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**CALLEGUAS CREEK WATERSHED
MANAGEMENT PLAN**

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

DRAFT

prepared for:

**LOS ANGELES REGIONAL WATER QUALITY
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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 #5 as required in the BPA:

Submit a workplan for approval by the Executive Officer to identify urban, industrial and domestic sources of organochlorine pesticides and polychlorinated biphenyls and control methods and to 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)
- PCBs
- Toxaphene

The workplan provides a process for identifying urban 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

For PCBs, additional work is necessary to identify urban sources. PCB-containing products included caulking, sealants, degraded paint and coatings, natural gas line condensates, insulation and sound-dampening materials, plastics, foam rubber and rubber parts, adhesive tape, fluorescent light ballasts, small capacitors, other electrical equipment, gaskets in duct systems and gaskets in insulated windows. Research has been conducted regarding potential releases of PCBs during demolition of older buildings (Switzerland, Boston) that will be reviewed for relevance to the CCW. In addition, while PCBs are no longer being produced, PCB-containing equipment may still be in use and buildings constructed with PCB containing materials are still in existence. Potential releases from these sources will also be evaluated.

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 PCBs or OCs. Certain historic land uses may also be more likely to be associated with elevated levels of PCBs (e.g., industrial areas, power plants, transformers). Table 2 contains a list of databases that can be researched to identify possible sources of PCBs. Some of these databases may be searched for other chemical compounds as well and should be useful for identifying potential sites in the watershed associated with 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.

Accumulated sediments in catch basins, stormwater conveyance systems, etc. may also provide information on pathways conveying OCs and PCBs to waterways. Accumulated sediments may also be useful in identifying geographic areas to evaluate. 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: Historical records for hazardous waste collection facilities may provide information regarding quantities of pesticides in landfills. Residential storage of old pesticides may be another source but this may be difficult to quantify. 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. Monitoring data that can assist with source identification may be available and possible sources will be contacted for available information. If available information indicates that monitoring may be necessary to identify a significant source, a monitoring plan may be developed. The following may be considered for evaluation:

- Wastewater influent
- Storm water runoff from different land uses
- Water supply, including surface water and ground water sources.
- Landfill leachate and hazardous waste management facility discharges
- Sewer sediments

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 and PCBs associated with the source. In addition, local agency jurisdiction over the source and ability to regulate or work with the source should be considered.

Once the sources have been prioritized, control measures will be identified for the highest priority sources and evaluated for effectiveness and cost to determine a source control plan.

Control strategies will likely be grouped by the source. Based on the available information, the following four categories of sources were determined:

- agricultural and urban pesticide use,
- accumulated sediment in stormwater conveyances
- Unenclosed sources (e.g., building materials),
- On-land spill site

For each category, a number of control measures could be considered. Possible control strategies are discussed below for each category.

URBAN PESTICIDE USE

As most of the OC pesticides are banned, the primary control option for OC pesticide use to be considered is education regarding which pesticides are of concern and developing approaches to collecting any remaining pesticides that may be stored in residential, commercial or agricultural areas. As required by the TMDL, a collection and disposal program will be described. This program will be integrated with existing household hazardous waste programs to the extent possible.

ACCUMULATED SEDIMENTS

Accumulated sediments can be addressed through a number of approaches though not all may be feasible in the CCW. Increased maintenance (e.g., catch basin and conveyance system cleaning) is within the direct control of the municipality and may be straightforward to implement because there may already be an established program with staff and resources that may only need to be augmented. Other options municipalities may implement to address accumulated sediments, depending on available resources, include reconstructing industrial area streets, removing or capping PCB-contaminated roadside soils, creating sweepable pavement surfaces, and constructing facilities to treat street runoff.

Reducing levels in runoff may also reduce accumulation in sediments and reduce releases to waterways. Urban runoff is collected in storm drains and can be treated through diversion through swales and bioretention areas. Detention basins and constructed wetlands can also reduce pollutant levels in stormwater.

UNENCLOSED SOURCES

Possible control options for unenclosed sources of PCBs include the implementation of appropriate practices during demolition, remodeling, and electrical equipment replacement to avoid PCB releases. Municipalities can encourage voluntary control measures for sealants, paint, and other building-related materials. Additionally, education programs to make sure that fluorescent light ballasts and transformers are properly disposed of can prevent PCB discharges. Regulatory approaches could also be developed.

Encouragement of voluntary efforts would require outreach to businesses and developers. Regulations governing disposal of materials high in PCBs may require safer practices, depending on landfill requirements. Landfills authorized to accept hazardous wastes, including PCBs, should implement plans to eliminate or control exposures to the public, and businesses disposing of these wastes must comply with the landfill requirements.

ON-LAND SPILL SITES

In many cases, control of on-land spill sites will involve working with other agencies with the regulatory authority to initiate or facilitate a cleanup through one of the programs available through Cal EPA. Local municipalities may or may not have jurisdiction over identified site cleanups. In addition, approaches will depend on identification of a property owner or responsible party. Different options can be pursued for the following scenarios:

- Contaminated site that is a candidate for redevelopment
- Contaminated site where the owner/ responsible party is known but is not a candidate for redevelopment
- Abandoned contaminated site
- Site that is suspected but not known to be contaminated.

If identified on-land spill sites will need to be evaluated on a case-by-case basis to determine the possibility of the site contributing to in-stream concentrations and the possible control measures.

The control strategies discussed above are examples of what will be considered through this study. However, the source identification and source prioritization work will dictate the control measures identified for the CCW. All control measures will be evaluated for effectiveness and cost.

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	6 months after completion of 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.
PCB Transformer Registration Database	http://epa.gov/pcb/data.html	EPA	Transformer with greater than 500 ppm PCBs	This database contains information submitted by facility owners on PCB-containing transformers on their property. The last update was July 2004. 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.
PCB Activity Database (PADS)	http://epa.gov/pcb/data.html	EPA	Generator, transporter, or permitted disposer of PCBs	The PCB Activity Database System (PADS) is used to monitor the activities of polychlorinated biphenyls (PCB) handlers. The database is updated quarterly with the most recent update in September 2004. PCB handlers submit information on their facilities including the type of activities where they handle PCBs. This database contains information on facilities throughout the country. It can be downloaded to an Excel file and sorted.
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.

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

Database	Web Address	Responsible Agency	Criteria for Inclusion in Database	Description
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 for "PCB" or "polychlorinated biphenyls" 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 for "PCB" or "polychlorinated biphenyls" can locate sites of concern.
DTSC's CalSites	http://www.dts.c.ca.gov/databas/calsites/calf001.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 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/databas/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 are a concern. These profiles are, for the most part, very comprehensive and provide plentiful information on site histories.

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

Database	Web Address	Responsible Agency	Criteria for Inclusion in Database	Description
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 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 and includes 25 sites with PCB material contamination and 18 sites with PCB contamination. Searching for sites in the Bay Area will not be time-consuming
Hazardous Waste Management Program (HWMP) Deed Restrictions	http://www.dts.c.ca.gov/database/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.