

Dewatering Controls Fact Sheet

Definition and Purpose

Dewatering controls are practices that manage the discharge of pollutants when non-storm water and accumulated precipitation (storm water) must be removed from a work location so that construction work may be accomplished.

Controls are required to ensure that water that is discharged to surface waterbodies or the storm drain system meets water quality standards and does not cause erosion or flooding.

Appropriate Applications

- These practices are implemented for discharges of non-storm water and storm water (accumulated rain water) from construction sites. Non-storm water includes, but is not limited to, groundwater, dewatering of piles, water from cofferdams, water diversions, and water used during construction activities that must be removed from a work area.
- Practices identified in this section are also appropriate for implementation when managing the removal of accumulated precipitation (storm water) from depressed areas at a construction site.
- Excavation dewatering options include:
 - Haul it off for proper disposal elsewhere
 - Discharge to sanitary sewer (requires permit from AWWU)
 - Discharge clean water to storm sewer (requires permit from MOA)
 - Discharge to uplands or areas that provide infiltration and no runoff to surface waters
 - Install well points and discharge clean water
 - Provide for settling prior to discharge to storm sewer (requires permit from MOA) or waterbody
 - Provide filtration prior to discharge to storm sewer (requires permit from MOA) or waterbody
- A dewatering plan shall be submitted as part of the SWPPP detailing the location of dewatering activities, equipment, and discharge point. PM&E may require that the plan be stamped by a registered engineer.

Limitations

- Dewatering operations for non-storm water will require, and must comply with, applicable state permits, project-specific permits, and regulations.
- Discharges to surface water must comply with state of Alaska Water Quality Standards, which can be found in 18 Alaska Administrative Code 70.020.
- Coverage under the Alaska Department of Environmental Conservation (ADEC) General Permit for excavation dewatering is required for discharges that don't otherwise have coverage under the EPA NPDES CGP. Written authorization from ADEC for the ADEC permit is required for sites within 1 mile of a contaminated site for discharges greater than 250,000 gallons (over the life of the project). More information can be found at http://www.dec.state.ak.us/water/wwdp/online_permitting/ind_ww_apps.htm
- Site conditions will dictate design and use of dewatering operations.
- Removal efficiency by settling (sedimentation) depends on particle size, flow rate, water temperature, and other factors. This may not be a treatment option if soil particles are fine. Consult the Design Criteria Manual for additional information on design of sedimentation facilities.
- The controls discussed in this best management practice (BMP) address sediment only. If the presence of polluted water with hazardous substances is identified in the contract, the contractor shall contact the

ADEC. If the quality of water to be removed by dewatering is not identified as polluted in the dewatering plan, but is later determined by observation or testing to be polluted, the contractor shall notify PM&E and ADEC.

- Avoid dewatering discharges where possible by using the water for dust control, by infiltration, etc.
- Dewatering discharges must not cause flooding or erosion at the discharge point.
- Dewatering records shall be maintained for a period of 3 years.

Maintenance and Inspection

- Inspect all BMPs implemented to comply with permit requirements frequently and repair or replace to ensure the BMPs function as designed.
- Conduct water quality monitoring pursuant to the “Storm Water Dewatering Operations BMP Discharge Monitoring Forms”.
- Accumulated sediment removed during the maintenance of a dewatering device may be incorporated in the project at locations designated in the dewatering plan or disposed of outside the right-of-way in conformance with applicable laws and regulations.
- Accumulated sediment that is commingled with other pollutants must be disposed of in accordance with all applicable laws and regulations.
- Assure that there is no downstream flooding if discharges are made to storm sewers, creeks, or streams.

Summary of Water Quality Standards (see 18 Alaska Administrative code 70.200.)

Maximum Concentrations in Dewatering Effluent

Indicator	Maximum Concentration or value
Turbidity	5 nephelometric turbidity units above natural conditions
Total aqueous hydrocarbons	15 microgram/liter
Total aromatic hydrocarbons	10 micrograms/liter
Settleable solids	0.2 milliliters per liter
pH	Between 6.5 and 8.5 pH units
Additives, such as antifreeze or solvents	None in detectable amounts
Toxic substances	None in detectable amounts
Sheen due to grease and oils	None in detectable amounts
Foam in other than trace amounts	None
Garbage, debris, or other contaminants	None in detectable amounts

Sediment Treatment

A variety of methods can be used to treat water during dewatering. Several devices are presented in this section that provide options to achieve sediment removal. The size of particles present in the sediment and receiving water quality limitations are key considerations for selecting sediment treatment option(s); in some cases, the use of multiple devices may be appropriate.

Category 1: Constructed Settling Technologies

The devices discussed in this category are to be used exclusively for dewatering operations only. Removal efficiency depends on particle size, flow rate, water temperature, and other factors. This may not be a treatment option if soil particles are fine. Consult the Design Criteria Manual for additional information on design of sedimentation facilities.

Sediment/Desilting Basin

Description:

A desilting basin is a temporary basin with a controlled release structure that is formed by excavation and/or construction of an embankment to detain sediment-laden runoff and allow sediment to settle out before discharging.

Appropriate Applications:

Effective for the removal of trash, gravel, sand, and silt and some metals that settle out with the sediment.

Implementation:

- Excavation and construction of related facilities is required.
- Temporary desilting basins must be fenced if safety is a concern.
- Outlet protection is required to prevent erosion at the outfall location.

Maintenance:

- Maintenance is required for safety fencing, vegetation, embankment, inlet and outfall structures, as well as other features.
- Removal of sediment is required when the storage volume is reduced by one-third.

Sediment Trap

Description:

A sediment trap is a temporary basin formed by excavation and/or construction of an earthen embankment across a waterway or low drainage area to detain sediment-laden runoff and allow sediment to settle out before discharging.

Appropriate Applications:

Effective for the removal of large and medium sized particles (sand and gravel) and some metals that settle out with the sediment.

Implementation:

- Excavation and construction of related facilities is required.
- Trap inlets shall be located to maximize the travel distance to the trap outlet.
- Use rock or vegetation to protect the trap outlets against erosion.

Maintenance:

- Maintenance is required for vegetation, embankment, inlet and outfall structures, as well as other features.
- Removal of sediment is required when the storage volume is reduced by one-third.

Category 2: Mobile Settling Technologies

These devices are typical of tanks that can be used for sediment treatment of dewatering operations.

Weir Tank

Description:

A weir tank separates water and waste by using weirs. The configuration of the weirs (over and under weirs) maximizes the residence time in the tank and determines the waste to be removed from the water, such as oil, grease, and sediments.

Appropriate Applications:

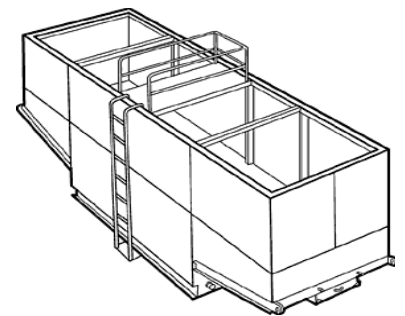
The tank removes trash, some settleable solids (gravel, sand, and silt), some visible oil and grease, and some metals (removed with sediment). To achieve high levels of flow, multiple tanks can be used in parallel. If additional treatment is desired, the tanks can be placed in series or as pre-treatment for other methods.

Implementation:

- Tanks are delivered to the site by the vendor, who can provide assistance with set-up and operation.
- Tank size will depend on flow volume, constituents of concern, and residency period required. Vendors shall be consulted to appropriately size tank.

Maintenance:

- Periodic cleaning is required based on visual inspection or reduced flow.
- Oil and grease disposal must be by licensed waste disposal company.



Weir Tank

Dewatering Tank

Description:

A dewatering tank removes debris and sediment. Flow enters the tank through the top, passes through a fabric filter, and is discharged through the bottom of the tank. The filter separates the solids from the liquids.

Appropriate Applications:

The tank removes trash, gravel, sand, and silt, some visible oil and grease, and some metals (removed with sediment). To achieve high levels of flow, multiple tanks can be used in parallel. If additional treatment is desired, the tanks can be placed in series or as pre-treatment for ot

Implementation:

- Tanks are delivered to the site by the vendor, who can provide assistance with set-up and operation.
- Tank size will depend on flow volume, constituents of concern, residency period required. Vendors shall be consulted to appropriately size tank.

Maintenance:

- Periodic cleaning is required based on visual inspection or reduced flow.
- Oil and grease disposal must be by licensed waste disposal company.



Dewatering Tanks

Category 3: Basic Filtration Technologies

Gravity Bag Filter

Description:

A gravity bag filter, also referred to as a dewatering bag, is a square or rectangular bag made of non-woven geotextile fabric that collects sand, silt, and fines.

Appropriate Applications:

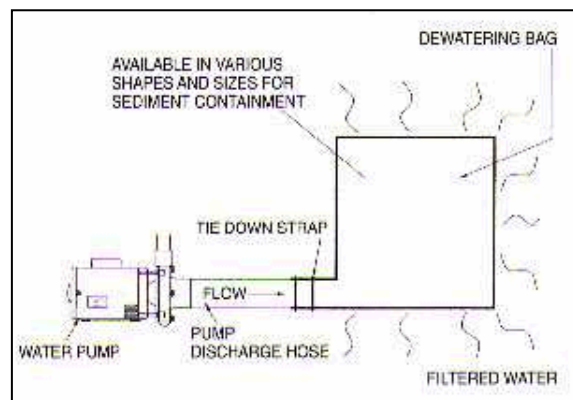
- Effective for the removal of sediments (gravel, sand, and silt). Some metals are removed with the sediment.

Implementation:

- Water is pumped into one side of the bag and seeps through the bottom and sides of the bag.
- A secondary barrier, such as a rock filter bed or straw/hay bale barrier, is placed beneath and beyond the edges of the bag to capture sediments that escape the bag.
- Assure that the size and mesh openings of the bag are appropriate for site soils and anticipated flow rate.

Maintenance:

- Inspection of the flow conditions, bag condition, bag capacity, and the secondary barrier is required.
- Replace the bag when it no longer filters sediment or passes water at a reasonable rate.
- Dispose of the bag off-site.



Gravity Bag Filter

Category 4: Advanced Filtration Technologies

Sand Media Particulate Filter

Description:

Water is treated by passing it through canisters filled with sand. Generally, sand filters provide a final level of treatment. They are used as a secondary or higher level of treatment after a significant amount of sediment and other pollutants have been removed.



Sand Media Particulate Filters

Appropriate Applications:

- Effective for the removal of trash, gravel, sand, and silt and some metals, as well as the reduction of biochemical oxygen demand (BOD) and turbidity.
- Sand filters can be used for standalone treatment or in conjunction with bag and cartridge filtration if further treatment is required.
- Sand filters can also be used to provide additional treatment to water treated via settling or basic filtration.

Implementation:

- The filters require delivery to the site and initial set up. The vendor can provide assistance with installation and operation.

Maintenance:

- The filters require monthly service to monitor and maintain the sand media.

Pressurized Bag Filter

Description:

A pressurized bag filter is a unit composed of single filter bags made from polyester felt material. The water filters through the unit and is discharged through a header, allowing for the discharge of flow in series to an additional treatment unit. Vendors provide pressurized bag filters in a variety of configurations. Some units include a combination of bag filters and cartridge filters for enhanced contaminant removal.

Appropriate Applications:

- Effective for the removal of sediment (sand and silt) and some metals, as well as the reduction of BOD, turbidity, and hydrocarbons. Oil absorbent bags are available for hydrocarbon removal.
- Filters can be used to provide secondary treatment to water treated via settling or basic filtration.

Implementation:

- The filters require delivery to the site and initial set up. The vendor can provide assistance with installation and operation.

Maintenance:

- The filter bags require replacement when the pressure differential exceeds the manufacturer's recommendation.



Pressurized Bag Filter

Cartridge Filter

Description:

Cartridge filters provide a high degree of pollutant removal by utilizing a number of individual cartridges as part of a larger filtering unit. They are often used as a secondary or higher (polishing) level of treatment after a significant amount of sediment and other pollutants are removed. Units come with various cartridge configurations (for use in series with pressurized bag filters) or with a larger single cartridge filtration unit (with multiple filters within).

Appropriate Applications:

- Effective for the removal of sediment (sand, silt, and some clays) and metals, as well as the reduction of BOD, turbidity, and hydrocarbons. Hydrocarbons can effectively be removed with special resin cartridges.
- Filters can be used to provide secondary treatment to water treated via settling or basic filtration.

Implementation:

- The filters require delivery to the site and initial set up. The vendor can provide assistance.

Maintenance:

- The cartridges require replacement when the pressure differential exceeds the manufacturer's recommendation.



Cartridge Filter

DEWATERING OPERATIONS DISCHARGE MONITORING FORM

GENERAL INFORMATION				
Project Name				
Operator				
Location				
Sampler's Name				
Sampler's Signature				
Date Discharge Began		Date of Sampling		
Size of Pump		Hours of operation		
Time pump started		Time pump shut off		
WATER SAMPLE LOG				
Constituent	Units	Sample Results		
Turbidity	NTUs			

One sample shall be taken at a point representative of discharge prior to its entering the receiving water. A second sample shall be taken of the receiving water upstream of the discharge point or in the case of receiving waters with low or no flow, prior to discharge at a location representative of the receiving water. Both samples shall be taken during the same day within a reasonable timeframe (i.e., thirty minutes).

DISCHARGE LIMITATION (See Alaska Water Quality Standards in 18 Alaska Administrative Code 70.200)

Constituent	Units	Receiving Water
pH	Standard	between 6.5 and 8.5
Turbidity	NTUs	5 NTU above background

Notes: