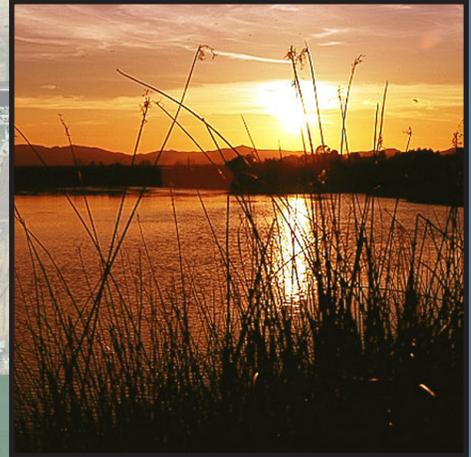


**City of Antioch
Proposition 1E Grant Proposal
Attachment 6**

**Monitoring, Assessment, and
Performance Measures**



City of Antioch
Proposition 1E Stormwater Flood Management Grant Proposal

ATTACHMENT 6 –
MONITORING, ASSESSMENT & PERFORMANCE MEASURES

This attachment describes information on the monitoring, assessment and performance measures for the *Drainage Area 55 – West Antioch Creek Channel Improvements Project*. In accordance with the PSP, the following details are provided:

PSP Requirements

- ✓ The metrics used to evaluate project performance **(see pg 6-2)**
- ✓ The monitoring systems in place to verify project performance **(see pg 6-2)**
- ✓ A description of the data collection process and how the data will be evaluated to ensure the goals and objectives of the IRWM Plan are being met **(see pg 6-2)**
- ✓ A discussion of how the project is consistent with the Basin Plan **(see pg 6-3)**
- ✓ A project performance measures table including **(see pg 6-4)**:
 - Project Goals
 - Desired Outcomes
 - Output Indicators
 - Outcome indicators
 - Measurement Tools and Methods
 - Targets

Task 1 – Drainage Area 55 - West Antioch Creek Channel Improvements

The City of Antioch is partnering with the Contra Costa County Flood Control District (District) to address chronic flooding of West Antioch Creek through the installation of three 14' by 7' Caltrans Standard Box Culverts spanning 620 feet. These box culverts will increase the storm water capacity of the creek, replacing an inadequate concrete trapezoidal ditch and arch culverts. This installation will provide a 25-year level of flood protection (the maximum achieved without expanding the AT&SF RR crossing) to commercial and multi-family properties adjacent to the channel and within a Disadvantaged Community Area by addressing a gap that currently exists between channel improvements made by the District in 1993 and the earthen channel on the Antioch Fairgrounds property.

This project will (1) **improve flood protection** for the community, including disadvantaged communities (DACs); (2) **eliminate the significant public health threat** to this Disadvantaged Community (DAC) caused by chronic flooding and exposure to constituents of concern in degraded flood waters; (3) **provide water quality and habitat protection benefits** by reducing flood-related debris and pollutant loading in West Antioch Creek, which flows directly into New York Slough, and (4) **provide recreation benefits**, as flooding in this area often results in the closure of the Contra Costa County Fairgrounds, the Antioch Little League Complex and Prosserville Park.

Metrics Used to Evaluate Project Performance

Existing watershed hydrology and hydraulic runoff criteria established by the District will be utilized to measure specific storm runoff events and compare to improved channel capacity projections. Current channel capacity restrictions cause localized flooding on an annual basis; post-project, higher levels of protection (Q25-Q100) will be provided. Actual channel performance will be measured in the field during specific documented storm events.

The City of Antioch will also keep track of the monetary flood damages, pre and post-project, as well as the number of road closures due to flooding and number of recreation area closures due to flooding pre-and post project.

Monitoring Systems

The District has established hydrology and hydraulic information for this watershed area. Specific storm events will be compared against existing data to verify channel performance against design criteria.

Spreadsheets will be used to track monetary damages and number of road and recreation area closures.

Data Collection and Evaluation Process

Actual rainfall data from specific storm events will be collected and used to analyze/verify hydrology and hydraulic runoff conditions to determine the performance of the designed channel improvements against actual flow conditions. Projected infiltration rates and proposed development within the watershed will be monitored and review on a periodic basis.

Rainfall data will be collected continuously in the future to ensure that hydrology and hydraulic flow projections were established correctly. Future minor capacity adjustments can be made to adjust to changes in design flow criteria.

Spreadsheet data on monetary damages, road and recreation area closures due to flooding will be evaluated against pre-project conditions as another measure of the effectiveness of the project.

Consistency with Basin Plan

This project will eliminate flooding in an urbanized area and subsequent introduction of polluted flood waters into the Delta, potentially reducing loading of bacteria, biostimulatory substances, chemical constituents, floating material, mercury, oil and grease, pesticides, salinity, sediment, settleable material, suspended material, and taste-and-odor-causing compounds. In addition, pollution from flood waters could cause pH impacts and contribute to increased temperature, turbidity, color and toxicity and decreased dissolved oxygen. As a result, this project is consistent with the Region 5 Basin Plan.

Project Performance Measures Table: Drainage Area 55 - West Antioch Creek Channel Improvements

Project Goals	Desired Outcomes	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets
1. Eliminate/Reduce flooding occurrences and associated damages	1. Improve-Flood Protection level	1. Compared improved channel capacities against actual storm events	1. Reduction/elimination of flooding occurrences in the area 2. Reduction of flood-related damages 3. Reduction of number of road closures due to flooding 4. Reduction of number of recreation area closures due to flooding	1. Rainfall collection and project hydraulic runoff conditions 2. Tracking of monetary flood damages pre- and post-project 3. Tabulation of number of road closures and recreation area closures due to flooding pre- and post- project	1. Q25-Q100 levels of flood protection