Stormwater Dewatering Operations

Course Number: CE-02-602

PDH: 2

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Module 1: Stormwater Dewatering Operations

Learning Objectives

By the end of this section, you will be able to:

- **Identify** appropriate dewatering practices and sediment treatment technologies based on specific construction site conditions.
- **Evaluate** regional discharge requirements and permit conditions for both stormwater and non-stormwater management.
- **Implement** maintenance and inspection protocols to ensure dewatering Best Management Practices (BMPs) function as designed.

Executive Summary: Dewatering operations manage the removal of non-stormwater and accumulated precipitation from work areas to facilitate construction while controlling pollutant discharge, specifically sediment. Successful implementation requires a detailed dewatering plan submitted as part of the SWPPP/WPCP. Dewatering operations are practices used to manage pollutant discharge when water must be removed from a work location to accomplish construction.

Design Fundamentals

Appropriate Applications

- These practices apply to discharges of both non-stormwater and accumulated rainwater (stormwater).
- **Non-stormwater** includes groundwater, water from cofferdams, dewatering of piles, water diversions, and water used during construction activities.
- These practices are also used for removing accumulated precipitation from depressed areas on-site.
- Any stormwater mixed with non-stormwater must be managed as **non-stormwater**.

Critical Limitations

- Operations must comply with all local and project-specific permits and regulations.
- The controls identified in this BMP are designed to address **sediment only**.
- If hazardous substances are identified, contractors must implement additional pollution controls as required by contract documents.

⚠️ **Safety Constraint:** If water is determined to be polluted during operations, the contractor **shall** notify the Resident Engineer (RE) and comply with "Differing Site Conditions" specifications.

Standards and Specifications

💡 **Design Tip:** Whenever possible, avoid dewatering discharges by using the water for dust control or through infiltration.

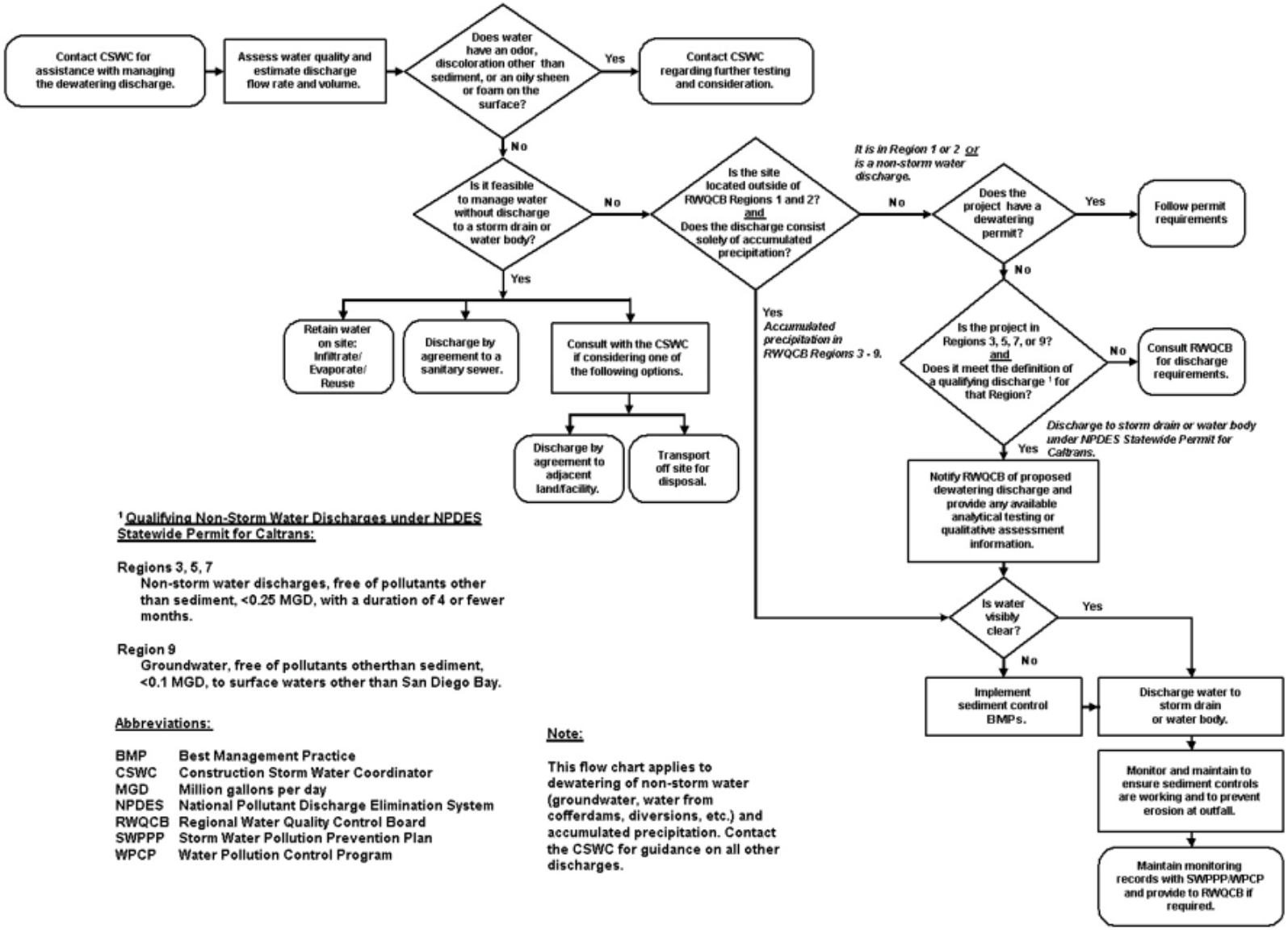
Permit Requirements and Regional Differences

Dewatering must be conducted according to the *Field Guide to Construction Site Dewatering*. The Regional Water Quality Control Board (RWQCB) may require separate NPDES permits for non-stormwater, which can take significant time to obtain.

- **Regions 1 and 2:** Notification and approval are required prior to any discharge.
- **Regions 3, 5, 7, and 9:** Non-stormwater discharges meeting certain conditions may be allowed under a general dewatering NPDES permit.

Conditions for Potential Discharge Under General NPDES Permit:

Region	Discharge Type	Flow Limit	Duration/Criteria
3, 5, 7	Non-storm water discharges, free of pollutants other than sediment	< 0.25 MGD	4 or fewer months
9	Groundwater, free of pollutants other than sediment	< 0.10 MGD	To surface waters other than San Diego Bay



[1] Qualifying Non-Storm Water Discharges under NPDES Statewide Permit for Caltrans:

Regions 3, 5, 7
Non-storm water discharges, free of pollutants other than sediment, <0.25 MGD, with a duration of 4 or fewer months.

Region 9
Groundwater, free of pollutants otherthan sediment, <0.1 MGD, to surface waters other than San Diego Bay.

Abbreviations:

BMP	Best Management Practice
CSWC	Construction Storm Water Coordinator
MGD	Million gallons per day
NPDES	National Pollutant Discharge Elimination System
RWQCB	Regional Water Quality Control Board
SWPPP	Storm Water Pollution Prevention Plan
WPCP	Water Pollution Control Program

Note:

This flow chart applies to dewatering of non-storm water (groundwater, water from cofferdams, diversions, etc.) and accumulated precipitation. Contact the CSWC for guidance on all other discharges.

Maintenance and Inspection

- **Record Keeping:** Maintain dewatering records for a period of **3 years**.
- **Frequency:** Frequently inspect all BMPs and repair or replace them to ensure they function as designed.
- **Water Quality:** Conduct monitoring pursuant to the "Storm Water Dewatering Operations BMP Discharge Monitoring Forms".
- **Sediment Disposal:** Accumulated sediment may be incorporated into the project at RE-designated locations or disposed of per Standard Specifications.

⚠️ **Safety Constraint:** Sediment commingled with other pollutants **must** be disposed of in accordance with all applicable laws and as approved by the RE.

Sediment Treatment Technologies

Selecting a treatment option depends on the particle size present in the sediment and permit limitations.

Category 1: Constructed Settling Technologies

These devices are used exclusively for dewatering operations.

Sediment/Desilting Basin (SC-2)

- **Description:** A temporary basin with a controlled release structure formed by excavation or embankments to allow sediment to settle.
- **Applications:** Effective for removing trash, gravel, sand, silt, and some metals.
- **Implementation:** Requires excavation, safety fencing if necessary, and outlet protection to prevent erosion.

Sediment Trap (SC-3)

- **Description:** A temporary basin formed across a waterway or low drainage area to detain sediment-laden runoff.
- **Applications:** Effective for large and medium-sized particles (sand and gravel).

🧮 **Calculation Note:** Removal of sediment is required for both basins and traps when the storage volume is reduced by **one-third**.

Category 2: Mobile Settling Technologies

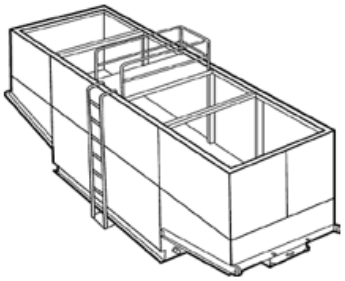
Weir Tank

- **Description:** Separates water and waste using a configuration of "over and under" weirs to maximize residence time.
- **Applications:** Removes trash, settleable solids, and some visible oil and grease.

Dewatering Tank

- **Description:** Flow enters through the top, passes through a **fabric filter**, and discharges through the bottom.
- **Applications:** Removes trash, gravel, sand, silt, and visible oil/grease.

Schematic Diagrams:



Weir Tanks

Dewatering Tank

Schematic Diagrams:

Dewatering Tanks

Category 3: Basic Filtration Technologies

Gravity Bag Filter

- **Description:** A square or rectangular bag made of non-woven geotextile fabric.

Purchase this course to see the remainder of the technical materials.