

EXHIBIT D
MAINTENANCE AGREEMENT - PILOT STUDY
MONITORING REQUIREMENTS

Comprehensive protocols have been developed by the Sacramento Stormwater Quality Partnership¹ to study and evaluate the performance of proprietary stormwater quality treatment device (Device(s)) in Sacramento County. These protocols were published in the *Investigation of Structural Control Measures for New Development Final Report* (Larry Walker and Associates, 1999), prepared for the local agencies participating in the Sacramento Stormwater Quality Partnership. The document can be downloaded at www.sacramentostormwater.org or a hard copy can be obtained by contacting the City or County of Sacramento Stormwater Management Programs.

The following minimum requirements for a pilot study have been developed for consistency with the protocol described above. The intent of the pilot study is to provide data, which when considered along with data from other similar studies in the county, will allow the local agencies to make a determination about future acceptance/use of such Device(s) in Sacramento County. If, at the conclusion of the monitoring study, it is shown that the Device(s) did not fully satisfy the local agency requirements for pollutant removal performance, removal of the Device(s) will not be required.

Maintenance requirements defined elsewhere in this Agreement shall continue to apply to this project, regardless of the outcome of the pilot study.

Sampling Requirements

- Minimum number of storms per site: 10 (may occur in two consecutive years)
- Storm depth: from 0.15 to 1.50 inches
- Runoff duration: from 2 to 24 hours
- Average storm intensity: 0.05 to 0.25 inches/hour
- Type of samples: flow-weight composite samples, except when grab sampling is required by standard test protocol.
- Sampling procedure:
 - To the extent possible, sampling is to occur through the entire period of runoff.
 - Sampling is to occur for a period that represents at least 60% of the volume of each storm with an overall average of all storms of at least 75%.
 - A minimum of ten aliquots must be taken during each sampled storm.
- Analytes:
 - Influent and effluent TSS, pH, total recoverable zinc, copper, cadmium, oil/grease, TPH and, TP and TKN. Suspended Sediment Concentration (SSC) is required in addition to TSS.

¹ Formerly known as the Sacramento Stormwater Management Program, established in 1990. Includes member agencies: Sacramento County and Cities of Citrus Heights, Elk Grove, Folsom, Galt, Rancho Cordova and Sacramento.

- If the device is also intended to remove dissolved constituents, the analytes shall include the dissolved species of the targeted constituents.
 - Chemical samples are to be preserved following analytical procedures specified by USEPA protocols and are to be analyzed using USEPA protocols. If no USEPA protocol exists, such as SSC, then ASTM, AWWA, or USGS testing protocols must be followed.
 - Analytical analysis is to be done by a certified laboratory.
- At the end of the test period, the sediment shall be removed, quantified, and analyzed. The sediment will be evaluated for the following: moisture content, particle size distribution, organic content, oil/grease, and zinc. To analyze particle size distribution, both the wet and dry sieve test procedures will be used, following ASTM.

Required Plans and Reports

Monitoring Plan

Prior to the County of Sacramento's approval of the Device(s) for the project, the Owner shall submit a monitoring study plan for review and approval by the County. The monitoring plan shall describe, at a minimum: anticipated start & completion date (site shall be stabilized before the start date); the description, installation and use of monitoring equipment; the sampling procedures, analytes to be tested, testing protocols, quality assurance procedures; and qualifications/names of personnel and laboratory to conduct the work.

Interim Documentation

During the course of the pilot study, documentation shall be provided to the County upon request to provide interim results.

Final Monitoring Report

Within 90 days of the conclusion of the study, the Owner shall submit to the County a report documenting results of the study. The final report shall include at a minimum:

- Description of the test site, including: total acreage, total impervious acreage, a description of landscaping if relevant, and the acreage draining to the device (if it differs from total acreage).
- Description of the drainage system.
- Description of the treatment device including the design peak capacity
- Complete drainage calculations showing the calculations to size the treatment device for the test site.
- All raw data including laboratory reports. All data is to be reported including rejected data with an explanation for the rejection.
- Statement from the analytical laboratory certifying the specified analytical procedures were followed in the analysis of the samples and that the appropriate preservation methods were followed.
- Calculation of efficiency of each storm by comparing the influent and effluent concentrations of each storm.

- Calculation of the efficiency for all storms by comparing the total aggregate inflow loading of all storms to the total aggregate outflow loading for all storms.
- Present a plot of influent concentration versus efficiency for TSS for each storm sampled. All data is to be plotted including rejected data with an explanation for the rejection.
- Start and end times of the precipitation period.
- Start and end times of the runoff period of each sampled storm.
- Start and end times of the sampling period of each sampled storm.
- Total rainfall depth.
- Rainfall depth during the sampling period.
- Total runoff volume
- Runoff volume that occurred during the sampling period
- Statement of certification signed by an officer or Professional Engineer of the company performing the monitoring that the protocol was followed.

Completion of Monitoring

The pilot study monitoring requirements will be met when either of the following is satisfied:

- The monitoring requirements (number of monitoring events and specific protocol) listed above have been completed and reports submitted to the County for review and verification.

OR

- Based on the results of its ongoing study of proprietary devices, the Sacramento Stormwater Quality Partnership accepts the selected proprietary device for general use as a stormwater quality treatment option in Sacramento County. If this happens during the course of the pilot study, the Owner may submit a written request to the County to discontinue the study. Monitoring data collected up to that point shall be sent to the County for its use.