

Creek Asset Management Plans

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BAYWORK Maintenance & Asset Management Workshop

May 30, 2018



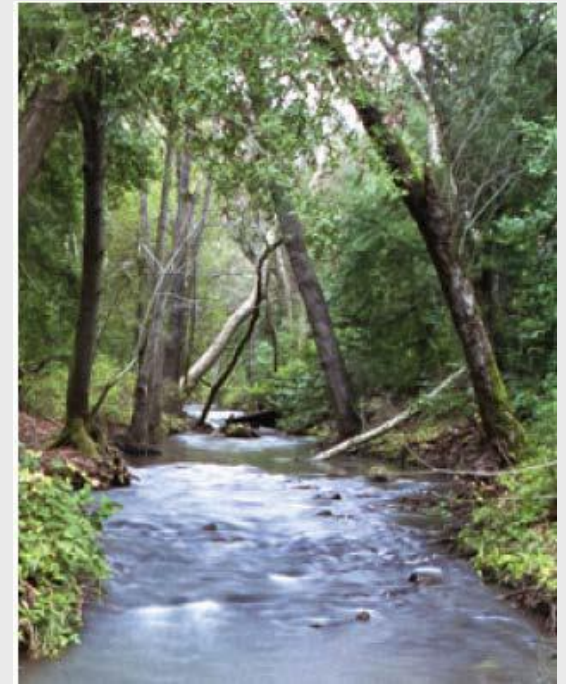
Overview

- ▶ District Mission
- ▶ Facts about SCVWD
- ▶ 10 Step AM Planning Model
- ▶ Creek AM Plan Development
 - ▶ Watershed AM Program
 - ▶ Condition Assessment and Technology Evolvement
 - ▶ Management Strategies Development
 - ▶ Goals
- ▶ Questions



District's Mission

Provide Silicon Valley safe, clean water for a healthy life, environment and economy

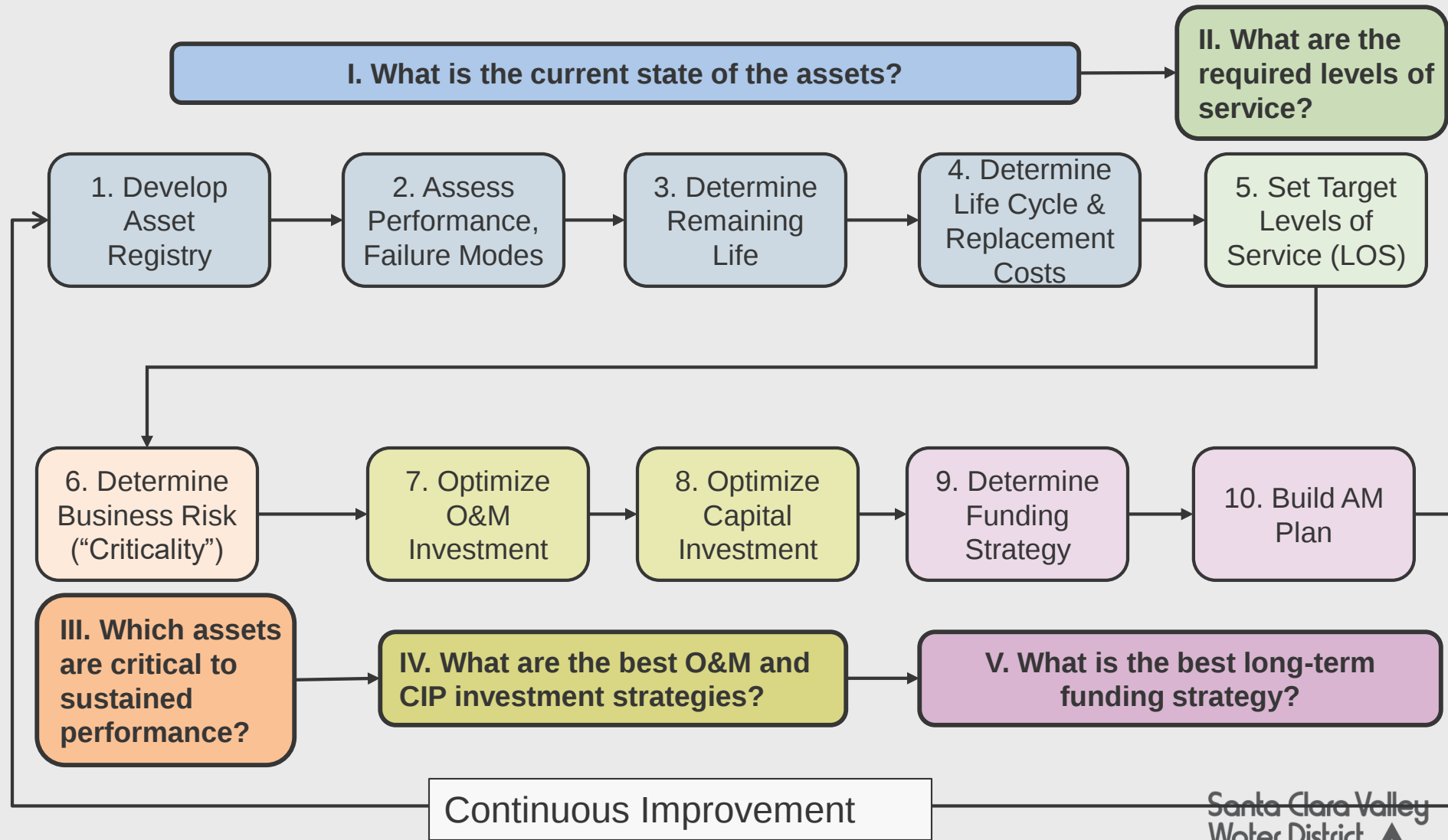


Facts About SCVWD

- ▶ 13 Water Retailers
- ▶ 3 Water Treatment Plants
- ▶ 10 Dams and Reservoirs
- ▶ 400 acres of groundwater recharge ponds
- ▶ 5 Watersheds
- ▶ 279 Miles of Creek within District Jurisdiction within 15 cities
- ▶ 3 Asset Management Programs
 - ▶ Water Utility
 - ▶ Watersheds
 - ▶ Facilities/Fleet
 - ▶ Software: IBM Maximo and AMPT



10 Step Asset Management Planning Model



Watershed Asset Management Program

- ▶ Continual development of asset registry maintenance and creek inspections
- ▶ Advancing work on AM model steps 5 – 10:
 - ▶ Compiling LOS and updating Maintenance Guidelines for 5 to 7 creeks a year
 - ▶ Developing an Asset Management Plan for one creek a year (2009)



Regnart Creek

- ▶ Located in the West Valley Watershed
- ▶ Within the City of Cupertino
- ▶ 2.9 miles within District jurisdiction
- ▶ Earth Trapezoidal Channel
- ▶ Erosion vs Sediment



Regnart Creek AMP

► Project Overview:

► Consultants: AECOM

► AMP consisted of:

► Updated Asset Register

► Performed field condition assessments

► Developed Management Strategies for Each Creek Asset Type

► Developed long-term (100-year) Funding Forecast

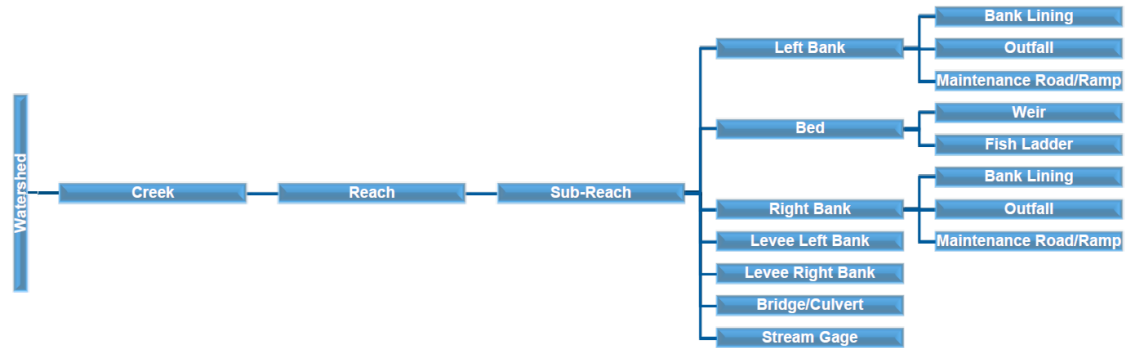


Figure 3-1 Watershed Asset Hierarchy A (Sub-Reach)

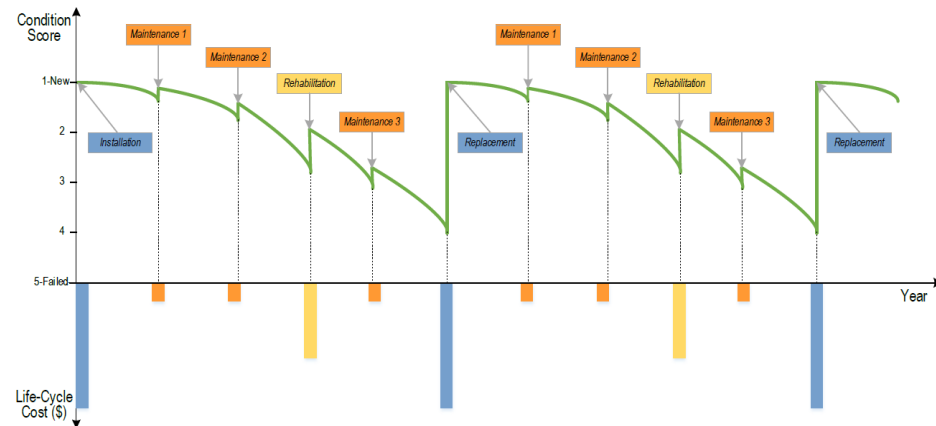


Figure 6-1 Asset Life Cycle Example

Condition Assessments - Technology

- ▶ Annually inspect channels with A-E (1-5) rating system
- ▶ Mobile Device
 - ▶ Current: Yuma handheld with Arc PAD GIS
 - ▶ Consultant: Tablet and/or Phone with Survey 123 and Collector
- ▶ Data from inspections are synced overnight in Maximo
- ▶ Investigating Maximo Mobile Applications and Software



Condition Rating	Definition
1 (A)	Fully functional, new or recently rehabilitated; stable
2 (B)	Good / stable condition
3 (C)	Functional / minor defects. Requires monitoring
4 (D)	Requires corrective action
5 (E)	Failed or unserviceable, unable to satisfy one or more LOS, requires immediate action

Condition Assessments - Technology

Survey 123 on Tablet

Natural Assets - Banks



SCVWD Piedmont Creek Inventory and CA

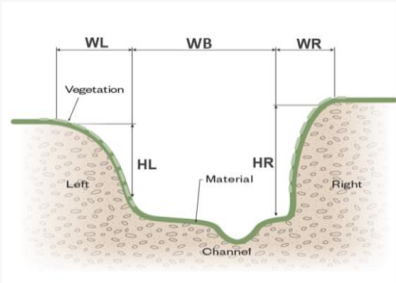
Subreach Name *
Berryessa Creek to Vista Way

Asset Location *
Left Bank

Existing or New Asset? *
Existing

Channel Type: Natural? *
Yes

Natural



HL (FT) *

WL (FT) *

Type of Erosion: *

☐ No Erosion

 ☐ Moderate Erosion

 ☐ High Erosion

 ☐ Extreme Erosion

Type of Aggradation: *

 ☐ No Aggradation

 ☐ Low Aggradation

 ☐ Moderate Aggradation

 ☐ High Aggradation

 ☐ Extreme Aggradation

Vegetation Cover (% Range) *

☐ 0%

 ☐ 10%

 ☐ 30%

 ☐ 50%

 ☐ 70%

 ☐ 90%

☐ 100%

Channel Evolution *

 ☐ Class I: Sinuous, Premodified

 ☐ Class II: Channelized

 ☐ Class III: Degradation

 ☐ Class IV: Degradation and Widening

 ☐ Class V: Aggradation and Widening

 ☐ Class VI: Quasi Equilibrium

Condition Assessments - Technology

Survey 123 on Tablet

Concrete Assets

Santa Clara Valley Water District

SCVWD Piedmont Creek Inventory and CA

Subreach Name *
Carnegie Dr to Roswell Dr

Asset Location *
Left Bank

Existing or New Asset? *
Existing

Channel Type: Natural? *
No

Channel Height (FT) *

Channel Width (FT) (WL+WB+WR) *

Concrete Condition Scale *

☐ Level 1: New

☐ Level 2: None/Minimal Damage to Concrete

☐ Level 3: Damage to Concrete Mortar

☐ Level 4: Loss of Concrete Mortar/Damage to Rebar

☐ Level 5: Rebar Severly Corroded/Significant Damage to Structure

Crack Defect 1:
Circumferential Crack

Cicumferential Crack Length 1 (FT)

Crack Defect 2:
Longitudinal Crack

Longitudinal Crack Length 1 (FT)

Void Size 1 (Inches)

Exposed Rebar 1 (FT)

Photo 1 *
 

Photo 2
 

Photo 3
 

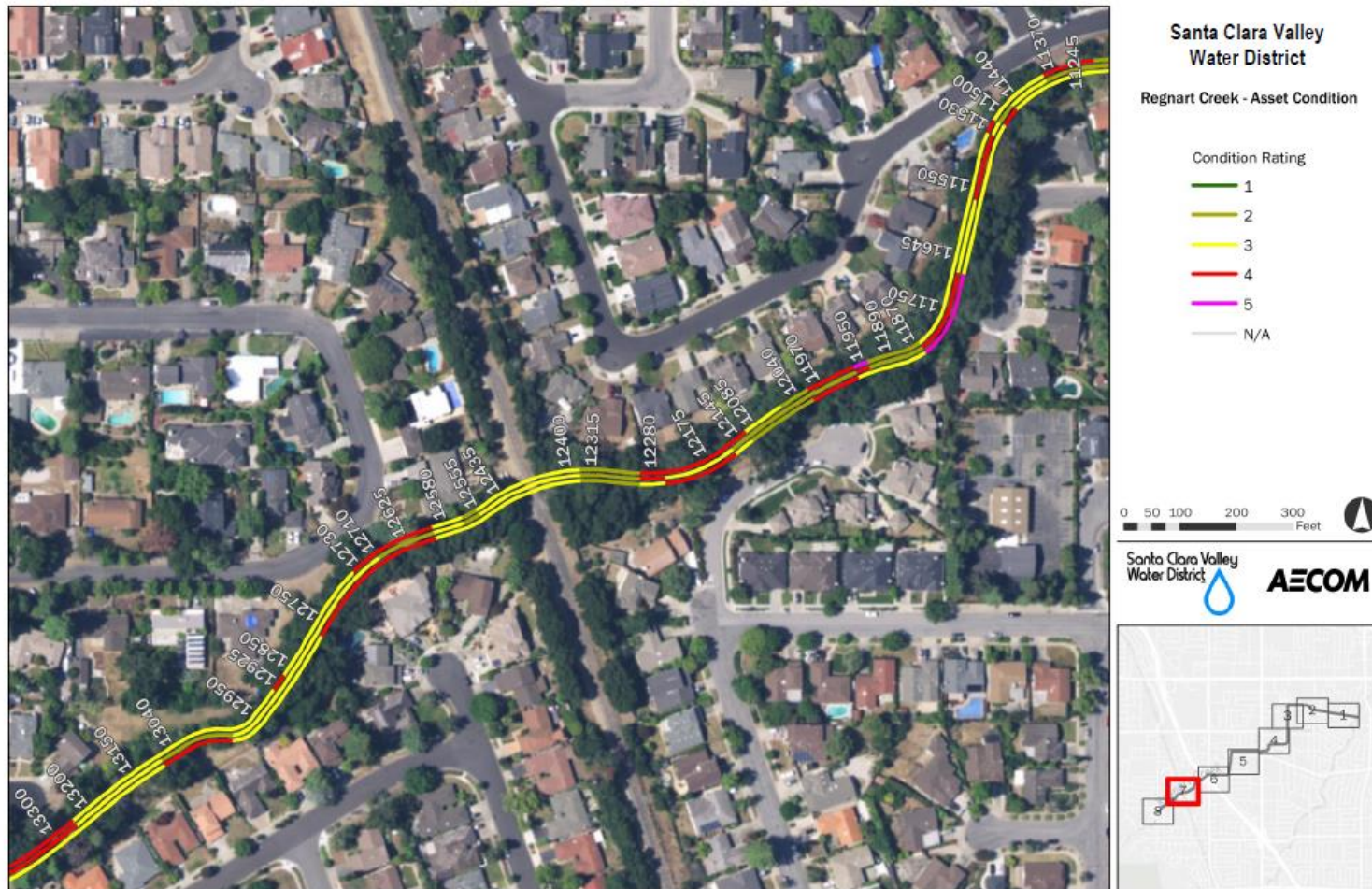
Additional Notes:
Date of Submission *
Monday, February 26, 2018

Location
No Location


Management Strategies

Regnart Creek

Condition Assessment Results



Probability of Failure score and Consequence of Failure score are used to determine Business Risk exposure score to initiate the development of Management Strategies.

Management Strategy - Development

- ▶ Review asset registry and asset conditions
- ▶ Observe geomorphology (address cause, not symptom)
- ▶ Observe performance prior improvement approaches
- ▶ Review planning documents that describe current management strategies
- ▶ Identify improvements to the current management strategy

Risk Range	Risk Classification	Total Length	Percentage of Total Length
76 or greater	High	720	2%
60 to 76	Medium	7,641	18%
Below 60	Low	33,999	80%

Bed Erosion Will Lead to Accelerated Deterioration of Improvements at Station 31+20



Management Strategies

3 Strategies - Baseline, Alternative 1 (O&M and Capital involvement), Alternative 2 (Capital Involvement)

- ▶ Main concepts of Alternative Strategies
 - ▶ Coordination of bank and bed improvements
 - ▶ Improvements of longer creek segments as opposed to spot repair of acute problems
 - ▶ Continued improvement of assets in advance of failure or imminent failure



Management Strategies

Regnart Creek - Long Range Funding Forecast Strategy

5-Year Increment	Average Annual Expenditure		
	Alternative 1 Management Strategy	Alternative 2 Management Strategy	Alternative 3 Management Strategy
1 to 5	\$1,740,000	\$6,479,000	\$14,588,000
6 to 10	\$3,742,000	\$1,960,000	\$877,000
11 to 15	\$2,512,000	\$1,226,000	\$1,037,000
16 to 20	\$823,000	\$4,679,000	\$1,293,000
21 to 25	\$4,600,000	\$429,000	\$275,000
26 to 30	\$1,678,000	\$2,120,000	\$1,277,000
31 to 35	\$1,484,000	\$705,000	\$372,000
36 to 40	\$1,326,000	\$421,000	\$275,000
41 to 45	\$619,000	\$452,000	\$376,000
46 to 50	\$3,819,000	\$275,000	\$275,000
51 to 55	\$4,256,000	\$1,769,000	\$3,405,000
56 to 60	\$705,000	\$1,227,000	\$644,000
61 to 65	\$1,335,000	\$2,061,000	\$656,000
66 to 70	\$817,000	\$3,054,000	\$1,701,000
71 to 75	\$1,134,000	\$352,000	\$275,000
76 to 80	\$289,000	\$651,000	\$1,045,000
81 to 85	\$275,000	\$1,089,000	\$827,000
86 to 90	\$352,000	\$421,000	\$275,000
91 to 95	\$550,000	\$452,000	\$376,000
96 to 100	\$2,257,000	\$275,000	\$275,000
Total (100-Year Basis)	\$34,313,000	\$30,097,000	\$30,124,000

Watershed Asset Management Program

► Current Goals

- Improve Condition Assessment Software and Mobile Device
- Improve Transparency
 - Continue involvement with District staff on developments of each creek AMP to ensure value for O&M, Capital Improvements, and Budgeting units
- Establish Implementation Process
 - Utilize and compare AMP during development of proposed Capital and O&M projects
 - Create additional PM's in Maximo
 - Develop in AMPT
 - Create Annual Summary Reports



Questions?

Please email your questions to

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