



## **STORM WATER BEST MANAGEMENT PRACTICES (BMPs) FOR MUNICIPAL OPERATIONS**

### **STREET SWEEPING AND CLEANING**

- Operate two street sweepers, each 40 hours per week.
- The City's sweeping schedule is influenced by factors such as traffic volume, land use, field observations of sediment and trash accumulation, customer requests for service, etc. In general, the sweeping frequencies are:
  - Sweep street curbs and gutters in the downtown and "main" beach areas twice per week
  - Sweep streets in residential areas as needed, most are swept twice a month.
  - Sweep streets in commercial areas once a week.
- Sweep specific residential streets, in addition to scheduled cleanings, if requested by residents.
- Clean streets using sweepers equipped with a dust sprinkler. Streets are never "wet" cleaned or flushed.
- Deposit debris collected by sweepers at the City Landfill. No "dewatering" of the collected debris should be required.
- When additional labor is available, removes weeds from the street curbs prior to the rainy season in order to increase the street sweepers' effectiveness.
- Clean street sweepers at the City Corporation Yard wash rack (which drains to a pre-treatment system).

### **STORM DRAIN SYSTEM INSPECTION AND CLEANING**

- Inspect all downtown and Beach Flats storm water catch basins and inlets annually. The City Team Clean Program conducts cleaning or repairs as needed.
- Clean and inspect storm water pipelines as needed.
- Inspect Branciforte Storm Water Conveyance Channel annually and remove trash as needed.
- Clean all pump stations along the San Lorenzo River annually.
- Remove leaves, weeds and debris from gutters and open channels by hand, where necessary, prior to the rainy season.
- Dewater wet wastes, removed from storm drain cleanings, in a designated area at the Wastewater Treatment Facility prior to disposal at the Landfill.

- Dispose of dry wastes removed from storm drain cleaning at the Landfill.
- Analyze sediment, removed from an inlet cleaning if it is suspected of being contaminated with a hazardous material, prior to disposal. Sediment or materials determined to be hazardous waste will be disposed of accordingly.
- Maintain and clean CDS unit at Soquel Avenue and Capitola Road.

## **LITTER CONTROL**

- Maintain existing “No Littering” signs and post additional signs as needed.
- Provide litter and recycling receptacles in areas of high pedestrian use, including the San Lorenzo River levee and Pacific Avenue Shopping Mall.
- Empty litter and recycling receptacles in parks and downtown daily to prevent spillage and leakage. Other areas are done as needed.
- See below for cleaning/maintenance of trash receptacles and trash enclosures.
- Implement the “Leaf Program” for the collection of leaves during the fall season in the “downtown” area. Currently, this involves daily sweeping during the fall season.

## **OUTSIDE PAVED AREAS CLEANING**

- Sidewalks, gutters, plazas, alleyways, outdoor eating areas, steps, and other outside areas should be cleaned by sweeping preferably. If water is used to clean or rinse (whether by rinsing with water only, pressure washing, steam cleaning, mopping or any other method) all the wastewater must be collected and disposed of in the sanitary sewer. The wastewater may not runoff into the street or be discharged into the storm drain system. Leaves and other debris should not be left behind, such as in the street or gutter, after the cleaning event. If any cleaning chemicals will be used, please contact the Wastewater Treatment Facility, at 420-6050, in advance of the cleaning event for discharge approval.
- When cleaning driveways and parking lots, all the wastewater must be collected and disposed of properly. Please contact an Environmental Compliance Inspector, at 420-6050, regarding the proper disposal method. Not all wastewater is acceptable for discharge to the Wastewater Treatment Facility.
- When cleaning loading docks and delivery areas, the wash water from these areas must be discharged to the sanitary sewer in accordance with the Sewer Use ordinance. Loading dock and delivery areas must be kept clean and free of food waste and debris at all times.
- Cleaning solvents may not be used outside to clean ground surfaces, such as sidewalks, walkways, plazas, patios, driveways, loading docks, delivery areas, or dumpster areas, unless all the solvent is cleaned up and properly disposed of.
- Hand sweep sidewalks on Pacific Avenue three times per week. Hand sweep sidewalks on downtown side streets as needed.

- Hand sweeping and cleaning of the improved alleys in the downtown area are conducted as staffing permits, typically at least once per month.
- Sweep public parking lots in the downtown area twice per week with a vacuum sweeper. Lots may be swept more depending upon need and staff/sweeper availability. When there is a special event, a specific area may be swept the day before and the day after the event.
- Require all contractors to abide by the above cleaning methods.

## **WINDOWS, WALLS AND BUILDING CLEANING**

- Wastewater from cleaning windows, walls, and building exteriors may not be discharged to a street or the storm drain system. Be sure that employees or a hired cleaning service take measures to prevent the discharge of these wastes to the storm drain.
- If cleaning building exteriors or surfaces painted with lead-based or mercury-additive paint, please contact an Environmental Compliance Inspector, at 420-6050, regarding the proper disposal method in advance of the cleaning event for discharge approval.
- If water is used to remove paint or graffiti from building exteriors, walls, steps, signs, and other surfaces, the wastewater and paint particles may not be discharged to the street or storm drain system. This wastewater may be discharged to the sanitary sewer if the paint does not contain lead and the large paint particles are filtered out prior to discharge. (If the paint contains lead, please call the County of Santa Cruz Household Hazardous Waste Facility at 454-2606 for disposal information.) If blasting or sanding is used to remove paint or graffiti, the paint particles, blasting material, sand, or dust may not be allowed to reach the storm drain system.

## **REFUSE AND RECYCLING CONTAINERS AND TRASH ENCLOSURES**

- Leaking containers or garbage bags may not be placed into a dumpster.
- Dumpster and garbage can lids must be kept on securely. Do not allow trash to spill out or overflow the dumpster or garbage can.
- When cleaning areas where trash and recycling is contained and stored, such as trash enclosures, or when cleaning individual cans, containers, and dumpsters, the wastewater must be collected and discharged to the sanitary sewer. This applies to all types of cleaning methods using water or fluids including: pressure washing, steam cleaning, rinsing with water only, mopping, scrubbing, etc. If the wastewater contains cleaning chemicals, please contact the Wastewater Treatment Facility in advance of the cleaning event for discharge approval.
- Leakage from dumpsters or trash and recycling containers may not be discharged to or allowed to reach the storm drain system. Whenever possible, avoid storing the dumpster or trash and recycling containers near or over a storm drain inlet. If you have a leaking dumpster, or trash/recycling container, please call the City's Customer Service Division at 420-5220 to get it repaired or replaced.

## **MEDIANS, PARKS, MUNICIPAL GOLF COURSE, AND OTHER LANDSCAPED AREAS**

### **Erosion Control**

- Maintain vegetative cover on medians and embankments to prevent soil erosion. Apply mulch or leave clippings to serve as additional cover.
- Do not use disking as a means of vegetation management.
- Provide energy dissipaters (e.g., riprap) below culvert outfalls.

### **Vegetation Management and Irrigation**

- When conducting vegetation pruning, mowing or leaf blowing/removal, do not discard vegetation, grass, or leaves in the gutter or street, on a paved shoulder, or near a storm drain inlet.
- When conducting mechanical or manual weed control, avoid loosening the soil that might cause erosion into a stream or storm drain.
- Inspect irrigation systems periodically to ensure that the right amount of water is being applied and that excessive runoff is not occurring. Minimize excess watering, and repair leaks in the irrigation system as soon as they are observed.
- When bailing out muddy water, do not discharge or dump it in the storm drain. Instead, pour the water over landscaped areas.
- Plant native species, wherever possible, to reduce the need for water and herbicides.

### **Pesticide Use (Diazinon, Chlorpyrifos, and other Similar Products)**

- All pesticide use conforms to the City's Integrated Pest Management Policy.
- The City's Integrated Pest Management Policy allows the use of pesticides under the following guidelines although exceptions may be granted under specific conditions:
  - Use non-pesticide alternatives whenever possible.
  - Use pesticides only if there is an actual pest problem (not on a regular preventative schedule).
  - Use the least toxic pesticide for the job.
  - Do not use Toxicity Category I or Category II pesticides.
  - Follow federal, state, and local laws governing the use, storage, and disposal of pesticides.

- In addition, the City also implements the following guidelines when using pesticides:
  - Use the minimum amount of pesticide(s) needed for the job.
  - Do not mix or prepare pesticides for application near storm drains.
  - Do not use pesticides if rain is expected.
  - Check inventory and use up pesticides in stock prior to purchasing more. Rinse containers and use the rinse water as product. Dispose of unused pesticide as hazardous waste.

### **Herbicide Use (Roundup, Rodeo, and other Similar Products)**

- All herbicide use will conform to the City’s Integrated Pest Management Policy.
- Use the least toxic herbicide for the job if alternatives are available.
- Do not use herbicides if rain is expected.
- Use the minimum amount of herbicide(s) needed for the job.
- Reduce the need for herbicides by planting native species, wherever possible.
- Follow federal, state, and local laws governing herbicide use, storage, and disposal.

### **Fertilizers**

- Minimize use of chemical fertilizers. Use only as needed. Chemical fertilizers are applied annually, in the fall, on the “turf” found in City ball fields and parks.
- Use plant and flower “food” instead of chemical fertilizers.
- Check the nitrogen/phosphorus/potassium concentrations of fertilizers and calibrate the distributor to avoid excessive application.
- If fertilizer is spilled on either the pavement or sidewalk, clean up before applying irrigation water.

## **REPAIR AND MAINTENANCE OF CITY SURFACES (Streets, Roads, Sidewalks and Bridges etc.)**

### **Asphalt/Concrete Removal**

- Conduct asphalt and concrete removal activities during dry weather whenever possible.
- Protect nearby storm drain inlets and adjacent water bodies prior to breaking up asphalt or concrete (e.g., place sandbags around inlets or work areas) if rain is forecast.
- Dry cut whenever possible and sweep up particles when done. Sweep by hand or using street sweeping equipment as appropriate.

- During saw cutting and grading operations, use as little water as possible--if any. Protect nearby catch basins or gutters, or use materials to contain the slurry. If slurry enters the storm drain system, remove material immediately. If work is conducted on a bridge, take precautions to prevent any runoff from reaching the river, channel, or creek beneath it.
- Remove saw-cut slurry from the work area with a shovel, vacuum, or by sweeping as soon as it is dry or by the end of the day.
- After breaking up old pavement, sweep up materials thoroughly to avoid contact with rainfall and storm water runoff. Recycle as much material as possible, and properly dispose of non-recyclable materials.
- When the job is completed, be sure that all particles and debris are collected and removed from the site. Sweep the area by hand or with the City's street sweeping equipment. Be sure that nothing has "drifted" towards the street, gutter, or catch basin.
- Require all City contractors to follow these BMPs.

### **Concrete Installation and Repair**

- Avoid mixing excess amounts of fresh concrete or cement mortar on-site.
- Store dry and wet materials under cover, protected from rainfall and runoff.
- Wash out concrete mixers into open excavation pits whenever possible. Never dispose of washout into the street, storm drains, drainage ditches, or creeks.
- Wash out concrete transit mixers only in designated wash out areas where the water will flow either 1) into drums or settling ponds or 2) onto dirt, stockpiles of aggregate base, or sand. Whenever possible, pump washout back into mixers for transport and disposal at the concrete batch plant.
- When work is conducted on a bridge, take precautions to prevent any runoff from reaching the river, channel, or creek beneath the bridge.
- Require all City contractors to follow these BMPs.

### **Patching, Resurfacing, and Surface Sealing**

- Schedule patching, resurfacing and surface sealing during dry weather.
- Preheat, transfer, or load hot bituminous material away from drainage systems or watercourses.
- Cover and seal nearby storm drain inlets and manholes before applying seal coat, slurry seal, etc. Leave covers in place until job is complete and until all water from emulsified oil sealant has drained or evaporated. Collect waste materials for proper disposal.
- Use only as much water as necessary for dust control to avoid runoff.
- If it rains unexpectedly, take appropriate action to prevent pollution of storm water runoff (e.g., divert runoff around work areas, cover materials).

- Stockpile materials away from streets, gutter areas, storm drain inlets or watercourses. During wet weather, cover stockpiles with tarps or use berms to prevent runoff.
- Maintain current standard procedures, which is to remove stockpiles (asphalt materials, sand, etc.) by the end of the day.
- Sweep up as much excess material as possible and dispose of properly. Only wash down streets if runoff can be controlled or contained.
- Require all City contractors to follow these BMPs.

## **Equipment Cleaning, Maintenance and Storage**

- Inspect equipment daily and repair any leaks as soon as possible.
- Make equipment repairs at the corporation yard if possible. If emergency repairs must be done on a street, use BMPs to prevent discharge to the storm drain system.
- If the refueling or repair of vehicles and equipment must be done on-site, use a location away from storm drain inlets and creeks.
- Use dry methods for cleaning leakage and spillage.
- Recycle used motor oil, diesel oil, other vehicle fluids, and vehicle parts when possible.
- Require all City contractors to follow these BMPs.

## **PAINING, PAINT REMOVAL, BUILDING CLEANING, AND GRAFFITI REMOVAL**

### **Painting**

- Use “thermo-plastic” instead of paint to mark streets, parking lots, etc. “Thermo-plastic” may be either extruded (beaded, melted, and die cast) for application or sprayed on.
- Use paint to mark street curbs and for temporary markings.
- Where there is a risk of a spill reaching storm drains, protect nearby inlets prior to starting painting.
- When work is conducted on a bridge, take precautions to prevent any runoff from reaching the river, channel, or creek beneath the bridge.
- Clean up spills immediately. Capture all clean up water and dispose of properly.
- When transferring or loading paint, protect nearby storm drains or water bodies.
- Check inventory and use up paints in stock prior to purchasing more.
- Dispose of unusable paint, by recycling, at the proper disposal facility.
- Never clean paintbrushes or rinse paint containers in the street or storm drain.
- When cleaning brushes and rollers, brush out excess paint onto newspaper or cardboard. If using latex paints, rinse the brush or roller in the sink. If using oil-based paints, the

brush or roller needs to be cleaned with paint thinner. Drain leftover paint in the roller pan back into the paint can. If using paint hoses and guns, spray out paint residue into the paint can.

- Empty (clean) paint cans may be disposed of in the trash.
- Require all City contractors to follow these BMPs.

## **Paint Removal**

- When removing old paint, protect nearby storm drains with booms or sandbags.
- Preferably, grind old paint off instead of sand blasting. Sweep up paint particles and other debris, and dispose of the materials at the landfill. Ensure that no particles are left on the ground or in the street.
- If blasting is necessary, use a baking soda blaster instead of a sand blaster. Protect storm drain inlets if necessary. Sweep up the particles and dust, and dispose of at the landfill. Particles and dust may not be left on the ground or allowed to reach the storm drain system. If sand blasting is conducted, the same procedures apply.
- If water is used to remove paint or graffiti, the wastewater and paint particles may not be discharged to the street or storm drain system. Please contact an Environmental Compliance Inspector, at 420-6050, regarding the proper disposal method. Not all wastewater is acceptable for discharge to the Wastewater Treatment Facility.
- Require all City contractors to follow these BMPs.

## **Graffiti Removal**

- Typically remove graffiti by “painting over.” Use power washing only in special cases.
- When power washing to remove graffiti, the wastewater and paint particles may not be discharged to the street or storm drain system. Protect nearby storm drains by placing sand bags, booms or barriers around drain inlets or by making an enclosure around the wash area.
- If washing building exteriors or surfaces painted with lead-based or mercury-additive paint, first check with the Wastewater Treatment Facility for approval regarding sanitary sewer discharge.
- Do not use soap or cleansers for graffiti removal unless necessary. If soap or cleansers are used, the soapy water must be either diverted to a dirt area of sufficient size or collected for sanitary sewer disposal. Nearby storm drain inlets must also be protected from accidental runoff.
- Avoid graffiti abatement activities during rain.
- Require all City contractors to follow these BMPs.

## **STRUCTURAL RETROFIT OF STORM DRAIN INLETS AND CATCH BASINS**

- Divert water from Neary Lagoon to the wastewater treatment plant during dry weather (when the treatment plant has the capacity to accept additional water).

## **MUNICIPAL SWIMMING POOLS, FOUNTAINS, LAKES, AND OTHER WATER BODIES**

### **Municipal Swimming Pool Water**

- Reduce the use of chlorine in the municipal swimming pool by using bromine, instead of chlorine, as a disinfectant. Treat pool water with chlorine weekly.

### **Fountains, Lakes, and Other Water Bodies**

- Do not use copper containing products to reduce algal growth.
- Use only organic algaecides.

### **Alternative Methods to Control Algae in Lakes and Lagoons**

- Discourage the public from feeding birds and fish.
- Reduce fertilizer use in areas around water bodies.

## **MUNICIPAL OPERATION AREAS**

### **Corporation Yard**

- Implement all applicable controls in these BMPs and the BMPs for Vehicle Service Facilities.

### **Municipal Golf Course Maintenance and Storage Areas**

- Compliance with BMPs for Vehicle Service Facilities.
- Compliance with the City's IPM Policy.

### **Parks and Recreation Yard**

- Store fuel and paint according to state regulations.
- Conduct a complete inspection monthly.
- Conduct a check for spills and leaks weekly.
- Compliance with BMPs for Vehicle Service Facilities.
- Compliance with the City's IPM Policy.

## **Parks and Recreation Remote Storage Areas**

- Conduct a complete inspection at each storage area once a month.
- Conduct a check for spill and leaks at each storage area weekly.

## **Municipal Wharf**

- Clean special event area buildings at least once a month between Memorial Day and October each year by pressure washing, without the use of soap or detergents, to remove bird droppings. Building awnings are cleaned quarterly. Cleaning is conducted on weekdays and more cleanings may be scheduled on an “as-needed” basis
- Sweep parking and eating areas.

## **Fire Stations**

- Conduct fire engine maintenance and mechanical repairs at the Corporation Yard.
- Wash trucks with water only during routine washing. Wash truck with biodegradable soap after an emergency fire response.

## **Wastewater Treatment Facility (WWTF)**

- All outdoor drains discharge back into sanitary system.
- Conduct all practices in accordance with NPDES permit.

## **Resource Recovery Facility**

- Conduct all practices in accordance with the State Storm Water General Permit for Industrial Activities, the Storm Water Pollution Prevention Plan, and the Waste Discharge requirements issued by the CA Regional Water Quality Control Board.
- Maintenance shop will implement all applicable BMPs for Vehicle Service Facilities.

## **DRINKING WATER DISTRIBUTION SYSTEM**

### **Repair and Maintenance of City Water Infrastructure**

Follow Water Department standard operating procedures (SOPs are attached):

*Superchlorinated Potable Water Discharges-SOP # 7102-01*

*Low Chlorine Potable Water Discharges-SOP # 7102-02*

*Sediment Control During Open Channel Water Discharges- SOP #7105-01*

- Street repairs, for work associated with water pipeline installation, maintenance, and repair, are conducted in accordance with the BMPs listed in the above section “Repair and Maintenance of City Surfaces.”

## **Facilities & Operations Outside City Limits**

- Inspect and clean storm water conveyance system on watershed lands before, during, and after the onset of the rainy season.
- Follow the BMPs in the Draft Watershed Management Plan for maintenance of forest roads and associated drainage infrastructure.
- Abide by the City's IPM policy regarding the use of herbicides and pesticides in water bodies. Copper containing products are used in Loch Lomond reservoir in accordance with and under the General Permit NPDES Permit No. CAG990003 for Discharges of Aquatic Pesticides.

## **Water Department Remote Storage Areas**

- Conduct a complete inspection at each storage area once a month.
- Conduct a check for spill and leaks at each storage area weekly.

# STANDARD OPERATING PROCEDURE NO. 7102-01

## Superchlorinated Potable Water Discharges

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### Purpose

This standard operating procedure (SOP) describes the procedures to be followed when flushing any part or portion of the Santa Cruz Water Department's (SCWD) distribution system and free chlorine residual exceeds 2 parts per million (ppm). This includes water discharged during flushing activities associated with line disinfections.

The main objectives for water main flushing are sediment removal; taste and odor control; control of color, high turbidity, low chlorine residuals, or bacterial growths; corrosion control; or response to customer complaint(s).

Disinfection of water mains is addressed in proposed SOP No. 7102-04.

Dechlorination of discharges of low-chlorinated water with a chlorine residual less than 2 ppm is addressed in SOP No. 7102-02.

**The intent of this SOP is to satisfy requirements of the Regional Water Quality Control Board (RWQCB).**

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### Discharges Requiring Dechlorination

All discharges from the distribution system must be addressed to ensure they do not reach waters of the State. Waters of the state include streams, rivers, ponds, lagoons and the ocean. Discharges to be dechlorinated are those generated in the course of performing any of the following:

- Trench dewatering during distribution system maintenance and construction activities (when water in trench is from leaking water pipe, not exclusively from groundwater).
  - Main or hydrant flushing (for any purpose).
  - Hydrant testing.
  - Main dewatering (for any purpose).
  - Any other activity requiring discharge of chlorinated water (other than exempt discharges as defined below).
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### Exempt Discharges

The following discharges are exempt from the dechlorination requirement described in this SOP:

- Discharges of raw, untreated water with no chlorine residual.
  - Discharges of non-chlorinated groundwater.
  - Unplanned discharges at unstaffed locations (e.g., main breaks, broken fire hydrant, reservoir overflow).
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- Discharges from system leakage/seepage.
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**Scope of this Procedure**

This procedure addresses manual dechlorination of SCWD-generated potable water discharges with free chlorine residual exceeding 2 ppm. Water with a chlorine residual exceeding 2 ppm requires dechlorination such that chlorine does not reach waters of the state and cause damage to plant and animal life. The SOP applies primarily to the dechlorination of water that has been injected with chlorine to disinfect new water main.

The specifications do not give instructions for making up dechlorinating solution or determining appropriate feed rates. See manufacturers instructions for dechlorination solution application.

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**Changes to Procedure**

This is the second draft of a formal procedure. Any previously released informal procedures are no longer acceptable and should be replaced with this SOP. Any suggestions or ideas pertaining to this procedure as well as informal or older procedures should be forwarded to the Engineering division to be filed.

This procedure may evolve over time as new dechlorination chemicals or methods become available that make dechlorination of potable water discharges quicker and/or easier.

Note that references to existing interdepartmental SOPs related to this topic are made throughout this SOP.

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**Impacts of Flushing and Dechlorination**

See the Production division's SOP 7106-IV-4 for handling of dry and liquid chlorine products. Other concerns include:

- Environmental: Flushing at high velocities can erode soil and cause instability, uproot vegetation and cause drainage problems.
- Fish and Wildlife / Endangered Species: Chlorine in concentrations exceeding 0.05 ppm kills nitrifying bacteria and other aquatic life necessary for sustenance for the aquatic food chain/nutrient cycling. Spikes of ammonia and nitrite, through gill necrosis, result in respiratory failure, suffocation, etc.
- Wastewater Treatment Plant: High doses of chlorine kills nitrifying bacteria and can cause certain unit treatment processes to fail, resulting in potential contamination of effluent discharging to the receiving water.
- Degradation/Capacity of Storm/Sanitary Sewer: Prolonged contact with high concentrations of chlorine may cause corrosion in cast iron pipe. Further, large discharges may reduce pipe capacity such that design flow rates are hydraulically restricted.

Consideration of these concerns should be evaluated prior to each discharge and impacts should be minimized as prescribed by regulations.

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**Priority of  
Dechlorination  
Relative to  
Other Jobsite  
Tasks**

For any job involving flushing or dechlorination, jobsite tasks should be prioritized in order of the following concerns:

1. Worker Health and Safety (e.g., don safety gear, set up traffic control, identify any site contamination concerns)
  2. Public Health & Safety (e.g., stop flows from breaks that are impeding traffic or threatening homes or businesses, operate valves as necessary to prevent contamination of mains and minimize number of customers out of water)
  3. Environmental Protection (e.g., set up dechlorination and/or sediment control equipment as necessary, ensure trench spoils are disposed of properly)
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**Flushing  
Equipment**

The following equipment is needed for flushing:

Hydrant Flushing:

- 2 ½” Hydrant adaptor fitting by 2” male end cam-lock fitting.
- 2” Fire hose with cam-lock fittings.
- 2 ½” Hydrant adaptor fitting with hose bib sampling port.
- Pitot tubes.
- Pipe wrench.
- Various valve keys.

Blowoff Flushing:

- 2” Blowoff assembly with sample port.
  - 2” Fire hose with cam-lock fittings.
  - Pipe wrench.
  - Pitot tubes.
  - Various valve keys.
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**Dechlorination  
Equipment**

The following equipment is needed for dechlorination when following this procedure:

- Basic Dechlor Kit
  - Captor Dechlorination Solution
  - Diffuser with tablet chamber
  - Personal Protective Equipment (i.e. respirator, goggles and rubber gloves)
  - Analytical equipment (as described in proposed SOP No. 7102-03) for measuring free chlorine residual concentration and turbidity.
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**Chemical  
Handling & PPE  
Requirements**

When handling solid or liquid chlorine, use clean rubber or leather gloves and a respirator if in an enclosed area. Do not inhale vapors from closed container (upon opening). Diffusers with tablets (new or used) should be stored in vehicles in secondary containment to prevent particles of sodium sulfite from being deposited directly onto vehicle, tool or other surfaces. Plastic containers that can completely

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contain the diffuser constitute adequate secondary containment. If the container is subject to overturn or objects falling into it during transport, the container should be sealed with a lid. Otherwise, a lid is not necessary.

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## **First Aid**

See MSDS for specific chemical to determine best course of action:

*Eye Contact:* Hold lid open and flush with water for 15 minutes and transport to the nearest medical facility for evaluation.

*Skin Contact:* Wash thoroughly with soap and water.

*Ingestion:* Give copious amounts of water and transport to the nearest medical facility for evaluation.

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## **WARNING!**

**Some work units that will be using calcium thiosulfate (CAPTOR) for dechlorination also use calcium hypochlorite (HTH) or sodium hypochlorite to disinfect water distribution system mains or appurtenances. These two (2) chemicals can react when mixed in the presence of water. The reaction can produce heat and both hydrogen and chlorine gas, creating both a potentially toxic and explosive/flammable atmosphere. Should the chemicals become mixed, staff should immediately evacuate to a safe area and contact the fire department (911). These chemicals and associated mixing and dispensing equipment must be kept segregated from each other at all times.**

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## **PROCEDURE**

**Procedure for new main dechlorination and flushing.**

**These procedures include instructions for using the LPD-250 Diffusers as well as step-by-step instructions for actual dechlorination/flushing procedure for chlorinated water main through a hydrant or blowoff.**

- **Notification**

**Give 48 hour notice to areas that will be affected by flushing, particularly to certain categories of customers who are seriously affected by flushing (i.e. laundries and dialysis patients, using door hangers). Internal notification shall be given to all divisions of the Water Department.**

**Notify City or County Public Works Departments to use storm or sanitary sewer for water disposal. In the City, inform Randy Bullock, Wastewater Mains Supervisor, via fax (attached) at (831) 420-6053. He can also be reached at (831) 420-6036 (office), (831) 212-9852 (cell) or (831) 689-6913 (pager).**

- **Preparation**

**Direct flushing water away from traffic, pedestrians, underground utility vaults, watercourses and private lands. Check that travel path of water is**

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- **Dechlorination/ Flushing** clear of hazardous contaminants such as puddles of gas, oil, paint thinners, etc. Take measures necessary to prevent sediment from entering the sanitary or storm sewer.

**Note that for superchlorinated water, the basic superchlorinating kit and CAPTOR solution is to be used in addition to the LPD-250 diffuser.**

Refer to equipment manuals for specific instruction on use of the dechlorinating diffuser system.

1. Open and/or close the appropriate valves to isolate the water main.
2. Obtain an initial water sample from hose-bib in glass quart bottle. Check chlorine concentration using a diluted sample and colorimeter. An appropriate amount of sample is 5 mL of deionized water (DI) (to the fill line on the colorimeter's sample tube) from the glass quart bottle to one (1) drop of sample water (20 drops = 1 mL). Add one (1) DPD Free Chlorine Reagent Pillow. Cover and shake the sample tube. If a pink or red color remains, use the colorimeter to determine the approximate free chlorine concentration. (Multiply by 100 to account for the sample's dilution).
3. Record initial concentration in the appropriate section on the "*Field Chlorination Report*".
4. Set diffuser and dechlorination equipment on a fire hose attached to hose bib assembly on a fire hydrant or blowoff. Position diffuser end of hose such that it discharges in a storm drain inlet.
5. At this point begin flushing by opening the hydrant/blowoff valve slowly until a flow rate of approximately 50-100 GPM is obtained.
6. Bathe hose bib in superchlorinated water and disinfect nozzle with propane torch for a minimum of 30 seconds.
7. Sample water discharged before dechlorination equipment through sample port and test using the method described in step no. 1 to ensure that free chlorine concentration is being reduced to system residual (0.5 – 1.0 ppm). When free chlorine concentration is approximately 3 ppm or less, transfer 5 mL of undiluted sample water taken with the glass quart bottle to the sample tube and add one (1) DPD Free Chlorine Reagent pillow. Cover and shake the sample tube. If a pink or red color remains, use the colorimeter to directly read the approximate concentration of the chlorine. Absence of color indicates that there is no detectable chlorine present.
8. Periodically, sample water discharged through dechlorination equipment and test using step no. 7 to ensure that free chlorine concentration is being reduced to 0 ppm. Adjust equipment or add tablets as necessary to achieve this concentration.
9. At this point, begin checking turbidity using the Hach Portable Turbidimeter. Verify calibration of turbidimeter with the standards. Fill glass sample bottles to line at top of bottle and wipe dry outside with KimWipes. Gently tilt bottle to expel air bubbles. Test samples until turbidity is close to a standard set by the Water Quality Control Lab ( $\leq 0.5$  NTU).
10. Confirm chlorine concentration using a sample with the colorimeter (direct read

this value). Chlorine level should be between 0.5 and 1 ppm.

11. At each sample point, take a General Physical sample, filling to neck of the bottle. Carefully fill two (2) small, sterile Bact test sample bottles (two (2) per sample point) to the 100-mL line and cap immediately. Resample if contamination is suspected. Do not sample if it is raining or windy. Record sample identification on “*Field Chlorination Report*”.
12. Close valve to hydrant or blowoff and disassemble dechlorination equipment.
13. Estimate the amount of water flushed. Record on “*Field Chlorination Report*”.
14. Submit “*Field Chlorination Report*” as well as samples to lab within two (2) hours of sampling.

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**Method of Measurement**

Free chlorine is measured by adding DPD Free Chlorine Reagent pillow to a sample of a given discharge. If a pink or red color develops when reagent is added to the sample, chlorine is present. This is known as colorimetric analysis. Absence of color indicates there is no detectable chlorine present.

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**Measuring Equipment**

**DPD Free Chlorine Reagent pillows, manufactured by Hach, are used to dispense the reagent into the sample. Utilize the clear, clean sample tubes included in the Hach Colorimeter kit to analyze the water.**

**Turbidity is measured using the Hach Portable Turbidimeter. Verify calibration of turbidimeter with the standards.**

**The target chlorine concentration is 0.5 – 1 ppm for system residual.**

See proposed SOP No. 7102-03 for analytical procedures used in determining free chlorine residual concentration.

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**Attention!**

Any activity resulting in a shutdown requires sampling of the water to verify that the turbidity is less than 0.5 NTU and the chlorine residual is between 0.5 and 1 ppm before putting main back in service. If the main is dewatered or the residual pressure drops below 20 psi, the requirements above must be met and the SCWD Water Quality Lab must to be notified at (831) 420-5480 for possible additional water quality sampling.

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**Regulating Agencies**

- USEPA
- US Fish and Wildlife
- California Department of Health
- Central Cost RWQCB
- City of Santa Cruz

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**Applicable**

- Clean Water Act Section 309, etc.
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**Regulations**

- Endangered Species Act Section 11
  - California Water Code Sections 13300-13361
  - California Fish and Game Code Sections 5650 and 2050
  - City of Santa Cruz Municipal Code
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**Attachments**

- MSDS, CAPTOR
  - Data Collection Sheets
  - Notification to Public Works for Discharge to Sewer
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**References**

- AWWA Standard for Disinfecting Water Mains (March, 2001)
  - AWWA Research Foundation Guidance Manual for Disposal of Chlorinated Water (2001)
  - State of California RWQCB Water Quality Control Plan for the Central Coastal Basin (September, 1994)
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# STANDARD OPERATING PROCEDURE NO. 7102-02

## Low-Chlorine Potable Water Discharges

### Purpose

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This standard operating procedure (SOP) describes the procedures to be followed when flushing any part or portion of the Santa Cruz Water Department's (SCWD) distribution system and chlorine residual is less than or equal to 2 parts per million (ppm). This includes water discharged during flushing activities, hydrant testing, and main breaks.

The main objectives for planned water main flushing are sediment removal; taste and odor control; control of color, high turbidity, low chlorine residuals, or bacterial growth; corrosion control; or response to customer complaint(s).

Dechlorination of discharges of superchlorinated water with a chlorine residual exceeding 2 ppm is addressed in SOP No. 7102-01.

Sediment control (i.e. pumping a trench to a drain inlet) is addressed in SOP No. 7105-01.

The intent of this SOP is to satisfy requirements of the Regional Water Quality Control Board (RWQCB).

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### Discharges Requiring Dechlorination

All discharges from the distribution system must be addressed to ensure they do not reach waters of the State. These include streams, rivers, ponds, lagoons and the ocean. Discharges to be dechlorinated include those generated in the course of performing any of the following:

- Trench dewatering during distribution system maintenance and construction activities (when water in trench is from leaking water pipe, not exclusively from groundwater).
  - Main or hydrant flushing (for any purpose).
  - Hydrant testing.
  - Main dewatering (for any purpose).
  - Any other activity requiring discharge of chlorinated water (other than exempt discharges as defined below).
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### Exempt Discharges

The following discharges are exempt from the dechlorination requirement described in this SOP:

- Discharges of raw, untreated water with no chlorine residual.
  - Discharges of non-chlorinated groundwater.
  - Discharges less than 1000 gpm.
  - Unplanned discharges at unstaffed locations (e.g., main breaks, broken fire hydrant, reservoir overflow).
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**Scope of this Procedure**

This procedure addresses manual dechlorination of SCWD-generated potable water discharges with free chlorine residual of 2 ppm or less. Dechlorination of discharges of superchlorinated water with a chlorine residual of greater than 2 ppm are not addressed in this procedure.

The specifications do not give instructions for making up dechlorinating solution or determining appropriate feed rates. See manufacturers instructions for dechlorination solution application.

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**Changes to Procedure**

This is the second draft of a formal procedure. Any previously released informal procedures are no longer acceptable and should be replaced with this SOP. Any suggestions or ideas pertaining to this procedure as well as informal or older procedures should be forwarded to the Engineering division to be filed.

This procedure may evolve over time as new dechlorination chemicals or methods become available that make dechlorination of potable water discharges quicker and/or easier.

Note that references to existing interdepartmental SOPs related to this topic are made throughout this SOP.

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**Impacts of Flushing and Dechlorination**

See the Production division's SOP 7106-IV-4 for handling of dry and liquid chlorine products. Other concerns include:

- Environmental: Flushing at high velocities can erode soil and cause instability, uproot vegetation and cause drainage problems.
- Fish and Wildlife / Endangered Species: Chlorine in concentrations exceeding 0.05 ppm kills nitrifying bacteria and other aquatic life necessary for sustenance for the aquatic food chain/nutrient cycling. Spikes of ammonia and nitrite, through gill necrosis, result in respiratory failure, suffocation, etc.
- Wastewater Treatment Plant: High doses of chlorine kills nitrifying bacteria and can cause certain unit treatment processes to fail, resulting in potential contamination of effluent discharging to the receiving water.
- Degradation/Capacity of Storm/Sanitary Sewer: Prolonged contact with high concentrations of chlorine may cause corrosion in cast iron pipe. Further, large discharges may reduce pipe capacity such that design flow rates are hydraulically restricted.

Consideration of these concerns should be evaluated prior to each discharge and impacts should be minimized as prescribed by regulations.

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**Priority of Dechlorination**

For any job involving flushing or dechlorination, jobsite tasks should be prioritized in order of the following concerns:

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**Relative to  
Other Jobsite  
Tasks**

4. Worker Health and Safety (e.g., don safety gear, set up traffic control, identify any site contamination concerns)
  5. Public Health & Safety (e.g., stop flows from breaks that are impeding traffic or threatening homes or businesses, operate valves as necessary to prevent contamination of mains and minimize number of customers out of water)
  6. Environmental Protection (e.g., set up dechlorination and/or sediment control equipment as necessary, ensure trench spoils are disposed of properly)
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**Flushing  
Equipment**

The following equipment is needed for flushing:

Hydrant Flushing:

- 2 ½” Hydrant adaptor fitting by 2” male end cam-lock fitting.
- 2” Fire hose with cam-lock fittings.
- 2 ½” Hydrant adaptor fitting with hose bib sampling port.
- Pitot tubes.
- Pipe wrench.
- Various valve keys.

Blowoff Flushing:

- 2” Blowoff assembly with sample port.
  - 2” Fire hose with cam-lock fittings.
  - Pipe wrench.
  - Pitot tubes
  - Various valve keys.
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**Dechlorination  
Equipment**

The following equipment is needed for dechlorination when following this procedure:

- Diffuser with tablet chamber
- Dechlor tablets (45 lb bucket)
- Personal Protective Equipment (i.e. respirator, goggles and rubber gloves)
- Analytical equipment (as described in proposed SOP No. 7102-03) for measuring free chlorine residual concentration and turbidity.

Note that the diffuser equipment is capable of dechlorinating up to 20 ppm in free chlorine concentration.

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**Chemical  
Handling &  
Personal  
Protective  
Equipment**

When handling solid or liquid chlorine, use clean rubber or leather gloves and a respirator if in an enclosed area. Do not inhale vapors from closed container (upon opening). Diffusers with tablets (new or used) should be stored in vehicles in secondary containment to prevent particles of sodium sulfite from being deposited directly onto vehicle, tool or other surfaces. Plastic containers that can completely contain the diffuser constitute adequate secondary containment. If the container is

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**Requirements**

subject to overturn or objects falling into it during transport, the container should be sealed with a lid. Otherwise, a lid is not necessary.

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**First Aid**

See MSDS for specific chemical to determine best course of action:

*Eye Contact:* Hold eyelid open and flush with water for 15 minutes and transport to the nearest medical facility for evaluation.

*Skin Contact:* Wash thoroughly with soap and water.

*Ingestion:* Give copious amounts of water and transport to the nearest medical facility for evaluation.

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**WARNING!**

Some work units that will be using calcium thiosulfate (CAPTOR) for dechlorination also use calcium hypochlorite (HTH) or sodium hypochlorite to disinfect water distribution system mains or appurtenances. These two (2) chemicals can react when mixed in the presence of water. The reaction can produce heat and both hydrogen and chlorine gas, creating both a potentially toxic and explosive/flammable atmosphere. Should the chemicals become mixed, staff should immediately evacuate to a safe area and contact the fire department (911). These chemicals and associated mixing and dispensing equipment must be kept segregated from each other at all times.

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**PROCEDURES**

These procedures include step-by-step instructions for an actual flushing procedure during typical hydrant flushing and flow testing operations as well as main dewatering through a hydrant or blowoff.

- **Notification**

Give 48 hour notice to areas that will be affected by flushing, particularly to certain categories of customers who are seriously affected by flushing (i.e. laundries and dialysis patients, using door hangers). Notification of flushing as part of the department's flushing program shall be given via a newspaper ad (example attached). Internal notification of all planned flushing shall be given to all divisions of the Water Department.

- **Preparation**

Notify City or County Public Works Departments to use storm or sanitary sewer for water disposal. In the City, inform Randy Bullock, Wastewater Mains Supervisor, via fax (attached) at (831) 420-6053. He can also be reached at (831) 420-6036 (office), (831) 212-9852 (cell) or (831) 689-6913 (pager).

- **Dechlorination**

Direct flushing water away from traffic, pedestrians, underground utility vaults, watercourses and private lands. Check that travel path of water is clear of hazardous contaminants such as puddles of gas, oil, paint

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thinners, etc. Take measures necessary to prevent sediment from entering the sanitary or storm sewer. (See SOP 7105-01.)

Dechlorination is accomplished by the addition of sodium sulfite tablets to the discharge flow. For main flushing, hydrant flow testing or main dewatering through a blowoff, a dechlorinating diffuser assembly is typically used. For the diffuser, tablets are placed inside a chamber of the flow-through diffuser attached to the discharge face of the diffuser. The diffuser is then directly screwed onto a hose bib assembly attached to the hydrant or blowoff. As the discharged water flows over and around the tablets, chemical is released as the water contacts the tablets, reacting with and destroying the chloramines. Refer to equipment manuals for specific instruction on use of the dechlorinating diffusers and dechlorination mat systems.

- **Procedure No. 1**

**Dechlorination Procedure when Main Flushing, Hydrant Flow Testing or Main Dewatering through a Blowoff.**

Included with this instruction is a brief outline of flushing procedures for a typical flushing area (i.e. Area #10). Please read all instructions before getting started.

These instructions will cover the procedure for flushing a particular area. Refer to attached Flushing Area #10 instruction sheet and map.

15. Start at flow no. 1, column 3 on the instruction sheet and begin by setting a water diffuser/deflector and dechlorination equipment (diffuser full of tablets) on a fire hydrant or water main blowoff. In example Area #10, flow no. 1, you would set the diffuser on hydrant (FH-667).
16. Reading left to right move to the next step, column 4 (SHUT Valves BEFORE Flow is Started), and close all valves indicated. Close valves slowly to prevent water hammer.
17. Obtain a water sample from a hose-bib sample port or at a home in the area to be flushed. Perform a turbidity and chlorine test before starting the flush. This will give you an idea of what the water in this area is like before starting. Record on "Water Loss and Data Worksheet" (attached).
18. At this point you would begin the flushing by opening the hydrant or blow off valve slowly until desired flow is obtained. Measure flow rate with a pitot tube. Record on "Water Loss and Data Worksheet" (attached).
19. Continue to flush the water, sampling and testing until turbidity is close to a standard set by the Water Quality Control Lab, usually  $\leq 0.5$  NTU. (See Water Department Policy 76-1 for a complete list of standards.)
20. When you are close to the standard, move to the next step (OPEN Valves BEFORE End of Flow) for flow no. 1 in column 6:
  - a. Open the first valve starting with the valve farthest away from the flushing point. When the turbidity is again near the standard, open the next valve.
  - b. Continue to open valves one at a time following that set of instructions.
  - c. After the last valve is open check turbidity until the standard is obtained.

21. Check chlorine. Chlorine level should meet or exceed the results you got before you started the flush. Record this value on the “Water Loss and Data Worksheet” (attached).
22. Move to the next flow set (no. 2) and continue as above.
23. Monitor the supply of tablets in the tablet chamber periodically to ensure that there are adequate tablets available to complete the flushing.
24. When both chlorine and turbidity targets are achieved, close valves to terminate discharge.
25. Estimate the flowrate and amount of water flushed. Record on appropriate report(s).

• **Procedure No. 2**

**Dechlorination Procedure for Trench Dewatering during Main Breaks, Distribution System Maintenance (Main Dewatering) and Other Construction Activities**

**These procedures include instructions for trench (when water in trench is from leaking water pipe, not exclusively from groundwater) or main dewatering and dechlorination. In this case, water is either spilling over or being pumped from ditch.**

1. Begin by setting up a fire hose, water diffuser/deflector, dechlorination (diffuser full of tablets) and/or pump equipment as necessary.
2. At this point you would begin pumping or allowing the flow path of the break to pass through the dechlorination equipment. Measure flow rate with a pitot tube, if possible.
3. If possible, perform a turbidity and chlorine test at the start of pumping to get an idea of the water quality.
4. Continue to pump/empty the trench/pipe until there is no discharge or the break has been isolated. As a precautionary measure, flush the line(s), sampling and testing until turbidity is close to a standard set by the Water Quality Control Lab ( $\leq 0.5$  NTU).
5. Check chlorine and turbidity using analytical procedures described in the “Measuring Equipment” section, below.
6. Monitor the supply of tablets in the tablet chamber periodically to ensure that there are adequate tablets available to complete the flushing.
7. When both chlorine and turbidity targets are achieved, close valves to terminate discharge. Remove the diffuser from the storm drain(s) the discharge was entering, placing it on the upstream side of the grate. Hose the flow path to remove any tablet residual, ensuring that the flow enters the storm drain(s). Retrieve the diffuser and store it in its secondary container on the field vehicle.
8. Estimate the amount of water flushed and report to the Conservation division.

**Method of**

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Free chlorine is measured by adding free DPD Free Chlorine Reagent pillow to a

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**Measurement**

sample of a given discharge. If a pink or red color develops when reagent is added to the sample, chlorine is present. This is known as colorimetric analysis. Absence of color indicates there is no detectable chlorine present.

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**Measuring Equipment**

**DPD Free Chlorine Reagent Pillows, manufactured by HF Scientific, Inc., are used to dispense the reagent into the sample. Utilize the clear, clean sample tubes included in the Hach Colorimeter kit to analyze the water. Transfer 5 mL of sample water taken with the glass quart bottle to the sample tube and add one (1) DPD Free Chlorine Reagent pillow.**

**Cover and shake the sample tube. If a pink or red color remains, use the colorimeter to directly read the approximate concentration. Absence of color indicates that there is no detectable chlorine present.**

**The target chlorine concentration is 0.5 ppm, with an acceptable range of 0.5 to 1.0 ppm.**

See proposed SOP No. 7102-03 for use of analytical equipment in determining chlorine residual concentration and turbidity.

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**Attention!**

Any activity resulting in a shutdown requires sampling of the water to verify that the turbidity is less than 0.5 NTU and the chlorine residual is between 0.5 to 1.0 ppm before putting main back in service. If the main is dewatered or the residual pressure drops below 20 psi, the requirements above need to be met and the SCWD Water Quality Lab needs to be notified at 831-420-5480 for possible additional water quality sampling.

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**Regulating Agencies**

- USEPA
  - US Fish and Wildlife
  - California Department of Health
  - Central Coast RWQCB
  - City of Santa Cruz
- 

**Applicable Regulations**

- Clean Water Act Section 309, etc.
  - Endangered Species Act Section 11
  - California Water Code Sections 13300-13361
  - California Fish and Game Code Sections 5650 and 2050
  - City of Santa Cruz Municipal Code
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**Attachments**

- MSDS, Sodium Sulfite
  - Example Flushing Area, (Area 10), Map and Instruction Sheet
  - Water Loss and Data Sheets
  - Sample Flushing Notification via Newspaper Ad
  - Notification to Public Works for Discharge to Sewer
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**References**

- AWWA Standard for Disinfecting Water Mains (March, 2001)
  - AWWA Research Foundation Guidance Manual for Disposal of Chlorinated Water (2001)
  - State of California RWQCB Water Quality Control Plan for the Central Coastal Basin (September, 1994)
  - SCWD Policy 76-1 Water Main Disinfection
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<b>PROCEDURE</b>	7105-01
<b>EFFECTIVE</b>	7/10/08
<b>SUPERSEDES</b>	8/30/02

## STANDARD OPERATING PROCEDURE NO. 7105-01 Sediment and Turbidity Control During Open Channel Water Discharges

<b>Purpose</b>	This standard operating procedure SOP describes procedures to be used to minimize the transport of sediment (with associated turbidity) to storm drains or receiving waters during open channel discharges containing sediment or having the potential to entrain sediments to satisfy the requirements of the Regional Water Quality Control Board and to protect the environment.
<b>Scope of this Procedure</b>	This procedure is not intended to cover all erosion control or sedimentation situations, but does apply to dewatering and related sediment control at SCWD work sites. Larger projects with sediment control needs should follow guidelines of the City’s Urban Water Runoff Program.
<b>Discharges Requiring Sediment Control</b>	The control procedures described herein must be used for all discharges from trenches during main or service break repair activities and any other Department activities that involve open channel discharges to the storm drain system or “receiving” waters with potential to mobilize and transport significant concentrations of sediment or turbidity.
<b>Exempt Discharges</b>	The following discharges are exempt from these sediment control requirements: <ul style="list-style-type: none"> <li>• Unplanned discharges at unstaffed locations (e.g., reservoir overflows, main or service breaks prior to arrival of repair crew).</li> <li>• Discharges to land – Any discharges to land that are absorbed into the ground well away from receiving waters and involve minimal or no runoff to storm sewers or receiving waters.</li> <li>• Discharges of clean water along a clean flow path.</li> <li>• Discharges within closed conduits.</li> </ul>
<b>Overview of Sediment Control Procedures</b>	Sediment control is accomplished through implementation of one of the following categories of Best Management Practices (BMPs): 1) use of vacuum truck to eliminate discharge, 2) filtration with straw rolls before discharge to storm drain (urban area), 3) retention of water in a settling basin, or 3) overland filtration. Residual sediment should be shoveled and either used as fill <sup>1</sup> , or hauled off-site for appropriate disposal. Success of these procedures will depend on appropriate implementation.

<sup>1</sup>In areas of potential soil contamination (gasoline, etc.) refer to draft SOP #7105-03 for more information before determining appropriate course of action. This procedure for working with contaminated soils has yet to be developed.

<sup>2</sup> Reporting required as follows: Any discharge to surface waters requires notification to RWQCB within **24 hours**. Report to DFG should be made **in writing** within 14 days of beginning of **emergency** work. All dewatering work that is not emergency work should not involve any discharge to surface waters and therefore does not require a discharge permit but may require consultation with DFG, USFWS, etc. regarding biotic issues. See Attachment 1– Sample Notification Letter.



<b>PROCEDURE</b>	7105-01
<b>EFFECTIVE</b>	7/10/08
<b>SUPERSEDES</b>	8/30/02

## STANDARD OPERATING PROCEDURE NO. 7105-01 Sediment and Turbidity Control During Open Channel Water Discharges

- Roles and Responsibilities**
- Distribution Crew Leader is responsible for:
- Determining method of dewatering
  - Monitoring
  - Contacting Water Resources Management staff for consultation
- Water Resources Management is responsible for:
- Determining necessity of further procedures for environmental protection.
  - Consultation with regulatory agencies (RWQCB, DFG, others as appropriate)<sup>2</sup>.
  - Annual training of Distribution Staff on monitoring techniques and SOP implementation

**Impacts of Turbidity and Sedimentation on Aquatic Habitat**

Sedimentation (the result of discharge of soil laden water to surface, or “receiving” waters) causes degradation of aquatic habitat through filling of pools and embedding spawning gravels, limiting respiration of aquatic life, and enriching receiving waters with nutrients; thereby increasing incidence of algae blooms. Elevated turbidity can also impede the ability of aquatic life to locate prey and feed normally.

**Priority of Control Measures Relative to Other Jobsite Tasks**

For any activity involving dewatering and sediment control, jobsite tasks should be prioritized in order of the following concerns:

1. Worker Health and Safety (e.g., don safety gear, set up traffic control, identify any site contamination concerns).
2. Public Health & Safety (e.g., stop dewatering sediment control if flows into traffic are causing a hazard, or if delays in dewatering are resulting in an inability to repair a leaking main and ability to provide water).
3. Environmental Protection (e.g., set up dechlorination and/or sediment control equipment as necessary, ensure trench spoils are disposed of properly).

**Control Equipment**

- Vacuum Truck (urban setting, if possible)
- Straw rolls
- Flat Blade Shovel
- Container for residual sediment disposal
- Straw bales (rural setting)<sup>4</sup>
- Filter fabric (rural setting)
- Pump
- Prevention of entrainment/impingement on pump intake
  - Screened intake, per DFG/USFWS/NOAA criteria or equivalent (to be determined in consultation with Water Resources) required for sites with aquatic life present<sup>3</sup>.
- Straw and Seed<sup>4</sup>
- Whirl-Paks or other containers for holding water samples (for turbidity analysis).

<sup>3</sup>Sites with potential aquatic life present require consultation with Water Resources Management staff and possibly presence of a qualified biologist before work can be initiated. Any site on the North Coast requires consultation with Water Resources Management staff before initiation of work. Water Resources Management staff will consult with regulatory agencies before initiation of any work if possible in cases with aquatic life present. Tail gate meetings with biologist will be held at the beginning of every work day at such sites. Biologist has authority, within reason and with deference to Dept. priorities as stated in this SOP, to direct dewatering work such that impacts to aquatic life are minimized.

<sup>4</sup> Straw should be rice or barley straw. Seed should consist of a mix of red clover and barley or local native mix to be determined at time of application in consultation with Water Resources Management Section.



<b>PROCEDURE</b>	7105-01
<b>EFFECTIVE</b>	7/10/08
<b>SUPERSEDES</b>	8/30/02

## STANDARD OPERATING PROCEDURE NO. 7105-01 Sediment and Turbidity Control During Open Channel Water Discharges

**Water Sampling Guidelines**

The following is applicable to samples taken from the downstream receiving water:

1. Where natural turbidity is between 0 and 50 units (NTU), increases shall not exceed 20 percent.
2. Where natural turbidity is between 50 and 100 units, increases shall not exceed 10 units.
3. Where natural turbidity is greater than 100 units, increases shall not exceed 10 percent.

**Changes to Procedure**

This is a formal procedure. Any previously released informal procedures are no longer acceptable and should be replaced with this SOP. This procedure may evolve over time as new sediment control technology or methods become available that make sediment control quicker, easier or more effective.

**Related SOPs**

Please reference SOPs # 7102-01-01, 7102-02 and 7102-04 for dechlorination, 7105-02 for protection of red-legged frogs, and 7105-03<sup>5</sup> for contaminated soil disposal procedures.

Scenario	Procedure
1. Dewatering in vegetated, rural setting.	<ol style="list-style-type: none"> <li>1. Ascertain that aquatic life is not present in ponded water (<i>for example repairs of leaks on the North Coast<sup>5</sup> require consultation with Water Resources Management staff before dewatering or other work can begin</i>).</li> <li>2. Screen pump with ¼ inch mesh if frogs or fish may be present (<i>if frogs or fish may be present, consultation with Water Resources Management staff is required</i>). If they are determined to not be present, screening is not required.</li> <li>3. Dissipate discharge by discharging directly into a straw bale. Discharge should not cause erosion or transport sediment to <u>any</u> nearby surface waterbody. Discharge should be as far from nearest waterbody as possible and located on flat, well vegetated ground if possible. If it is necessary for the discharge to occur near a waterbody or in an area that flows directly into a waterbody (e.g., a slope above a stream), discharge water should be retaining temporarily in a settling basin constructed of straw bales and lined with filter fabric to filter out suspended sediment.</li> <li>4. Pump as necessary, ascertaining that discharge water is not eroding soil and that sediment is settling out of discharge water before entering any surface water.</li> <li>5. Collect samples upstream and downstream in receiving waters during procedure if work site is near any surface water body. Document turbidity and estimate discharge volume. Insert this information into the data sheet (Attachment 3) and check that downstream turbidity increases do not exceed the limits listed.</li> <li>6. If downstream limits are exceeded, attempt to lower surface water impacts by decreasing turbidity of discharge water, based on applicability to the site: 1) move outlet farther from receiving water, 2) slow pumping speed, 3) increase amount of straw rolls/and or straw bales and filter fabric that water must travel through, 4) check that intake location is raised as high as practicable in the work hole and not sucking bottom mud. Repeat sampling and re-assess exceedance. Keep ALL data.</li> <li>7. Follow up with straw/seed soil stabilization as necessary immediately following completion of work, or prior to the end of the day if the U.S. Weather Service forecast is a "chance" (30% or more) of rain before the next day, and prior to weekend or other shutdown periods during winter months (October 15 – April 15).</li> </ol>
2. Dewatering trench in a paved, urban	<ol style="list-style-type: none"> <li>1. Secure vacuum truck for end-hauling of water to wastewater treatment plant.</li> <li>2. No further action required for dewatering if no discharge exists.</li> </ol>

<sup>5</sup> This procedure for working with contaminated soils has yet to be developed.

<sup>6</sup> See Attachment 2– Map



<b>PROCEDURE</b>	7105-01
<b>EFFECTIVE</b>	7/10/08
<b>SUPERSEDES</b>	8/30/02

## STANDARD OPERATING PROCEDURE NO. 7105-01 Sediment and Turbidity Control During Open Channel Water Discharges

setting <i>with</i> vacuum truck available.	
3. Dewatering trench in a paved, urban setting <i>without</i> vacuum truck available.	<ol style="list-style-type: none"> <li>1. Remove debris (sediment, branches, garbage, etc.) from discharge flow path. If the discharge is caused by a main or service break and there is surface flow, isolate the main or service prior to excavation if it is appropriate to do so based on standard main or service break repair procedures. Once the surface flow is stopped, remove all sediment and debris from the flow path. If there is surface flow and debris is present, remove debris if it can be removed without causing it to become entrained in the flow. For breaks where there is no surface flow (street is dry) or for main dewatering or other clean water discharges, inspect the flow path between the flow source and discharge location (the storm drain or receiving water into which the flow will discharge). Remove any debris or accumulated sediment from the flow path.</li> <li>2. Place straw rolls in flow path and around nearest downslope storm drain. Beware of safety issues related to ponded water on pavement and place traffic cones around perimeter of ponded water.</li> <li>3. Begin pumping.</li> <li>4. Check straw rolls periodically to ensure they are staying in place and performing their function. If the sediment has built up behind straw rolls, remove sediment as necessary if an opportunity occurs (flow has temporarily ceased). Do not attempt to remove sediment during discharge. Do not allow accumulated sediment to enter storm drain.</li> <li>5. Collect sample(s) of water being discharged to storm drain throughout the process (after it has drained through straw rolls) and document estimated discharge volume and turbidity.</li> <li>6. When discharge is complete, allow any water that is ponded behind the straw rolls to drain, then shovel as much sediment as possible into backhoe bucket or other available container. Hose down remaining sediment on pavement ensuring that flow of this cleanup water drains to straw rolls at downslope storm drain. When hosing is complete, allow any water that is ponded behind the straw rolls to drain. Retrieve all equipment and store in appropriate field vehicle(s).</li> <li>7. Haul residual sediment off-site for disposal or use as fill on-site. Empty the sediment and debris from the backhoe bucket or container into the dump truck if available. Otherwise, the sediment may be 1) spread out on an appropriate unpaved ground locally, if an appropriate location exists, 2) transported to a City facility and deposited on an appropriate unpaved surface, if an appropriate location exists, 3) added to open trench spoils bins, or disposed of in a dumpster. Non-sediment debris must be disposed of in a dumpster or garbage can.<sup>9</sup></li> </ol>
<b>Regulatory Agencies</b>	<ul style="list-style-type: none"> <li>• Central Coast Regional Water Quality Control Board (RWQCB)</li> <li>• United States Environmental Protection Agency (USEPA)</li> <li>• United States Fish and Wildlife Service (USFWS)</li> <li>• National Marine Fisheries Services (NMFS)</li> <li>• California Department of Fish and Game (DFG)</li> <li>• Santa Cruz County Planning</li> <li>• City of Santa Cruz</li> </ul>
<b>Applicable Regulations</b>	<ul style="list-style-type: none"> <li>• Federal Clean Water Act</li> <li>• County of Santa Cruz Water Quality Ordinance</li> <li>• California Water Code</li> <li>• Endangered Species Act</li> </ul>

<sup>9</sup> In areas of potential soil contamination (gasoline, etc.) refer to SOP #7105-02 (yet to be developed) for more information before determining appropriate course of action.



<b>PROCEDURE</b>	7105-01
<b>EFFECTIVE</b>	7/10/08
<b>SUPERSEDES</b>	8/30/02

## STANDARD OPERATING PROCEDURE NO. 7105-01 Sediment and Turbidity Control During Open Channel Water Discharges

<b>Notifications</b>	<p>All projects:</p> <ul style="list-style-type: none"> <li>• California Department of Fish and Game (Mike Kirchner, <a href="mailto:mkirchner@dfg.ca.gov">mkirchner@dfg.ca.gov</a>) <b>within 14 days</b></li> <li>• Central Coast RWQCB (Mike Higgins, <a href="mailto:mhiggins@rb3.swrcb.ca.gov">mhiggins@rb3.swrcb.ca.gov</a>) <b>within 24 hours</b></li> <li>• County of Santa Cruz (John Ricker, <a href="mailto:jricker@co.santa-cruz.ca.us">jricker@co.santa-cruz.ca.us</a>) <b>within 24 hours</b></li> <li>• City of Santa Cruz (Chris Berry, <a href="mailto:cberry@ci.santa-cruz.ca.us">cberry@ci.santa-cruz.ca.us</a>) <b>within 24 hours</b></li> </ul> <p>Additional for projects on State Parks Property:</p> <ul style="list-style-type: none"> <li>• California State Parks (Victor Roth, <a href="mailto:vroth@parks.ca.gov">vroth@parks.ca.gov</a> and Chris Spohrer, <a href="mailto:cspoh@parks.ca.gov">cspoh@parks.ca.gov</a>) <b>within 24 hours</b></li> </ul>
<b>Attachments</b>	<ol style="list-style-type: none"> <li>1. Sample Agency Notification Letter</li> <li>2. Map</li> <li>3. Data Sheet</li> </ol>
<b>References</b>	<ul style="list-style-type: none"> <li>• EBMUD Environmental Compliance Manual</li> <li>• Central Coast Basin</li> </ul>

**Attachment 3 – Data sheet**