

**CITY OF CULVER CITY
BALLONA CREEK WATER QUALITY IMPROVEMENT PROJECT
SCOPE OF WORK**

1. BACKGROUND

The City of Culver City proposes to install a Continuous Deflective Separation (CDS) water pollution trap at the outlet of a 102 inch storm drain located just west of the Overland Avenue Bridge along Ballona Creek (see attached map). The location is adjacent to the elementary, middle and high school campuses as well as a branch of the Los Angeles County Public Library.

Ballona Creek is a major waterway and open space that winds through the City of Culver City out to Santa Monica Bay. Ballona Creek is on the Environmental Protection Agencies (EPA) 303d list of Impaired Waters. Virtually anything deposited on a street within the 130 square-mile watershed winds up in the ocean via the concrete channel. The area is 65% residential, 13% commercial, 4% industrial, and 12% open space and 4% public space.

Ballona Creek ranks the highest among the watershed's 28 drainage basins in emissions of all nine categories of pollutants (Total Suspended Solids, Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD), phosphate, nitrate, lead, copper, zinc, oil and grease). It is estimated that of all the urban runoff entering the Bay, Ballona Creek contributes 69% of the oil and grease, 60% of the BOD, and more than 50% of the lead, copper, zinc, COD and phosphate.

High indicator bacterial counts from sources both known (animal waste, sewage overflows) and unknown (illegal sewer connections, leaking sewer lines) have historically been found in Ballona Creek.

Sediment deposited by Ballona Creek is contributing to the shoaling problem at the entrance to Marina Del Rey. The shoals, which are a hazard to boating, are heavily contaminated with industrial and urban runoff that flows from upstream. The high levels of heavy metals, especially lead and petroleum hydrocarbons, have made the dredging and disposal of the material an extremely costly and environmentally hazardous situation.

Tremendous quantities of trash and debris are washed into the creek channel and flow into the Bay, particularly after a major storm. The creek often has an oily sheen due to oil-contaminated runoff and the presence of natural oil seeps in the watershed.

The City of Culver City in collaboration with Ballona Creek Renaissance and several environmental organizations has been strategizing on methods of rehabilitating and enhancing nine mile long Ballona Creek. This project is the first step towards a long-term water quality improvement in Ballona Creek and is looked upon as a prototype that can be duplicated along the creek at various locations, as well as by other cities experiencing many of the same problems.

The CDS unit is a cost-effective way to separate gross solids from liquids. The unit can effectively protect waterways from the entry of gross pollutants such as plastic, paper, leaves, cigarette butts, packaging, syringes, etc., as well as from much of the sediment load that is transported by the water. The CDS unit can collect anything larger than a match head and is expected to treat approximately 26 to 35 cfs.

The hydraulic characteristics of the CDS technology and the unique design of the separation chamber provides an excellent opportunity to achieve maximum exposure of sorbent material and will help capture and retain the low concentrations of free oil and grease recently observed in Ballona Creek.

2. GOALS AND OBJECTIVES

The Ballona Creek Water Quality Improvement Project is aimed at achieving specific water quality goals such as the following:

- To reduce the amount of TSS, hydrocarbons, fecal coliforms and total coliforms
- Incorporate an ongoing water quality monitoring program through sampling and data collection/analysis
- Capture a large percentage of free oil and grease
- Capture a large percentage of trash, vegetation and TSS
- Develop an education and outreach program

The specific water quality goals involved with this project are to reduce suspended solids, hydrocarbons, fecal coliforms and total coliforms. Oil and grease contain a wide variety of hydrocarbon compounds that have an affinity for sediments and much of the hydrocarbon load absorbs to particles and settles out. It is anticipated that the CDS unit can capture up to 80-90% of free oil and grease sorbents, 70-80% of the trash, vegetation and total suspended solids.

In addition, this project will allow for experimental observations to determine if removal of the TSS, debris, hydrocarbons; have positive impacts on reduction of bacteria indicators.

3. SCOPE OF WORK

TASK 1	December 2001 to February 2002	Design, Preparation of Construction Documents and Advertise for Construction Bids
TASK 2	March 2002	Selection of Contractor
TASK 3	April 2002	Council Approval of Contract Pre Construction Meeting
TASK 4	May 2002 to June 2002	Construction and Installation
TASK 5		Sampling and Monitoring Water Quality

	<p><u>Ongoing</u> From January 2002 through July 2003</p>	<p>Culver City shall collaborate with The Santa Monica Baykeeper for the sampling and monitoring of the water quality to establish effectiveness of such a system in treating similar runoffs. Samples shall be collected and analyzed only by trained staff or volunteers.</p> <p>The samples shall be collected and analyzed for the following parameters:</p> <ul style="list-style-type: none">• pH (Waterproof pocket meter)• Total Coliform (MPN IDEXX 2000 method)• E. Coli (MPN IDEXX 2000 method)<ul style="list-style-type: none">• TSS (Photometric method) <p>Assuming there is a flow of water, at least three samples shall be taken as described below:</p> <ol style="list-style-type: none">1. Direct flow at the inlet and/or from the CDS unit discharge.2. Under the Overland Bridge located upstream of the inlet.3. Approximately 60 feet downstream of the inlet and upstream of the next inlet. <p>Throughout this project the Santa Monica BayKeeper shall use its Southern California Volunteer Monitoring Quality Assurance Protection Plan (QAPP). Representatives of the EPA, SWRCB, LARWQCB, and the Southern California Marine Institute have approved this plan. If the CDS unit is at its capacity, a sample shall be taken of the bypass flow. Additional samples shall occasionally be taken to comply with the QAPP.</p> <p>Monitoring shall be performed at least once a week on all of the above parameters until installation is complete. Monitoring will continue on this schedule one year after the installation of the CDS unit.</p> <p>Trash removed from the CDS unit each time shall be quantified using established protocols (to be determined in consultation with the SMBRP, the Los Angeles Regional Water Quality Control Board (LARWQCB), and the Los Angeles County Department of Public Works).</p>
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TASK 6	<p><u>Ongoing</u> From January 2002 through September 2003</p>	<p>Data Collection and Analysis (18 months from grant approval date) Baykeeper shall provide monitoring data to the City of Culver City on a quarterly basis. Any alarming increase in TSS shall be reported immediately to the City, as this may indicate a need for maintenance on the CDS unit. Upon completion of the project, the BayKeeper shall provide a comprehensive report to Culver City including all monitoring results.</p>
TASK 7	<p><u>Ongoing</u> From January 2002 through January 2003</p>	<p>Education and Outreach The Santa Monica BayKeeper shall administer the education and outreach portions of the project that has overwhelming support from the Culver City Unified School District. The location selected for this project is adjacent to Farragut Elementary School, the Culver City Middle School and the Culver City High School. The goal is to teach at least ten (10) classes during the 2001-02 school year. The proposed education and outreach program consists of three components as described below:</p> <p>Classroom Education Program This section shall consist of a slide show in the classroom followed with a discussion on urban runoff and how to reduce impacts of urban runoff. Educational packets shall be distributed to each student with information on Ballona Creek ecology and the importance of environmental awareness. Each student shall also be asked for a commitment that they and their family promise to reduce pollution coming from their household.</p> <p>Conduct Educational Field Trips The science classes shall take a field trip to the Ballona Creek Overland Avenue location where they shall get a hands-on tour that includes: viewing and identifying wildlife, testing the oxygen and pH levels in the creek, salinity testing and test for bacteria indicators (Total, <i>E. Coli</i>, and Enterococci).</p> <p>Class Project The final part of the education program shall be a class project and discussion on the data collection results. Students will help to assess the sampling results and create an informal report of findings.</p>

Task 8	Twice Annually	Maintenance and Operation The City of Culver City shall maintain the system and may use outside contractors to provide the necessary removal and upkeep. Maintenance schedule may be adjusted based on the results of the water quality monitoring.
Task 9	June 2004	Grant Close-out and Evaluation