San Luis Obispo County
Los Osos Wastewater Project Development

VIABLE PROJECT ALTERNATIVES FINE SCREENING ANALYSIS

JUNE 2007

carollo
Engineers...Working Wonders With Water

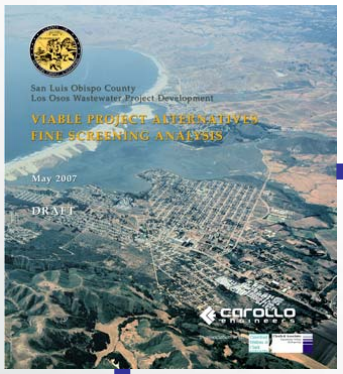
in association with Crawford Multari & Clark Associates

Cleath & Associates
Engineering Geology
Hydrogeology

Introduction / Summary of Work

Engineers...Working Wonders With Water™

The Fine Screening Report Will Be the Basis for Parallel Efforts



TAC Pro/Con Analysis

Final Project Options

CEQA+

Community Survey

Due Diligence

Project Selected

Assessment Engineering

P 218 Vote

Funding

Project Design & Construction

The Fine Screening Report is the Culmination of Six Months of Work by the County's Team

County has authority under AB2701 to solve this problem — *January 1, 2007*

↓

Rough screening report provided focus for more detailed evaluations — *March 2007*

↓

Fine screening analysis part of process to provide community with adequate information for 218 ballot — *May 2007*

Engineering studies are one component of County's overall project effort

…and it Resulted in Draft Findings of:

Community Options

Community Options Benefits

Community Options Costs

The report does NOT provide a Project Recommendation

Community-Driven Decision Making

Our Goal is to Present Community Options

1. Participatory Government
2. Understanding Community Preferences

Challenges:

1. Legal Requirements
2. Regulatory and Other Requirements

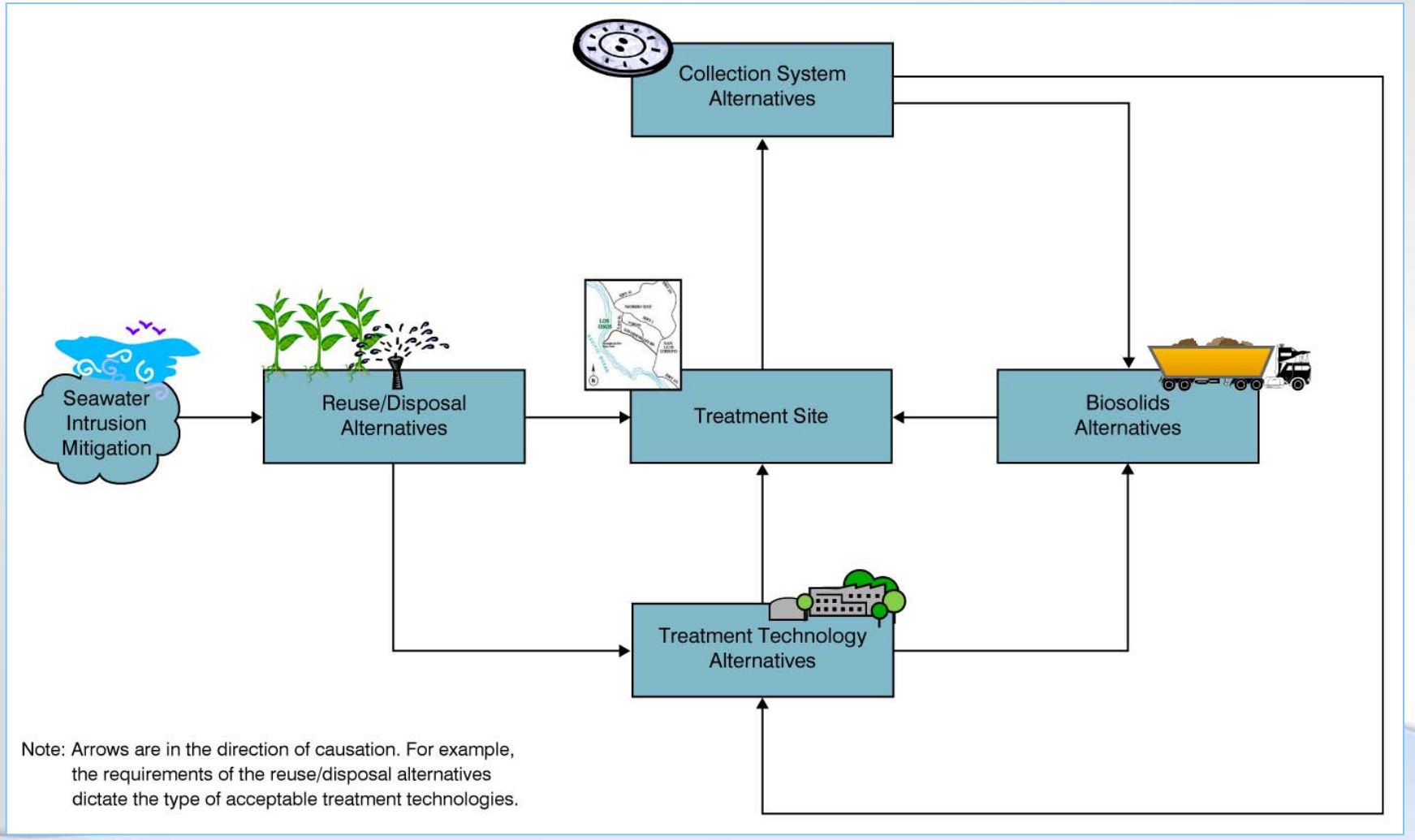
Fine Screening Considered Previous Project Efforts

1. 1998 County/2005 LOCSD/2006 Ripley
2. NWRI Final Report
3. Regulatory Requirements
   a. Expected WDR Requirements
   b. RWQCB Feedback
4. SWRCB Discussions
5. Updated Flow and Load Estimates
6. Groundwater Management

Fine Screening Approach Evaluated Options from Many Perspectives

1. Short-list of Community Options
2. Develop Capital and O&M Costs Information
3. Environmental and Permitting Considerations
4. Purveyor Participation Considerations
5. Future Adaptability

The Evaluation of Options Began with Interdependency of Project Components



Collection / Treatment / Disposal Interrelationship

1. Disposal/Reuse dictates water quality requirements
2. Collection impacts influent parameters and treatment performance
3. Nitrification/Denitrification required to meet low nitrogen levels
4. Filtration required to meet reuse requirements

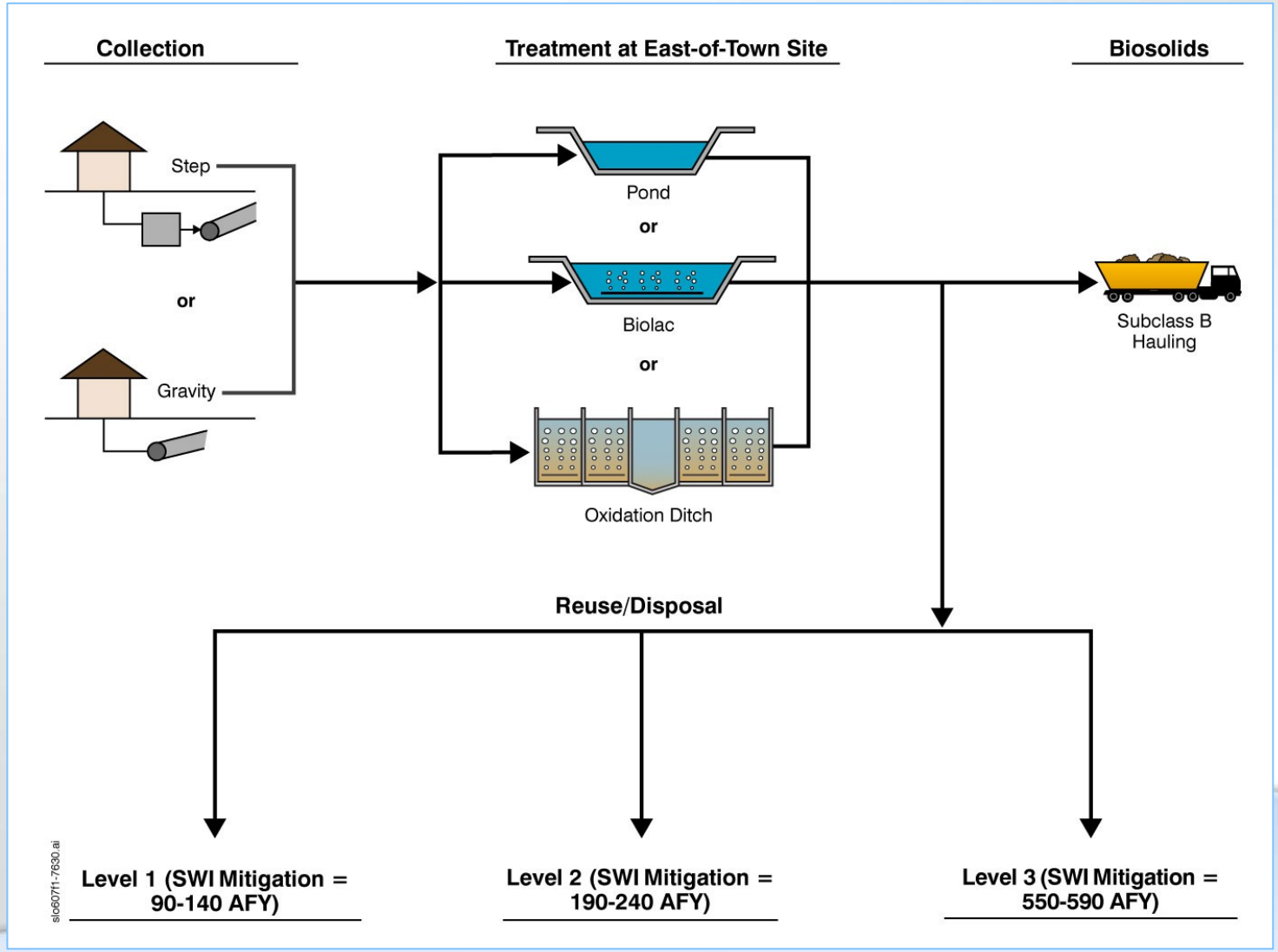
The Fine Screening Report Resulted in Draft Findings of:

Community Options

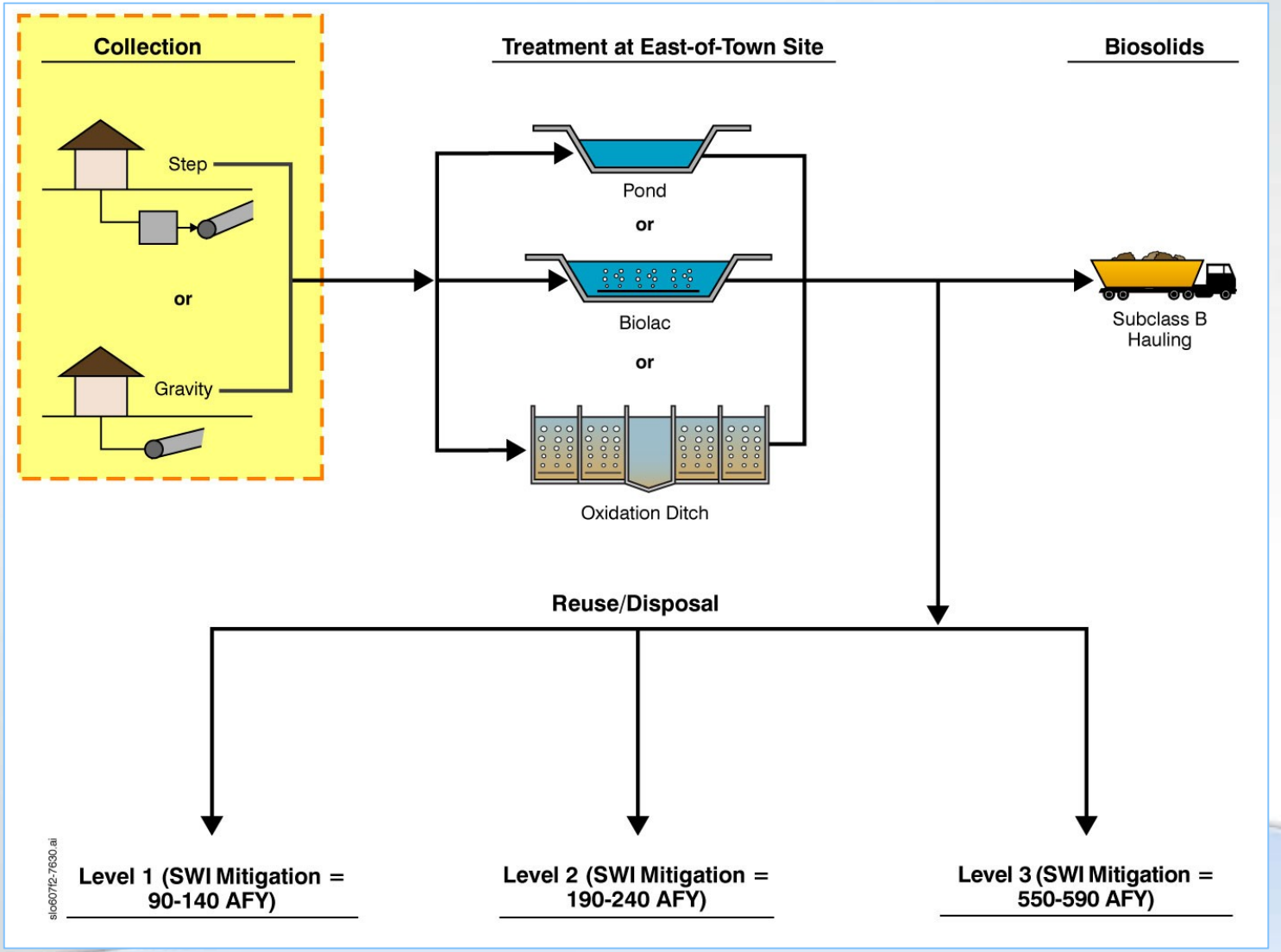
Community Options Benefits

Community Options Costs

Community Options Provide Basis for Pro/Con Analysis



Collection System Options



There are Several Issues for Deciding on a Collection System

1. Constructability
2. Lifecycle comparison
3. Status of design
4. On-lot impacts

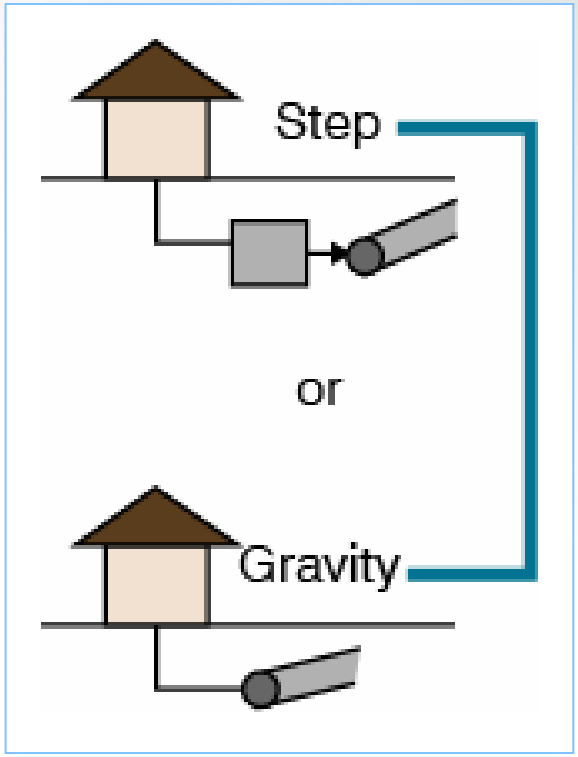
Our Focus Has Been to Fairly Evaluate All STEP Benefits and Costs

1. Reduced solids loading from Septic tank
2. Gave credit for STEP in plant size
3. Less sludge disposal required
4. Considered on-lot costs (including electrical) for both STEP and Gravity
5. Considered road restoration costs

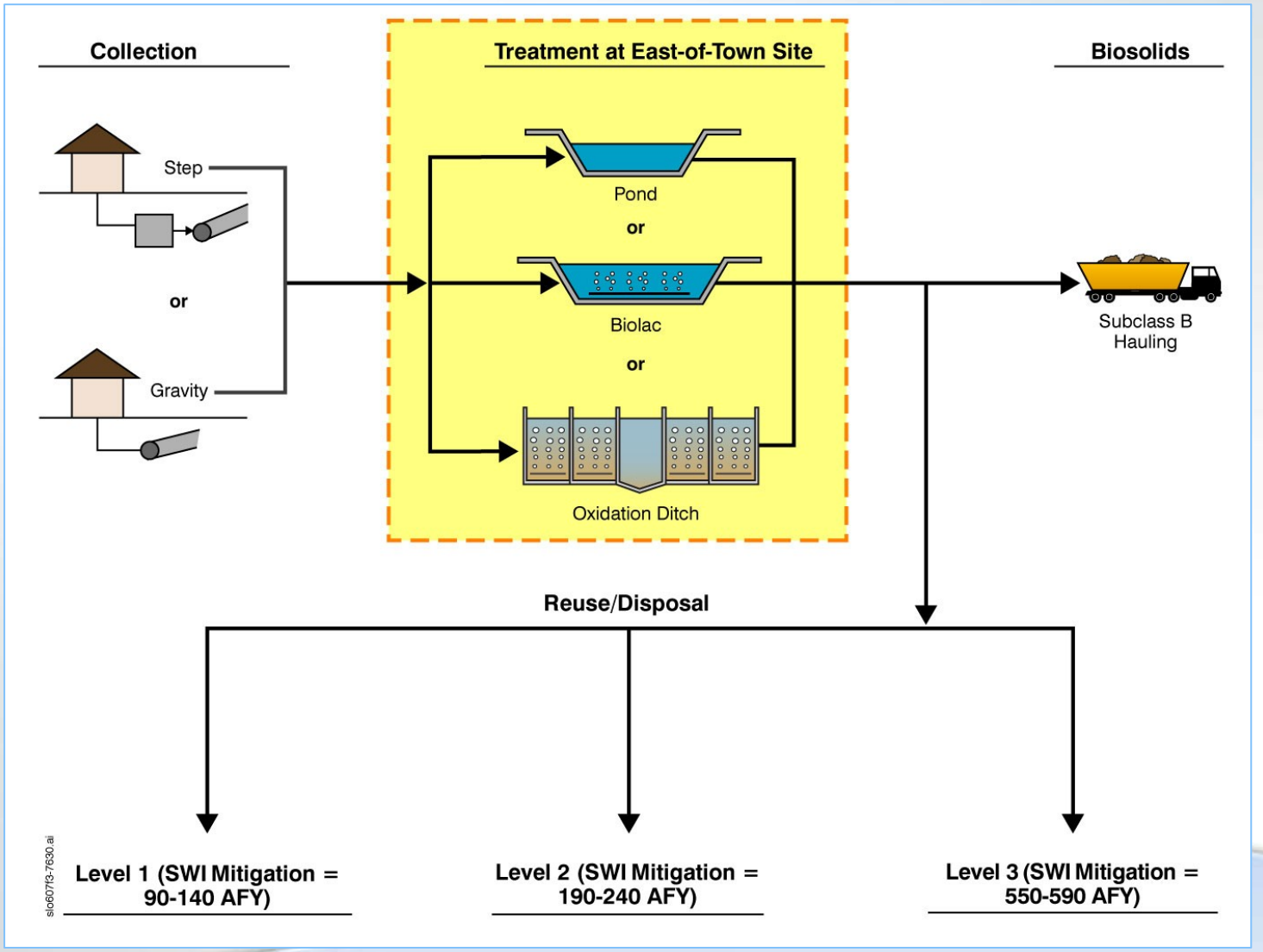
Base Costs similar to Ripley Report

Collection System – STEP and Gravity

1. Both STEP and Gravity sewers will be carried forward as Community Options
2. Alternative contracting methods can demonstrate which option is less costly
3. Community preferences will be an important part of decision



Treatment Options



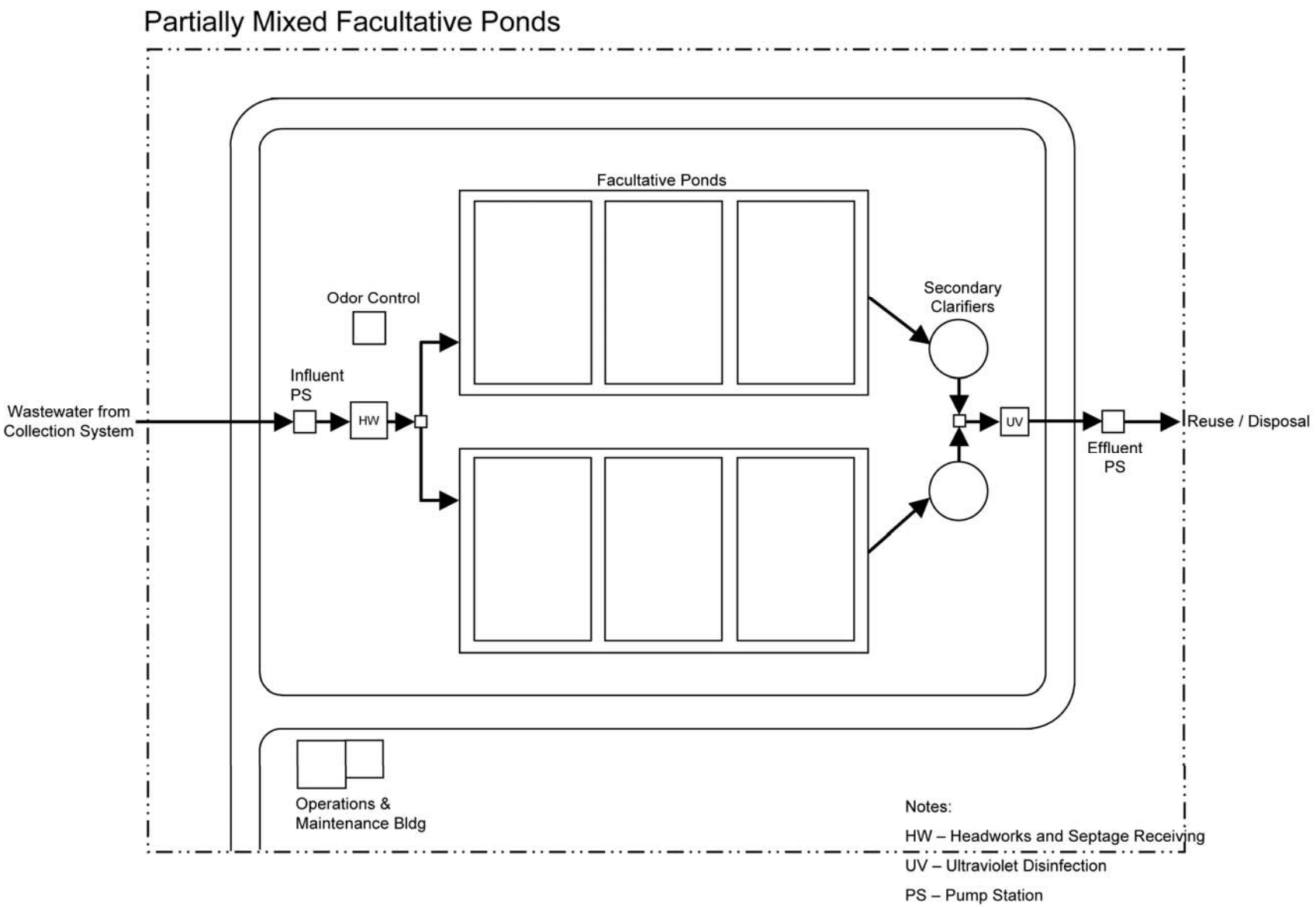
The Selection of Treatment Requires Consideration of…

1. Waste Discharge Requirements (WDR)
2. Compatibility with disposal options (additional levels of treatment required?)
3. Facility location

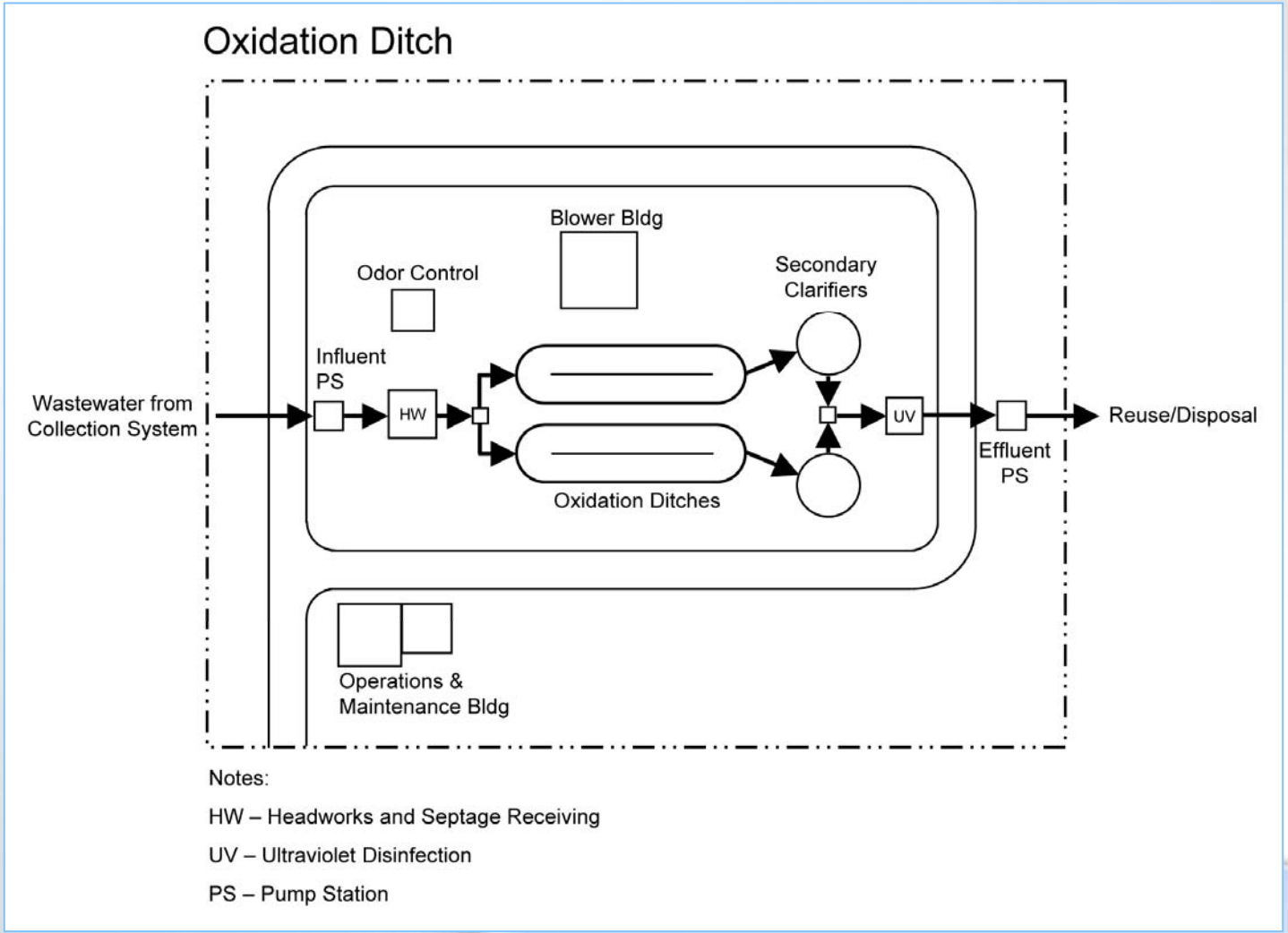
WDR Requires Secondary Treatment As Base Level

1. Three options:
   a. Facultative Ponds
   b. Oxidation Ditch
   c. Biolac
2. Some disposal options also require filtration (tertiary) and/or nitrification/denitrification
3. Membrane Bioreactors (MBR), which was the Tri-W project, is a tertiary option with N removal

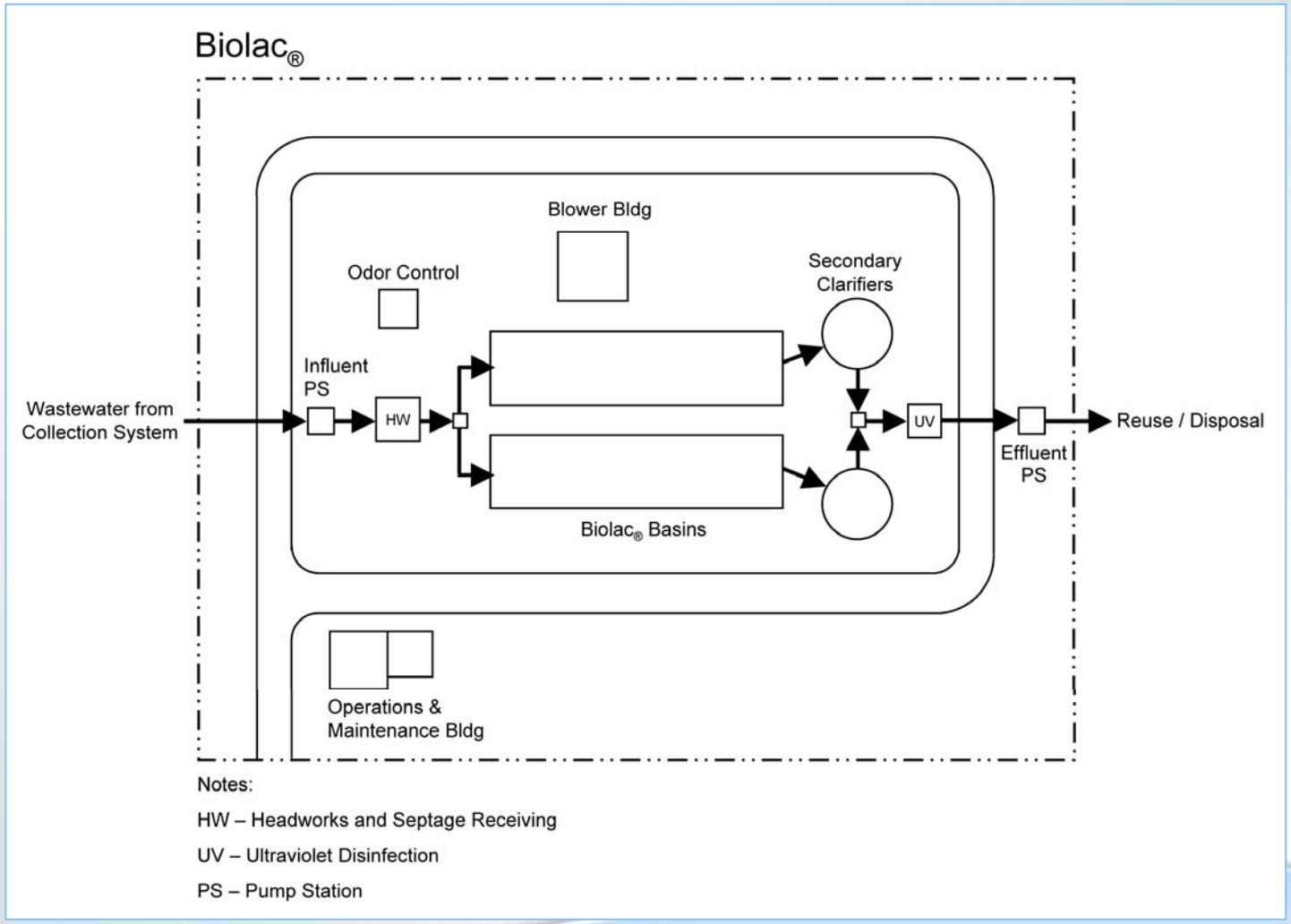
Facultative Ponds (15–20 acres)



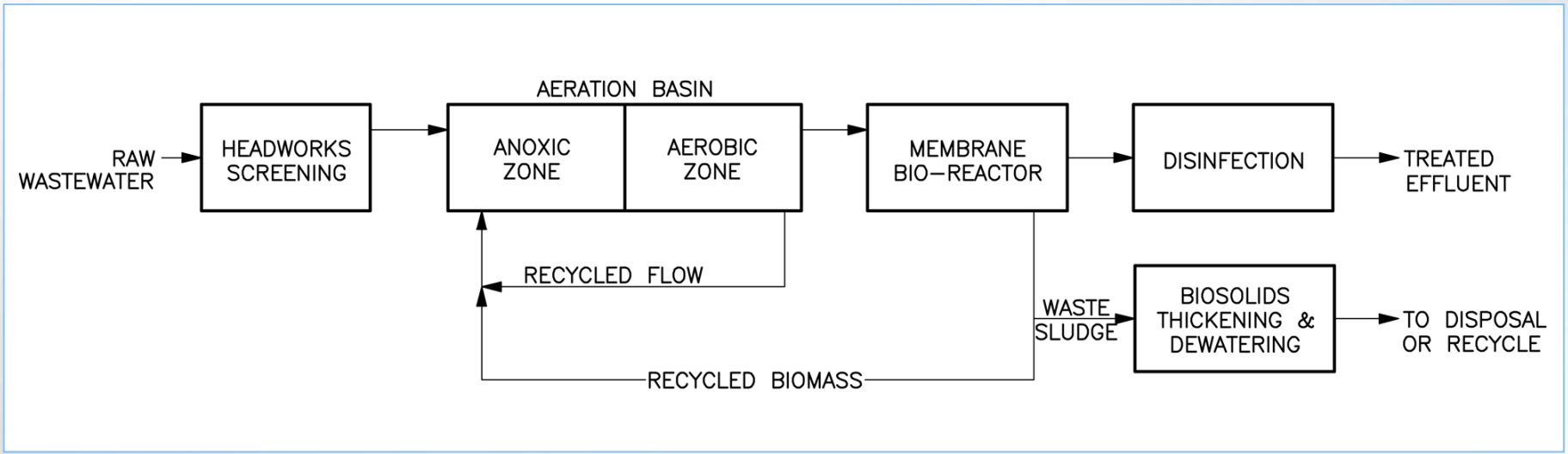
Oxidation Ditch – 8 Acres



Biolac – 10 Acres



Membrane Bioreactor (MBR) – 4 Acres



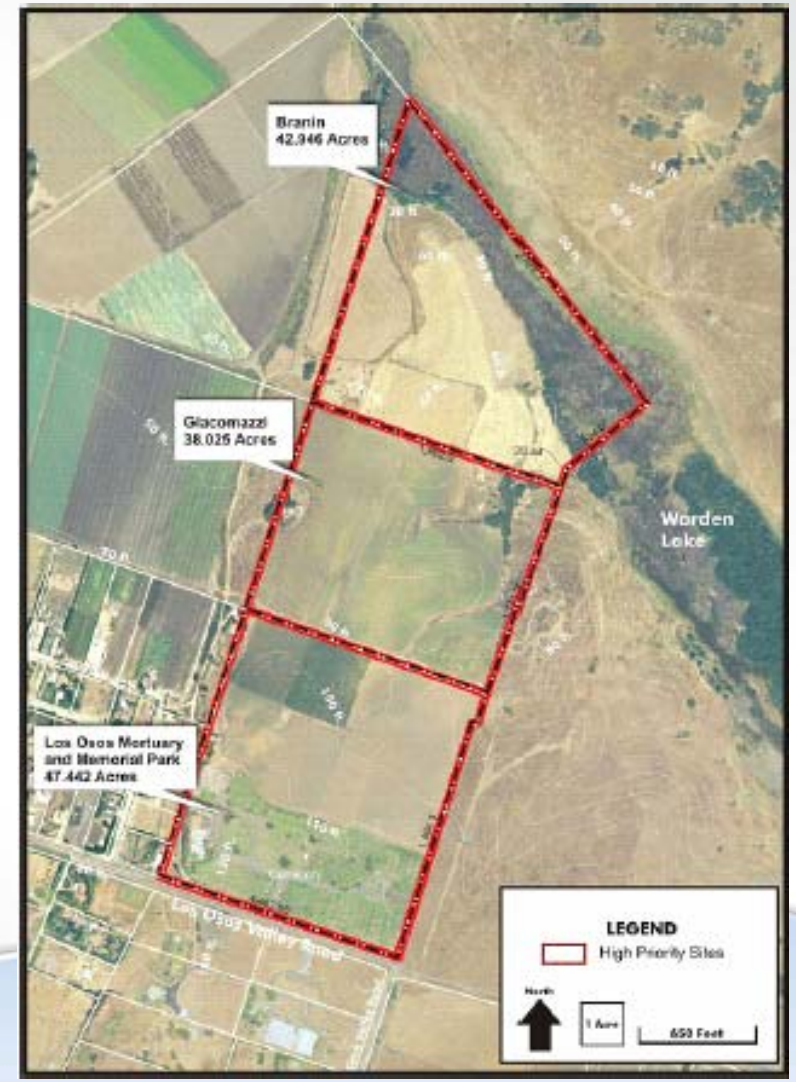
The Treatment Options are Compatible with Other Communities

- Pismo Beach, CMC, Ojai
- Imperial Valley, Cuyama, Orange Grove
- Atascadero, Templeton

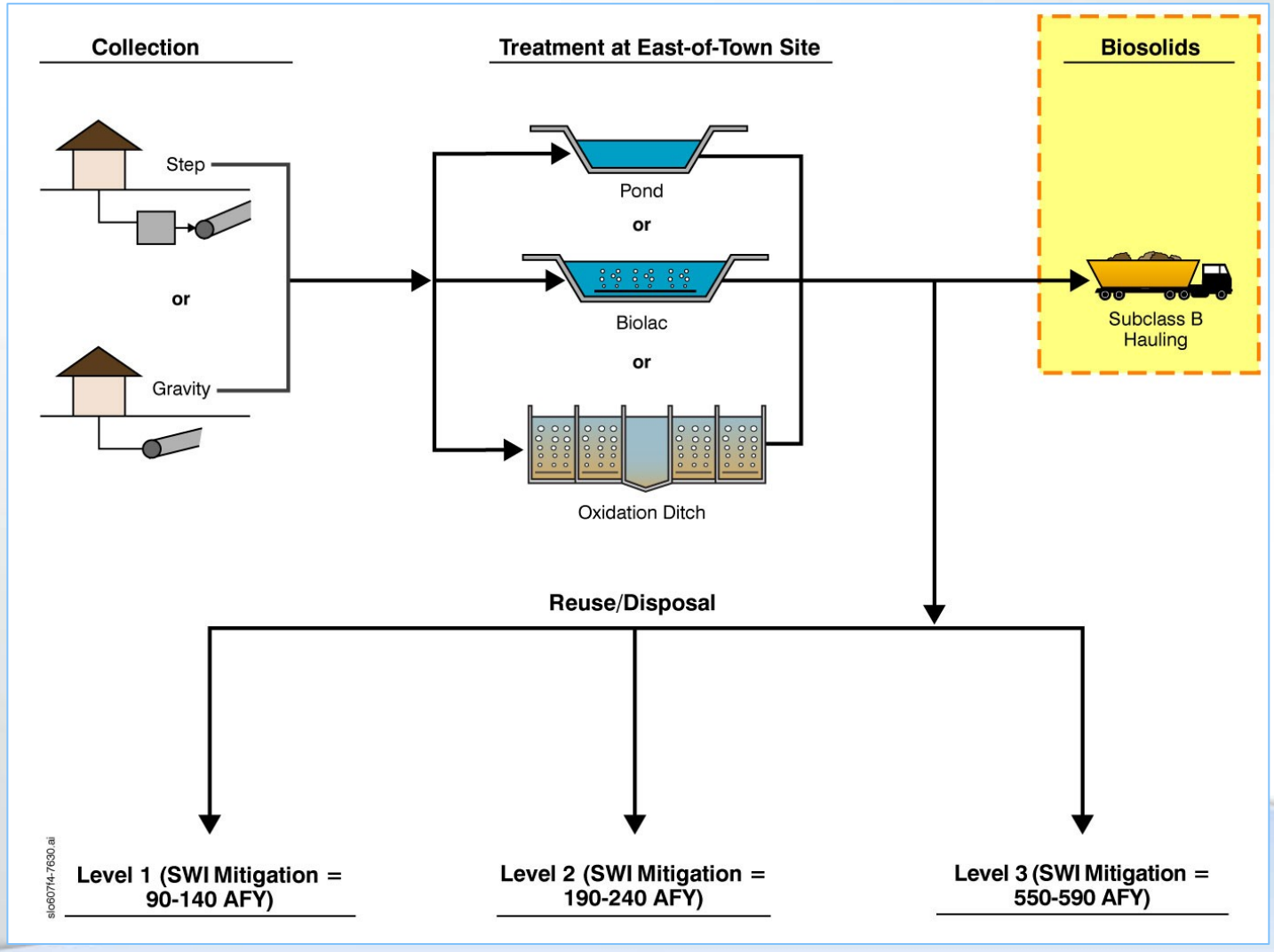
Three High Priority Sites are Being Carried Forward

Preliminary review considered:

- Acreage
- Topography
- Geology
- Visual impacts
- Environmental impacts



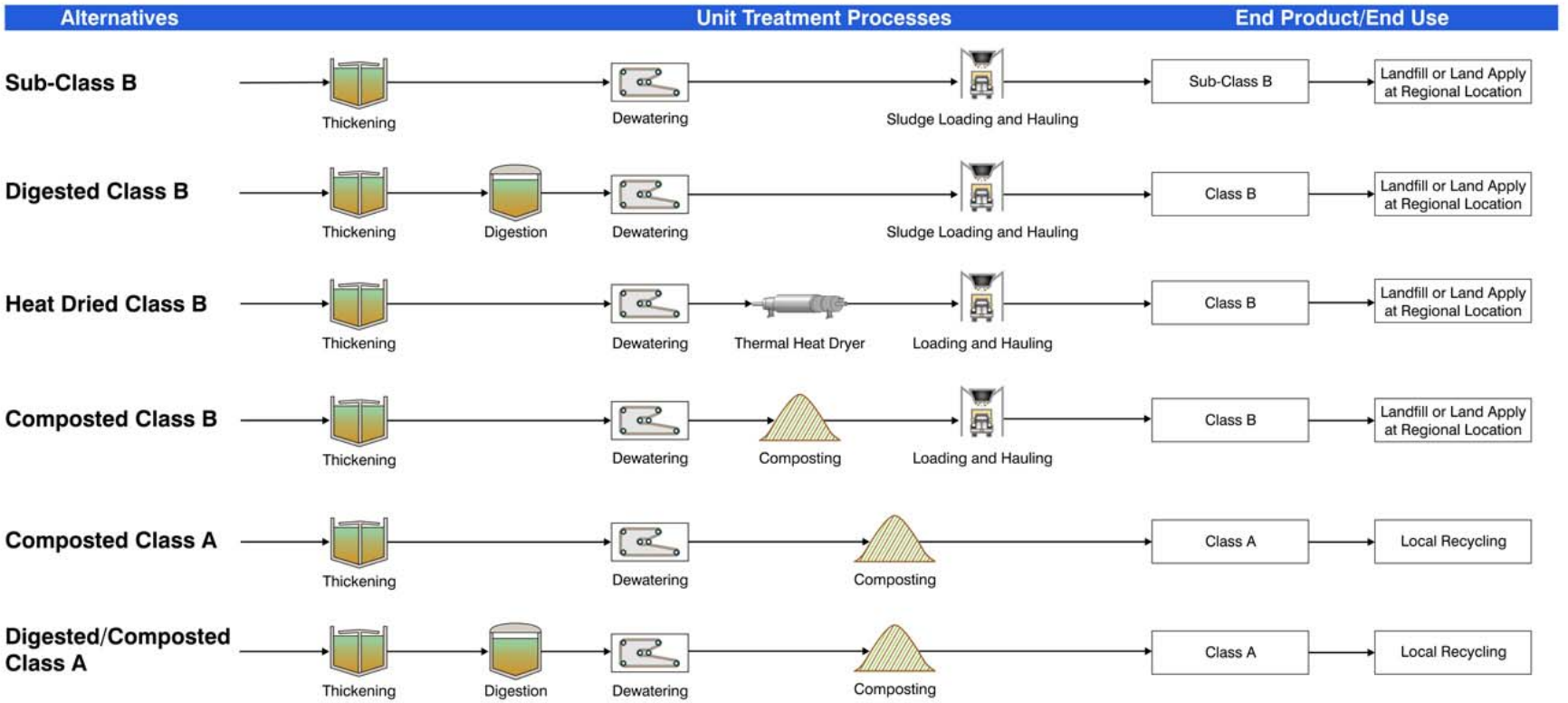
Solids Treatment and Disposal Options



Considerations for the Solids Options Include:

1. Affordability vs. long-term regulatory climate
2. Flexibility for future upgrades
3. Regional solutions

Six Solids Options Were Considered:



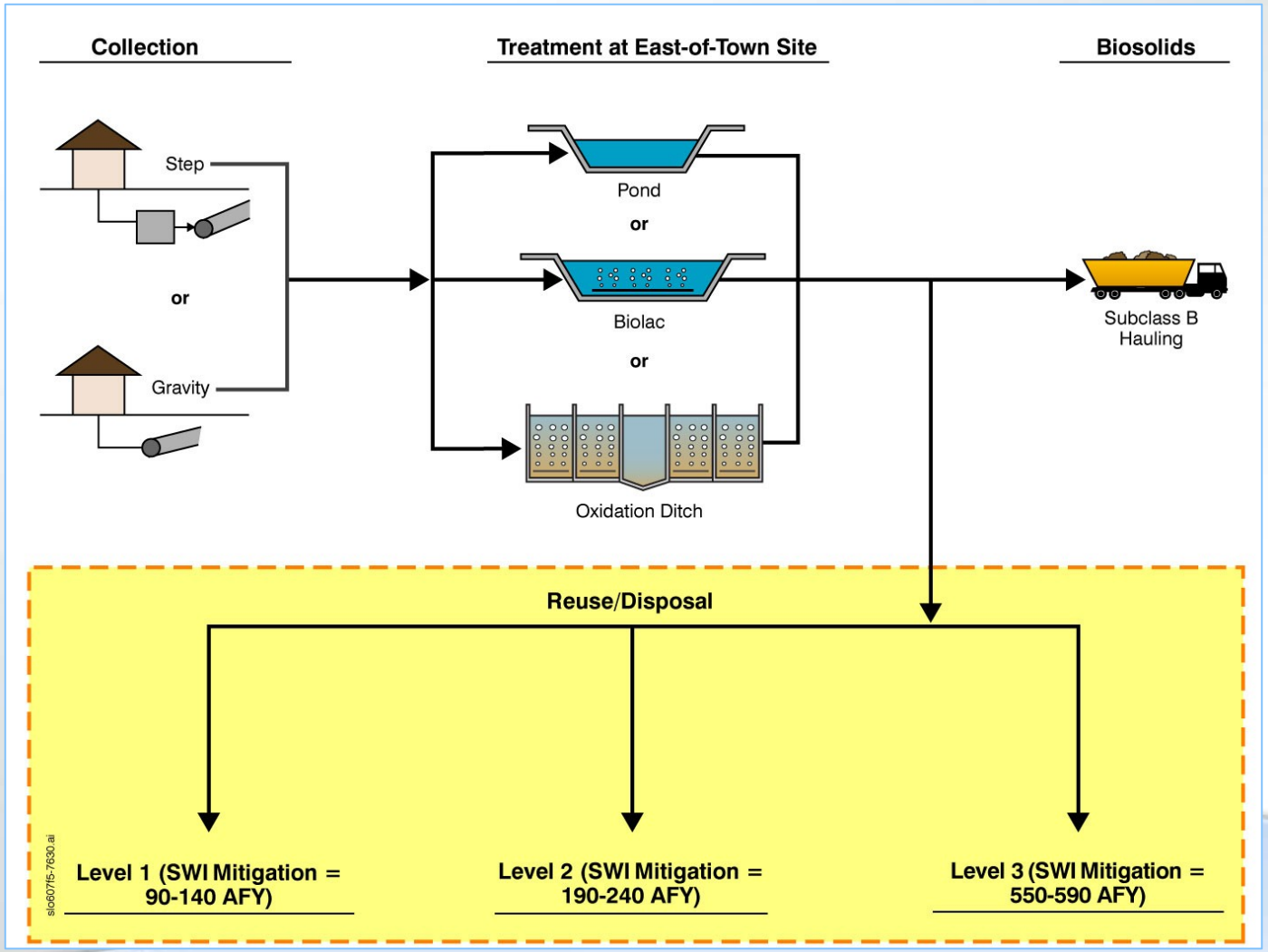
Solids Treatment and Disposal is a Community-Driven Issue

1. Sub-Class B hauling least expensive and leaves future options open
2. Value engineering-driven
3. Community Preferences
4. Market and Regulatory Factors

What Are Other Communities Doing?

1. South SLO County Sanitation District
   a. Digested and Solar Dry Class A to private composting
2. Morro Bay
   a. Digested Class B + Composting to produce Class A to land application and landscape amendment
3. Pismo
   a. Digested Class B, dewatered and hauled for land application

Effluent Disposal / Reuse Options

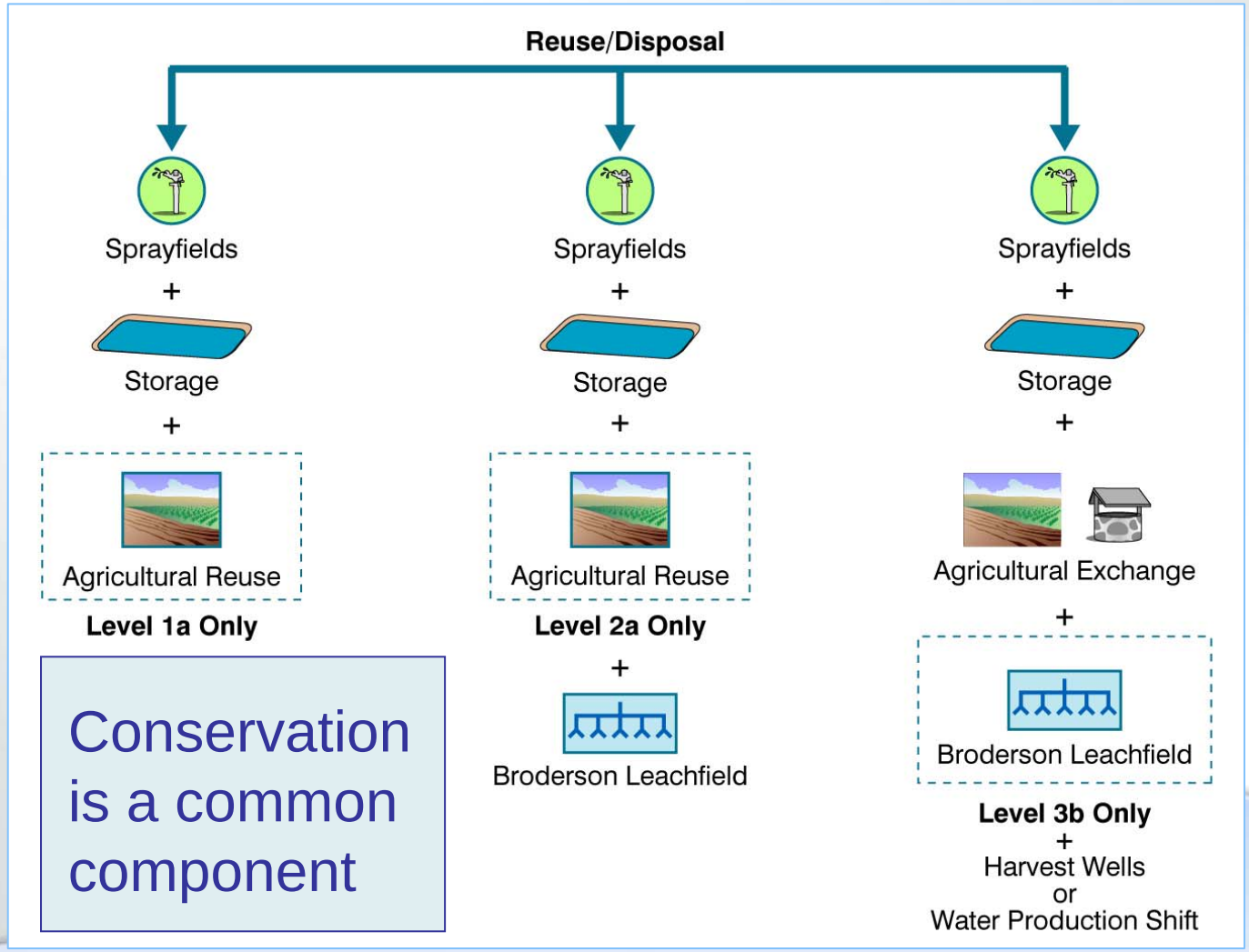


There Several Issues Affecting Effluent Disposal/Reuse

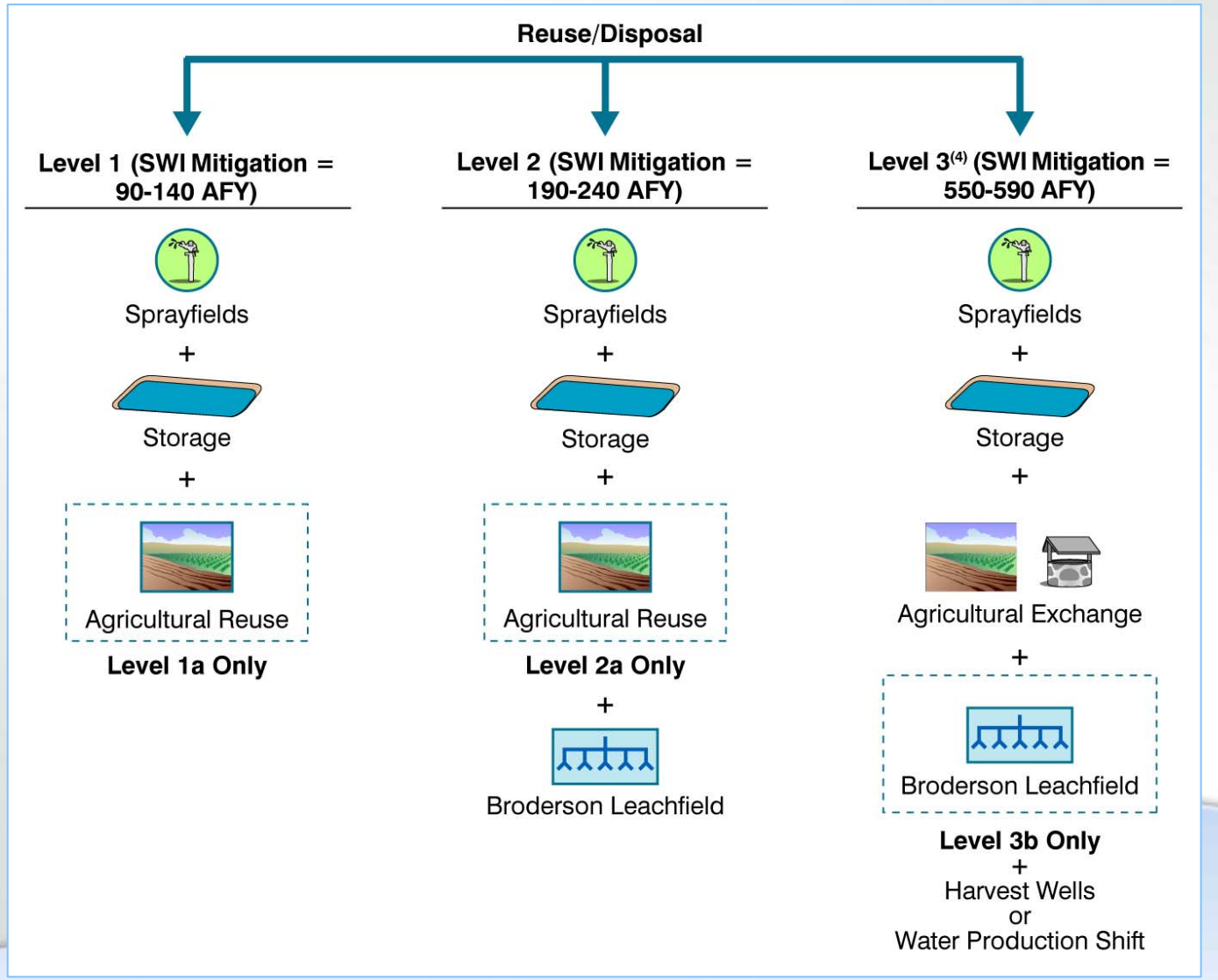
1. Disposal capacity for wastewater effluent
2. Groundwater management issues
   a. Septic discharges
   b. Seawater intrusion (SWI)

Options will be measured by their ability to mitigate seawater intrusion (project can only partially solve SWI)

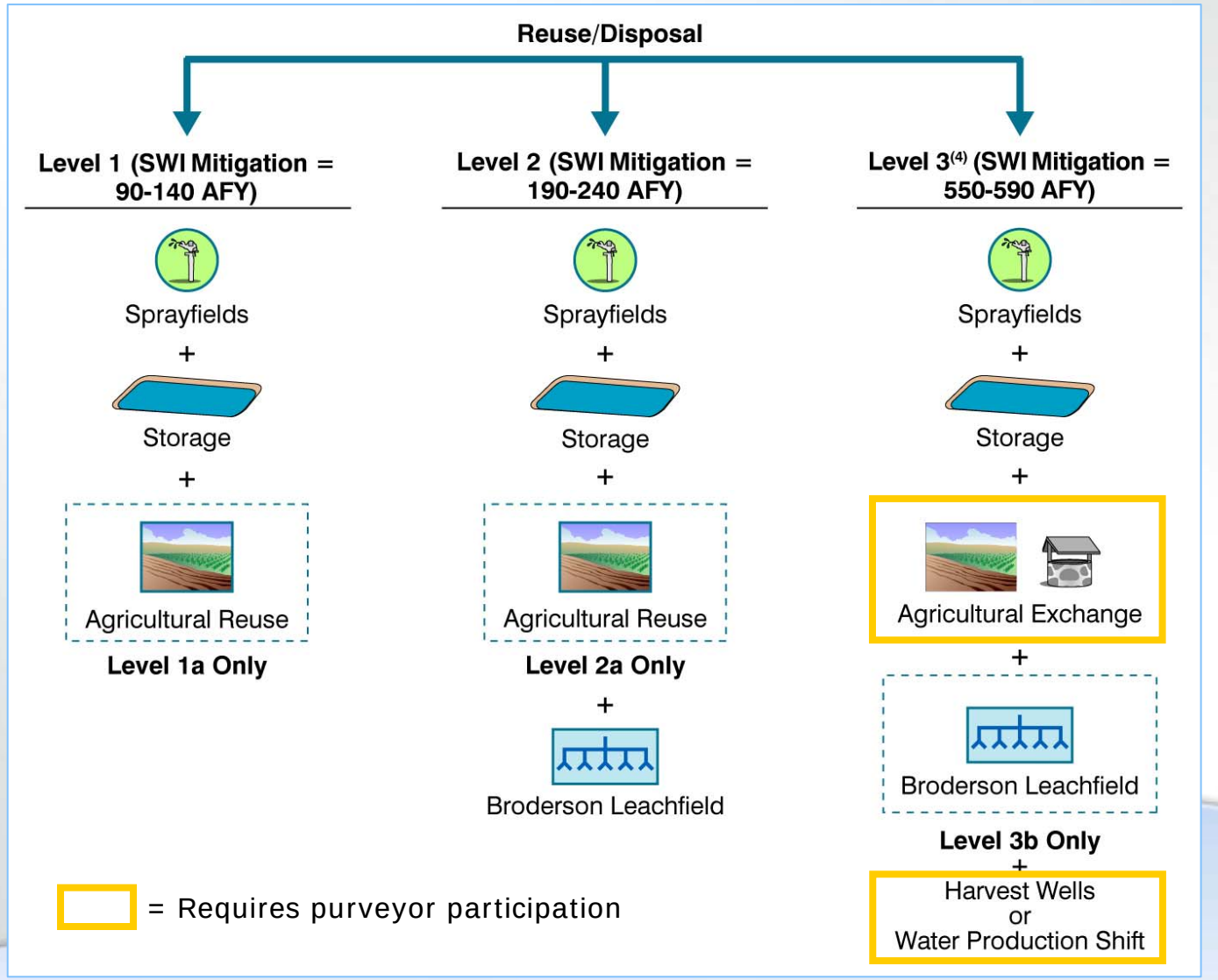
A Combination of Options is Required for Capacity and Seawater Intrusion Mitigation



Each Combination Provides a Varying Degree of Benefit



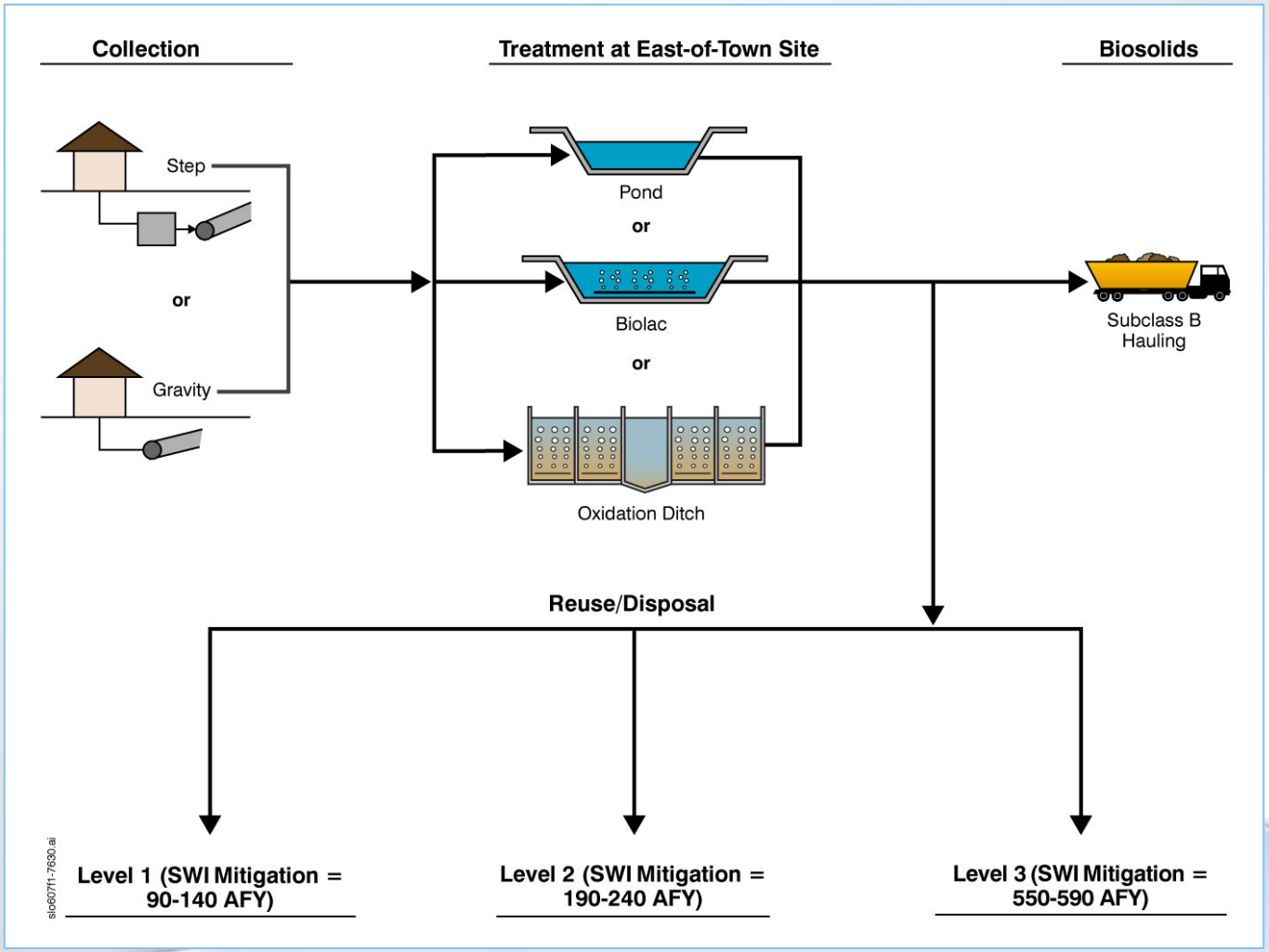
Water Company Participation Needed for Greatest Benefit



Important Sources of Disposal/Reuse Information:

1. Previous WDRs/other communities' WDRs
2. Cleath and Associates Groundwater Report
3. Scott's Valley – successful financial cooperation with water agency
4. Local Water Purveyors participation, including other options

Community Options Provide Basis for Pro/Con Analysis



The Fine Screening Report Resulted in Draft Findings of:

Community Options

Community Options Benefits

Community Options Costs

Community Option Benefits were Measured by Seawater Intrusion Mitigation

1. SWI is occurring at 460 AFY
2. Replacement of septic systems will increase SWI by 90 AFY
3. Community to decide desired level of mitigation, with current condition as minimum
4. Reuse/disposal options offer different mitigation factors

Community to Decide What Level of Mitigation To Achieve

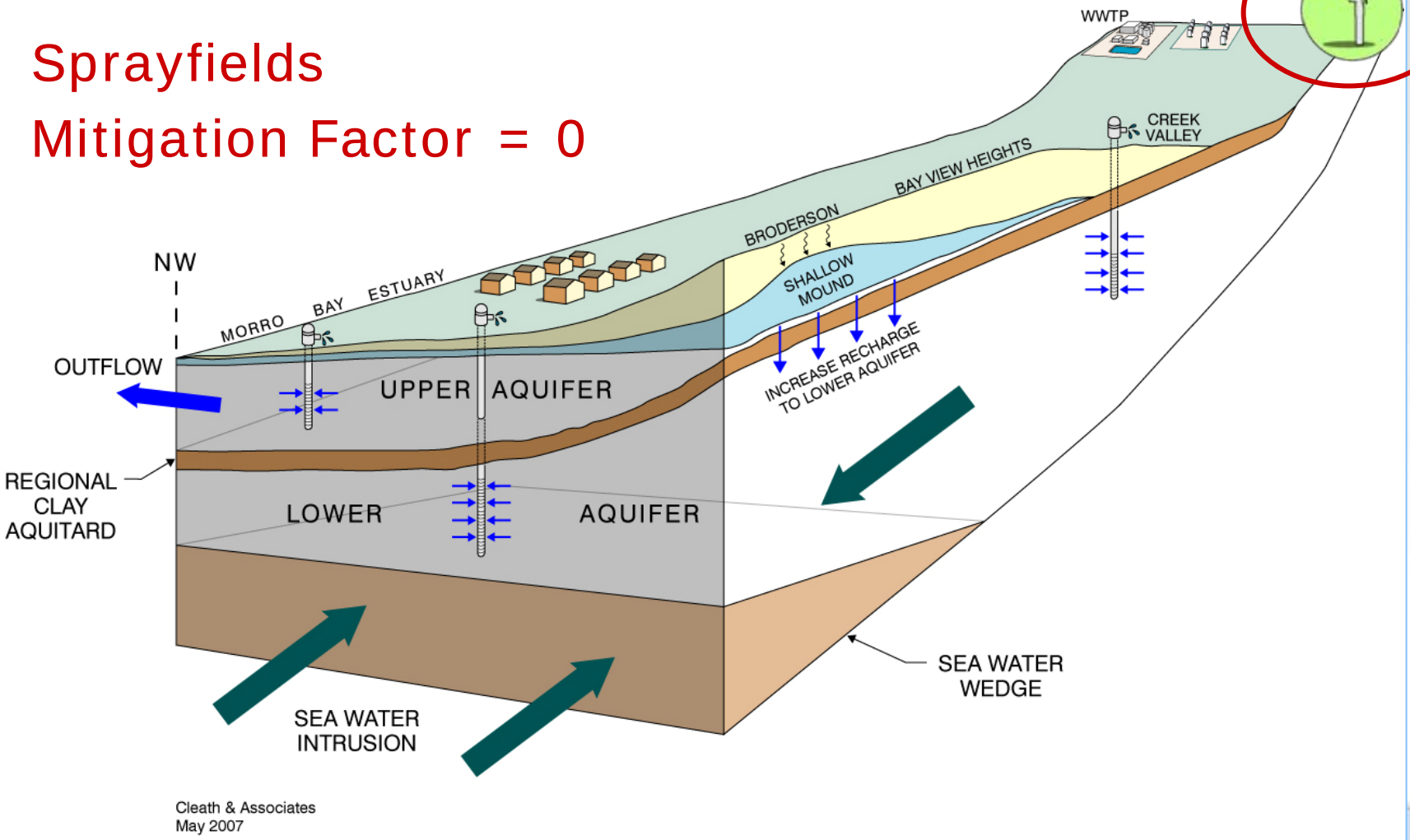
Seawater Intrusion Mitigation Levels

Level	Absolute Volume Mitigated (AFY)	Description
Level 0	0	No mitigation of seawater intrusion
Level 1	90 to 140	Mitigation of seawater intrusion similar to current conditions (minimum project)
Level 2	190 to 240	Maximum mitigation of seawater intrusion possible without purveyor participation
Level 3	550 to 600	Achievement of a balanced basin at present water use rates (requires purveyor participation)
Level 4	780 to 830	Achievement of a balanced basin at buildout (requires purveyor participation)

Seawater Mitigation Potential

Sprayfields

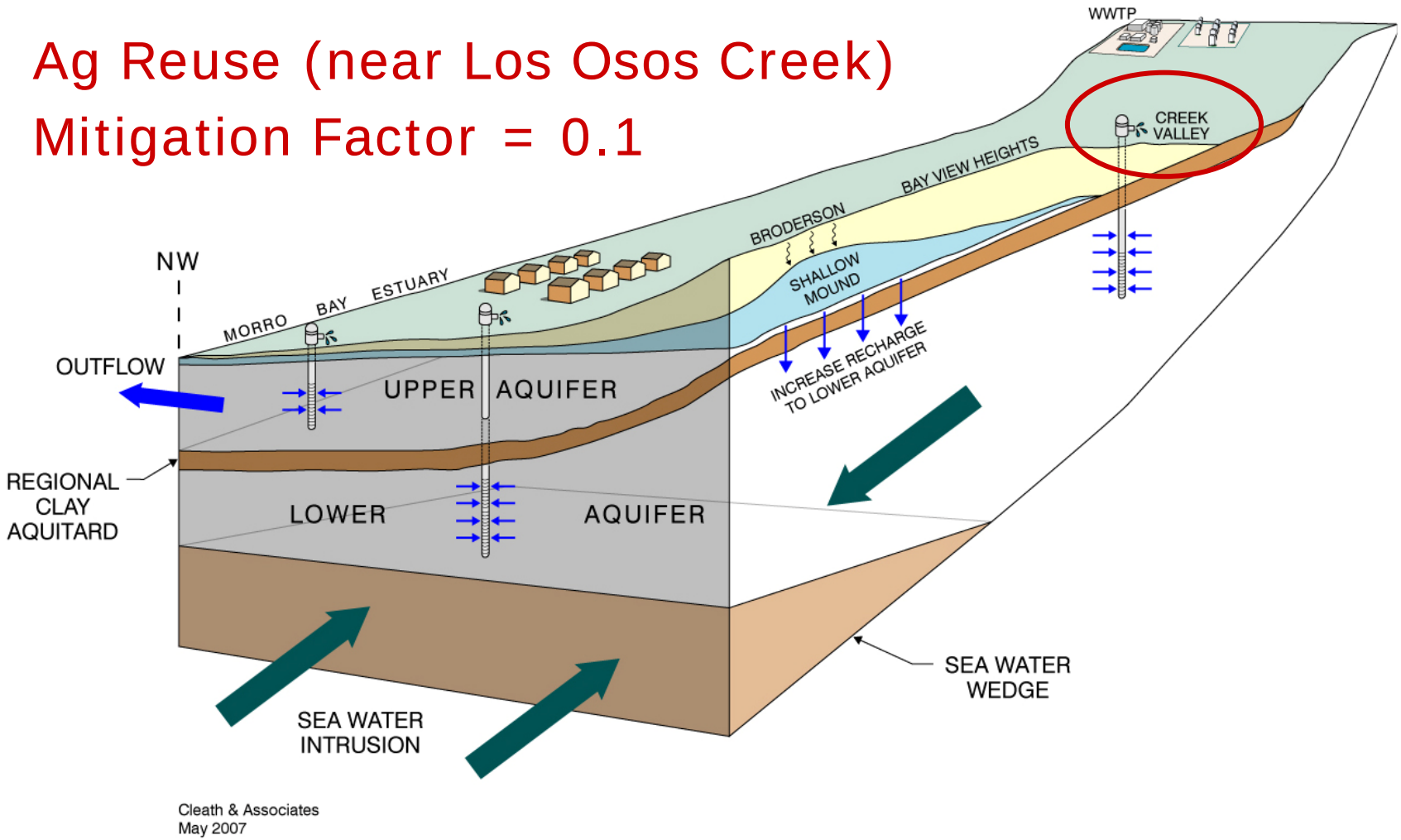
Mitigation Factor = 0



Seawater Mitigation Potential

Ag Reuse (near Los Osos Creek)

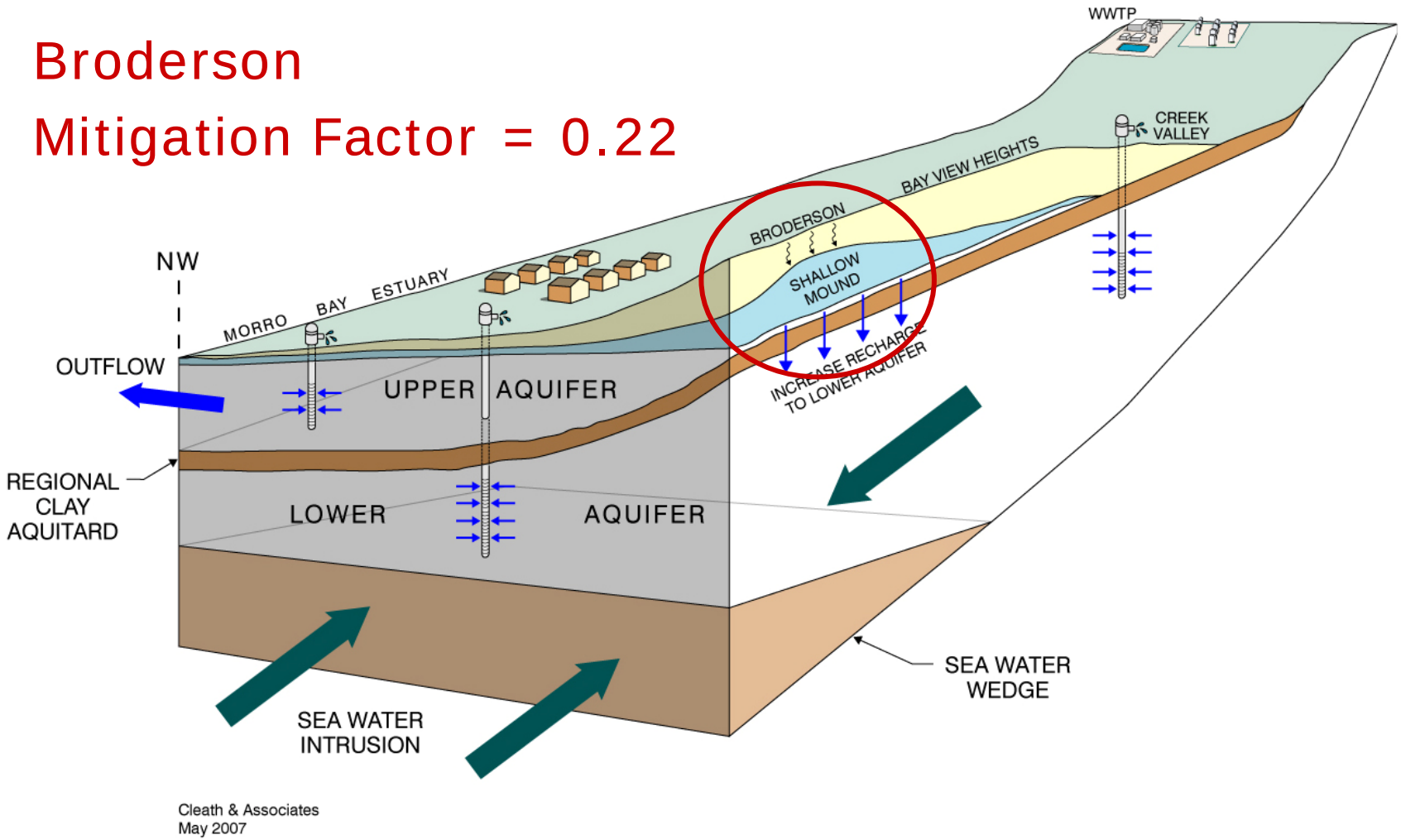
Mitigation Factor = 0.1



Seawater Mitigation Potential

Broderson

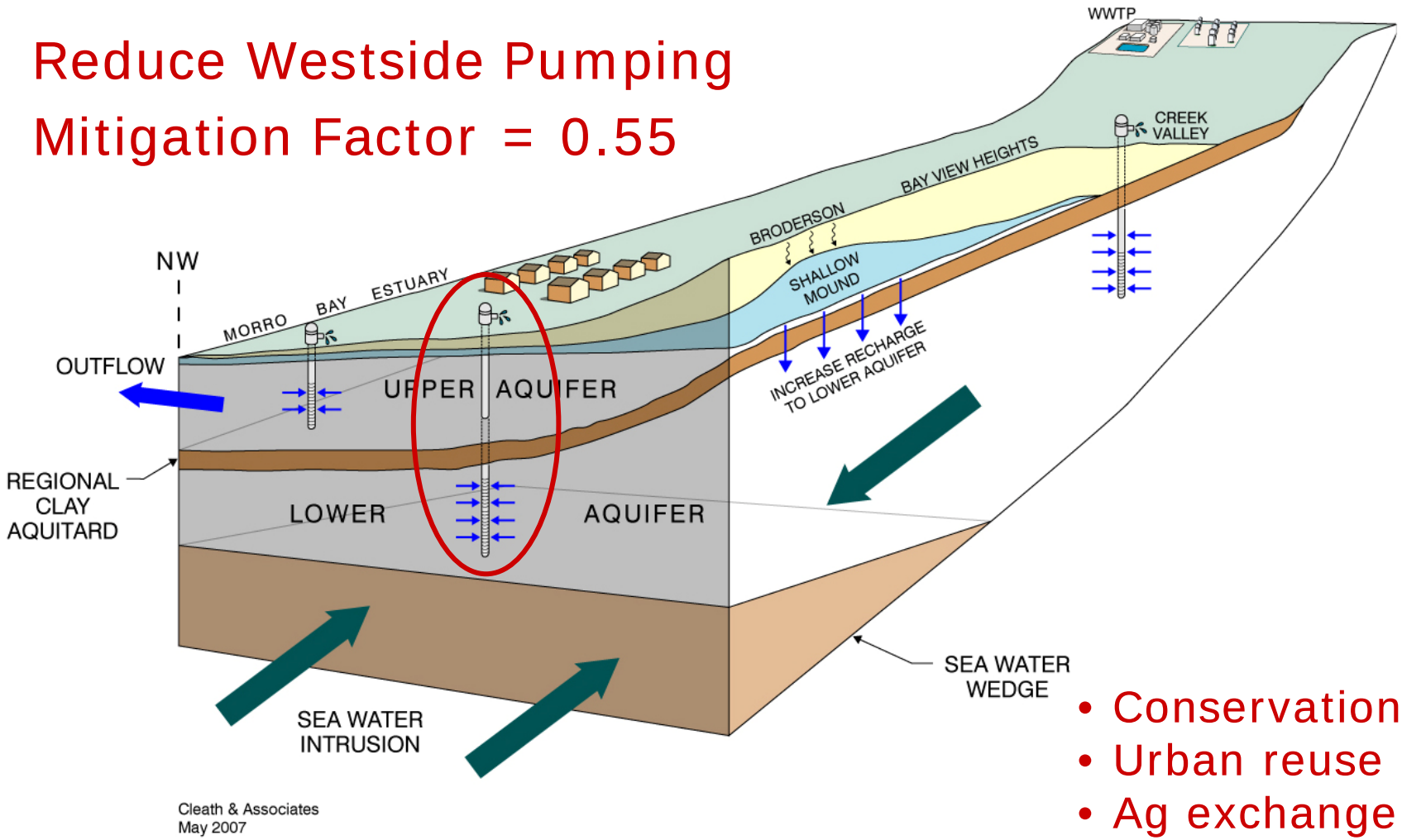
Mitigation Factor = 0.22



Seawater Mitigation Potential

Reduce Westside Pumping

Mitigation Factor = 0.55



- Conservation
- Urban reuse
- Ag exchange

The Fine Screening Report Resulted in Draft Findings of:

Community Options

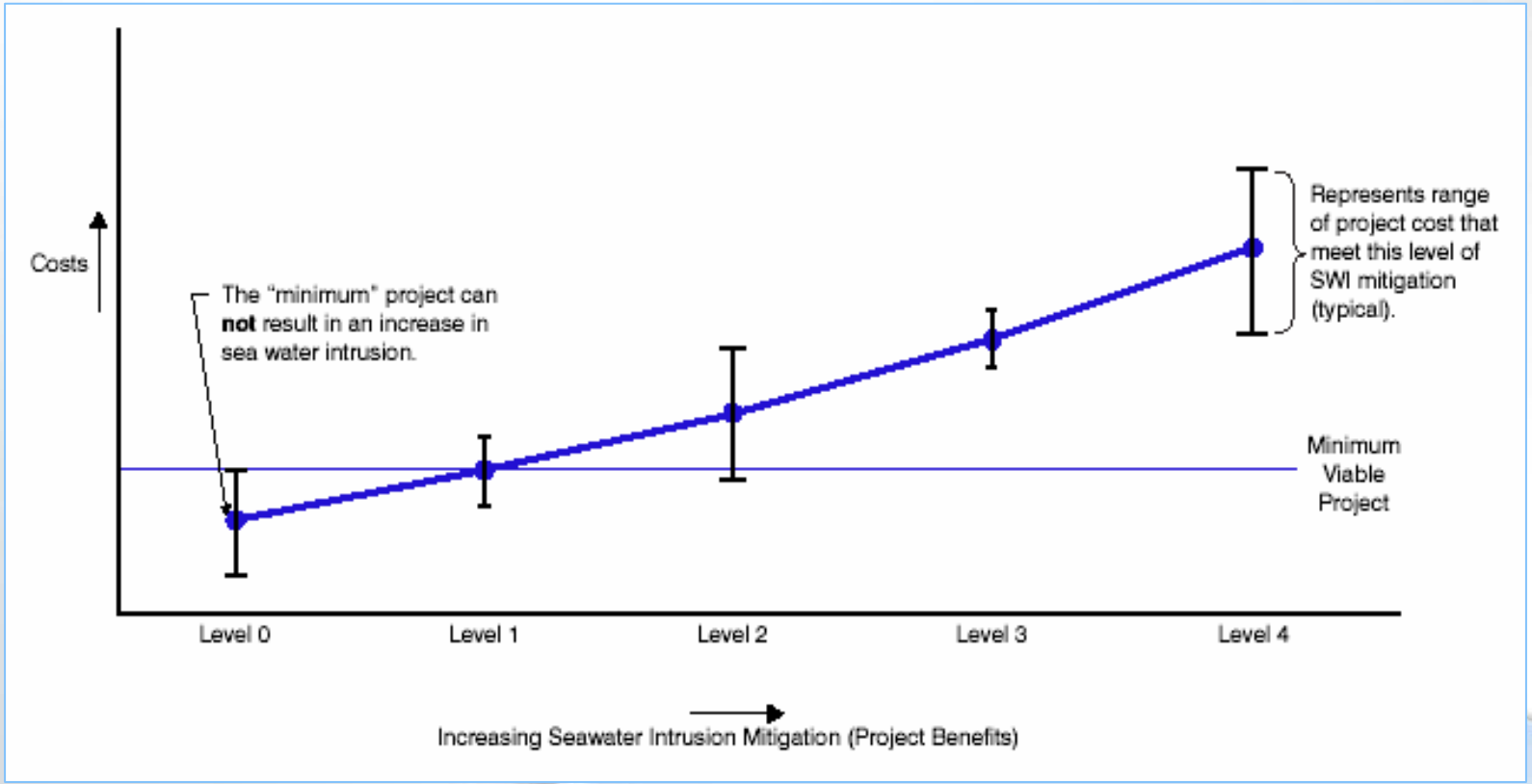
Community Options Benefits

Community Options Costs

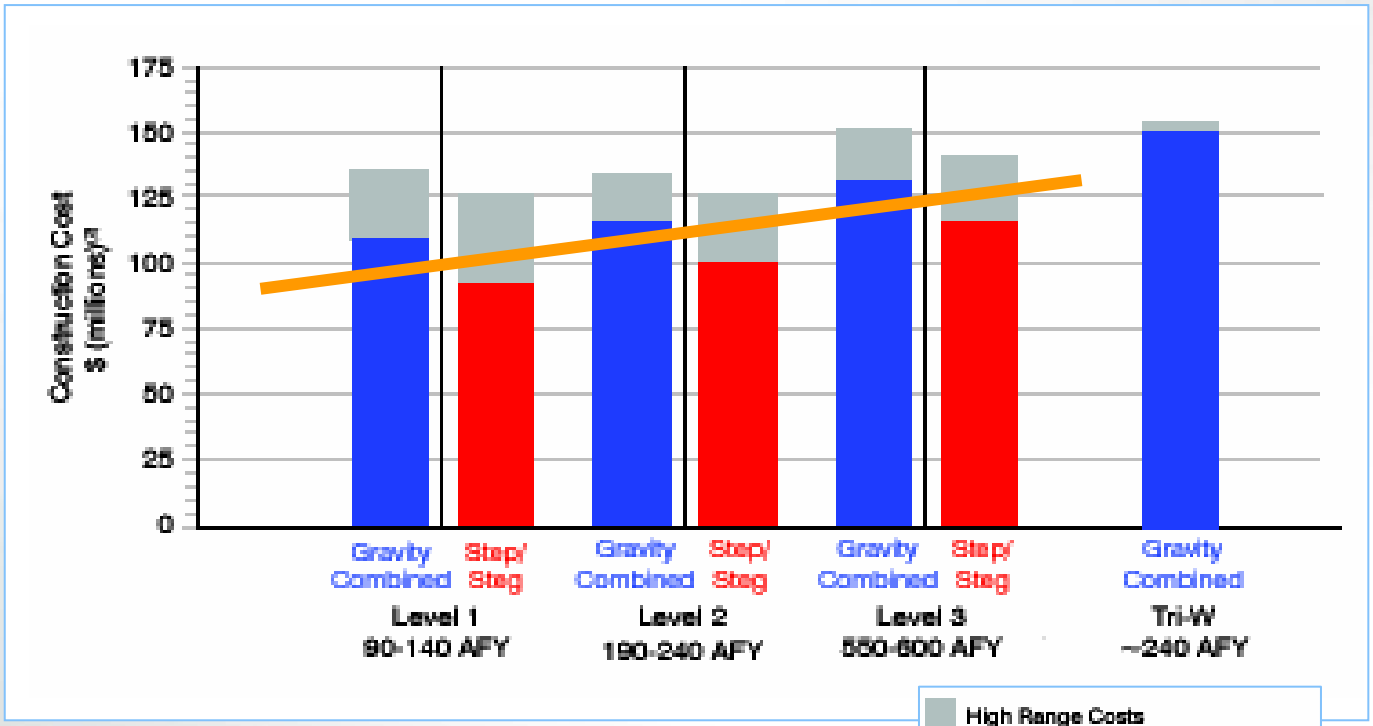
Costs Were Calculated for Construction, Total Project and O&M

1. Costs were estimated using
   a. analogous projects (used scaling factor)
   b. unit costs
   c. Previous bid tabs (where available)
   d. Previous estimates
2. Capital Costs were escalated to estimated midpoint of construction, June 2011

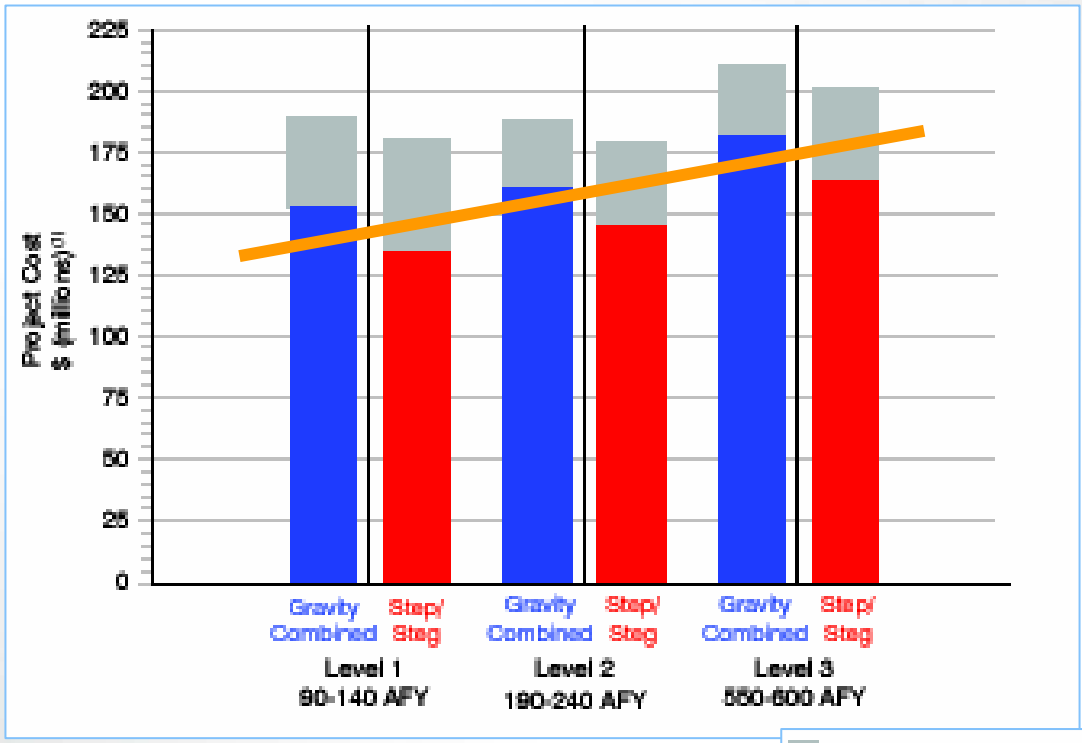
The Goal was to Provide Cost Estimates for Each Level of SWI Mitigation (Project Benefit)



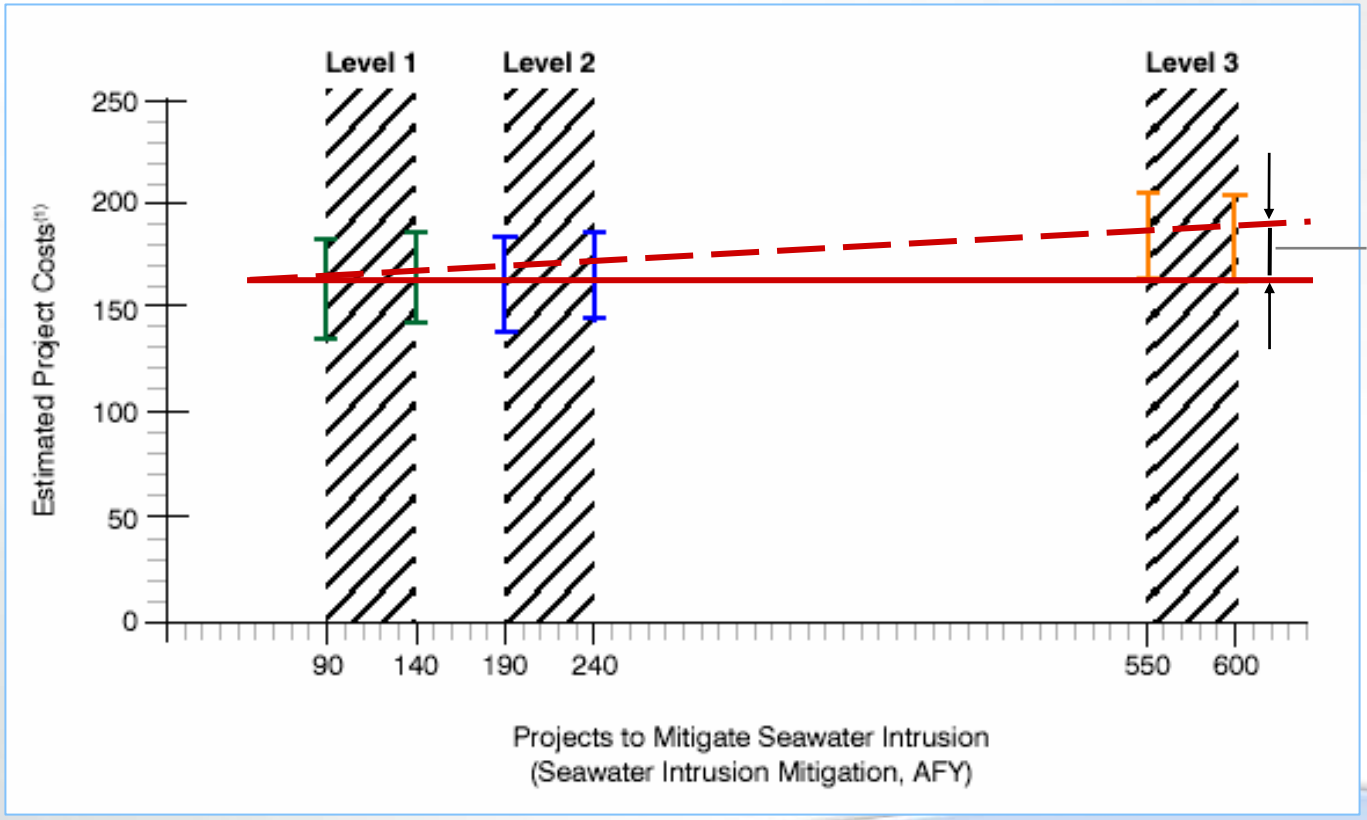
The Estimates Resulted in a Range of Construction Costs with Significant Overlap



Project Costs Also Overlap
(Includes Engineering, Legal, Admin and Construction Management)

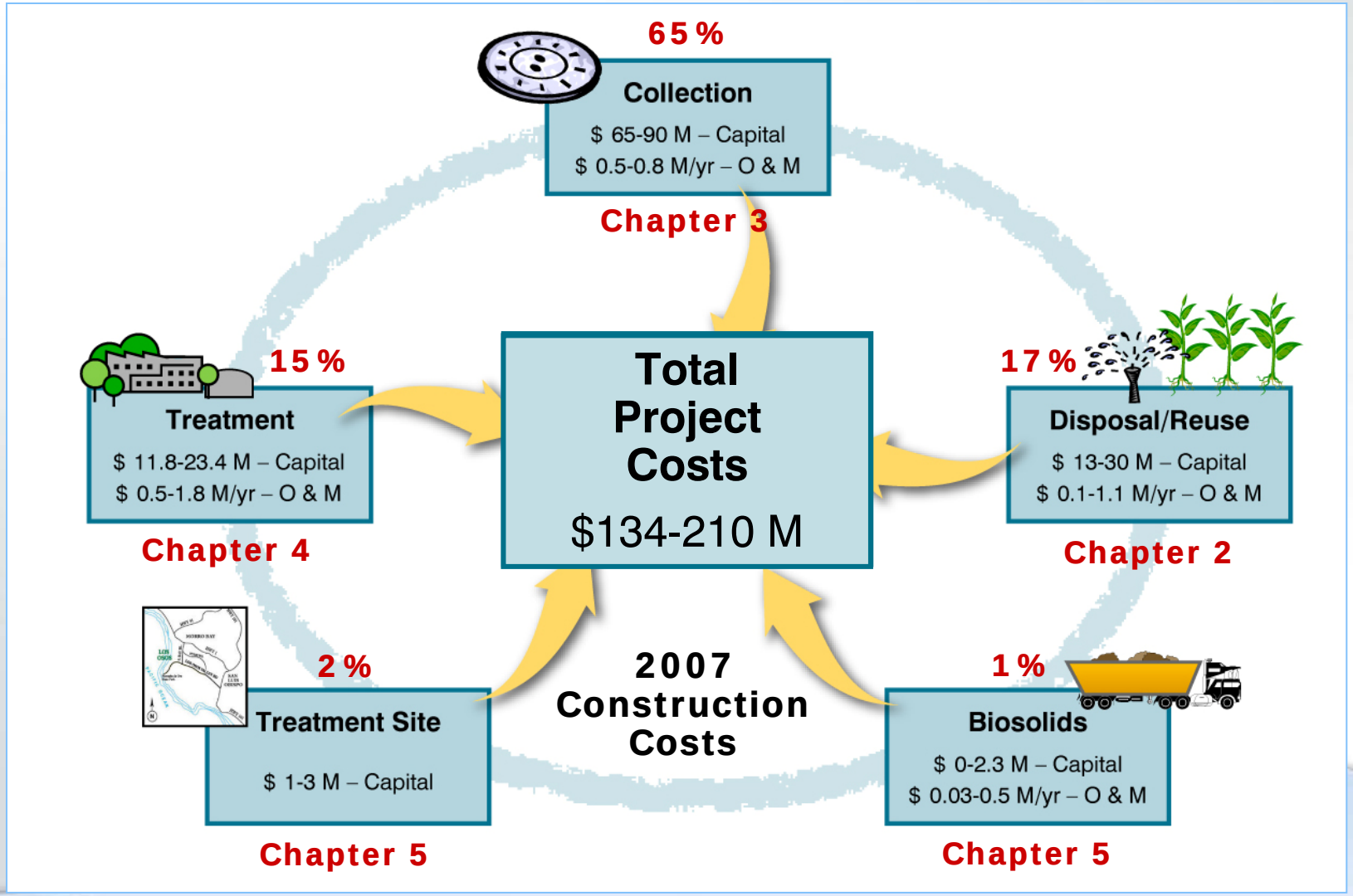


Level 3 Mitigation Could Be Achieved at Similar Costs to Levels 1 and 2

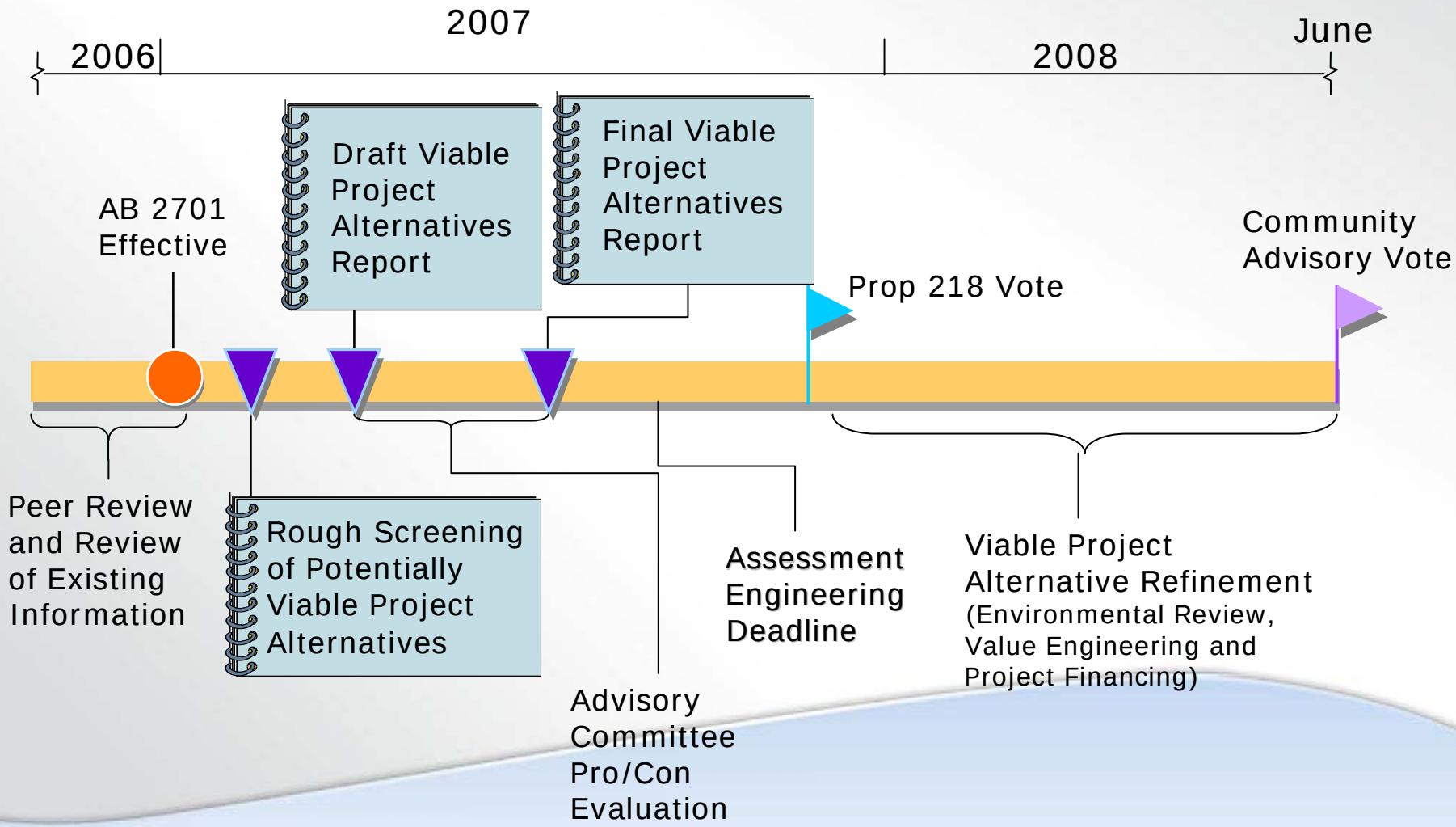


But requires purveyor participation!!!

Why is the Project So Expensive?



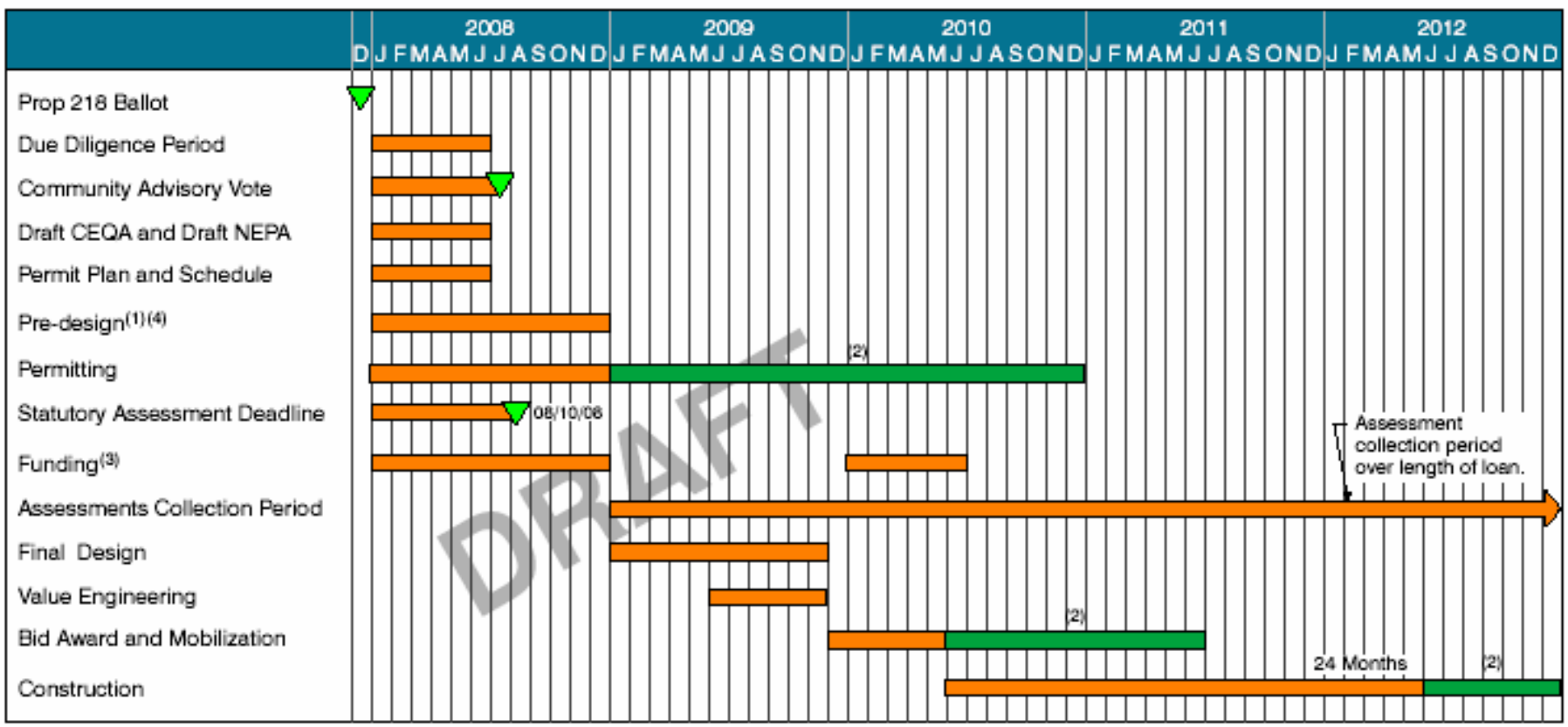
Viable Project Alternative Development Schedule



Next Steps

1. We want your input! – so it can be incorporated into the final report
2. Proposition 218 Ballot (Fall)
3. Initiate Environmental Compliance and Permitting (Early 2008)
4. Due Diligence and Peer Review (2008)
5. Community Advisory Vote (Summer 2008)

Long Term Schedule



End Of Presentation

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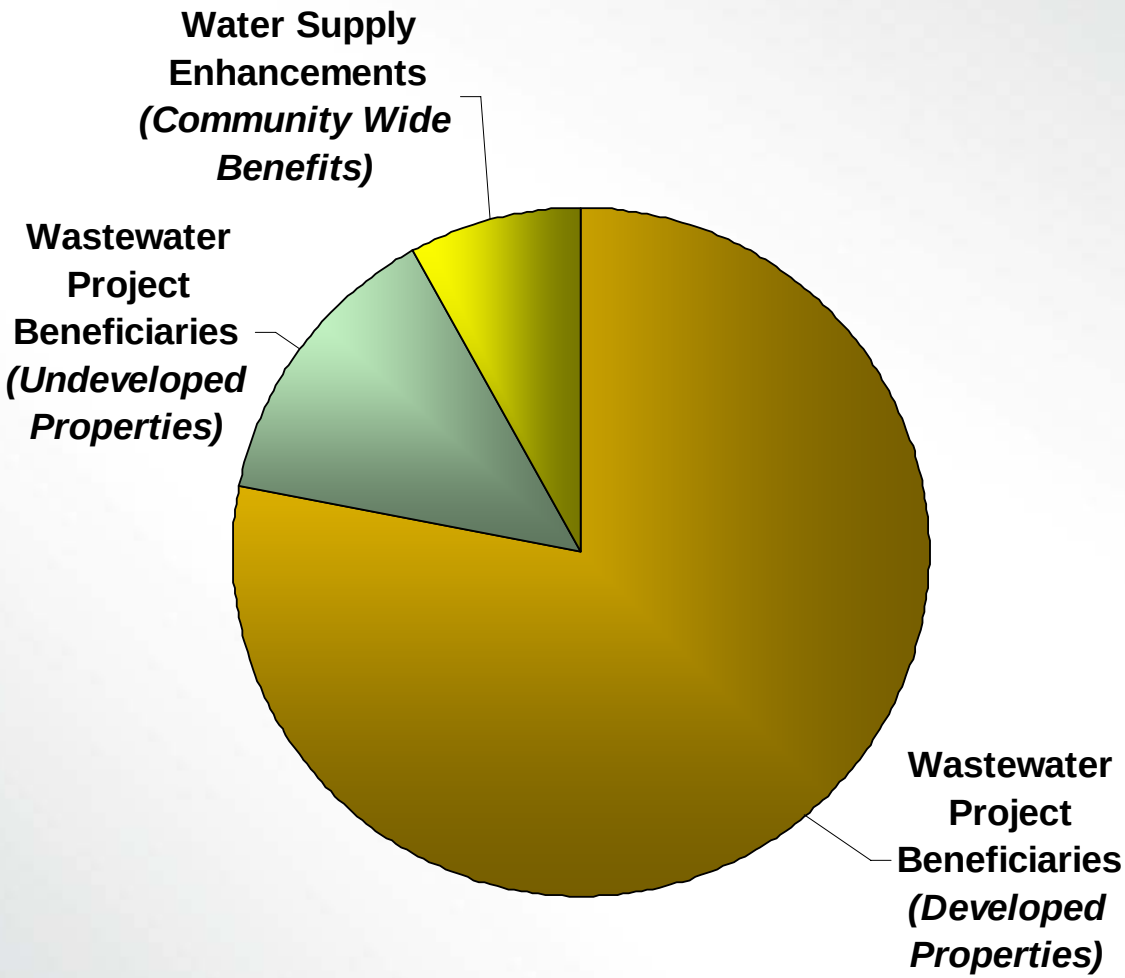
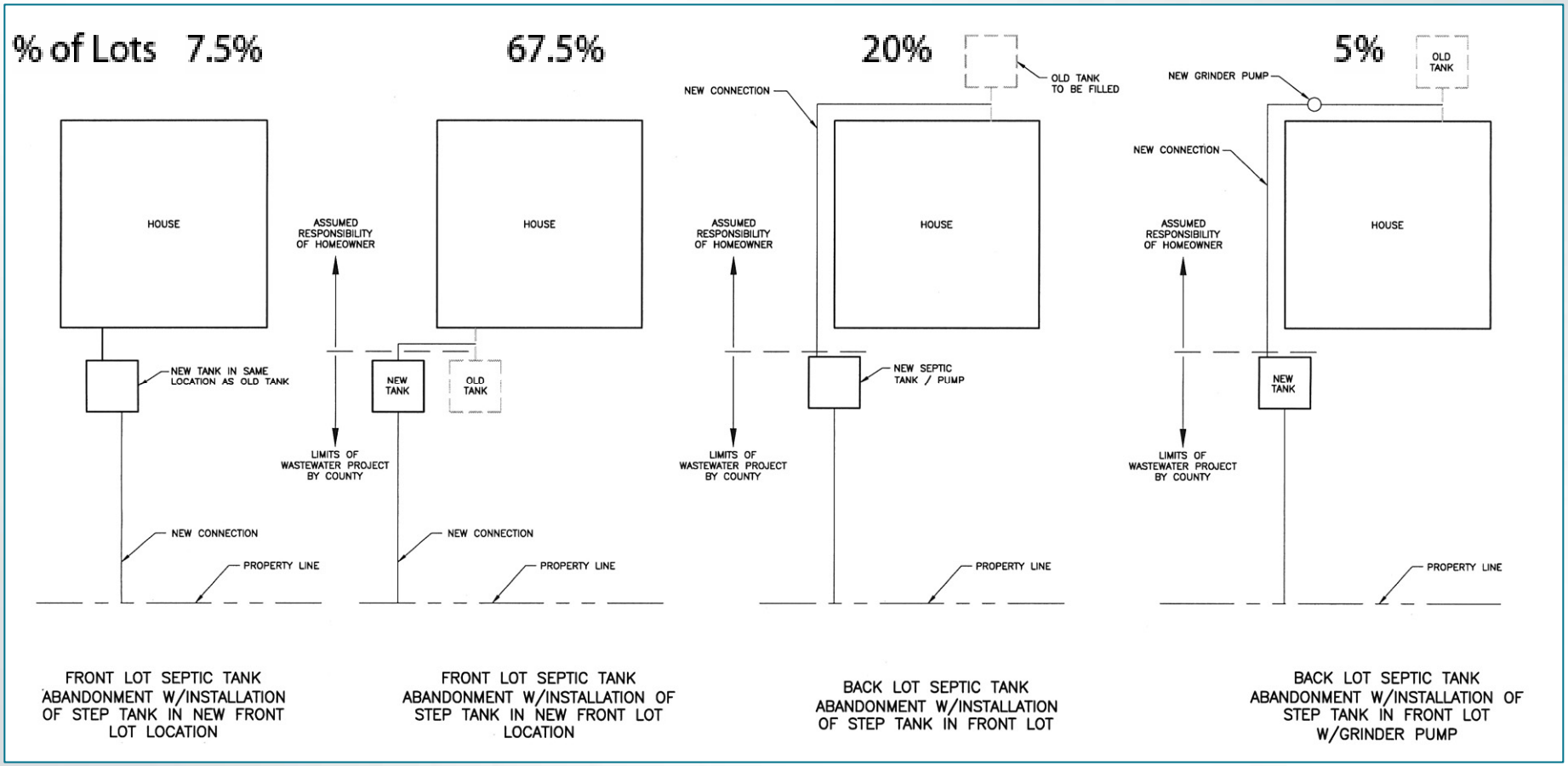
Analyzing the Costs



STEP System On Lot Configuration



Gravity System On Lot Configuration