

APPENDIX E

Sampling Protocol, Logistics and Preparation

Sampling Protocol and Logistics

- 1) Pre-Event
 - a) Project Clean Water (PCW) staff will be responsible for tracking long range weather forecasts
 - b) Predictions of rain events within 3 days will trigger initial notification of samplers and laboratories (Zymax and Public Health). This does not constitute “stand by” status for County employees.
 - i) Samplers will check pager and cell phone batteries at this point. Batteries should be fully charged and may require recharging.
 - c) Approximately 2 days before the predicted storm event, conditions will be re-evaluated and a decision will be made concerning likelihood of sampling. A subsequent notification will be sent out to all appropriate samplers and lab staff.
 - d) 24 hours before a predicted storm event, PCW staff will discuss potential for storm event and precipitation loading.
 - i) If storm appears promising, Project Clean Water staff will notify appropriate laboratory staff.
 - (1) If not previously completed, PCW Technicians will be responsible for preparing all necessary equipment and forms for sampling. The *Preparation of Sampling Equipment and Forms* (attached) gives a detailed description of all tasks that must be completed.
 - ii) If storm conditions prevent at least a 24 hour notification prior to sampling (i.e. the storm moved inland faster than expected, produced more rain than previously predicted, etc.), lab staff will be contacted to determine if sampling and laboratory schedules can be modified to accommodate storm changes. If it is determined during those conversations that adjustment to the storm changes are not possible, the sampling event will be cancelled.
 - iii) If the storm is predicted to occur after work hours, a “stand by” status window (beginning and ending timeframe) will be determined. Stand by status is compensated time for County employees at the rate that has been negotiated by the County bargaining unit. Stand by compensation is limited to the time between initiation of status and termination of timeframe or subsequent call in for duty, whichever comes first.

Emergency (e.g. earthquakes, floods, fires, etc.) issues take precedence over storm water sampling.
 - e) From 12 hours to 2-3 hours before storm event, tracking will continue.
- 2) Onset of promising storm
 - a) event will trigger notification of samplers and laboratories
 - b) PCW Management will make the decision to send samplers into the field in consultation with other PCW staff. PCW staff will contact Zymax and public health labs.
 - c) Samplers will complete first section of Sampling Day Checklist before going into the field. This is critical to ensure sample teams have all sampling equipment (keys) and proper number of sample bottles.

- 3) Field Sampling During Storm Event
 - a) Sample Teams will proceed to first designated sample location and ascertain ability to enter sample location with minimal risk
 - b) If creek entry is deemed unsafe, stainless steel sample buckets (“asparagus cookers”) can be used as an alternative.
 - c) If area is deemed unsafe for sampling or there is no flow, this decision will be noted in field log and samplers will move to next sample location
 - d) If water sample collection is deemed safe, double check types of sampling to be performed at location and if flow measurements are necessary for this location.
 - e) Any field observations (e.g. odors; sheen on water; foamy water; etc.) are to be noted in the sites notes sheet or the flow measurement sheet in the notebook at the sample location.
 - f) Sample bottle labels, chain of custody forms, sample date and time and other documentation should be completed inside car prior to taking bottles to creek sites. Observations should be recorded inside car after sampling event.
 - g) Follow Creek Sampling Protocols for water sample collections.
 - h) Once water samples are collected, samples are to be handled and transported following sanitary techniques and in ice chests with ice. Samplers are reminded that bacteria water samples must be kept on ice in the field and may not exceed a maximum of 6 hours from time of collection to lab processing.
 - i) It is the responsibility of the sampling teams to ensure they have adequate ice prior to sampling. If they are short the team should go to a local store near sample locations and purchase additional amounts. Costs for ice will be reimbursed from the Water Agency within 1 week of submitting “request for reimbursement.”
 - j) At end of fieldwork, return to staging area.
- 4) Completion of Field Work
 - a) Ice chests containing all Zymax samples are to be stored separately from the ice chest containing bacteria samples. Zymax samples are to be stored on ice and placed in the Water Agency hall until all teams have returned. At that time, PCW staff will deliver all bacteria samples, chain of custody and reporting forms to the PHD laboratory.
 - i) Chain of custody forms for both Zymax and the Public Health Laboratory are to be filled out and signed. These forms along with the checklist and PHD lab reporting form are to be placed together in the “in box” located in the Water Agency staging room..
 - (1) Chain of custody and lab reporting forms should indicate where samples have not been collected (e.g. dry site; unsafe access, etc.). A line should be drawn through the sample identification number and reporting form to indicate no sample is submitted for this site.
 - ii) All sample bottles for bacteria testing and QA/QC samples or “blanks” are to be removed from ice chest and transported to PHD laboratory by at least one member of sampling team or PCW staff.
 - (1) At the PHD laboratory, PCW staff will deliver water samples and have lab staff complete and sign chain of custody. Copy of chain of custody will be returned to the Water Agency Office.

- 5) Post Field Work
 - a) PCW staff is responsible for meeting Zymax courier and ensuring chain of custody forms are completed and samples turned over to courier. Lab results are to be reported to PCW Management. Invoices are to be sent to the PCW Director.
 - i) Upon completion of sample exchange with Zymax, PCW Technicians are to report to PHD Lab to assist with sample processing if necessary. Samplers and/or PCW staff dropping off samples are to review all submittals with lab staff, receive their concurrence with samples and documentation, prior to departing laboratory.
 - b) PCW Technicians are responsible for collection of all chain of custody forms, field notes, etc and for proper filing.
 - c) PCW Technicians are responsible for data entry for all field observations into creek GIS database post sampling.
- 6) Follow-up activities
 - a) Lab results from Zymax and PHD Lab are to be reported to PCW Management.
 - i) After initial review, PCW Management will pass on results to PCW Technicians for data entry into GIS databases.
 - b) Once entered, data analysis will begin
 - i) Review will be by PCW staff and other appropriate Technical Advisory Committee members
 - (1) In most situations, data analysis will precede next storm sampling.

Preparation of Sampling Equipment and Forms

1. Sample Bottles

Determine the number of sites to be sampled, and which constituents are to be sampled at each site.

Order the appropriate number of sample bottles from Zymax at least three weeks before a sample event. Make sure to also request the appropriate # of coolers to fit all the bottles. Each cooler will fit two complete sets of bottles.

Check the Water Agency's stock of bacteria bottles, and order more from the Public Health Lab if necessary.

Using waterproof labels (Zymax usually provides plenty of these), label each bottle (including bact bottle) with the station #. Group each station's bottles together (including bact) and place in a clear plastic bag (found on equipment shelf in Water Agency). Put a label on the bag. Place two bags in each cooler. Make sure to group bags of bottles in the coolers according to team # and order of sampling for each team. Put a label on each cooler listing the station #s contained inside and the team # which samples those stations.

For sites which sample bact only, label the bact bottle with waterproof label and place in a smaller cooler along with other bact-only sites for each team.

Include 3 extra bact bottles in the small coolers for duplicates or lost/missing bact bottles.

Store all coolers in the Water Agency.

2. Team Notebooks

Tape on the front of the notebook directions to each site, listed in the most appropriate order (Zymax sites first, bact-only sites last, with the least driving time possible). These directions should have appropriate symbols to designate use of a key to enter the site, or required flow measurement to remind the samplers. This document is located in *PWORKS/group/water_ag/PCW/sampling/sampling docs/front sheet for notebook.doc*.

Place 2 ballpoint pens in the front inside pocket of the notebook and tape them down so they do not fall out. Also place 3 extra labels in this pocket.

Page 1: Sample Day Checklist. This should be modified for each team as necessary. Some teams might need special keys, some measure flows on many creeks, some do not measure any flows, etc. Found in *PWORKS/group/water_ag/PCW/sampling/sampling docs/sampling day checklist.doc*.

Page 2: Public Health Lab Sample Form is found in *PWORKS/group/water_ag/PCW/sampling/sampling docs/PHL_bact forms.xls*. Modify the forms to include all the sites for each team, an asterisk if the site is to be sample for all constituents, and list the sites in the appropriate order, corresponding to the directions list.

Page 3: Public Health Lab Chain of Custody Form, found in the back of the bottom drawer of the PCW file cabinet by the sink in the Water Agency. Fill out one for each team, with all the sites listed in the appropriate area. This form is to be signed off by a team member after returning from sampling. All sites not sampled are to be crossed off this form, and all duplicate sites are to be added, and labeled in coordination with the label on the bottle. When dropping the bottles off at the PHL, lab staff should sign the received section and then take one copy. When results are ready and distributed, the second copy should be sent with the results.

Page 4: Zymax Chain of Custody Form, which should be sent with the bottles. Fill out and process in similar fashion as the PHL COC form above.

Pages 5&6: Site maps for Goleta Teams and Montecito to Carpinteria Teams. Found in *PWORKS/group/water_ag/PCW/sampling/sampling report 2000-20001/western south coast sites.jpg (eastern south coast sites.jpg)*. These files might need some modification as the sample sites change and the team allocations change.

Page 7: List of constituents tested for in each bottle, this should be sent from Zymax with the bottles.

Page 8: Updated Phone Tree, found in *PWORKS/group/water_ag/PCW/sampling/sampling docs/phone tree.xls*.

Page 9: Updated Sampling Team Assignments, found in *PWORKS/group/water_ag/PCW/sampling/sampling docs/sampling team assignments.doc*.

Next few pages: Directions for all sites and all teams, with a tab taped to the top of the specific team's directions. These directions should correspond to the directions on the front of the notebooks, with the same key reminders and flow reminders.

Found in *PWORKS/group/water_ag/PCW/sampling/sampling docs/sample site descriptions.doc*.

Next few pages: Sampling Logistics, found in *PWORKS/group/water_ag/PCW/sampling/sampling docs/generic sampling logistics 8-00.doc*.

Each site needs to have its own section with a divider labeled according to station #. Within these sections are:

- Station Notes sheet (*PWORKS/group/water_ag/PCW/sampling/sampling docs/flow notes.doc*)
or Flow Rate Measurement/Notes sheet
(*PWORKS/group/water_ag/PCW/sampling/sampling docs/creeks to measure flow rate.doc*), depending on whether flow measurement is required (some sites have painted scales on creek banks or bridge pilars)
- Laminated (or in report cover) Thomas guide page with site highlighted, and on the other side the watershed map with site highlighted
- Laminated (or in report cover) pictures of the site and how to get there

3. Other Sample Equipment

Flashlights, each team should have 2 waterproof flashlights, one of which is relatively high powered

Gloves, each sampler should have a pair of dishwashing gloves and disposable latex gloves

Sampling bucket, or asparagus cooker with ropes attached for each team

Small sample scooper for each team for low flow conditions, when the flow is too small to fill a bottle

Deionized water for each team for rinsing the sampling bucket or scooper

Each team can take a harness and lanyard if desired, which are located either in the shelves where the equipment is kept or under the printer table in the Water Agency

A first aid kit in each team's car

Waders

Rain jackets and overalls

Backpack

Pepper spray

Flood control keys

Other keys for special sites

Velocity Blocks to measure flow

Duct Tape

4. Day of storm event

Put all coolers and bottles in hallway grouped according to team #

Lay out all equipment on table, the samplers should go through their checklist and pick up the appropriate equipment. It is useful to have some empty boxes available for all the equipment.