Water Utility Discharge Incidents

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SFPUC’s Drinking Water Transmission System

Large System

- over 200 miles of pipeline in Bay Area system
- average pipeline size 60 in.
- mostly pre-stressed concrete
- planned & unplanned discharges
- large volume discharges
NPDES Permit

- Individual Transmission System Permit
- Issued 2008; Expires 2014
- Planned & Unplanned Drinking Water Discharges
- Shield from 3rd Party Liability
- Compliance with permit limitations is considered compliance with CWA
- Non-compliance subject to liability from RWQCB
• Effluent Limits
  * pH 6.5-8.5
  * total residual chlorine 0.0 mg/L
    - detection level 0.05 mg/L
    - anything > 0.05 mg/L is a violation
Discharges

- **Planned**
  - related to WSIP, maintenance, inspection
    - Dewatering
    - Disinfection
    - High Volume
    - Surface Waters
      - sensitive creeks, storm drains, SF Bay
    - Sanitary lines
    - SOPs
      - dechlorination
      - effluent monitoring
    - BMPs
      - diffuser/erosion control
    - Regulatory obligations
Discharges

- **Unplanned**
  - Breaks, leaks
  - BMPs
  - Regulatory obligations
Pipeline: Crystal Springs Pipeline No. 2 (60in.; steel)
Receiving Water: San Mateo Creek
Initial Discharge
  * fish kill
  * superchlorinated water
  * 1100 gpm discharge rate
Monitoring
Aquatic Wildlife Surveys
Notifications
Cessation of Operation

Restart of Discharge
  * additional BMPs and monitoring
  * low level water quality limit exceedances
Negotiated Re-start

- RWQCB, NMFS, CDFW approval
- increase in discharges from reservoir to dilution
- decrease in the rate of discharge from the transmission line
- increase in monitoring frequency and recording
- biologist will be on-site/in creek
  - temp, pH, DO, total chlorine residual
  - 5-10 meters downstream of discharge
- additional contact time for dechlorination agents
- cessation of discharge
- sanitary sewer
Schematic Layout of Typical Dual Dechlorination Setup for Discharge Site

Raw water sample tap for measuring Cl₂ residual and pH approx. every 15-20 minutes.

Injection point for dechlorination using calcium thiosulphate. WSTD plumbers to adjust feed rate per dechlorination table (i.e., Cl₂ residual and pH).

Intermediate sample tap for pH measurement approx. every 15-20 minutes using a pocket pH meter.

Primary Injection point for sodium bisulphite

Pre-final sample tap for pH measurement approx. every 15-20 minutes. Target pH is 7.5±0.5.

* Secondary injection point for sodium bisulphite to control pH of discharge. Refer to the dechlor table prepared by Eddy to adjust feed rate per information (i.e., Cl₂ residual).

Pipe diameter depends on discharge rate. The pipe section needs not be a straight pipeline.

To ensure adequate mixing of dechlorination chemicals, the chemical injection points should be at least 25 feet apart (assuming a 10” discharge pipeline) between each other.

Sample tap for final pH and Cl₂, which should be < 0.05 mg/L, before discharging to the water of the State. NOTE: As an extra effort to be vigilant, Cl₂ residual should be monitored every 30 minutes when the Cl₂ residual at the first sample tap is > 20 mg/L.

Chlorinated water flow

25+ feet

25+ feet

Dechlorinated discharge to Water of the State
Feb. 2013 Unplanned Discharge Study

- Pipeline: Crystal Springs Pipeline No. 2
- Receiving Water: San Mateo Creek
- Initial Discharge
  - * fish kill
  - * 1-2ppm chloramines
  - * 1000gpm initial flow
- BMPs
- Monitoring
- Aquatic Wildlife Surveys
- Notifications
• sanitary sewer
• dilution
• treatment redundancy
• monitoring redundancy
• additional training
• improved communications (internal & external)
• review our systems
Questions?

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