

Attachment 7 Technical Justification

Summary of Physical Benefits:

The proposed Project will provide the following physical benefits:

- a. Flooding Protection**
- b. Enhance Water Supply**
- c. Air Quality Improvement through Green House Gas Emissions Reduction**
- d. Multipurpose Recreational Trail**
- e. Water Quality Improvement**

Description of Physical Benefits:

The expected Project physical benefits are more specifically describe in the following section. Refer to Table 7 for quantified project benefit details.

I. Flooding Protection

Historically, the City has experienced flooding along the Calimesa Creek during storm events. The proposed Creek improvements will convey stormwater from the proposed basin at 5th Street to Interstate 10 Freeway. The existing creek is not adequately sized to convey 100 year frequency discharge of 1,065 cubic feet per second (cfs) in existing condition, creating flooding hazards along business and residential developments and, moreover, at public safety facilities. Flooding in these areas is well documented by photos, as shown in Attachment 7-2. The flooded inundation area is generally bounded by Avenue J on the north, Park Avenue on the east, Avenue L on the south, and Interstate 10 on the west. The 62 acre flood inundation area has been determined using existing topography, existing hydrology, FEMA flood mapping, creek and street cross sections, and City maintenance records the flood inundation area was determined, as shown on Attachment 7-1. The referenced exhibit highlights areas along and immediately surrounding the Project experience flood inundation up to 1.5 feet. The Project will provide 100 year flood protection to this inundation area. Areas which flood protection is enhanced includes commercial, single family and multi-family residential developments, and major and minor streets. See Table 7 for flood protection provided during various storm events. Additionally, there are no uncertainties related to the project benefits and the Project will not create any adverse effects.

II. Enhance Water Supply

The City of Calimesa is served by Yucaipa Valley Water District (YVWD). Since 2002, YVWD has relied on costly import water as a supplemental water supply in an effort to reduce groundwater overdraft. In recent years, import water supplied 28% of demand. The City's Project will create new water supplies through stormwater capture and recharge. Recharged stormwater will increase groundwater supplies and reduce groundwater overdraft in the Yucaipa Groundwater Basin. For Calimesa, YVWD purchases import water through San Gorgonio Pass Water Agency at \$277 per acre-foot.

The Project intends to construct the necessary improvements to enhance regional groundwater recharge. Annual storm runoff for the Project's 890 acre tributary area is estimating using the historic annual rainfall of 21 inches and applying a loss rate of 43% to account for evapotranspiration, based on Chino Basin Watermaster's 2010 Recharge Master Plan, see attached table. Approximately 884 acre-feet of storm water is expected to reach the Basin annually, portions of which will be recharged reducing the region's dependence on import water. The basin is not of adequate size to retain and recharge all runoff for the watershed. Based on the high annual rainfall amount and the number of moderate storm events in a typical year, it is estimated that the basin will recharge 200 acre-feet per year. Without the project, no new yield will be captured with projected amounts as presented above. Beneficiaries are all those served by YVWD and surrounding communities. Annual Project physical benefits for the life of the Project are highlighted in Table 7.

III. Air Quality Improvements through Green House Gas Emissions Reduction

The Project provides for reduction in greenhouse gas emissions through development of local water supplies that eliminates the need for imported water of the same quantity. The Project conserves local water reducing dependence on imported water in the amount of approximately 200 acre-feet per year. By avoiding delivery through the state's system, a significant reduction in greenhouse gas emissions is attained. According to the California Air Resource Control Board, the energy required to deliver State Water Project water to Southern California is 3,519 kW/hrs per acre-foot. Using the recommended conversion unit amount of 0.0004 kWh to tons of CO₂, green house gas emissions reduction of approximately 300 tons CO₂ per year for the project will be achieved. Three different sources and conversion factors were used to ensure accuracy, as shown on the attached table. Annual Project physical benefits for the life of the Project are highlighted in Table 7.

IV. Multi-Purpose Recreational Trail

In 2010, the City adopted its Downtown Business District (DBD) Code. The DBD comprises approximately 142 acres, including the Calimesa Creek Project area. The

adopted code establishes new development regulations, design guidelines, and street improvement plans to set this area apart from other commercial areas within the City. The code also created the Calimesa Creek Overlay with specific guidelines for the successful redevelopment of the creek area. The intent of the Calimesa Creek Master Plan is to promote public access to pedestrian use along Calimesa Creek, to protect and enhance the scenic character of the Downtown, and to improve development potential. The Project will provide a recreational asset to the community. This will be accomplished by connecting the project to the existing public streets. The design will likely include viewing and seating areas, trail markers and identification, native landscaping and habitat educational signage, as highlighted in the Calimesa Creek Master Plan, included with supporting documents in Attachment 3.

V. Water Quality Improvement

The Project will reduce urban runoff discharge pollutants including: sediment, nutrients, trash, metals, bacteria and virus, oil and grease, organics, and pesticides. Impervious surfaces associated with development increase the rate and volume of stormwater runoff that may increase downstream erosion potential and associated potential water quality impairment. Urban runoff makes its way to the Santa Ana River which is on the Santa Ana Regional Water Quality Control Board 303(d) List of Water Quality Limited Segments. Pollutants that settle on the impervious pavements and rooftops are washed untreated into nearby stream channels, increasing pollution in receiving water bodies. The Project will reduce approximately 200 acre-feet per year of stormwater runoff and subsequent pollutant discharge through the use of the basin to infiltrate the runoff into the soil.

Infiltration basins use the natural filtration to remove pollutants in stormwater runoff. Filtration provides for high pollutant removal efficiency.



LEGEND:

- EXIST. STORM CHANNEL/CREEK
- CALIMESA CREEK TRIBUTARY AREA
- PROP. CREEK IMPROVEMENTS
- PROP. BASIN

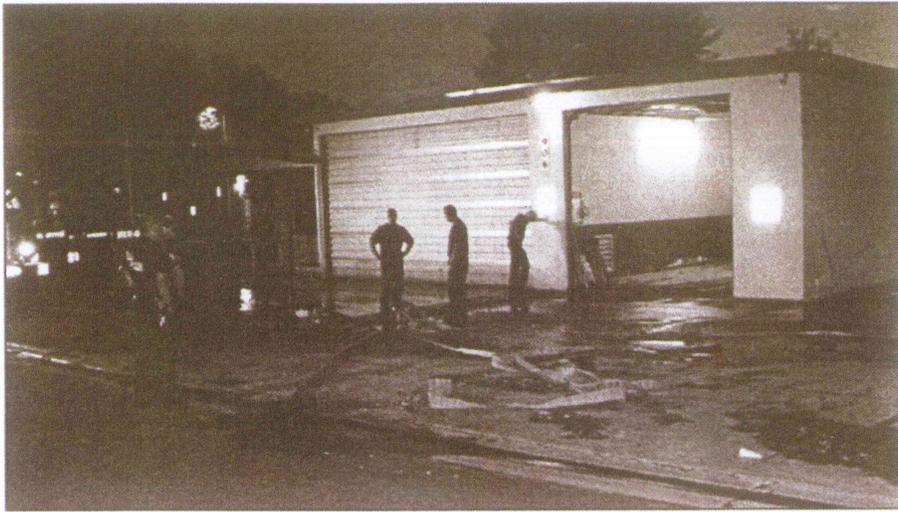


SCALE: 1" = 150'

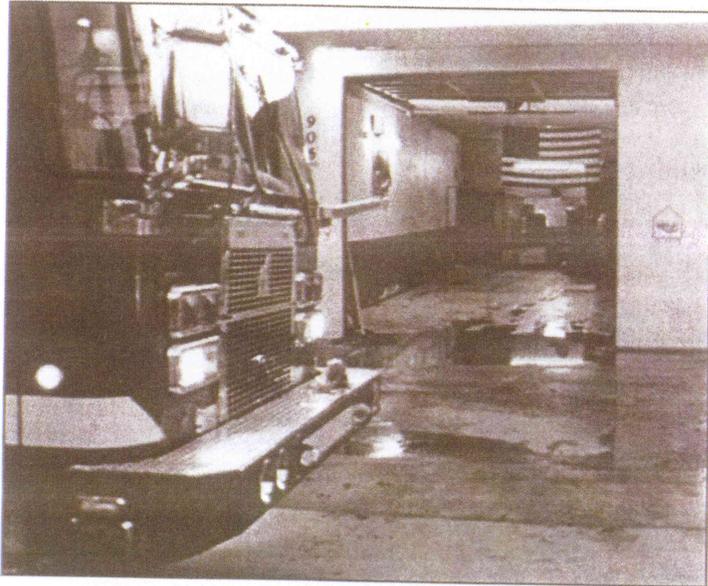
S:\CADD\133-02 Calimesa Creek\Att 7-1_Flood Inundation Exhibit.dwg

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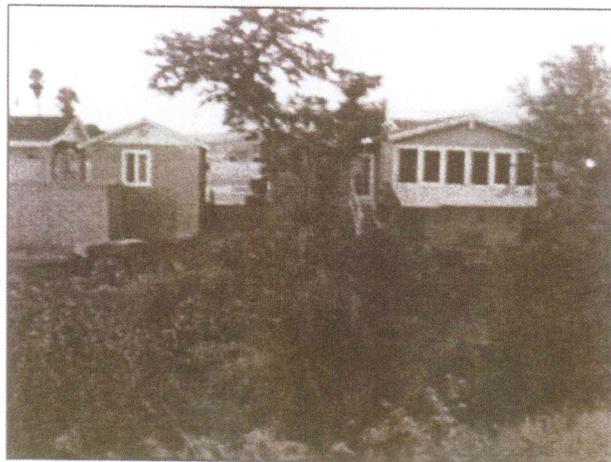
CITY OF CALIMESA
 ATTACHMENT 7-1
 FLOOD INUNDATION EXHIBIT



Fire Safety Personnel pump out the Calimesa Fire Station at night.



Calimesa Fire Station flooded from Calimesa Creek overflowing during storm.



Businesses back up to Calimesa Creek

Table 7 - Annual Project Physical Benefit

Project: Calimesa Creek Flood Control and Aquifer Recharge Project

Type of Benefit: Flood Damage Reduction
 Measure of Benefit (units): Multiple, See Below
 Additional Information about Benefit: For the 1 in 100 year event

(a)	(b)	(c)	(f)
Measure of Benefit Claimed	Without Project	With Project	Change Resulting from Project (b)-(c)
Area Flooded (Acre)	62	0	62
Number of Structures Flooded			
Residential (Single Story)	75	0	75
Residential (Two Plus Story)	0	0	0
Square Footage of Structures Flooded			
Commercial	419,216	0	419,216
Duration of Flooding (Days)	1	0	1

Table 7 - Annual Project Physical Benefit

Project: Calimesa Creek Flood Control and Aquifer Recharge Project

Type of Benefit: Stormwater Capture and Storage
 Measure of Benefit (units): acre-feet
 Additional Information about Benefit: -

(a)	(b)	(c)	(f)
Year	Without Project	With Project	Change Resulting from Project (c) - (b)
2012	0	200	200
2013	0	200	200
2014	0	200	200
2015	0	200	200
2016	0	200	200
2017	0	200	200
2018	0	200	200
2019	0	200	200
2020	0	200	200
2021	0	200	200
2022	0	200	200
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2054	0	200	200
2055	0	200	200
2056	0	200	200
2057	0	200	200
2058	0	200	200
2059	0	200	200
2060	0	200	200
2061	0	200	200

Total: 10,000

Table 7 - Annual Project Physical Benefit

Project: Calimesa Creek Flood Control and Aquifer Recharge Project

Type of Benefit: Avoided Green House Gas Emissions
 Measure of Benefit (units): metric tons of CO₂ per year
 Additional Information about Benefit: -

(a)	(b)	(c)	(f)
Year	Without Project	With Project	Change Resulting from Project (c) - (b)
2012	0	300	300
2013	0	300	300
2014	0	300	300
2015	0	300	300
2016	0	300	300
2017	0	300	300
2018	0	300	300
2019	0	300	300
2020	0	300	300
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2023	0	300	300
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2055	0	300	300
2056	0	300	300
2057	0	300	300
2058	0	300	300
2059	0	300	300
2060	0	300	300
2061	0	300	300
Total:			15,000

Notes:

1.)

City of Calimesa
Annual Stormwater Recharge Estimate

February 1, 2013

Basin	Drainage Tributary Area	Average Rainfall	Loss^{1.)}	Storm Water Recharge
	(ac)	(in)	(%)	(ac-ft)
Calimesa Creek	890	21	43%	884

Notes:

1.) Based on Chino Basin Watermaster, 2010 Recharge Master Plan

City of Calimesa
Calimesa Creek
Green House Gas Calculations

Energy Required to bring SWP Water to Southern California	Conversion Factor	Green House Gas Produced	Total Green House Gas Reduced^{4.)}	
(kWh/ac-ft)	(kWh to TonsCO ₂)	(TonsCO ₂ /ac-ft)	(TonsCO ₂ /Yr)	
3,519	0.000400	1.408	300	1.)
3,519	0.000430	1.513	400	2.)
3,519	0.000400	1.408	300	3.)

NOTES:

- 1.) per California Air Resource Board
- 2.) per California Energy Commission Protocol June 20, 2007
- 3.) per Berkeley Lab Report August 2002
- 4.) Based on a Total Water Use of 200 AFY