater. All of the structures are covered and some are fully enclosed. All consist of a reinforced concrete wash pad with a cast in place grated trench drain and an elevated catwalk so that rinsing the top of equipment is possible. Through the process of high pressure cleaning some solids (mud, sand, clay, gravel) and oils are generated in the wash water. The wash pad is sloped toward the trench drain with curbing surrounding the wash bay except at the entrance to prevent runoff from the wash facility. The trench drain is connected by a 4-inch pipe to an OWS, which are central for the removal of pollutants in the vehicle wash system. Pre-treated wash water is discharged from the OWS to either an on-site disposal system or municipal sanitary sewer system. Regular maintenance of the components greatly reduces operation and maintenance costs of the system. Best practices are listed in Appendix II (Best Practices for Vehicle Wash Facilities).

3.0 Operation and Maintenance

Regular maintenance activities must be incorporated into daily operation of the wash bay to keep it functioning optimally for everyone. The procedures outlined in this manual will be included in Appendix II, Best Practices for Vehicle Wash Facilities. It is recommended that these be posted at the wash bay so they are common knowledge to all who use the facility. The wash bay should be inspected once per quarter using the checklist in Appendix III. In addition, the OWS pumping log should be completed after pumping (Appendix IV). Make copies as necessary to log all pump out information.

3.1 Pre-Wash

Excess sediment should be removed from the equipment by dry methods prior to loading onto the wash pad. Sweep or knock off excess sediment prior to loading onto the pad. Mix removed sediment with millings or soil piles after the sediment is dry. If excess sediment is noted on the wash pad, or removed from the equipment onto the wash pad, it should be swept before the equipment is rinsed. The purpose is to ultimately keep sediment out of the OWS, which is not designed for sediment disposal. OWSs will be discussed in more detail later. Vehicle or equipment should be loaded onto the concrete wash pad so that wash water is contained within the wash bay area.

3.2 Vehicle Rinse and Trench Drain

Rinse the equipment using warm or hot water and high pressure to reduce the amount of water required for cleaning¹. Top down rinsing is most effective. A water flow meter installed at each wash bay is beneficial to monitor water usage.

Keeping sediment out of the 4-inch drain pipe is the most effective method to increase the period of time between costly maintenance of the OWS. The grated trench drain is where sediment collects as vehicles and equipment are rinsed. It is important to keep sediment in the trench drain from flowing into the 4-inch drain pipe which connects to the OWS. Most trench drains are equipped with a baffle or screen to protect the 4-inch drain pipe from sediment. The baffle serves as a weir allowing clean water to flow over the top or around the sides while preventing sediment from entering the trench drain. If your 4-inch trench drain pipe is not protected by baffle or screen, or if the baffle becomes damaged, please contact the Ground Water Protection Coordinator (GPC) and arrangements will be made to retrofit your trench.

Phosphate-free biodegradable detergents and soaps are allowed to be used in moderation at ADOT vehicle wash facilities. Soaps and detergents emulsify (break down) oils and reduce the effectiveness of the OWS. To ensure maximum efficiency of the OWS, keep soaps and detergents to a minimum. Maintain the appropriate Material Safety Data Sheet (MSDS) or Safety Data Sheet (SDS) in Appendix VI of this manual for each soap or detergent used at the wash facility.

¹ Vehicle and Equipment Wash water Discharges, Best Management Practices Manual, November 2012, Washington State Department of Ecology, Publication number WQ-R-95-056.



Photo 2: Clean trench as needed to keep sediment out of the trench drain & OWS



Photo 3: Trench with sediment removed

Sediment must be removed regularly from the trench so that it does not enter the 4-inch drain pipe. Sediment should be removed from the trench before it reaches a depth of 50% of the baffle height. A square shovel or strong shop vacuum can be used for this purpose. The removed sediment should be placed on the wash pad and dried completely. Most wash facility sites have been profiled for regulated waste in the sediment. Results indicate that there is no need for special handling or disposal of this sediment at this time. The sediment can be disposed of at the landfill, emptied into a dumpster, or mixed with millings or soil piles after it is dried. While keeping sediment out of the OWS is of primary importance, it is also important to properly dispose of removed sediment.

Wash water and sediment from ADOT vehicle wash facilities have been sampled at various points in the wash process to analyze contaminants (Wash Rack Report Summary, August 22,

2013). Analysis was also completed in 2018 on sediment samples collected at some of the vehicle wash facilities. Samples were analyzed for metals, volatile organic compounds (VOCs) and hydrocarbons. Although the composition of the wash water varies slightly across the state, all sediment samples were within parameters to be disposed at a landfill. Copies of these reports are available upon request from the Groundwater Protection Coordinator (GPC).

3.3 Oil Water Separator

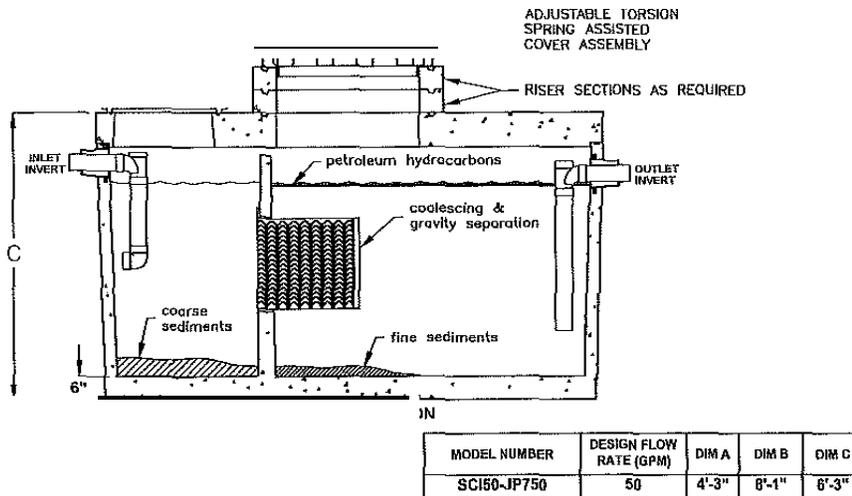


Figure 1: Jensen Precast OWS installed at some ADOT vehicle wash facilities²

The principal pretreatment component in the wash bay system is the OWS. It is important to have an understanding of how these structures operate in order to maintain the wash bay system. Oil water separators used at ADOT are conventional gravity type separators. The separators have two or three compartments and are equipped with an inlet and outlet “T” that slows the flow of water and allows separation of oil and solids. Some are equipped with polyethylene coalescing plates that help to collect the oil. When properly designed, installed and operated, the OWS provides a pretreatment system that prevents entry of unacceptable levels of contamination from oily wastewater to a sanitary sewer system or on-site disposal. The OWS is not designed to separate high concentrations of solids or oil from water that might occur when a large quantity of oil or sludge is spilled or poured into a wash bay drain. The OWS is designed to separate and retain oil as it is rinsed or washed from vehicles or equipment. Antifreeze, degreasers, or emulsifying detergents should be prevented from entering the OWS as they will emulsify (break down) the oils.

The OWS should be inspected once per quarter and recorded on the Quarterly OWS Checklist in Appendix III. The oil water separator is a confined space. Entry is restricted to those who are

² ADOT Truck Wash Station Design Report, Dibble Engineering, 2-7-2014
Best Practices for ADOT Vehicle and Equipment Wash Facilities

currently certified in confined space entry. The buddy system should be used to enter these confined space areas. Oil needs to be removed when there is two inches or more floating on top of any chamber per manufacturer's recommendations. With proper training provided by the GPC, some oil can be removed from the inlet chamber using absorbent socks. If handled properly, the pads can be wrung out (oil recycled) and reused. Reduced pumping frequency translates to cost savings for the Unit.

Sludge is oily dirt that builds up in the bottom of the separator and it is very expensive to dispose. Manufacturer recommends that it must be pumped when it accumulates to 8-10 inches in the inlet chamber of the OWS. It is important to use best practices at the wash facility to reduce this sludge buildup. The quantity of sludge found in the inlet section should be used as a basis for determining the next interval before cleaning. If the sludge level is very low, the cleaning interval can be extended. The GPC will determine the initial cleaning interval. Sludge level can be determined using a length of white PVC pipe as a dip stick in the OWS. The sludge will appear as black soot at the bottom of the PVC pipe.

It is important to note again that the OWS is a confined space and can only be entered by a person trained in confined space entry. Some of the OWS used at ADOT vehicle wash facilities have polyethylene coalescing plates. These plates must be cleaned before they get blinded, or coated with silts and sediment. The plates should be rinsed with a low pressure hose after each pumping. If sludge has accumulated more than 1/3 up the plate modules of the coalescing plate separators, the interval between cleaning should be shortened per manufacturer's recommendations and the coalescing plates must be removed and cleaned. It is important not to let the sludge accumulate more than 8-10 inches in the inlet chamber. Contact Facilities Management or the GPC if you believe your coalescing plates have become blinded or sediment has reached approximately 1/3 the height of the plate modules.

Older oils can become emulsified³, so regular maintenance is necessary. Initial monitoring has been completed at some OWS and regularly scheduled pumping has been recommended in accordance with manufacturer's recommendations. All vehicle wash facilities should have their OWS pumped at least annually and more often if necessary. Contact ADOT Facilities Maintenance to have the system pumped.

Upon pumping, the amount of liquid and sludge pumped should be recorded in the Pumping Log in Appendix IV. The oil water separator will need to be recharged with clean water after pumping. This requires the OWS to be filled with fresh water to the outlet "T" so that oil and water will be effectively separated prior to discharge to the sanitary sewer or on-site disposal system. Please see the SOP for pumping or contact the GPC for more information.

³ Fact Sheet: The Oil/Water Separator, How to select and maintain an oil/water separator, King County DNR, September 2010

Bioremediation is a proven method to minimize the oil content in the OWS⁴. Benefits include reduced cleanout frequency, reduced sludge quantities, and reduced or eliminated odors. The process is initiated by adding petroleum eating microbes to the OWS. These microbes break down oil and sludge into water and carbon dioxide. ADOT does not currently have a service contract in place for bioremediation, but this may be explored in the future.

3.4 Required Maintenance Schedule

Table 1

Weekly	Check sediment in trench and remove if necessary. (See Vehicle Rinse and Trench Drain - Section 3.2)
Quarterly	Complete OWS Checklist (Appendix III)
When OWS is pumped	Fill in Pumping Log (Appendix IV)

4.0 Monitoring

If wash water is discharged to an unlined surface impoundment or other area for subsurface disposal on State land, the following monitoring must be conducted on a quarterly basis. Monitoring will be conducted by an ADOT contractor or qualified personnel in accordance with the APP permit. Sampling will be conducted after the OWS and prior to discharge. New wash (2015 or newer) facilities have a distribution box where samples can be collected in order to see if treatment is being performed according to specifications.

1. ADOT will monitor the wash water quarterly at the point of discharge (distribution-box) for pH and for the presence of C10 through C32 hydrocarbons using a Department of Health Services certified method.
2. If pH is not between 6.0 and 9.0, or the concentration of C10 through C32 hydrocarbons exceeds 50 mg/l, ADOT shall submit a report to ADEQ with a proposal for mitigation and shall increase the monitoring frequency to monthly. The report will be compiled in conjunction with the Environmental Planning Group (EPG).
3. If the condition in item 2 above persists for three additional months, ADOT shall submit an application for an individual permit. EPG will work with the District (or Facilities) to prepare and submit the application.

Records must be maintained at the Org operating the wash bay and at the Groundwater Protection Coordinator's office for 10 years.

Vehicle wash facilities that discharge to sanitary sewer systems may have specific pre-treatment requirements. The individual sanitary district must be contacted prior to initial discharge. Generally, a pre-settling trench and OWS are required. These are expected to operate so that contaminants do not

⁴ Oil/Water Separators, Best Environmental Practices for Auto Repair and Fleet Maintenance, November 1999, USEPA

enter the sewer system. It is the responsibility of individual users to ensure proper maintenance and operation of the system.

There is currently no discharge monitoring requirements on tribal lands. Navajo Nation EPA requires that all wastewater systems, including vehicle wash facilities, are maintained in accordance with an operation and maintenance plan. The systems are expected to be maintained to treat wastewater to manufacturers' specifications so that contaminants do not discharge from the OWS.

Appendix I

Arizona Administrative Code

A.A.C. R18-9-D303. 3.03 General Permit: Vehicle and Equipment Washes

A. A 3.03 General Permit allows a facility to discharge water from washing vehicle exteriors and vehicle equipment. The 3.03 General Permit does not authorize:

1. Discharge water that typically results from the washing of vehicle engines unless the discharge is to a lined surface impoundment;
2. Direct discharges of sanitary sewage, vehicle lubricating oils, antifreeze, gasoline, paints, varnishes, solvents, pesticides, or fertilizers;
3. Discharges resulting from washing the interior of vessels used to transport fuel products or chemicals, or washing equipment contaminated with fuel products or chemicals; or
4. Discharges resulting from washing the interior of vehicles used to transport mining concentrates that originate from the same mine site, unless the discharge is to a lined surface impoundment.

B. Notice of Intent to Discharge. In addition to the Notice of Intent to Discharge requirements specified in R18-9-A301(B), an applicant shall submit a narrative description of the facility and a design of the disposal system and wash operations.

C. Design, installation, and testing requirements. An applicant shall:

1. Design and construct the wash pad:
 - a. To drain and route wash water to a sump or similar sediment-settling structure and an oil/water separator or a comparable pretreatment technology;
 - b. Of concrete or material chemically compatible with the wash water and its constituents; and
 - c. To support the maximum weight of the vehicle or equipment being washed with an appropriate safety factor;
2. Not use unlined ditches or natural channels to convey wash water;
3. Ensure that a surface impoundment meets the requirements in R18-9-D301(C)(1) through (3). The applicant shall ensure that berms or dikes at the impoundment can withstand wave action erosion and are compacted to a uniform density not less than 95 percent;
4. Ensure that a surface impoundment required for wash water described in subsection (A)(1) meets the design and installation requirements in R18-9-D301(C);
5. If wash water is received by an unlined surface impoundment or engineered subsurface disposal system, the applicant shall:
 - a. Ensure that the annual daily average flow is less than 3000 gallons per day;
 - b. Maintain a minimum horizontal setback of 100 feet between the impoundment or subsurface disposal system and any water supply well;
 - c. Ensure that the bottom of the surface impoundment or subsurface disposal system is at least 50 feet above the static groundwater level and the intervening material does not consist of karstic or fractured bedrock;

- d. Ensure that the wash water receives primary treatment before discharge through, at a minimum, a sump or similar structure for settling sediments or solids and an oil/water separator or a comparable pretreatment technology designed to reduce oil and grease in the wastewater to 15 mg/l or less;
- e. Withdraw the separated oil from the oil/water separator using equipment such as adjustable skimmers, automatic pump-out systems, or level sensing systems to signal manual pump-out; and
- f. If a subsurface disposal system is used, design the system to prevent surfacing of the wash water.

D. Operational requirements. The permittee shall:

- 1. Inspect the oil/water separator before operation to ensure that there are no leaks and that the oil/water separator is in operable condition;
- 2. Inspect the entire facility at least quarterly. The inspection shall, at a minimum, consist of a visual examination of the wash pad, the sump or similar structure, the oil/water separator, and all surface impoundments;
- 3. Visually inspect each surface impoundment at least monthly, to ensure the volume of wash water is maintained within the design capacity and freeboard limitation;
- 4. Repair damage to the integrity of the wash pad or impoundment liner as soon as practical;
- 5. Maintain the oil/water separator to achieve the operational performance of the separator;
- 6. Remove accumulated sediments in all surface impoundments to maintain design capacity; and
- 7. Use best management practices to minimize the introduction of chemicals not typically associated with the wash operations. Only biodegradable surfactant or soaps are allowed. The permittee shall not use products that contain chemicals in concentrations likely to cause a violation of an Aquifer Water Quality Standard at the applicable point of compliance.

E. Monitoring requirements.

- 1. If wash water is discharged to an unlined surface impoundment or other area for subsurface disposal, the permittee shall monitor the wash water quarterly at the point of discharge for pH and for the presence of C 10 through C 32 hydrocarbons using a Department of Health Services certified method.
- 2. If pH is not between 6.0 and 9.0 or the concentration of C 10 through C 32 hydrocarbons exceeds 50 mg/l, the permittee shall, within 30 days of the monitoring, submit a report to the Department with a proposal for mitigation and shall increase monitoring frequency to monthly.
- 3. If the condition in subsection (E)(2) persists for three consecutive months, the permittee shall submit, within 90 days, an application for an individual permit.

F. Recordkeeping. A permittee shall maintain the following information for at least 10 years and make it available to the Department upon request:

- 1. Construction drawings and as-built plans, if available;
- 2. A log book or similar documentation to record inspection results, repair and maintenance activities, monitoring results, and facility closure; and
- 3. The Material Safety Data Sheets for the chemicals used in the wash operations and any required monitoring results.

G. Closure requirements. A permittee shall comply with the closure requirements specified in R18-9-D301(G) if a liner has been used. If no liner is used the permittee shall remove and appropriately dispose of any liquids and grade the facility to prevent impoundment of water.

Appendix II

ADOT Vehicle Wash Facility Best Practices

1. Safety First
2. Conduct all vehicle and equipment washing in designated wash bays only.
3. Keep the wash pad area clean and free of sediment when not in use to protect the trench drain.
4. Inspect trench weekly to monitor sediment buildup.
5. Remove sediment if it reaches 50% of the baffle depth. (Refer to manual page 6-7 for specific details)
6. When the wash bay is not being used, remove sediment onto the wash pad for drying . Sediment may be mixed with millings or disposed in the trash after drying if initial profile has been completed.
7. Use minimal amounts of phosphate-free biodegradable soaps/detergents.
8. Use soaps/detergents in the contained wash area only.
9. Use pressure washer and warm water to conserve water.
10. No vehicle maintenance is permissible in any wash bay.
11. Direct discharge of oils, fuels, hazardous materials, or hazardous waste onto the wash bay is prohibited.
12. Maintain spill clean-up equipment (absorbents, spill kits, mops, vacuums, etc.) in close proximity to the vehicle wash facilities so that contaminants will not be washed into drain⁵.

⁶ ADOT Equipment Services BMP Manual
Best Practices for ADOT Vehicle and Equipment Wash Facilities

Appendix III

Quarterly Wash Facility Checklist



Inspection detail:

1. Inspect the wash pad and note any cracks, damage, or unusual staining.
2. Settling trench should be checked every week to ensure sediment has not filled to the top of the baffle which protects the 4-inch drain. No sediment should be in the 4-inch drain pipe. Remove sediment from the settling trench before it reaches 50% of baffle height and allow sediment to dry on the wash pad. Dispose of sediment in accordance with the Vehicle Rinsing and Trench Drain section of the manual.
3. Inspect the distribution box and disposal field. Note any wet or damp areas where water may be surfacing in the disposal field. This may indicate plugged soil substrate. Inspection ports at the end of each disposal field will allow the operator to see if water is coming close to the ground surface.
4. Check primary compartment of OWS. The cast iron sewer lid will have to be removed. Use a pvc or other dip stick to measure solids on bottom of tank and oil layer floating on top of water surfaces. If oil is emulsified (mixed with water), pump tank. If sediment in the bottom of the primary tank reaches 10 inches, pump the tank.

OIL/WATER SEPARATOR

Quarterly

Maintenance Inspection Checklist

Date of Inspection: _____

Location: _____

1. Wash pad condition?
 - a. Cracks? Y ___ N ___
 - b. Damage? Y ___ N ___
 - c. Unusual Staining? Y ___ N ___

2. Is sediment regularly removed from trench? Y ___ N ___

3. Distribution box and disposal field condition? (if applicable)
 - a. Excess dampness noted? Y ___ N ___
 - b. Damage to distribution box? Y ___ N ___

4. OWS inlet compartment (remove cast iron lid and use pvc to measure)
 - a. Solids (inches) _____ (Measured below the inlet T in primary tank)
 - b. Oil layer on top (inches) _____

OWS should be pumped when sediment or debris fills 8-10 inches of the primary tank (measured from the bottom of the tank) or at one year, whichever comes first. Pump if oil becomes emulsified (mixed with water/no separation). Pump or remove oil if it accumulates to 2" or more on the top of the primary tank.

Comments/Visual Observations: (Examples: odors, sheen, leaks, spills, sediment buildup and oil level on surface, signs of deterioration, road film, oil/grease, etc.)

Inspected by: _____

Appendix IV
OWS Pumping Log

Location

Pump Date	Contractor	Quantity oily water and solids pumped (Gallons)	Recorded by (name)

Appendix V

Wash Facility Sites and Contacts

Location Name	Contact	Phone
Auction Yard (Rinse down only)	Gary Lowe, Equipment Services (ES)	602-712-7284
Camp Verde MY	Anthony Imperia, CV Const.	928-567-8558
Chambers MY	Stetson Baker, Holbrook Maintenance	928—688-2782
Cordes Junction	Randy Skinner, Cordes Junction Const.	928-632-7786
Douglas MY	Andres Mendez, Super	928-364-3489
Durango MY	James Durlin, Hwy Ops Sup	602-390-0374
Flagstaff MY ES	Kenny Macias, Equipment Shop Super	928-526-0915
Flagstaff MY Maintenance	Zachary Gammill, Facilities Maintenance	928-779-7541
Fredonia MY	Tammie Zaccaria, Fredonia Maint.	928-643-7380
Ganado MY	Ron Curtis, Maintenance Super	928-755-3579
Gila Bend MY	David Miller, GB Maint.	928-683-2582
Globe MY	Tom Becker, ES Supervisor	928-402-5641
Grant Road MY	Scott Moody, Tucson ES	520-838-2872
Gray Mountain MY	Johnny (JR) Robbins, GM Maint.	928-679-2311
Happy Valley MY	Ismael Regalado, HV Maint.	602-712-5810
Kayenta MY	Kee Kescoli, Kayenta Maint.	928-697-3558
Keams Canyon MY	Elliot Koinva, Keams Canyon Maint.	928-738-2285
Kingman MY	Mike Ulloa, Kingman Maint.	928-681-6029
Little Antelope MY	James Kline, Super	928-286-1260
Needles (Topock)	Jeffrey Baumister, Super	928-768-4355
Nogales MY	David Cruz, Nogales Maint.	520-287-3771

Wash Facility Sites and Contacts – Cont.

Location Name	Contact	Phone
Page MY	Gavin Bunting, Page Maint.	928-645-9788
Payson MY	Brett Rupp, Payson Maintenance	928-486-5076
Prescott Valley MY	TJ Sota, Lead	928-642-0589
Quartzite MY	Timothy Mitchel, Quartzite Maint.	928-285-8616
Safford MY	Brad Smith, Safford Maintenance	928-428-4735
St. Johns MY	Jacob Isaacson, St. Johns Maint.	928-337-4913
Seligman MY	Tony Mascher, Seligman Hwy Admin	928-422-3482
Springerville MY	William (Bill) McCarty, Maintenance Super	928-333-4495
Three Way MY	Gabriel Gonzales, Super	928-687-1411
Tucson MY	Scott Moody, Tucson ES	520-838-2872
Wickenburg MY	Brent Brinkley, Wickenburg	928-684-2131
Wilcox MY	Gabrial Ayala, Wilcox Maint.	520-384-2388
Williams MY	Bob Freson, Lead	928-699-2640
Winslow MY	Sam Pogue, Super	928-289-2478
Yuma MY	Miguel Figueroa, Maint Supervisor	928-317-2126

Appendix VI

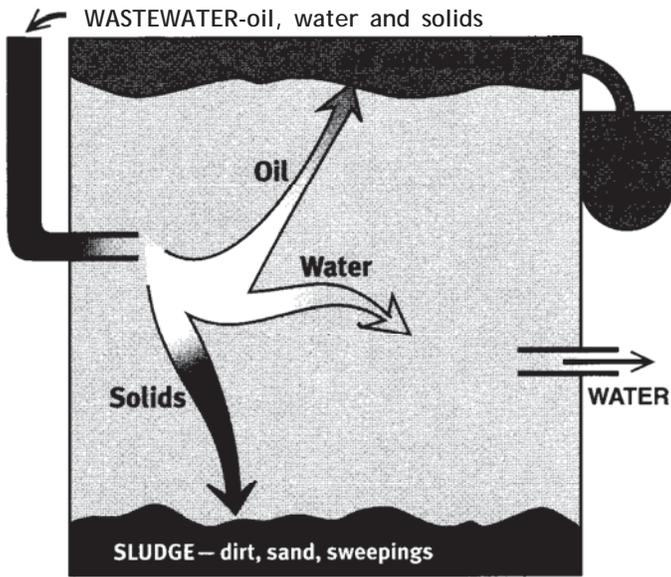
MSDS or SDS for each soap or detergent used at wash facility



OIL/WATER SEPARATORS

Best Environmental Practices for Auto Repair and Fleet Maintenance • November 1999

Simplified diagram of OWS operation



Heavier or Lighter Than Water? OWSs treat vehicle and floor wash water by allowing substances lighter than water to float and substances heavier than water to sink. Many OWSs also have baffles, coalescers, and oil skimmers to speed-up or enhance separation of these substances.

Why be concerned about oil/water separators?

Oil/water separators (OWS) can be costly to maintain, and if not properly managed, can pollute surface and ground water, and lead to costly violations. Have you taken steps to minimize the effects of your OWS on your budget and the environment? This fact sheet discusses the basic operation of OWSs in handling vehicle and floor wash water, and techniques to improve OWS performance and reduce costs and liabilities. To make sure your OWS works properly, remember:

Eliminate contaminants: Don't rely on the OWS to handle wash water from fuel, coolant, solvent, oil, or paint spills. Instead, clean up spills when and where they occur with dry methods (see the *Floor Cleanup* fact sheet).

Wash without detergents: Emulsifying cleaning compounds disperse oil in wash water and make OWSs ineffective-oil passes right through to the sewer. High pressure water or non-emulsifying cleaners are sufficient for most cleaning applications.

Minimize Loading: Minimize the amount of solids and oils that enter your OWS. The less solids and oils that reach the OWS, the less frequently sludge and floating oil must be removed from the OWS and the better it will work. Also, minimize the amount of wash water reaching the OWS. Excessive water flow can flood an OWS, forcing wastewater through it too fast to allow separation; the result: oil and other contaminants pass right through to the sewer. *OWSs should not be used to treat storm water runoff.*

TROUBLE SITUATIONS	POTENTIAL IMPACT	REMEDY
Chemicals and spills reach OWS	<ul style="list-style-type: none"> • Sewer discharge violation • Sludge requires disposal as hazardous waste 	<ul style="list-style-type: none"> • Eliminate floor drains from shop • Clean up spills when and where they occur • Use dry cleanup techniques in shop
Sludge builds up in OWS	<ul style="list-style-type: none"> • OWS is less effective because solids have less time to settle 	<ul style="list-style-type: none"> • Eliminate storm water flow into the OWS using berms or curbs • Install additional grates and screens on drains • Use sloping pavement and sediment traps around drains
Excessive floating oil accumulates in OWS	<ul style="list-style-type: none"> • Oil discharged to sewer during high flow periods 	<ul style="list-style-type: none"> • Pump out accumulated oil on a regular schedule • Use oil-only absorbent pads to remove and recycle oil • Use high-pressure, low-volume sprays for vehicle washing
Detergents reach OWS	<ul style="list-style-type: none"> • Oil is emulsified and flows out of OWS to sewer 	<ul style="list-style-type: none"> • Do not use oil-emulsifying cleaning solutions (detergents) • Wash vehicles and engines less often

How do I keep oil and solids out?

Filter filter filter. The best way to reduce OWS sludge is to keep solids out of vehicle and floor wash water. Install progressively finer grates and screens over the drains to the OWS inlet in order to maximize solids separation:

- Begin with steel bars spaced 3/4 to 1-inch apart at the OWS drain inlet
- Add sequentially finer grates and screens (3/4 and 1/4-inch screens or 1/4-inch expanded steel mesh)
- Finish with reusable absorbent material to remove very small particles.
- Use oil-only absorbents to separate and recycle oil from your OWS. In some older OWSs, it is not easy to collect and remove separated oil. If your OWS does not have an oil trough or other oil collection device, you can use reusable absorbent pads that absorb only oil and grease. Put these pads on the water surface to collect floating oil. Once saturated, squeeze the oil from the pads; this oil can be managed with your used oil, if the squeezed oil is not contaminated with hazardous waste (get data on your wash water quality or analyze a sample at least once to verify). The squeezed absorbent pads can be reused.
- Use microbes to digest oil in your OWS. Bioremediation is a proven technique to minimize the oil content in OWS effluent and sludge and to reduce OWS cleanout frequency. Microbes added to an OWS break down petroleum products suspended or dissolved in the wastewater, floating oil, or sludge. Facilities using bioremediation have eliminated wastewater violations and have reported reducing their sludge petroleum content by more than 80 percent. Such reductions can lower the regulatory status of OWS sludge, which will affect the required disposal method and disposal costs. Bioremediation is typically performed under a vendor service contract. Microbes are added to an OWS or inter-

ceptor lines on a regular basis to replenish microbe populations. Microbes are nontoxic and completely safe; the main by-products of bioremediation are water and carbon dioxide. Vendor service contracts usually cover all materials and labor; monthly costs range from \$75 to \$130 depending on the size and contaminant loading of the OWS.

BIOREMEDIATION BENEFITS:

- Lower hydrocarbon levels in OWS effluent
- Less contaminated sludge and lower volume of sludge
- Reduction or elimination of odor

LIMITATIONS OF BIOREMEDIATION:

- Microbe populations can be killed by harsh chemicals or pH levels greater than 8.5; do not use detergents that are caustic or contain emulsifiers

Case studies:

Car Repair and Car Wash

Salem Boys Auto of Tempe, Arizona used sloping pavement, grates, and screens to minimize OWS loading. These controls, together with bioremediation, decreased the sludge cleanout frequency and cost by 75%.

U.S. Postal Service Fleet Maintenance Facility

The Huntington Beach, California facility used bioremediation to reduce OWS effluent hydrocarbon concentration by more than 80%.

Your state or Local government environmental agency has more information about compliance and pollution prevention for auto repair shops and fleet maintenance operations in your state or area. Additional fact sheets and information can be found at www.epa.gov/region09/p2/autofleet. This fact sheet is part of a package of fact sheets entitled either "The Pollution Prevention Tool Kit, Best Environmental Practices for Auto Repair" (publication number EPA-909-E-99-001) or "The Pollution Prevention Tool Kit, Best Environmental Practices for Fleet Maintenance" (publication number EPA-909-E-99-002). To obtain copies of either package, call (800) 490-9198. Accompanying videos, "Profit Through Prevention", are available at the same phone number for either auto repair (number EPA-909-V-99-001) or fleet maintenance (number EPA-909-V-99-002).

