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**CALLEGUAS CREEK WATERSHED
MANAGEMENT PLAN**

**Calleguas Creek Watershed
OC Pesticides and PCBs TMDL
Agricultural Source Identification
Work Plan**

DRAFT

prepared for:

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Table of Contents

Introduction.....	2
Source Identification Steps	3
Source Evaluation and Control Measure Identification.....	4
Schedule.....	5

List of Tables

Table 1. Schedule.....	5
Table 2. Online databases for on-land spill/ contaminated site identification.....	6

Introduction

The *Total Maximum Daily Load for Organochlorine Pesticides, Polychlorinated Biphenyls, and Siltation in Calleguas Creek, Its Tributaries, and Mugu Lagoon (TMDL)* was adopted by the Los Angeles Region Water Quality Control Board on July 7, 2005 and became effective on March 24, 2006. The TMDL was developed to address impairments to Calleguas Creek and its tributaries caused by organochlorine (OC) pesticides and Polychlorinated Biphenyls (PCBs) in water, sediment, and fish tissue. OC pesticides and PCBs are often called historic or legacy pollutants, since concentrations of these chemicals persist in the environment despite enactment of regulations to restrict and/or end their use. The TMDL was adopted to address the continued impairment of waterbodies due to the persistence of OC pesticides in the environment, despite the fact that many of these pesticides have not been used in more than 20 years.

The OCs TMDL Basin Plan Amendment (BPA) contained requirements to develop source identification workplans. The following workplan was developed to address Implementation Task #6 as required in the BPA:

Submit a workplan for approval by the Executive Officer to identify agricultural sources of organochlorine pesticides and polychlorinated biphenyls and implement a collection and disposal program for organochlorine pesticides and polychlorinated biphenyls.

The specific constituents targeted in this analysis are the constituents for which targets are included in the TMDL as shown below:

- Aldrin
- Chlordane – alpha, gamma
- Dacthal
- Dieldrin
- DDT: 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, dicofol (contains trace amounts of DDT)
- Endosulfan: alpha-, beta-, endosulfan sulfate
- Endrin: endrin, endrin aldehyde
- Heptachlor: heptachlor, heptachlor epoxide
- HCH: alpha-, beta-, delta-, gamma-BHC (lindane)
- Toxaphene

This workplan will focus on OC pesticides as PCBs are not typically found in agricultural areas. Should review of PCB spill databases under the urban source identification workplan identify sites in agricultural areas, this information will be considered as part of this study.

The workplan provides a process for identifying agricultural sources in the CCW, prioritizing those sources, and identifying and evaluating control measures to control the high priority sources.

Source Identification Steps

The sources of the above listed constituents can be determined through the following activities:

- Identify and research current and historic uses
- Review and update information regarding current regulations
- Identify current contaminated sites and the extent of historical deposits
- Research the effect of environmental transport
- Evaluate other potential sources

Identify and research current and historic uses. The TMDL Source Analysis contains a large amount of background information on the sources of OC pesticides and PCBs in the CCW. The information provided in the Source Analysis section will be reviewed, updated as necessary, and information gaps identified. Information gaps will be filled by:

- Reviewing literature and internet resources
- Contacting local experts and other agencies or communities who have worked with OC and PCB sources
- Examining local records, databases, and pesticide sales data

Additionally, the use of OC pesticides in Ventura County for agriculture will be compared to other areas in California and the United States. Studies on source identification and control will be reviewed to determine if any information is useful for identifying sources or control strategies for agriculture in the CCW.

OC pesticides may still be in use outside the U.S. For example, as of 1995, the use of DDT was neither banned nor restricted in such countries as Honduras, Suriname, Uruguay, Mauritania, Chad, Pakistan, Malaysia, and New Zealand. Toxaphene is used in such places as Mexico, Suriname, Chile, Argentina, Norway, Spain, Mauritania, Ivory Coast, Chad, Sudan, Bangladesh, and Malaysia (Voldner and Li 1995). Potential conveyance through atmospheric deposition or other pathways to the watershed may be evaluated.

Review and update information regarding current regulations: As of 1997-98, the use of chlordane, DDT, dieldrin, heptachlor, and toxaphene has been prohibited in the U.S., with the exception of two heptachlor-containing products registered with the EPA and dacthal. Current regulations regarding use of these chemicals in California, the United States, and throughout the world will be reviewed. Regulations governing recordkeeping and management of hazardous materials and hazardous wastes can be reviewed to identify possible information sources regarding these compounds and provide information on possible control strategies.

Identify On-land spill sites: Online databases of spill sites, Water Board records, local government files, DTSC records, and historical land use maps may provide information on locations of sites containing elevated levels of OCs. Table 2 contains a list of databases that can be researched to identify possible spill sites for OC pesticides. DPR databases were used to develop information for the TMDL Source Analysis and that information can be updated if necessary.

Research environmental transport: Organochlorine pesticides are not particularly volatile, but because they tend to be stable and persistent in the environment, they can cycle among air, water, soil, vegetation, and animals. Organochlorine pesticides can travel long distances by wind and deposit on soil and water, so they can be found at great distances from their use. They can also be transported internationally on foods and other products treated with them.

Although organochlorine pesticides can evaporate into the air, they adhere strongly to soils or sediments, where their concentrations can build up, often exceeding those of surrounding water by orders of magnitude. Being lipophilic, organochlorine pesticides in water and sediments bioaccumulate in fish and marine life. They also bioaccumulate in plants, birds, terrestrial animals, agricultural livestock, and domestic animals, where their concentrations increase by orders of magnitude as they rise through the food web, particularly as they reach higher organisms. Movement through the food web is also a means for organochlorine pesticides to move around the environment.

The monitoring required under the agricultural waiver program will provide information on the environmental transport of OC pesticides. Additionally, the results from Special Study #2 Identification of High Concentration Areas and TMDL monitoring will be considered to evaluate the environmental transport of the pesticides.

Other potential sources: Storage of OC pesticides in agricultural areas may be a source, but it will be difficult to quantify the magnitude of this source. Research will be conducted to determine if other areas have done collection programs and the results of any identified programs that target agriculture. A collection and disposal program will be developed as required by this TMDL that will provide information on the magnitude of this source.

Monitoring approaches for source identification. The agricultural waiver program includes monitoring to identify possible sources of OC pesticides and a monitoring plan has been approved by the RWQCB to conduct that monitoring. The information collected under that program combined with the information gathered above will be used to identify any additional monitoring needs. Any additional monitoring required will be coordinated with the existing TMDL monitoring and agricultural waiver monitoring requirements to the extent possible.

A summary memo describing the sources identified above will be developed for review by stakeholders in the CCW.

Source Evaluation and Control Measure Identification

Once the sources have been identified, the sources will be prioritized to allow the evaluation of control measures to control potentially significant sources. Using available information, sources can be prioritized based on potential to be present in the watershed, proximity to water bodies and potential to be released, and estimated quantity of OCs associated with the source. In addition, jurisdiction over the source and ability to work with the source should be considered.

Once the sources have been prioritized, the information will be provided to the Ventura County Irrigated Agricultural Lands Group to assist them with identifying control measures for OC pesticides. The control measure identification will be developed in conjunction with the

agricultural waiver requirements and will be considered in the development of the Agricultural Water Quality Management Plans.

As part of the source control program, a collection and disposal program for stored agricultural OC pesticides will be implemented. To the extent possible, this program will be coordinated with existing urban collection programs and the program being developed under the urban source identification workplan. However, if the source identification identifies any other agricultural collection programs that demonstrate different approaches are needed to address agricultural sources or the urban programs cannot accept agricultural pesticides, a separate collection program may need to be developed.

Schedule

The workplan consists of three steps: source identification, source prioritization, and control measure identification. The following table summarizes the schedule for completing these steps and implementing the collection and disposal program.

Table 1. Schedule

Action	Estimated Completion
Source Identification	9 months after EO approval of workplan
Source Prioritization	3 months after completion of source identification
Control Measure Identification	1 year after completion of the source prioritization
Collection and Disposal Program	March, 2011

Table 2. Online databases for on-land spill/ contaminated site identification

Database	Web Address	Responsible Agency	Criteria for Inclusion in Database	Description
Accidental Release Information Program (ARIP)	http://yosemite.epa.gov/oswer/ceppoweb.nsf/content/ds-epds.htm#arip	EPA	Significant release of a hazardous substance	The ARIP database collects information on accidental releases of hazardous chemicals at fixed facilities. Facilities submit information on their facility, the circumstances and causes of a particular spill, and the accidental release prevention practices and technologies in place prior to, and added or changed as a result of, the event. The current version was updated in July 2000. This database contains incidents from 1986 to 1999. This database contains information on facilities throughout the country. It can be downloaded to an Excel file and sorted.
National Priorities List (Superfund) Database	http://www.epa.gov/superfund/sites/query/basic.htm	EPA	Hazardous waste site	This database can be searched by pollutant and county making the information very accessible. These profiles are very comprehensive and provide plentiful information on site histories.
Envirofacts Multisystem Database	http://www.epa.gov/enviro/html/multisystem_query_java.html	EPA	Varies depending on each database	The Envirofacts Query Form allows 13 of EPA's environmental databases to be searched for facility information, including toxic chemical releases, water discharge permit compliance, hazardous waste handling processes, Superfund status, and air emission estimates. This database can be searched by pollutant as well as county. NPDES permits are included in this database, so not all results indicate a contamination problem.
Spills, Leaks Investigation & Cleanups (SLIC) Database	http://www.swrcb.ca.gov/rwqcb4/Lustis/SLIC.xls	SWRCB	Unauthorized discharge polluting or threatening to pollute a waterbody	This database includes facilities throughout California. It can be sorted by city or county. A keyword search can locate sites of concern.
Leaking Underground Storage Tank Information System (LUSTIS)	http://www.swrcb.ca.gov/rwqcb4/Lustis/Lustis.xls	SWRCB	Leak from underground storage tank	This database includes facilities in Region 4. It is sorted by city but a keyword search can locate sites of concern.

Table 2. Online databases for on-land spill/ contaminated site identification

Database	Web Address	Responsible Agency	Criteria for Inclusion in Database	Description
DTSC's CalSites	http://www.dts.c.ca.gov/database/calsites/cal001.cfm	DTSC	Site has confirmed hazardous contamination	This database can be searched by county but not by pollutant. Once contaminated sites within a county of interested are retrieved, profiles on individual facilities must be read to ascertain if PCBs or OCs are a concern. These profiles are, for the most part, very comprehensive and provide plentiful information on site histories.
DTSC's Cortese List	http://www.dts.c.ca.gov/database/Calsites/Cortese_List.cfm	DTSC	Site has potential or confirmed hazardous contamination	The Hazardous Waste and Substances Sites (Cortese) List is a planning document used by the State, local agencies and developers to comply with the California Environmental Quality Act requirements in providing information about the location of hazardous materials release sites. DTSC is responsible for a portion of the information contained in the Cortese List. Other State and local government agencies are required to provide additional hazardous material release information for the Cortese List. This website provides DTSC's portion of the Cortese List, which consists of the Calsites database and sites that are Certified with Operation and Maintenance. Similar to CalSites, this database can be searched by county but not by pollutant. Once contaminated sites within a county of interested are retrieved, profiles on individual facilities must be read to ascertain if PCBs or OCs are a concern. These profiles are, for the most part, very comprehensive and provide plentiful information on site histories.
DTSC's Voluntary Cleanup Fund	http://www.dts.c.ca.gov/database/calsites/cal001.cfm	DTSC	Voluntary investigation and/or cleanup where contamination is a low threat to public health or the environment	This database can be searched by county but not by pollutant. Once contaminated sites within a county of interested are retrieved, profiles on individual facilities must be read to ascertain if PCBs or OCs are a concern. These profiles are, for the most part, very comprehensive and provide plentiful information on site histories.
Site Mitigation and Brownfields Reuse Program (Calsites) Deed Restrictions	http://www.dts.c.ca.gov/database/calsites/deed_list_contaminant.cfm	DTSC	Site has use limits placed by DTSC due to possible or necessary cleanup	This database can be searched by pollutant or county.

Table 2. Online databases for on-land spill/ contaminated site identification

Database	Web Address	Responsible Agency	Criteria for Inclusion in Database	Description
Hazardous Waste Management Program (HWMP) Deed Restrictions	http://www.dts.c.ca.gov/datab ase/LUC/county_list.cfm	DTSC	Site has use limits placed by DTSC due to possible or necessary cleanup	This database reports results in two parts: deed notices and land use restrictions. The database can be searched by county but not pollutant. There are only 32 sites in this entire database.
National Response Center Data	http://www.nrc.uscg.mil/foia.html	US Coast Guard	All chemical and oil spill data reported to the National Response Center is available on this site.	This database can be searched by pollutant and county, city or state. Other more specific information can also be queried. Spill reports include date, location and a description of the spill incident.