WSC
Water Systems Consulting, Inc.

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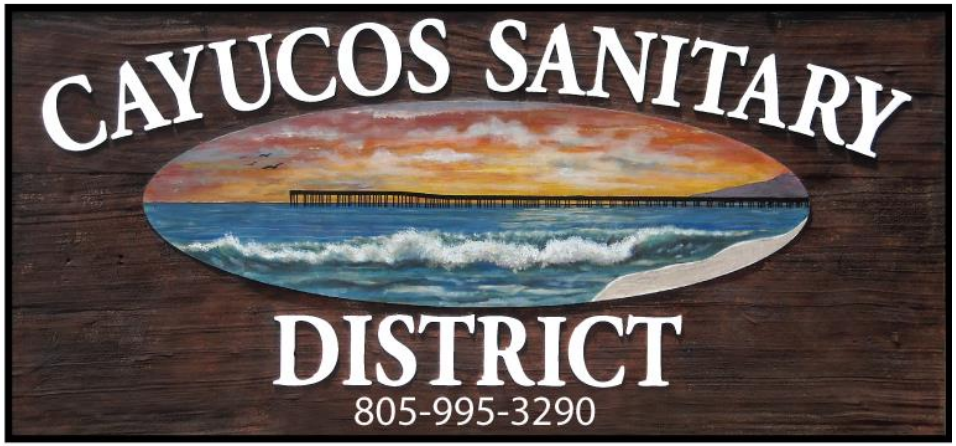
planning · environmental studies

# Cayucos Sustainable Water Project

## Comparative Analysis




February 18, 2016

# Project Objectives

- Community Sustainability
- Ownership
- Local Governance

**Cayucos Sustainable Water Project**

## Project Charter

7/23/15

### Vision

Provide Cayucos with efficient, reliable and adaptable wastewater treatment, while producing a high quality water supply to benefit the community.

### Mission

To deliver a sustainable and cost-effective water resource recovery system for the community of Cayucos within a streamlined schedule.

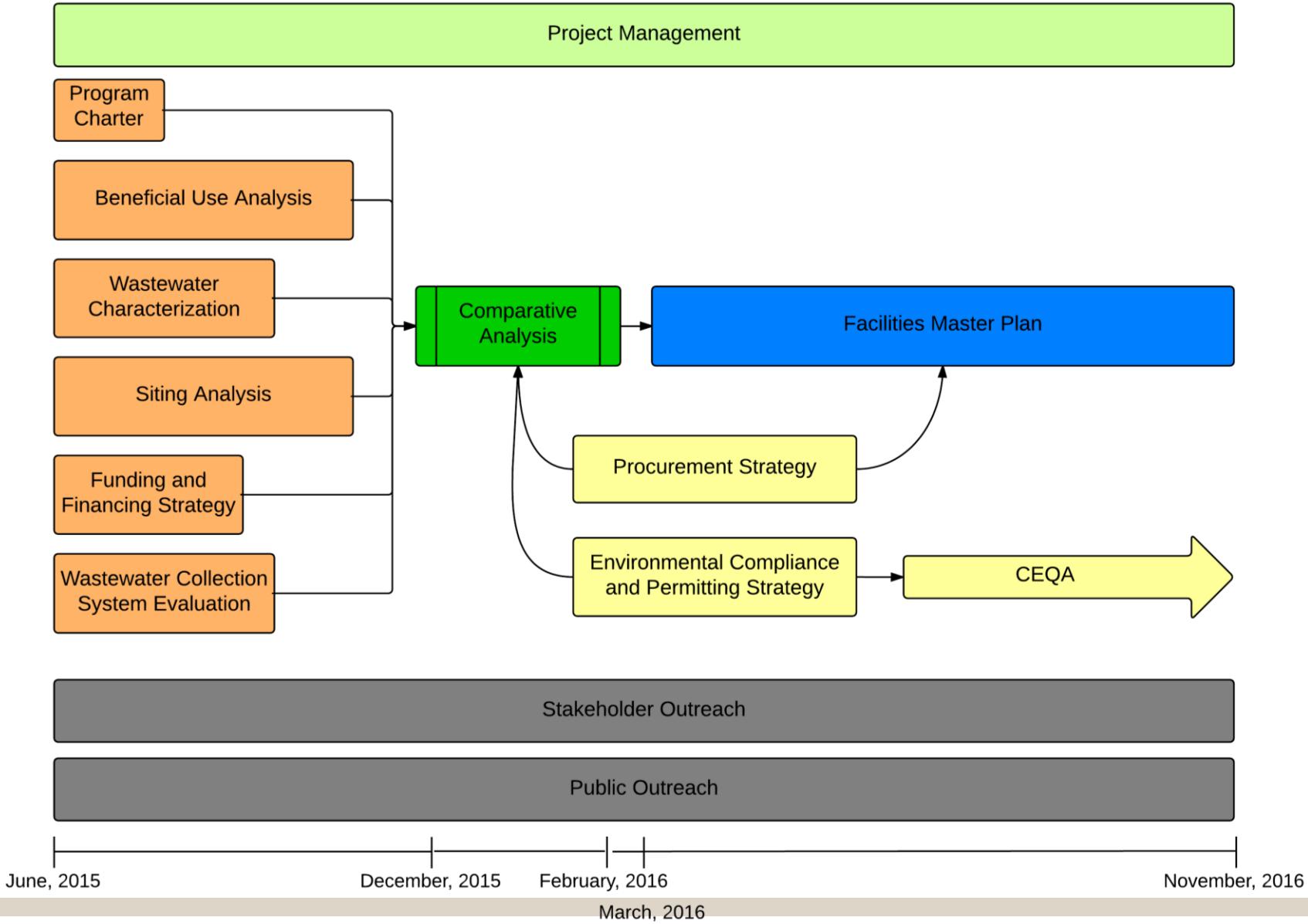
### Objectives and Performance Measures

- Optimize capital investment and life cycle cost
- Maximize value for ratepayers' investment
- Meet the District's schedule
- Obtain grants and low-interest loans to reduce the financial burden on the community
- Provide a facility with appropriate level of automation
- Create professional development opportunities for existing staff
- Design a robust treatment process that minimizes compliance risk
- Communicate with the community to inform and obtain feedback
- Complete the project with full regulatory compliance
- Develop a water resource recovery system that will benefit future generations
- Identify a facility location that benefits the community of Cayucos
- Enhance the community's long-term water supply reliability
- Use proven and dependable technology

### Guiding Principles

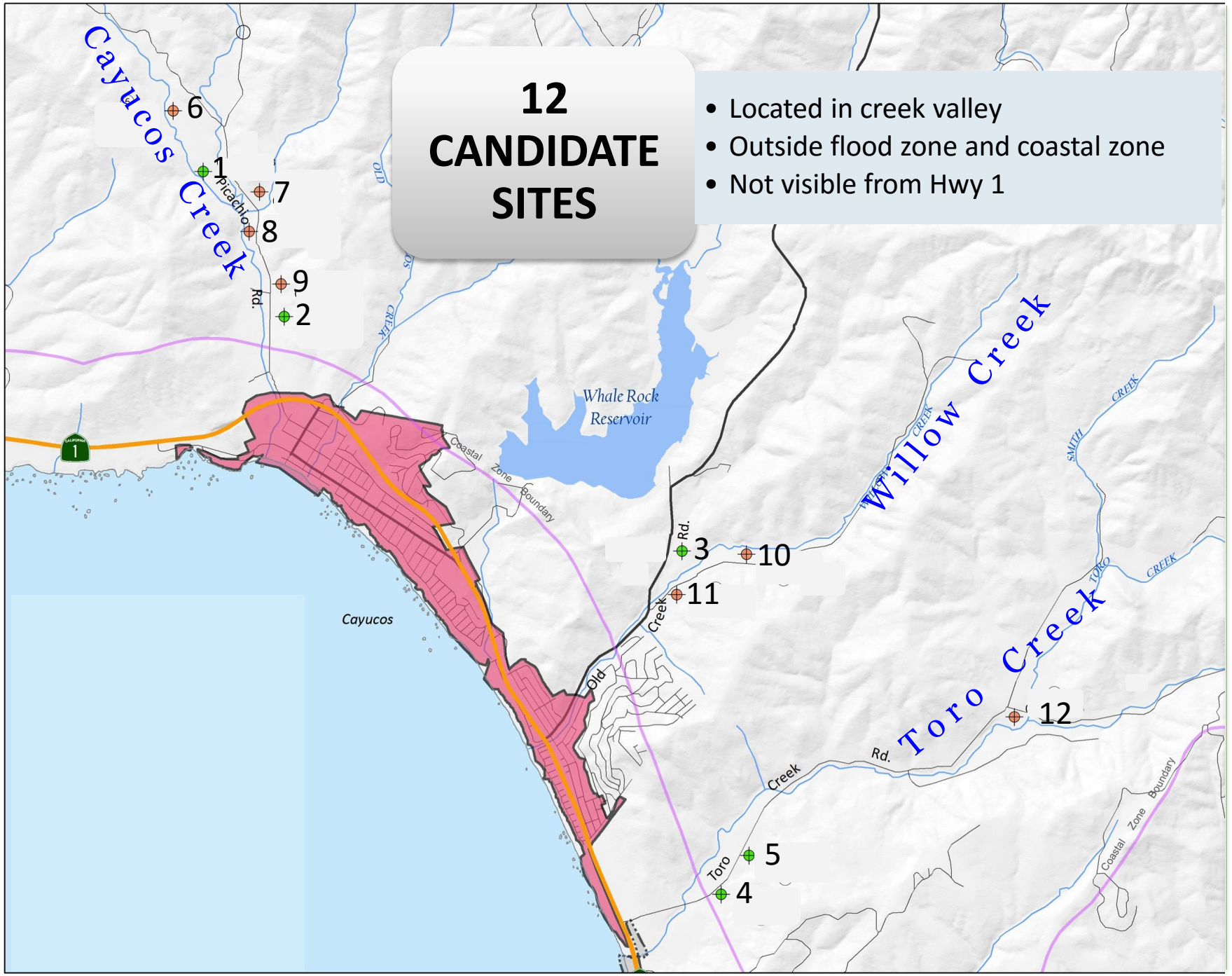
- Utilize proactive communication to minimize surprises
- Provide decision makers with sufficient documentation and time to support informed decisions
- Provide leadership and share knowledge to benefit the project
- Prepare a detailed schedule and be accountable to it
- Communicate directly and openly amongst the Project Team
- Perform timely and thorough review of project deliverables
- Maintain flexibility to work with members of the project team
- Incorporate sustainability, where practical, in all aspects of the project
- Keep regulatory partners informed and engaged
- Collaborate with internal and external stakeholders to efficiently solve problems
- Utilize cost-conscious decision making
- Inform and listen to the community

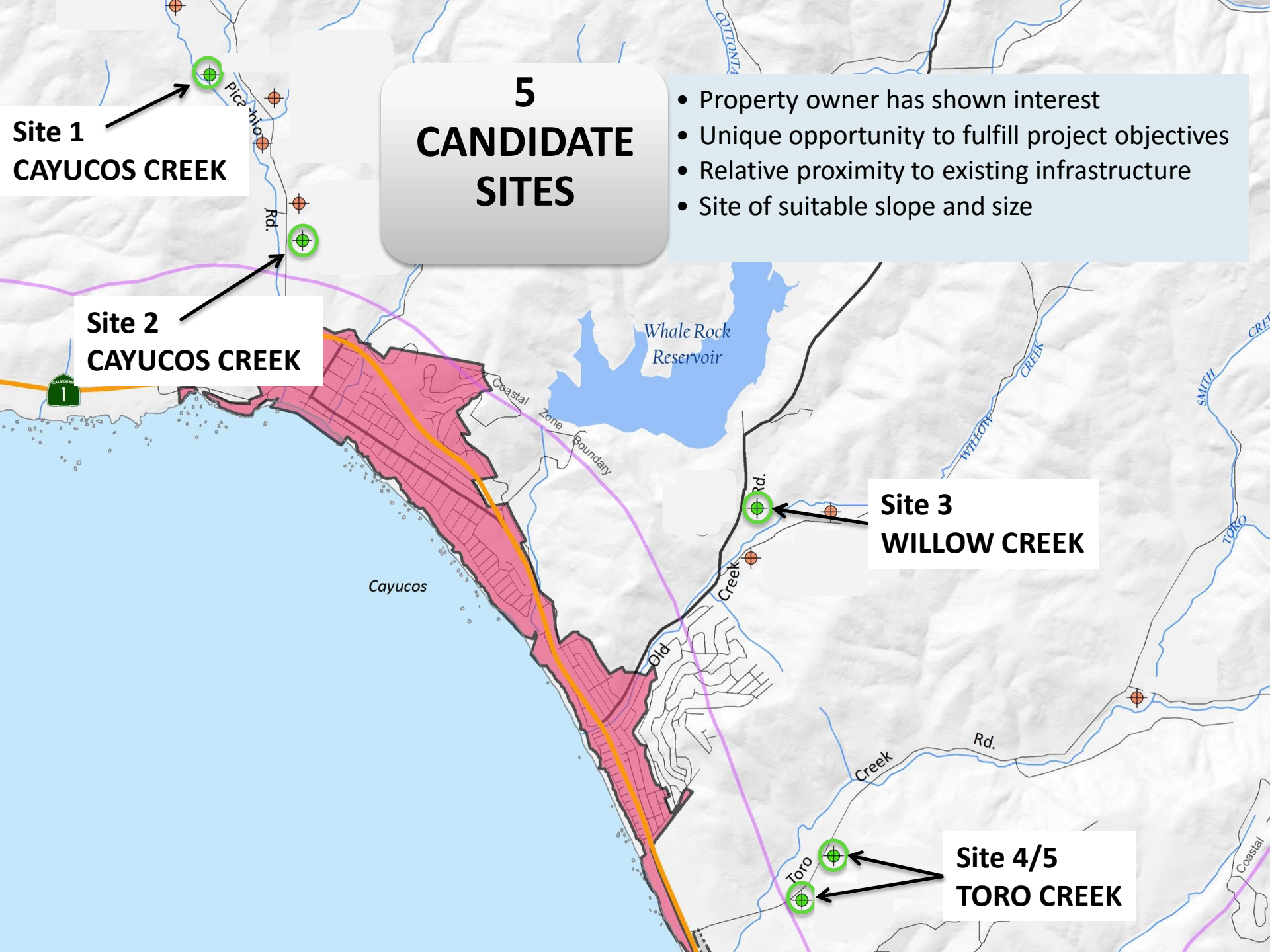
Phase 1 Work Plan



# Comparative Analysis Overview

- Siting Evaluation
- Conceptual Alternatives
- Evaluation Criteria
- Comparative Analysis Summary
- Next Steps


12
CANDIDATE
SITES
• Located in creek valley
• Outside flood zone and coastal zone
• Not visible from Hwy 1
Cayucos Creek
Willow Creek
Toro Creek
Whale Rock
Reservoir
Cayucos
Picachho
Rd.
Old
Creek
Coastal
Zone
Boundary
Toro
6
1
7
8
9
2
3
10
11
12
5
4


5
CANDIDATE
SITES
• Property owner has shown interest
• Unique opportunity to fulfill project objectives
• Relative proximity to existing infrastructure
• Site of suitable slope and size
Site 1
CAYUCOS CREEK
Site 2
CAYUCOS CREEK
Site 3
WILLOW CREEK
Site 4/5
TORO CREEK
Whale Rock
Reservoir
Coastal
Zone
Boundary
Cayucos
Old
Creek
Rd.
Toro
Creek
Rd.
Coastal
WILLOW
CREEK
SMITH
CREEK
TORO

# CANDIDATE SITE COMPARISON

| | 1 Cayucos Creek | 2 Cayucos Creek | 3 Willow Creek | 4 Toro Creek | 5 Toro Creek |
|---|---|---|---|---|---|
| **Geologic Hazard** | Minor | Minor | Minor | Landslide & Fault | Minor |
| **Biologic Resources** | Creek Proximity, Access | Creek Proximity, Native Grassland | Creek Proximity, Access | Creek Proximity | Creek Proximity |
| **Cultural Resources** | Monitor Construction | None | None | Monitor Construction | Monitor Construction |
| **Agriculture** | Prime Soil, Ag Preserve | Grazing | Prime Soil | Grazing | Prime Soil |

# CANDIDATE SITE COMPARISON

| | 2 Cayucos Creek | 3 Willow Creek | 4 Toro Creek | 5 Toro Creek |
|---|---|---|---|---|
| **Geologic Hazard** | Minor | Minor | Landslide & Fault | Minor |
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| **Cultural Resources** | None | None | Monitor Construction | Monitor Construction |
| **Agriculture** | Grazing | Prime Soil | Grazing | Prime Soil |

# CANDIDATE SITE COMPARISON

| | 2 Cayucos Creek | 3 Willow Creek | 5 Toro Creek |
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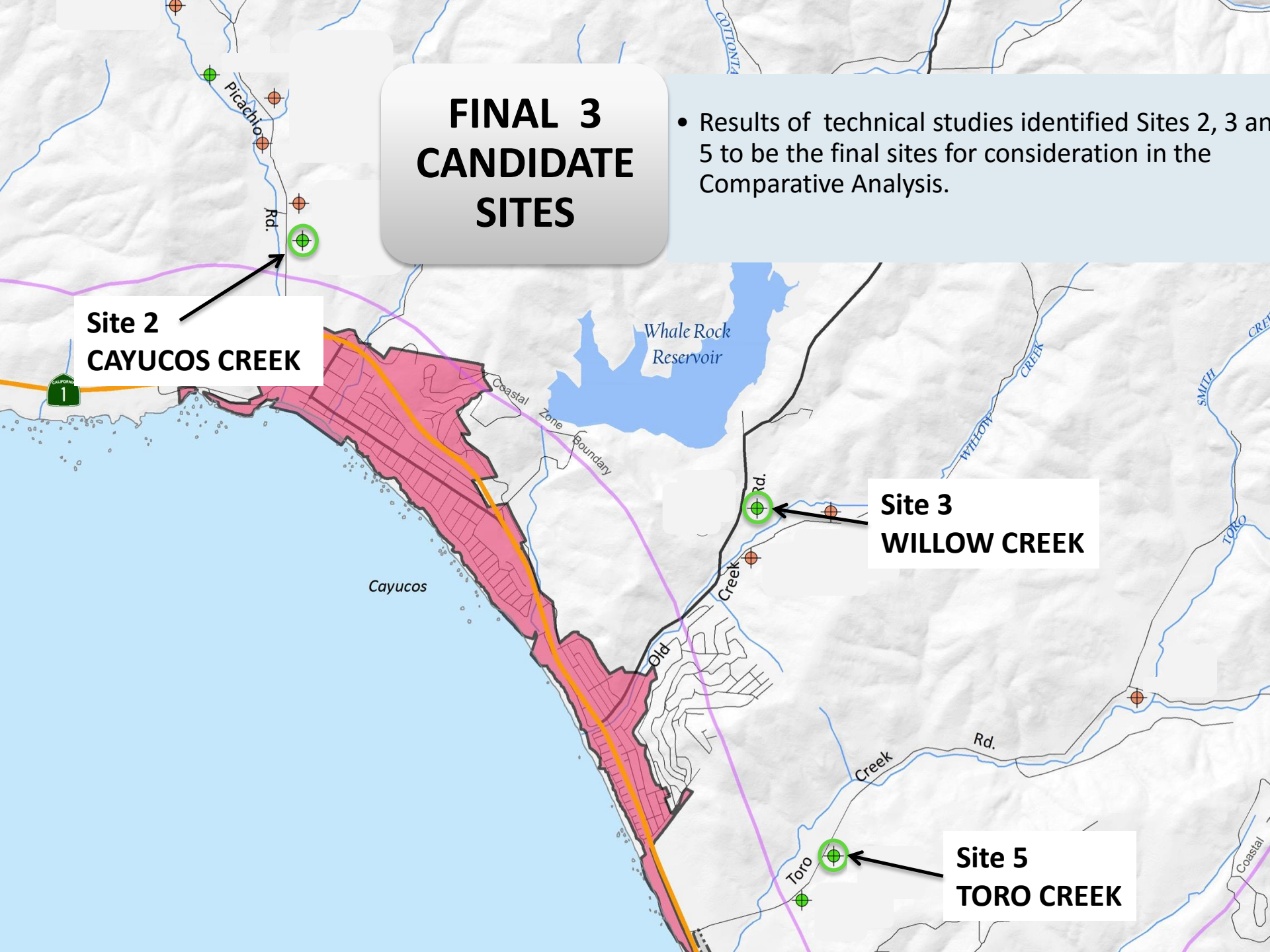
| **Cultural Resources** | None | None | Monitor Construction |
| **Agriculture** | Grazing | Prime Soil | Prime Soil |

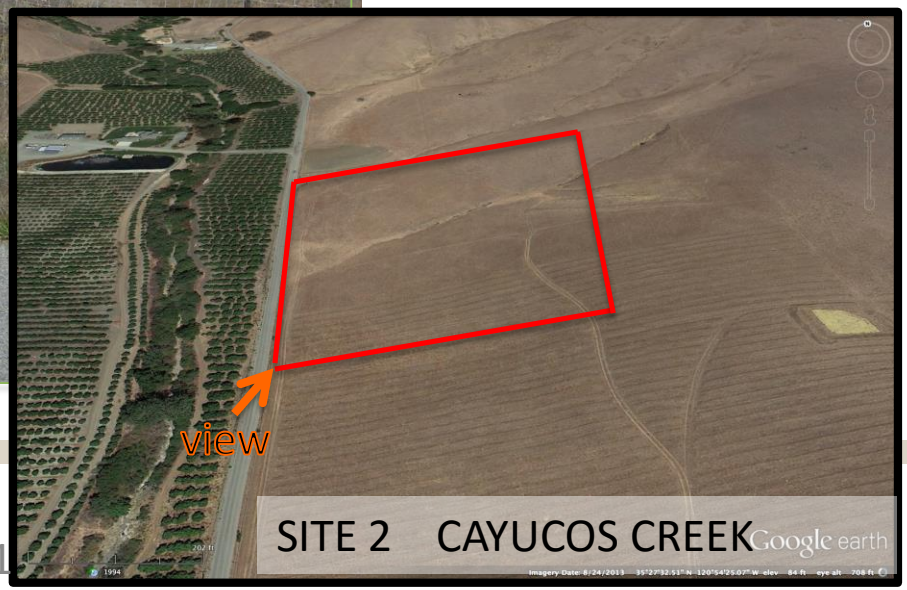
# FINAL 3 CANDIDATE SITES

- Results of technical studies identified Sites 2, 3 and 5 to be the final sites for consideration in the Comparative Analysis.



# CONCEPTUAL RENDERING

## SITE 2

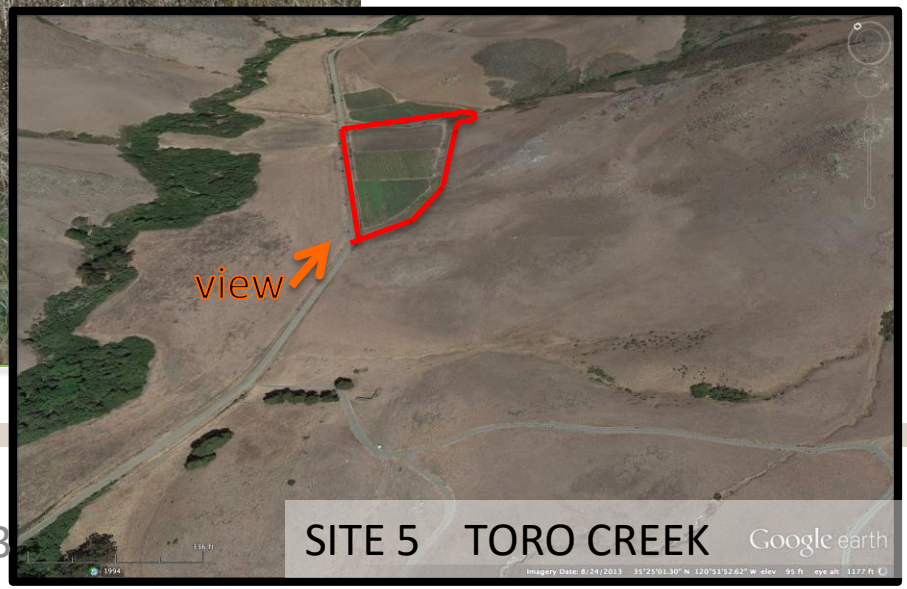


# C O N C E P T U A L  R E N D E R I N G

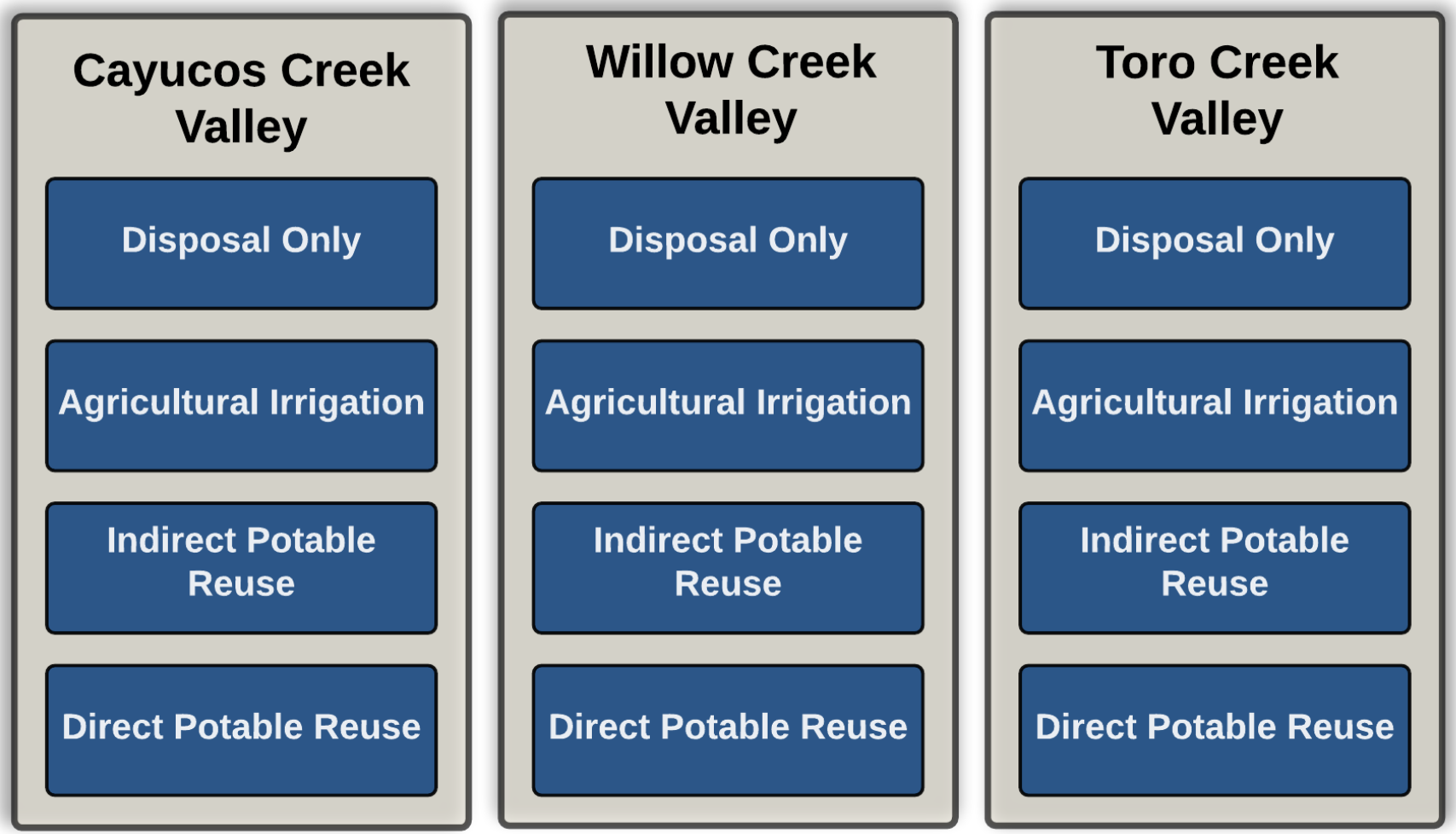
## SITE 3

# CONCEPTUAL RENDERING

## SITE 5



# Conceptual Alternatives Overview



# Components for Comparative Analysis

- Wastewater Collection System Modifications
- Wastewater Treatment Facility
- Outfall Disposal
- Recycled Water/Beneficial Reuse Opportunities

# Site 2 - Cayucos Creek Alternative

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# Site 2 - Cayucos Creek Alternative

# Site 2 - Cayucos Creek Alternative

# Site 3 - Willow Creek Alternative

# Site 3 - Willow Creek Alternative

# Site 3 - Willow Creek Alternative

# Site 3 - Willow Creek Alternative

# Site 3 - Willow Creek Alternative

# Site 5 - Toro Creek Alternative

# Site 5 - Toro Creek Alternative

# Site 5 - Toro Creek Alternative

# Site 5 - Toro Creek Alternative

# Site 5 - Toro Creek Alternative

# Alternatives Evaluation Approach

- Each Site Alternative scored on the basis of:

A. Qualitative/Non-Economic Criteria

B. Economic Analysis

1. Capital Cost (Design & Construction)
2. Operations & Maintenance (O&M) Cost
3. Recycled Water Unit Cost ($/AF)

# Qualitative/Non-Economic Criteria

- Consistency with Project Charter
- Site Constraints
- Permitting Complexity
- Construction Complexity and Duration
- Operational Complexity

# Qualitative/Non-Economic Criteria Scoring

Site alternatives are scored 1, 2 or 3 (3 being least constrained, least complex, etc.)

| Qualitative/Non-Economic Criteria | Cayucos Creek Site 2 | Willow Creek Site 3 | Toro Creek Site 5 |
|---|---|---|---|
| **Consistency with Project Charter** | **3** | **3** | **3** |
| **Site Constraints** | **3** | **2** | **2** |
| **Permitting Complexity** | **1** | **2** | **3** |
| **Construction Complexity and Duration** | **1** | **2** | **3** |
| **Operational Complexity** | **1** | **2** | **3** |
| **Total Score (Non-Economic/Qualitative)** | **9** | **11** | **14** |

# Economic Analysis

- Capital Cost (Design & Construction)
- Operations & Maintenance (O&M) Cost
- Recycled Water/Beneficial Use Yield - AFY of water put to Beneficial Use
- Unit Cost - $/AF of water put to Beneficial Use

The cost estimates shown in the following slides are preliminary and are only intended to be used for comparing the three sites to each other.

# Capital Cost Comparison Summary

| Alternatives | Cost Breakdown | Cayucos Creek Valley Site 2 ($M) | Willow Creek Valley Site 3 ($M) | Toro Creek Valley Site 5 ($M) |
|---|---|---|---|---|
| Disposal To Outfall | Treatment Plant Construction | 14.0 | 14.0 | 14.0 |
| | Collection System Modifications | 7.7 | 5.0 | 1.6 |
| | Conveyance to Outfall | 9.1 | 4.6 | 3.3 |
| | Subtotal 1 | 30.8 | 23.6 | 18.9 |
| | Indirect Costs[1] | 9.5 | 7.3 | 5.9 |
| | **Subtotal 2** | **40.3** | **30.9** | **24.8** |
| Ag Irrigation[2] | Recycled water infrastructure | 1.1 | 1.1 | 1.1 |
| | Indirect Costs | 0.3 | 0.3 | 0.3 |
| | **Subtotal 3** | **41.7** | **32.3** | **26.2** |
| Potable Reuse[3] | Treatment infrastructure | 3.7 | 3.7 | 3.7 |
| | Recycled water infrastructure | 1.5-2.5 | 0.8-2.3 | 2.5-3.0 |
| | Indirect Costs | 1.5-1.8 | 1.3-1.8 | 1.8-2.0 |
| | **Subtotal 4** | **48.4-49.7** | **38.1-40.1** | **34.2-34.9** |

[1]Indirect costs include cost associated with design, permitting, construction management, legal and administration (i.e. softcosts).
[2]Ag irrigation scenarios do not include potential cost associated with salt/TDS reduction that may be required for certain crop types.
[3]Potable reuse represents the range of anticipated costs to implement one of the following alternatives: groundwater rechargeand extraction; surface water augmentation; or direct potable reuse.

# Beneficial Use Analysis

| Alternatives | Cost Breakdown | Cayucos Creek Valley Site 2 | Willow Creek Valley Site 3 | Toro Creek Valley Site 5 |
|---|---|---|---|---|
| Ag Irrigation | Capital Cost ($M) | $1.4M | $1.4M | $1.4M |
| | Annual Debt Service ($)[1] | $64,000 | $64,000 | $64,000 |
| | Annual O&M ($) | $31,000 | $27,000 | $29,000 |
| | Total Annual Cost ($) | $95,000 | $91,000 | $93,000 |
| | Annual Yield (AF) | 80 | 80 | 80 |
| | Unit Cost ($/AF)[2] | **$1,200** | **$1,100** | **$1,200** |
| Potable Reuse Alternatives | Capital Cost ($M) | $6.7M-$8.0M | $5.8M-$7.8M | $8.0M-$8.6M |
| | Annual Debt Service ($)[1] | $303,000-$367,000 | $266,000-$358,000 | $367,000-$395,000 |
| | Annual O&M ($) | $205,000-$208,000 | $190,000-$206,000 | $210,000-$211,000 |
| | Total Annual Cost ($) | $510,000-$573,000 | $456,000-$564,000 | $577,000-$606,000 |
| | Annual Yield (AF) | 172-196 | 172-196 | 172-196 |
| | Unit Cost ($/AF)[2] | **$2,600-$3,100** | **$2,300-$3,200** | **$3,000-$3,400** |

[1]Assumes 2.2% financing costs

[2]Represents average $/AF over a 30 years in actual dollars.

# Comparative Analysis Summary

| Criteria | Cayucos Creek Valley | Willow Creek Valley | Toro Creek Valley |
|---|---|---|---|
| Qualitative Non-Economic Scoring | 9 | 11 | 14 |
| Disposal To Outfall Capital Cost ($M) | 40.3 | 30.9 | 24.8 |
| Ag Irrigation Capital Cost ($M) | 1.4 | 1.4 | 1.4 |
| Potable Reuse Capital Cost ($M) | 6.6-8.0 | 5.8-7.8 | 8.0-8.6 |
| Total Project Cost ($M) | **48.3-49.7** | **38.1-40.1** | **32.4-34.9** |
| Ag Irrigation Unit Cost ($/AF)[1] | $1,200 | $1,100 | $1,200 |
| Potable Reuse Unit Cost ($/AF)[1] | $2,600-$3,100 | $2,300-$3,200 | $3,000-$3,400 |

# Next Steps

- Facilities Master Plan
  - Treatment alternatives
  - Collection system modification optimization
  - Regulatory Compliance Study
  - Refined Cost Estimates
  - Site Planning
  - Implementation Plan
- Environmental Impact Report
  - Scoping meeting
  - Initial Study
  - Draft EIR preparation

# Comparative Analysis Summary

| Criteria | Cayucos Creek Valley | Willow Creek Valley | Toro Creek Valley |
|---|---|---|---|
| Qualitative Non-Economic Scoring | 9 | 11 | 14 |
| Disposal To Outfall Capital Cost ($M) | 40.3 | 30.9 | 24.8 |
| Ag Irrigation Cost ($M) | 1.4 | 1.4 | 1.4 |
| Potable Reuse Capital Cost ($M) | 6.6-8.0 | 5.8-7.8 | 8.0-8.6 |
| Total Project Cost ($M) | **48.3-49.7** | **38.1-40.1** | **32.4-34.9** |
| Recommendation | Suspend | Pursue | Pursue |