



### **General:**

The purpose of this document is to provide the reader with general information about how sand traps and oil/water separators work and how they benefit both the customer and the sewer utility. In addition it will provide specific information regarding statutory requirements for the installation and maintenance of sand traps and oil/water separators as provided by the International Plumbing Code and the *Sewer Use Ordinance* of the City of Beckley.

The sand, oil/water separator program established by the Beckley Sanitary Board (the "Board") deals primarily with repair garages, car-washing facilities, at factories where oily and flammable wastes are produced and in hydraulic elevator pit; separators shall be installed into all lines that having oil-bearing, grease-bearing or flammable waste and shall be discharged before emptying into the building drainage system or other point of disposal.

Excessive amounts of oil/grease cause various problems in the wastewater collection system (sewer and pumping systems), as well as in the wastewater treatment plant. In the wastewater pump stations (called "lift stations"), oil/grease can cause float switches to malfunction. Finally, at the wastewater treatment plant, oil can ultimately end up in the receiving stream, thereby violating Federal and State water quality standards. Oil/sand buildup in your building's plumbing and sewer lines can also cause sewer backups and other related problems.

What is an oil/water separator (O/WS)? Oil/water separators are "in-line" devices used to remove oils and greases (and sometimes solids such as sand (SOWS)) from industrial waste stream discharges. O/WSs operate by employing various physical or chemical separation methods, including gravity separation, filters, coagulation/flocculation, and flocculation. However, the use of any separation process depends on the properties of the oil in the oil/water mixtures.

To prevent problems in public sewer lines and wastewater treatment facilities associated with oil/water discharges, the West Virginia Department of Environmental Protection, the City of Beckley and the Sanitary Board have promulgated regulations governing sand/oil abatement, principally through installation and maintenance of sand/oil/water separator and enforcement of the various regulations.

This document is intended to summarize the requirements for sand, oil/water separators. A more complete discussion can be found in the International Plumbing Code, 2009 (Fourth Printing), Chapter 10 -Traps/Interceptors and Separators, and Chapter 9 of the *Code of the City of Beckley*. The Beckley Sanitary Board will make the final determination as to whether your sand/oil/water separator and maintenance program are acceptable since the Board is responsible for treatment of the waste.

## **Introduction:**

Sand traps shall be located within 30 feet of the area served, and only those areas into which the sandy wastewater is being generated from vehicle washing are to be connected to the sand/oil/water separator. The sand trap shall be in an easily accessible place outside the building served. Indoor sand traps are discouraged because the indoor traps are more likely to produce unpleasant odors and will require a more frequent cleaning routine (cleaning requirements are discussed later).

Oil/water separators are devices commonly used as a method to separate oils from a variety of wastewater discharges. They are typically installed in industrial and maintenance areas and receive oily wastewater generated during processes such as vehicle maintenance and washing. The effluent from oil/water separators is typically discharged to either a sanitary sewer. This sets forth uniform requirements for users of the Publicly Owned Treatment Works to capture and dispose of (SOWS) waste and enables the City to comply with all applicable state and federal laws, including the Clean Water Act, 33 U.S.C., § 1251, *et seq.*; and the General Pretreatment Regulations, Title 40 C.F.R. Part 403. Properly designed, installed, and operated oil/water separators provide a treatment system for handling oily wastewater that prevent the entry of unacceptable levels of contamination to or a sanitary sewer system. However, oil/water separators are generally not designed to separate solids or high concentrations of oil from water, such as might occur, for example, when a large quantity of oil or sludge is spilled or poured into a wash bay drain. Thus, it is important for all personnel who discharge wastewater into an oil/water separator to understand how they function, including their limitations, in order to prevent them from becoming sources of environmental pollution.

A summary of the City of Beckley's *Sewer Use Ordinance*, General and Specific Prohibitive Standards (Article, Section 9-5) states that "any discharge of fats, oils, or grease of animal or vegetable origin is limited to 100 mg/L." Paraphrasing the same section, solid or viscous waste which may cause obstruction to the flow in a sewer or with operation of the wastewater treatment facilities, such as, but not limited to: grease, garbage, particles greater than ½-inch, animal guts or tissue, whole blood, and other similar substances shall not be disposed of into the sanitary sewer system.

Section 9-4 (g)(4) provides that you can be fined as a result of violations in permit limits for incompatible pollutants,

Section 9-7, of the *Sewer Use Ordinance*, provides for civil and criminal penalties for those who willfully or negligently violate the provisions of the *Ordinance*. Civil penalties range from \$100 to \$1000 per offense with each day on which a violation occurs or continues being deemed a separate and distinct offense.

### **Submittal Requirements:**

The submittal requirements stipulated in the Sewer Use Ordinance include:

- (1) Wastewaters discharge peak rate and a volume over a specified time period;
- (2) Chemical analyses of wastewaters;
- (3) Information on raw materials, processes, and products affecting wastewater volume and quality;
- (4) Quantity and disposition of specific liquid, sludge, oil, solvent, or other materials important to sewer use control;
- (5) A plot plan of sewers on the user's property showing sewer and pretreatment location;
- (6) Details of wastewater pretreatment facilities;
- (7) Details of systems to prevent and control the losses of materials through spills to the municipal sewers.

At this time the Sanitary Board cannot accept any flows containing surface or stormwater. All areas served by an oil/water separator must be covered and all storm, surface and ground water isolated from the system.

### **Sizing and Design of Unit:**

Design of the oil/water separator and other system components shall be based on Ten States Standards, API publication 421, International Plumbing Code (2009) Fourth Printing and other applicable standards. If a prefabricated unit is purchased, the oil/water separator unit supplier shall certify the removal capabilities.

Submit design calculations. Design calculations must include flow rates, removal rates, oil globule size to be removed, suspended particle removal, etc.

Sand, grit and suspended solids removal must also be provided as part of the oil/water separator design

Test results for samples taken from this or a similar facility may be required to determine the contaminants present in the waste flow. Besides testing for oil and suspended solids, these tests shall include other metals (such as zinc, copper, mercury, lead, nickel and chromium), gasoline and fuel oil constituents, etc.

The oil/water separator must have sufficient reserve capacity to capture leakage from the largest diesel, gas or stored chemical tank in the drained area (including those on vehicles) or these sources must be isolated from the floor drains.

Provide information on the building sewer system including type of pipe, cleanout locations, and catch basin location and construction.

The unit must be tested and inspected prior to being placed in serviced.

Include a scaled floor plan showing the locations and quantities of stored liquids and hazardous materials, cleaning fluids, vehicle lubricants and fluids, and any other hazardous or biologically detrimental materials.

Submit a maintenance plan and emergency response procedures. All spills to the sewer system must be reported immediately.

### **Other Design Considerations:**

#### **Attachment 1: Beckley Sanitary Board Sand Oil Separator Design Guidelines & Sizing Worksheet**

Applicable Plumbing Code Requirement References - **International Plumbing Code [2009 Fourth Printing]**

### **Cleaning and Other Operational Considerations:**

Cleaning and other operational considerations are the most important factors in oil/water separator operation from the owner's standpoint. Since the ultimate responsibility rests with the owner/operator of the system, monitoring and cleaning are the primary actions which can be taken to obtain maximum oil/water separator efficiency.

#### **Keeping Your Trap Clean:**

Many owners of oil/water separators contract the services of a firm licensed to haul such wastes. These firms are familiar with the proper procedures, scheduling and disposal of oil/water separator wastes.

Oil/water separator should be pumped prior to reaching **25%** of the tank's holding capacity. Depending on the nature and amount of oil/solids generated, the cleaning frequency can range from once per month, or less, to as much as once per year. Actual experience will dictate the required pumping schedule. A Sanitary Board representative will make regular visits to inspect your oil/water separator. The inspector will inspect your oil/water separator records (hauling receipts, and/or records showing other methods of oil/solids removal) and he will visually inspect the sand, oil/water separator for its effectiveness in removing oil/solids. Should the inspector discover deficiencies in record

keeping and/or the actual oil/water separator performance, you will be notified of the deficiency and will schedule a return visit to confirm the deficiency has been remedied.

Again, remember that the *Sewer Use Ordinance* has specific limits on oil/solids. If the Board's representative determines that the oil/water separator is performing so poorly as to be causing problems in the Board's sanitary sewer system (restricting flow in the pipe, building up in the manhole, etc.), then you will be referred to the appropriate legal authority for further action, which may include fines and/or a sewer ban.

The use of hot water, solvents, emulsifiers, acids, and other such methods to open plugged sewer lines leading to or from the sand, oil/water separator is not allowable. The introduction of hot water into the sewer system that would cause the wastewater to enter the wastewater treatment plant at greater than **104 °F** is specifically prohibited by the City of Beckley's *Sewer Use Ordinance*.

### Monitoring:

Check your oil/water separator routinely! If your typical cleaning schedule is every month, check it bi-weekly; if your cleaning schedule is quarterly, check it every month. Two basic ways to check your separator are: visually; and by measurement. Visual inspections are a good way to gauge the amount of oil in the separator; however, it may be deceiving in certain instances. For example, it can be hard on top ("surface crust"), but directly underneath it is only watery. On the contrary, the surface may look clean, but sediment in the bottom is too deep for proper operation of the separator. To be certain, you need to use a rod to gauge grease thickness and to probe sediment depth.

Do NOT wait for the Board's representative to force you to contact an oil/solids removal service! Check your oil/water separator routinely! Schedule a routine cleaning or have a firm maintain your oil/water separator on a regular basis.

### Pollution Prevention:

1. Train your employees in the proper disposal of excess oil.
2. Dispose of captured oils in containers rather than dumping it down the drain.
3. Practice good housekeeping—keep waste products out of the oil/water separator, and reduce the quantity of water going to the trap; keep cleanup rags, paper towels, spent cleaning fluids and materials out of the trap.
4. Spent oil must be stored outside, in a covered container, for proper disposal (typically by a waste hauler); **Never** put oil in the line to the oil/water separator; it will not be properly captured in the oil/water separator and may lead to a violation of the *Sewer Use Ordinance*.

### Conclusion:

Please remember that you and the Beckley Sanitary Board are partners in solving problems associated with oil/water discharges into the sanitary sewer system or the storm sewer. Doing your part will make the job easier for both of us. If you need additional information or have questions about the sand, oil/water separator (SOWS) program, contact the Beckley Sanitary Board at 256-1760, Monday through Friday, except holidays, from 8:00 a.m. until 4:00 p.m. We will be glad to provide you with helpful information in establishing a SOWS program.

### **Document References:**

1. "CODE, City of Beckley, Code of Ordinances." 28 September 2010. Municode. 12 July 2012  
<<http://library.municode.com/index.aspx?clientId=10402>>
2. "ORDINANCE, Beckley Sanitary Board, Chapter 9, Article I, II and V." 28 September 2010. Municode. 12 July 2010  
<<http://library.municode.com/index.aspx?clientId=10402>>
3. "Chapter 10 - Traps/Interceptors and Separators." 2009. International Plumbing Code (Fourth Printing). 12 July 2012  
<[http://publicecodes.citation.com/icod/ipc/2009/icod\\_ipc\\_2009\\_10\\_section.htm](http://publicecodes.citation.com/icod/ipc/2009/icod_ipc_2009_10_section.htm)>
4. "General NPDES Permits." 02 December 2009. WVDEP. 12 July 2012  
<<http://www.dep.wv.gov/WWE/permit/general/Pages/default.aspx>>
5. 'FACT SHEET: Oil/Water Separators', 1999 August. PRO-ACT. 12 July 2012  
<<http://infohouse.p2ric.org/ref/07/06019.htm#2>>

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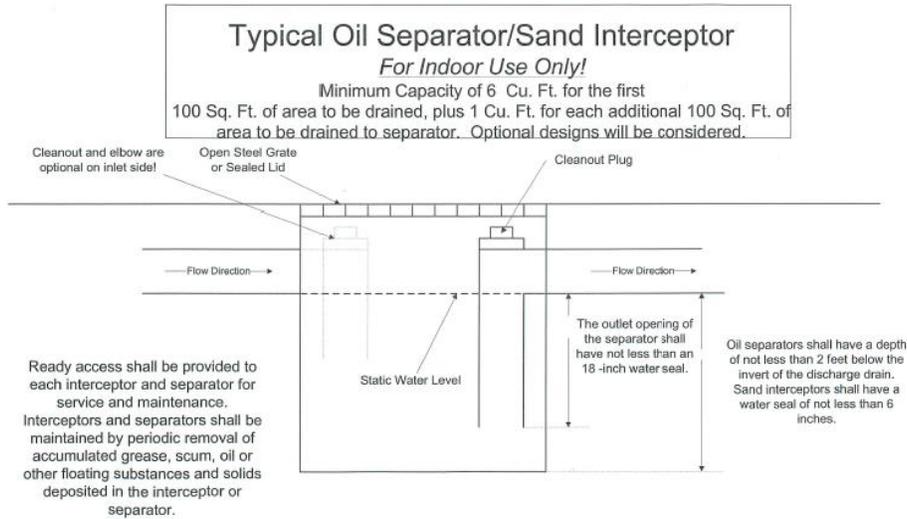
**Attachment 1: Beckley Sanitary Board Sand Oil Separator Design Guidelines & Sizing Worksheet**

Applicable Plumbing Code Requirement References – International Plumbing Code 2009

- *Section 1003.4 Oil separators required. At repair garages, car-washing facilities, at factories where oily and flammable liquid wastes are produced and in hydraulic elevator pits, separators shall be installed into which all oil-bearing, grease-bearing or flammable wastes shall be discharged before emptying into the building drainage system or other point of disposal.*

*Exception: An oil separator is not required in hydraulic elevator pits where an approved alarm system is installed.*

- *1003.4.2 Oil separator design. Oil separators shall be designed in accordance with Sections 1003.4.2.1 and 1003.4.2.2.*
- *1003.4.2.1 General design requirements. Oil separators shall have a depth of not less than 2 feet (610 mm) below the invert of the discharge drain. The outlet opening of the separator shall have not less than an 18-inch (457 mm) water seal*
- *1003.4.2.2 Garages and service stations. Where automobiles are serviced, greased, repaired or washed or where gasoline is dispensed, oil separators shall have a minimum capacity of 6 cubic feet (0.168 m<sup>3</sup>) for the first 100 square feet (9.3 m<sup>2</sup>) of area to be drained, plus 1 cubic foot (0.28 m<sup>3</sup>) for each additional 100 square feet (9.3 m<sup>2</sup>) of area to be drained into the separator. Parking garages in which servicing, repairing or washing is not conducted, and in which gasoline is not dispensed, shall not require a separator. Areas of commercial garages utilized only for storage of automobiles are not required to be drained through a separator.*
- *1003.5 Sand interceptors in commercial establishments. Sand and similar interceptors for heavy solids shall be designed and located so as to be provided with ready access for cleaning, and shall have a water seal of not less than 6 inches (152 mm).*



### Worksheet for Separator Device

Facility Name: BSB Car Washing Anytime

Facility Addresses: 301 S. Heber Street, Beckley WV 25801

Dimensions of floor area draining to device: 21' x 16'

Area of Floor draining to device: 336 sq. ft.

Minimum Capacity Calculation: If area < 100 square feet then Volume = 6 cubic feet

If area > 100 square feet then Volume = 6 + (floor area -100)/100 x 1

Minimum Separator Capacity Size: 6 + ((336-100)/100 x1) = 8.3 cubic feet (i.e. 2' x 2' x 2')

Available Facility Capacity: 21" x 21" x 21" = 5.35 cubic feet\*

Required Facility Depth: 24"

Required static water level: 18"

\*\*\*Available Capacity does not meet minimum sizing requirement in code and minimum depth does not meet minimum code requirement of 24" - Corrective Options for facility:

- 1) Increase the inlet dimensions to provide for the minimum capacity/depth; or
- 2) BSB will waive these sizing requirements if an inlet filter with absorbent media is added to the inlet. Approved filter systems are the Gratemaster inlet system, Flexstorm system, or approved equivalent.