

## **PROTOCOL FOR DRY WEATHER SCREENING**

Field screening occurs annually between May 1<sup>st</sup> and September 30<sup>th</sup>, no sooner than 72 hours following any rain event. Each station included in the Dry Weather Screening Program should be screened once annually during this dry weather season.

Dry weather screening will be performed by field inspectors as directed by City staff. Inspectors will carry the necessary equipment and supplies to complete field screening, collect samples and perform field testing.

All field screening data will be entered into electronic hand-held devices provided to field inspectors. These hand-held devices contain a database of the dry weather screening stations and the attributes required to be collected at the time of screening. All applicable data shall be entered into the electronic devices in the field and the devices shall be synched periodically to the City's network.

In the event of non-functioning electronic devices, a paper backup shall be utilized and then entered into the City's primary database.

If a field screening site cannot be accessed safely, field inspectors should proceed upstream and attempt to locate a safe access point. If this is not feasible, then note on the comments section of the database the reason(s) for not completing the field screening information.

During the channel inspection if open or closed conduits not identified on the storm drain master map are encountered, the inspection team will locate the discharge points of these conduits as accurately as possible on the storm drain master maps.

One of the following three (3) site conditions are anticipated to be encountered at each monitoring location:

**1. Flowing water.**

If flow is observed, field inspectors will perform field screening sampling and testing as outlined in Section 4.1. If tested parameters exceed the indicated ranges, then an investigation shall be conducted to identify and eliminate the source causing the exceedance. The investigation and source elimination shall be conducted within two days of the failed test.

**2. Standing or ponded water at the field screening site.**

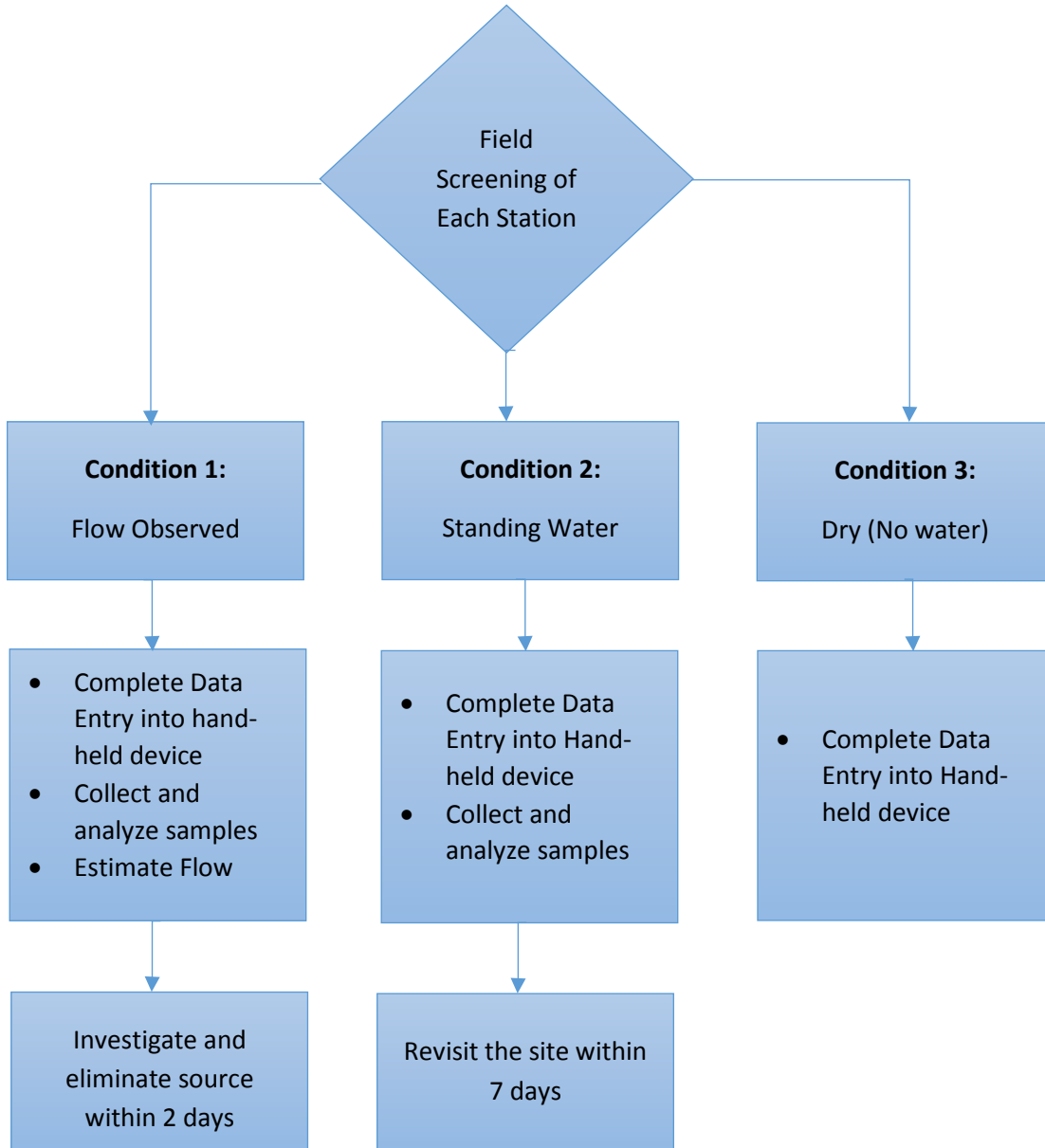
If standing or ponded water is observed near the field screening site and the water quality test results indicate exceedance levels of the tested constituents, a follow-up investigation will be scheduled to occur at the site within 7 days and retested or inspected to determine if the problem is chronic.

**3. No observed flow or water accumulated - dry condition.**

If the field screening site is dry, no further screening is required for the station..

A flow chart showing the procedures to be followed during the field screening process for major outfalls, and connected grid cells discharging to a receiving water is shown in Figure 3.1.

**Figure 1-1. Field screening process**



## Condition 1 – Flowing Water Observed

If flowing water is observed at the time of the site visit the following additional information is to be obtained and recorded on the Field Data Sheet:

1. Estimate the flow (one of two methods described below).
2. Record visual observations including odor, color, clarity, floatables, deposits/stains, vegetation condition, structural condition, biology. Be descriptive if additional comments are provided.
3. Obtain adequate sample(s) and complete the field analysis with the appropriate equipment for pH, turbidity, conductivity, and detergent.
4. Note test results on the electronic database.
5. Photograph the observed flow.
6. Schedule a return visit to the site within 48 hours to investigate, identify, and eliminate the source if the limits are exceeded.

### Estimating Flow

There are two (2) recommended methods for estimating flow. The selection of the method best suited for the site will depend on the magnitude of the flow and access to measure the flow in the conveyance system. The methods are:

- Area/Velocity method
- Volume/Time method

There are a number of techniques for determining flow by the Area/Velocity method. In general, the depth of the flow at the discharge point is measured with a yardstick or tape measure. The width of the water surface is also measured in a similar fashion. Surface velocity is determined by measuring the time it takes a floating object to travel a set distance.

One technique for measuring the surface velocity is the flow stick method, suitable for conduits or streams that can be easily straddled. The flow stick method uses a 4-foot pole with a nail driven in the end of the pole. A small center-drilled cork is placed over the nail. A 3-foot string attaches the cork to the nail. Velocity of flow is determined by inserting the stick into the mouth of the conduit or upstream in the case of a small stream. The cork is allowed to slip off the nail and float downstream. A stopwatch is used to record time (N) required for the cork to float downstream and pull the string taut. This will indicate surface velocity in 3 feet/N seconds (fps).

A similar method for measuring surface velocity is the fishing pole method. This method is useful for measuring surface velocities from manholes. A standard fisherman's float is connected on the end of the fishing line. A lead fishing weight is attached to the line 3 feet from the float (a larger distance may be required). The float and weight are lowered into the flow quickly enough as to allow the weight to enter the flow prior to the line between the float and weight becoming taut. A stopwatch is used to time (N seconds) how long it takes between float entering the water and the line between the float and weight becoming taut. This will allow calculation of the surface velocity in 3 feet/N seconds, (fps).

Note: These methods should not be used in pipes where abrupt changes in slope or other obstructions are observed.

The discharge (gpm) is estimated by multiplying the depth times the width (area- square feet) times the velocity (fps), which can be calculated at the end of each day.

The second method (Volume/Time method) is suitable for low flows discharged from an open or closed conduit with a drop. Under this method the time to fill a known volume is determined. Field personnel should have a 5-gallon container marked off in one gallon increments. Depending on the flow rate, the time to fill 1 to 5 gallons is measured. The discharge is then estimated by the following formula (which can be calculated back at the office):

$$\text{Flow, } Q \text{ (gpm)} = \frac{\text{Container Size Filled (gal)} \times 60 \text{ sec/min}}{\text{Time to Fill Container (seconds)}}$$

Where these techniques are not practical, at a minimum the flow depth should be measured and recorded.

## **Condition 2 – Standing or Poned Water In The Outfall Area**

Field personnel should use discretion in assessing whether the ponded water is from the conveyance system or another source. If standing or ponded water in the immediate vicinity of the field screening site is observed, the following additional information will be obtained and recorded on the Field Data Sheet:

1. Record visual observations including odor, color, clarity, floatables, deposits/stains, vegetation condition, structural condition, biology. Be descriptive if additional comments are provided.
2. Obtain adequate sample(s) and complete the field analysis with the appropriate equipment for pH, turbidity, conductivity, and detergent.
3. Note test results on the electronic database.
4. Photograph the observed flow.
5. Schedule a return visit to the site within 7 days to investigate, identify, and eliminate the source if the limits are exceeded. If the source of the water cannot be identified, then additional field screening visits may be planned during the same year to evaluate if the ponding was the result of a one-time event, or if it is a chronic problem.

## **Condition 3 - Dry Condition**

If the field screening site is dry, field personnel should complete the electronic database for the field screening station.

## **Field Data Entry**

To facilitate efficient field work and to maintain an up-to-date database, field staff are equipped with hand-held electronic devices that are pre-loaded with the field screening station locations, required attributes, and City maps to allow efficient data entry. The primary device used by City staff is the Trimble NOMAD with backup Trimble Yuma 2 devices. User's manuals for these devices are located in the Appendix. All fields are to be completed at the time of field inspection. The hand-held devices are periodically re-synched with the primary database on the City's network.

The electronic devices are GPS enabled and preloaded with City maps and the required fields and attributes for each station. For some attributes, the inspector has the option of picking the value from a pre-defined list to eliminate data entry errors. Other fields allow free entry with text filters. The field data entry table is included in Table 3-1.

**Table 3-1. Field data entry table**

<b>PICK LIST HEADER:</b>	<b>CHOICE IN PICK LIST</b>
Object ID	Record ID. Number
Facility ID	Manhole or Outfall
Priority	1 or 2 (Priority for inspection and water testing)
GridID	identification Number of Inspection/Test Grid
INSP_DATE	Date of the Inspection (entered manually with popup keyboard)
LAST_RAIN	> 72hrs or <72hrs
QUANTITY	>.1 inch or < ,1 inch (How much Rain in last Rain Event)
INSPECTOR	Employee Name Conducting Inspection.
SITE	Text Input- pop up keyboard
OUTFALL	Major or Minor
MATERIAL	Text Input
LAND-USE	agricultural, commercial, industrial, institutional, open space, residential
FLOWING	n (no), y (yes)
ILLICIT_DC	Text Input – Description
ODOR	Musty, None
COLOR	Brown, Clear Red
TURBIDITY	Clear, Cloudy
FLOATABLES'	None
DEPOSITS	None, Sediments
VEGETATION	Excessive Growth, None, Normal
STRUCTURAL	Concrete cracking, Normal
BIOLOGICAL	Algae, Mosquito Larvae, None

<b>PICK LIST HEADER:</b>	<b>CHOICE IN PICK LIST</b>
FOLLOW-UP	No, Yes, (Yes_No flow/evidence found in upstream manhole)
COMPLETED	Text _Input
COMP-DATE	Date _ Date Input
INSPECTION	Text Filter
COMMENTS	Text Filter
SIZE	Pipe Size_ 0-84
WS-ID	Watershed ID _ CL, GC, MS, NC, RD, SRC
WEATHER	Cloudy, Fog, Sunny
DRY	Y, N
FLOWDESC	Moderate, Substantial, Trickle
PONDWIDTH	0-74 Inches (in increments)
PONDDEPTH	0-25 inches (in increment)
PONDLENGTH	0-48 inches (in increments)
OVERFLOW	No, Yes
Ph	0-8.5 (in Increments)
COND	0-178 (in Increments)
TURBMEAS	0-453 (in increments)
DETERGENT	0-3 (in increments)
ANALYTICSA	No, Yes
ILLICIT	No, Yes
OVERDESC	Irrigation Runoff, Other
WS_NAME	Carr Lake, Gabilan Creek, Markley Swamp, Natividad Creek, Reclamation Ditch, Santa Rita, Salinas River
FLOWWIDTH	0-36 inches (in increments)
FLOWDEPTH	0-5 inches (in increments)
FLowsPEED	0-6 inches (in increments)
GEOAREA	North or South

<b>PICK LIST HEADER:</b>	<b>CHOICE IN PICK LIST</b>
RESPONSIBLE PARTY (RP)	Text Input - Name of Discharger
RP PHONE	Number Input - Phone Number
RP ADDRESS	Text Input - Address
ACTION STARTED	Date _ Date Input
ACTION ENDED	Date _ Date Input

<b>PICK LIST HEADER:</b>	<b>CHOICE IN PICK LIST</b>
1. FOLLOW UP	Date _ Date Input
1. ACTION TAKEN	Text Input - Description
2. FOLLOW UP	Date _ Date Input
2. ACTION TAKEN	Text Input - Description
3. FOLLOW UP	Date _ Date Input
3. ACTION TAKEN	Text Input - Description

Field crews may carry a hard copy of the “Dry Weather Screening, Reporting and Response Form” in case Field Data equipment malfunctions or not available for use.



# Maintenance Services Department Wastewater Division

Wastewater Collection Systems – NPDES – Industrial Waste – Street Sweeping – Hazardous Materials – Water Resources Planning

## CITY OF SALINAS Dry Weather Monitoring Field Datasheet

GRID/MANHOLE/OUTFALL # \_\_\_\_\_

DATE \_\_\_\_\_

TIME: \_\_\_\_\_

**GENERAL INFORMATION:**

TIME SINCE LAST RAIN: Less 72hr. / Greater 72hr. Weather: Sunny  Cloudy  Fog   
 QUANTITY OF LAST RAIN: Less 0.1 in. / Greater 0.1 in.

WATER SHED \_\_\_\_\_

INSPECTION TEAM: \_\_\_\_\_

**FIELD SITE DESCRIPTION:**

MANHOLE CATCH BASIN \_\_\_\_\_ OUTFALL OTHER \_\_\_\_\_ SIZE \_\_\_\_\_

OUTFALL TYPE: MAJOR MINOR SIZE: \_\_\_\_\_ OTHER: \_\_\_\_\_

DOMINANT WATERSHED LAND USES: Indust. Com. Instit. Resid. Agr. Open Space Unknown

**VISUAL OBSERVATIONS:**

ODOR: NONE / MUSTY / SEWAGE / SULFIDE (ROTTEN EGG) / SOUR MILK / OILY / OTHER: \_\_\_\_\_

COLOR: CLEAR / RED / YELLOW / BROWN / GREEN / GREY / OTHER: \_\_\_\_\_

TURBIDITY: CLEAR / CLOUDY / OPAQUE / SUSPENDED SOLIDS / OTHER: \_\_\_\_\_

FLOATABLES: NONE / OILY SHEEN / GARBAGE / SEWAGE OTHER: \_\_\_\_\_

DEPOSITS / STAINS: NONE / SEDIMENTS / OILY / GARBAGE / OTHER: \_\_\_\_\_

VEGETATION CONDITION: NONE / NORMAL / EXCESSIVE GROWTH / INHIBITED GROWTH / OTHER: \_\_\_\_\_

STRUCTURAL CONDITION: NORMAL / CONCRETE CRACKING, SPAULING / METAL CORROSION / OTHER: \_\_\_\_\_

BIOLOGICAL: NONE / MOSQUITO LARVAE / ALGAE / OTHER: \_\_\_\_\_

**WATER FLOW:**

FLOW OBSERVED: YES – NO STANDING WATER: YES – NO Dry YES- NO

FLOW DESCRIPTION  Trickle  Moderate  Substantial  
(If present)

FLOW MEASUREMENT: Width \_\_\_\_\_ Depth \_\_\_\_\_ Velocity \_\_\_\_\_

FONDED WATER Width \_\_\_\_\_ Depth \_\_\_\_\_ Length of Ponded Area \_\_\_\_\_

Evidence of Overland Flow? Yes  No  Irrigation runoff  Other  \_\_\_\_\_

**FIELD MEASUREMENT:**

Parameter	Reading
pH (Unit)	
Cond. (mS/cm)	
Turbidity (NTU)	
Detergent	

ANALYTICAL LAB SAMPLE COLLECTED? Yes / No

FOLLOW UP: YES – NO

ILLCIT DISCHARGE YES / NO

COMMENTS:

\_\_\_\_\_

(SIGNATURE) \_\_\_\_\_

## PROTOCOL FOR COLLECTING AND HANDLING SAMPLES AND OPERATING TEST EQUIPMENT

Four parameters are tested to characterize the non-stormwater discharge. The selection of these four parameters allows for rapid in-field testing and identification of pollutants. The parameters to be tested are indicated in the table below:

Pollutant	Action Level		
pH	7.0 – 8.5 <sup>b</sup>		
Turbidity (NTU)	126 <sup>a</sup>		
Detergent (mg/L)	0.5 <sup>c</sup>		
Potential Problem	Degree or Restriction on use <sup>c</sup>		
	None	Slight to moderate	Severe
Conductivity (uS/cm)	700	700-3000	>3000

a –Derived from the 90<sup>th</sup> percentile data in the National Stormwater Quality Database.

b – Criteria as identified in the Water Quality Control Plan for the Central Coast Region (Basin Plan).

c – Criteria based on the level identified in The CA Waterboard Water Quality Criteria for Irrigation (attached pdf document)

### Collecting and Handling Samples

1. Each morning, the City of Salinas field inspection team will obtain the appropriate number of sample containers, reagents, equipment, and apparatus required to conduct the estimated number of samples and tests for discharging site conditions. As a rule of thumb, plan on encountering two field sites discharging and completing two return scheduled sites each field day.
2. **NOTE: AFTER ARRIVAL AT THE SITE, IF ABNORMAL FLOW CONDITIONS ARE OBSERVED AND/OR THE DISCHARGE IS SUSPECTED OF CONTAINING HAZARDOUS MATERIALS (I.E., VERY STRONG ODORS, ABNORMAL COLORS, DEAD ANIMALS ADJACENT TO THE DISCHARGE POINT, ETC.), THEN LEAVE THE SITE AND CONTACT YOUR SUPERVISOR IMMEDIATELY. SEE SECTION 8- INSPECTION TEAM SAFETY PLAN, FOR TELEPHONE NUMBERS OF HAZ MAT EMERGENCY RESPONSE TEAM.**
3. Put on protective gloves and eye protection prior to obtaining samples.
4. Care needs to be exercised to prevent contamination of containers prior to sampling. An electric sampling pump can be used to facilitate sample collection. If the pump is not functioning, samples may be collected by hand. Hold the cap in one hand around the outside edge of the cap and the sample container at the bottom. For locations where the flow stream can be accessed, hold the container under the stream. Fill the container sufficiently enough to avoid air pockets in the container.



If the stream cannot be accessed directly (i.e., pipeline at the bottom of a manhole), use an expandable pole with small container to dip the container in the stream and retrieve a sample. Carefully pour the contents into the sample container.

5. Tightly secure the lid to the sample bottle
6. Complete the field tests using the Horiba U-52 Multiparameter test instrument (pH, turbidity, conductivity). Conduct the detergent test using the CHEMetrics detergent test .
7. Record the test results on the electronic database as they are completed.
8. If the testing apparatus malfunctions or other unforeseen conditions occur, prepare the samples for storage and transport. Use an adhesive label to identify the samples. The completed labels should indicate the site identification number, date and time of sample. Assign a laboratory number to each sample (suggest using site ID no. plus abbreviations for type of test as listed on the Daily Monitoring Data Summary Sheet at the end of Section 3).
9. If abnormal flow conditions are observed, the appropriate personnel (HAZMAT Response Team) with protective clothing and equipment (protective suits, boots, eye protection, and breathing apparatus) will return to the site and collect samples with the appropriate type sample containers.

## Health & Safety Guidelines

Field investigations conducted at remote locations require that field inspection teams and the supervisor overseeing the operation be trained per a safety plan. The following health and safety guidelines should be addressed as an overview prior to starting field work. The guidelines are only presented as a general overview to assist personnel in health and safety and accident prevention.

1. Inspection Team Size
  - Minimum team size of two persons.
2. Confined Space Entry
  - Do not enter - including manholes, storm sewer outfalls, culverts, etc.
  - Confined space entry is not permitted without special training and the proper equipment
3. Traffic Control
  - Place traffic cones or pylons on the roadway to divert traffic.
  - Place warning signs along roadway or shoulder an adequate distance from sampling point.
  - Provide traffic control personnel to direct traffic if required (team may require a third person to assist in directing traffic).
  - Wear appropriate traffic safety vests
4. Vehicle Safety
  - Vehicles should be in proper operating condition with functional hazard lights.
  - Trucks and other service vehicles should have an audible reverse signal alarm.
5. Surface Waters
  - Be aware of water safety procedures.
  - Watch for slippery rocks along stream banks and in stream.
  - Keep a safe distance from the edge of steep embankments.
6. Biological Hazards

- Be aware of hazards involving insects, snakes, and other animals. Use of the following protective equipment is advised:
  - Boots, long sleeve shirts and pants, gloves, and hats.
  - Insect repellents.
  - Mace repellent for use on aggressive animals. (Each field inspector and supervisor will need to be trained and certified in the proper use, handling, and storage procedures before issuing. Check with local police department for training and certifying requirements.)
- In areas where an inspection team could be exposed to poison oak, the following protective measures should be observed:
  - Wear protective clothing (boots, gloves, long sleeve shirts and pants, etc.)
  - Use soap and water to wash exposed areas.
- 7. Proper Lifting Techniques
  - Use team lifting techniques.
  - Bend at the knees, not at the waist.
  - Lift with leg muscles not the back muscles.
  - Keep load close to the body.
  - Avoid twisting while carrying a heavy load.
- 8. Decontamination Procedures
  - Proper decontamination procedures should be followed to prevent sample contamination and/or endangerment of human health.
  - Avoid hand-mouth contact when collecting samples.
  - Always wash hands and face prior to taking breaks and at the end of the shift.
- 9. Personal Protective Equipment (PPE)
  - Protective clothing should be used to protect against injuries or exposure to hazardous materials especially to hands, feet, eyes, head, and ears.
  - PPE should be clean, fit comfortably, and be designed for the job.
  - Dispose of PPE or clean it to reduce contamination after every use.
  - Wear safety orange if working in traffic.
- 10. Emergency Response
  - Each team or vehicle should be equipped with a two-way radio or cellular phone to communicate back to the office in case of an emergency.
  - Emergency response procedures need to be established according to the terrain being surveyed by the inspection team. This is required to assure the City of Salinas has the appropriate equipment available to reach the inspection team if needed.

If there are any injuries, treat the injured person(s) and dial 911 and/or notify the nearest hospital. The following hospitals provide emergency room care:

Hospital	Emergency Phone No.
Salinas Valley Memorial Hospital 450 E. Romie Lane	831-755-1700
Natividad Medical Center 1330 Natividad Road	831-755-6268

If a fire is occurring, or if the spill is suspected to contain hazardous and/or flammable materials, contact the City of Salinas Fire Department at **911**. If a spill of hazardous or flammable materials is identified, notify the following government agency as soon as possible:

State of California, Office of Emergency Services      1-800-852-7550  
 (Responsible for contacting Monterey County HAZMAT Team)

**Emergency Coordinator and Emergency Contacts**

<b>Primary Contacts</b>	
Name	Business Phone
Superintendent of Environmental & Maintenance Services- Emergency Coordinator*	831-758-7233
Emergency Center (Monterey County)	911
State of California, Office of Emergency Services (For contacting Monterey County HAZMAT)	1-800-852-7550
Monterey County Health Department - Environmental Health	831-755-4880
Monterey County Health Department - Environmental Health	831-755-5000
<b>Alternate Contacts</b>	
Salinas Fire Department	831-758-7261
Salinas Public works non-emergency number	831-758-7233
Salinas Public Works On Call Person(After regular Work Hours	911
Chemtrec (Highway Incidents Only)	800-424-9300
Poison Control Center	800-662-9886
Hospital - Salinas Valley Memorial Hospital	831-757-4333
Business Physician- Pinnacle Healthcare, 2 Rossi Cir. Salinas, Ca.	(831) 770-0444
Ambulance	911
Also call: California Highway Patrol (For Highway Related Incidents) Sheriff (County Roads) Salinas Police Department (City Streets)	911
<b>For Pesticide Related Incidents, also call:</b>	
County Agricultural Commissioner	831-759-7325

One individual from the City's Public Works Department is on call outside of regular work hours. This assignment rotates every two weeks. The 911 operator and police dispatch have access to all home and personal cell phone numbers for the individuals on this list. Calls requesting emergency response will go to either 911 or Salinas Dispatch and the call will be relayed to the on-call person or other appropriate personnel on the list.