



CLWA Recycled Water Master Plan

WaterReuse LA Chapter Meeting @ Castaic Lake Water Agency

October 11, 2016

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Kennedy/Jenks Consultants

Recycled Water Master Plan

- Introduction and Background
- Recycled Water Supplies
- Recycled Water Market
- Project Alternatives
- Alternatives Evaluation
- Recommended Project
- Next Steps



Study Goal and Objectives

Goal: Update the 2002 Recycled Water Master Plan based on recent developments affecting recycled water sources, supply availability and demand, and explore opportunities to maximize the utilization of recycled water in the Santa Clarita Valley.

Near-Term Objective:

- Incorporate updates for Phase 2 Recycled Water System expansion.
- Support upcoming design work.
- Assist in pursuit of currently available grants and loans.

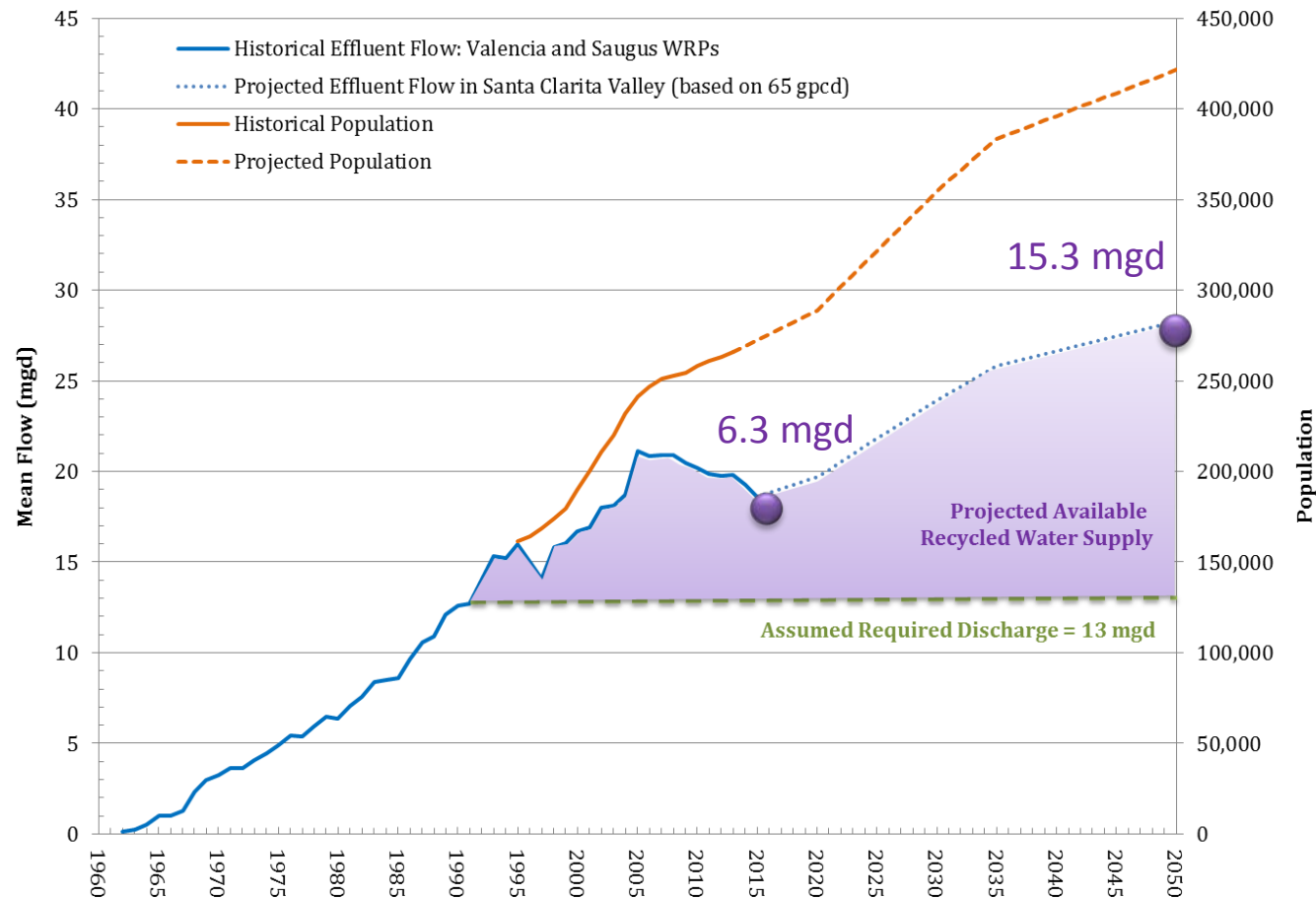
Mid-Term Objective:

- Optimize expansion of the non-potable recycled water system.
- Further investigate next steps for potable reuse.

Long-Term Objective:

- Continue exploration and/or implementation of potable reuse through surface water augmentation and/or direct potable reuse.

Recycled Water Supply



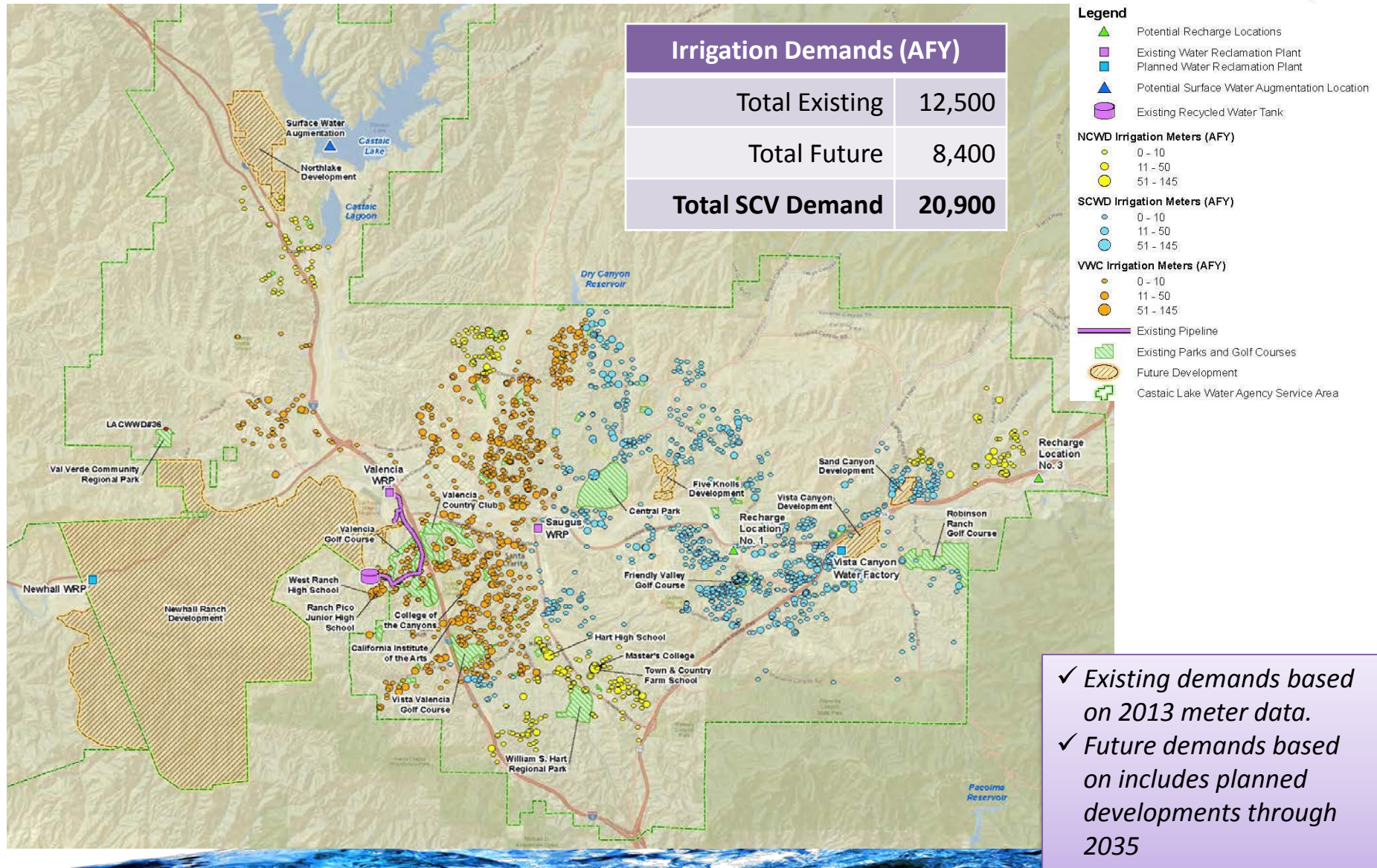
Recycled Water Supply (AFY)

Total Existing	7,000
Total Future	17,000
Total SCV Supply	24,000

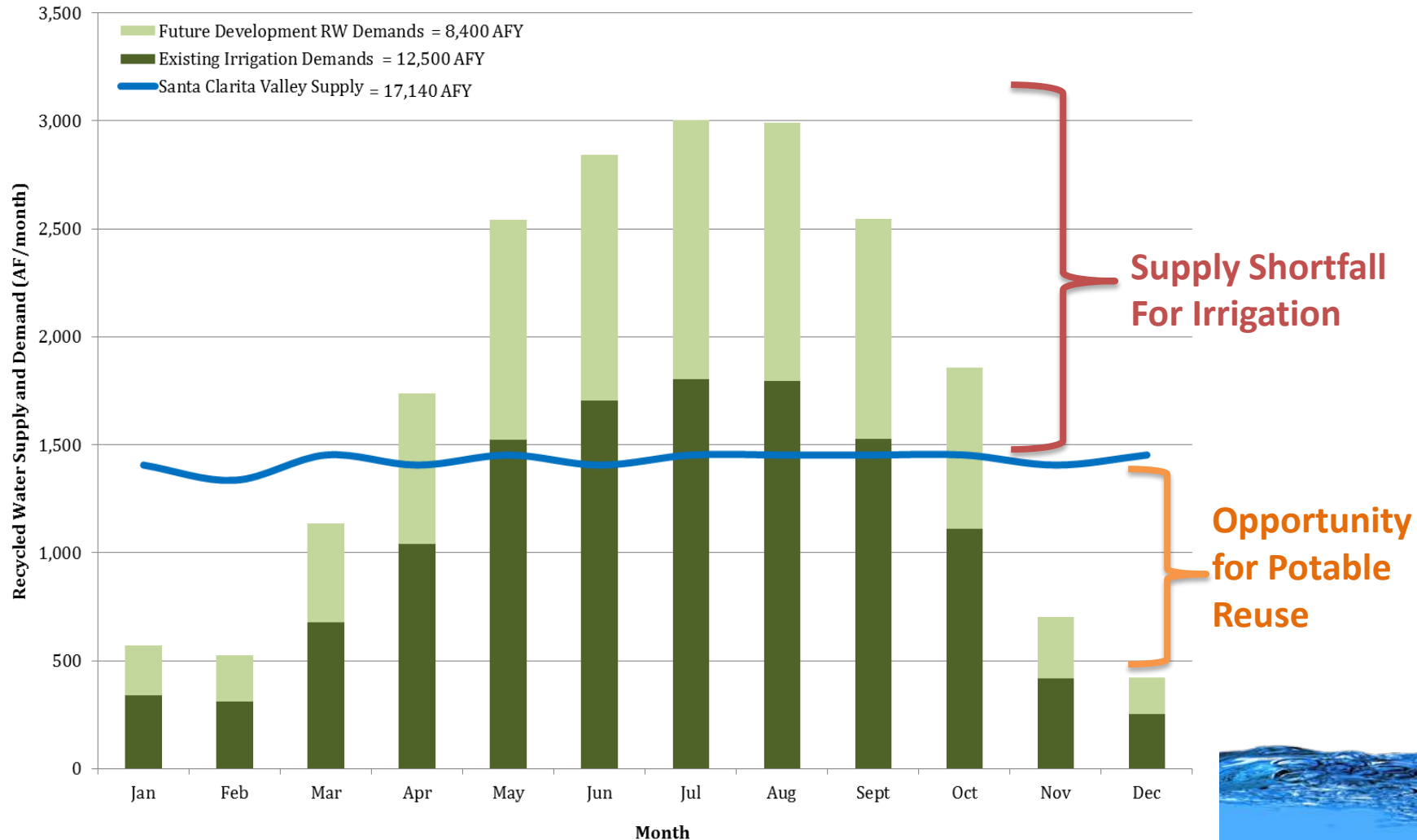
Not all flows can be utilized

- ⊗ Limited Saugus after discharge requirement
- ⊗ Limited use near Vista Canyon Water Factory
- ⊗ Limited use near Newhall Ranch WRP

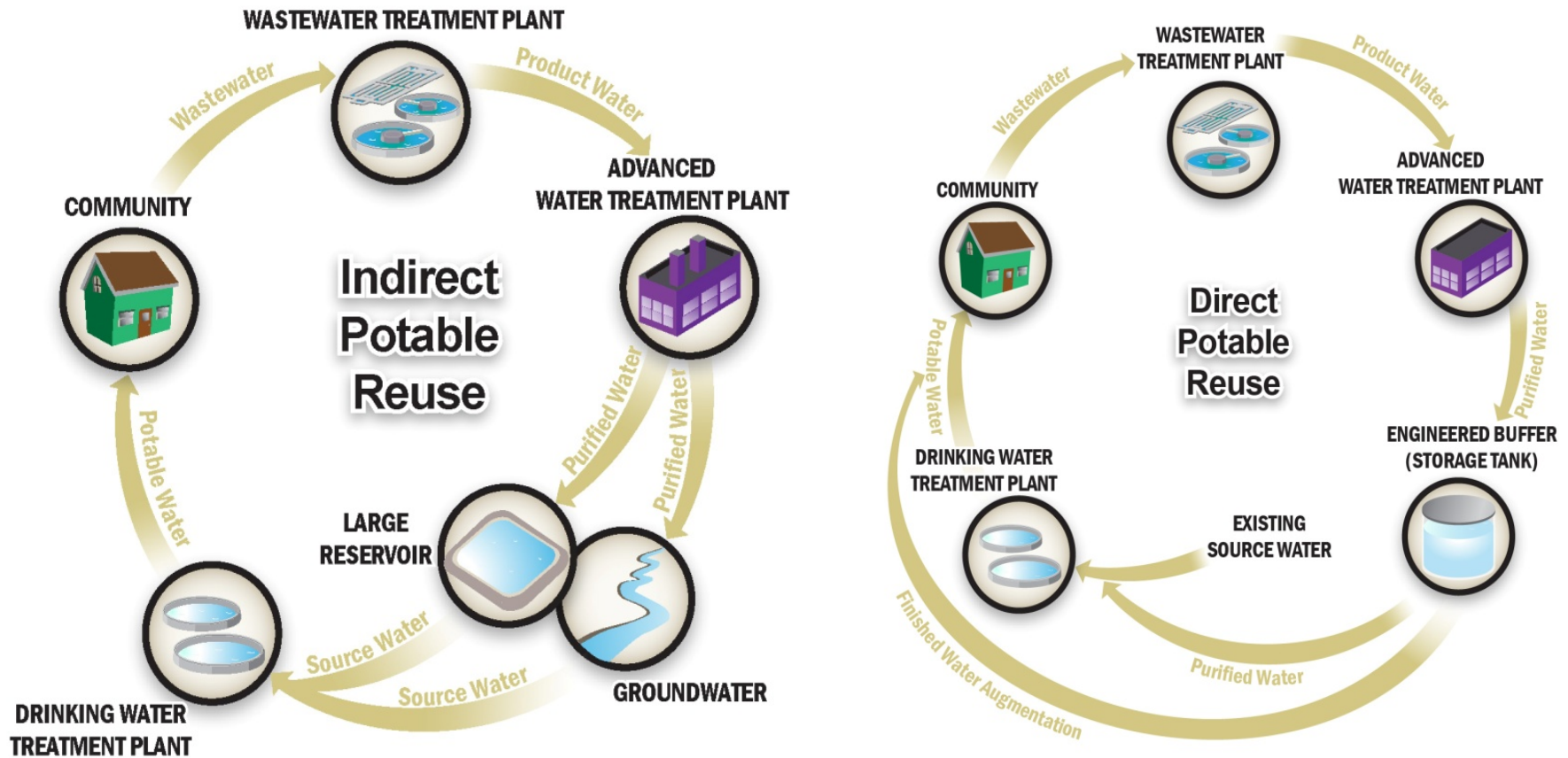
Recycled Water Market: Non-Potable Reuse



Future Recycled Water Supply and NPR Demand (2050)



Recycled Water Market: Potable Reuse



GWRR = Groundwater Replenishment Reuse
SWA = Surface Water Augmentation

DPR = Direct Potable Reuse

Recycled Water Market: Potable Reuse

Potable Reuse Opportunities	Ultimate Demand (AFY)
GWRR Surface Spreading	1,100 to 3,700
GWRR Direct Injection	4,250
Surface Water Augmentation	4,250
Direct Potable Reuse	4,250

** The ultimate demand is based on anticipated available supply in 2050 after non-potable demands are served.*

Potential Benefits

- Local, drought-proof, sustainable supply
- Reduce reliance on imported water
- Use of RW in off-peak irrigation months
- Supply redundancy in case of SWP interruption
- Reduce discharges to the Santa Clara River
- Repurpose unused capacity in the SCVSD AWTF
- Recharge groundwater basin(s)
- Maintain lake levels
- Integrated approach solving multiple issues

Potential Challenges

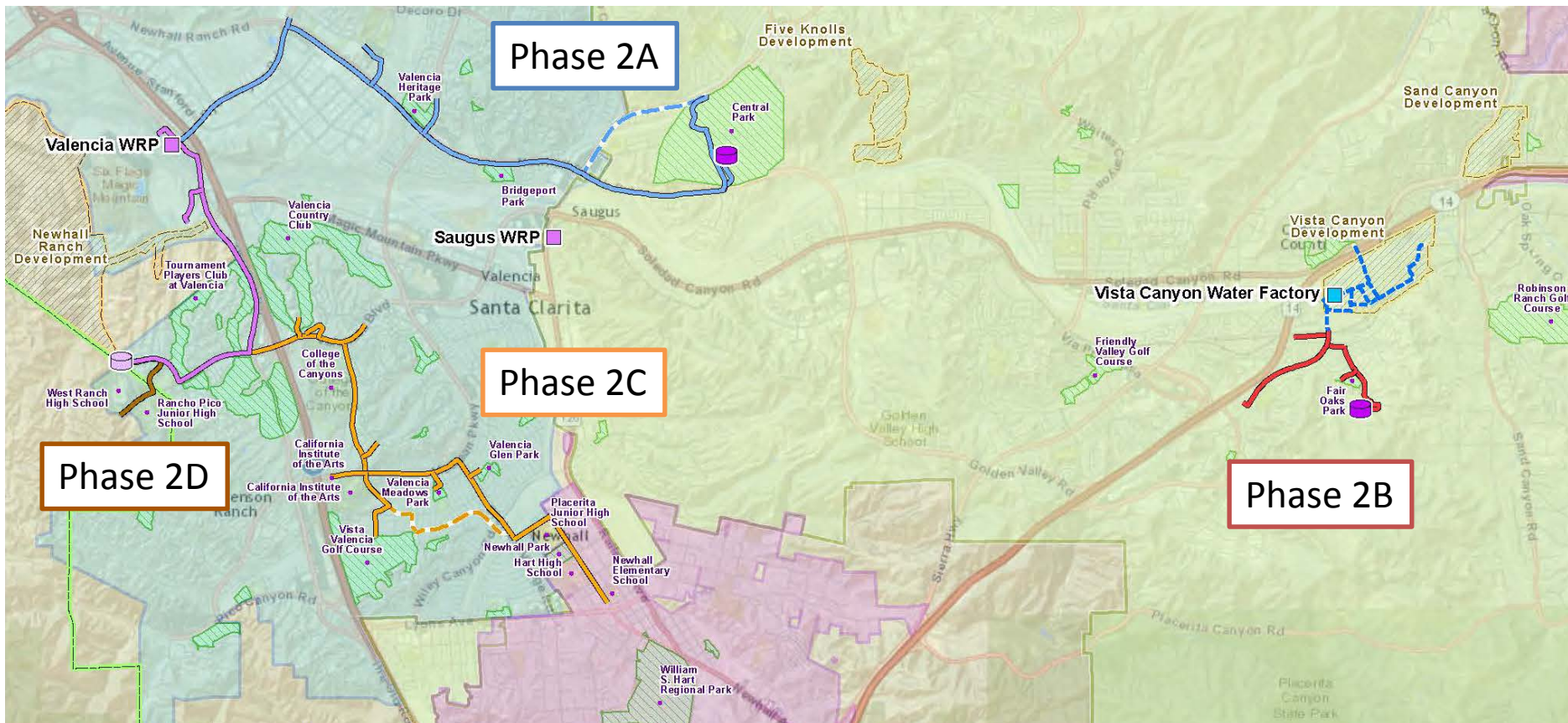
- High treatment and brine disposal costs
- High conveyance costs
- Additional permitting requirements
- Public acceptance
- Development of partnerships and agreements
- Regulatory uncertainty

Project Alternatives

Alternative	Description	Range of Annual Demands (AFY)*
Alternative 1 - Non-Potable Reuse Expansion (Phase 2)	Phase 2A, 2B, 2C, 2D	186 to 1,374
Alternative 2 - Non-Potable Reuse Expansion (Future Phases)	Future Expansion North, Future Expansion South, Westside Communities	1,900 to 7,180
Alternative 3 - Groundwater Recharge (Surface Spreading)	Spreading Site #1 and/or Spreading Sites #3a/b	1,660 to 3,410
Alternative 4 - Advanced Treatment for Potable Reuse	GWRR Direct Injection, SW Augmentation Direct Potable Reuse	4,250 to 4,810

** Some of the Alternative 2 project demands include serving Phase 2 demands. There is insufficient supply to meet all demands for Alternatives 1-4*

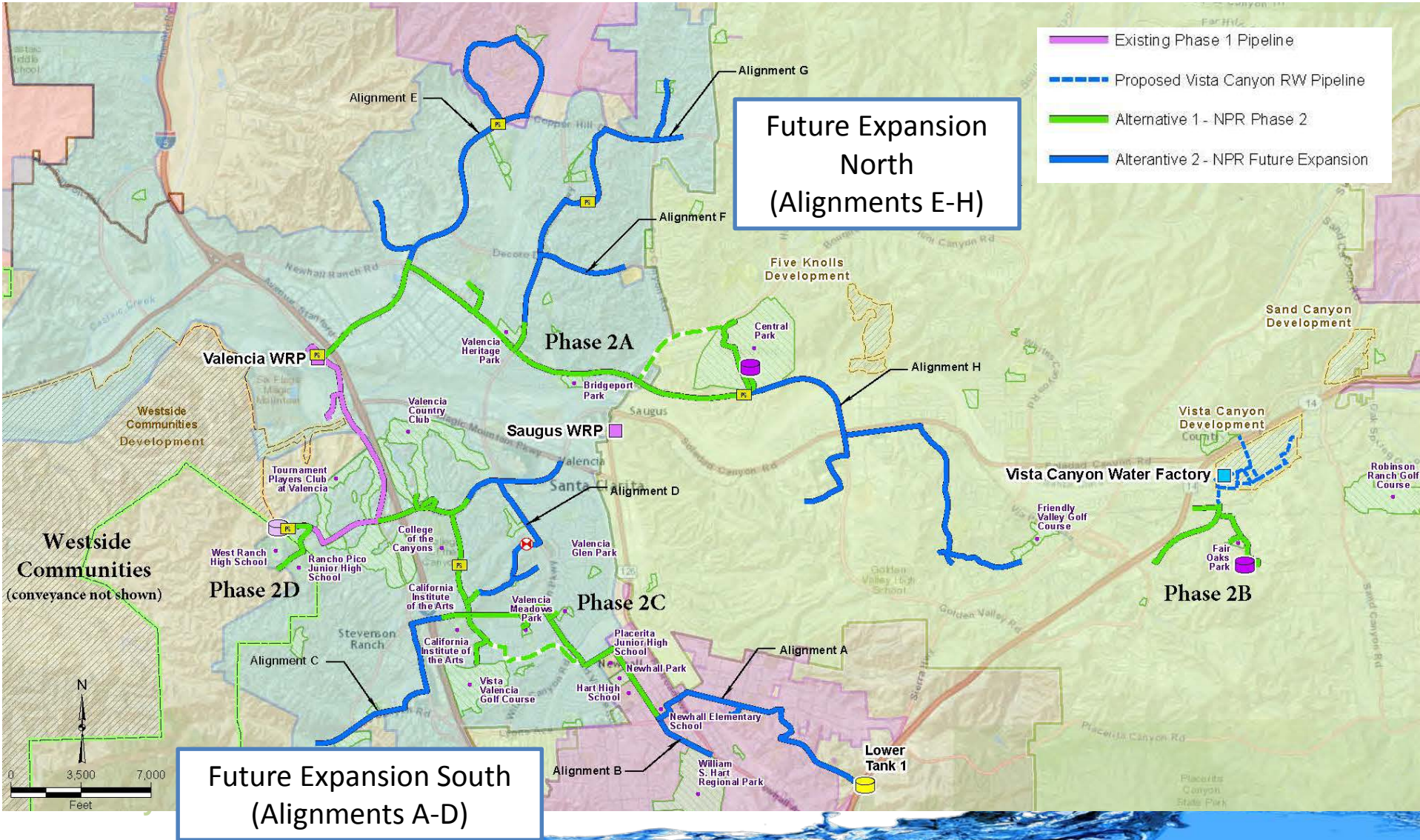
Alternative 1 – Non-Potable Expansion (Phase 2)



Legend

- | | | | |
|----------------------------------|-----------------------------------|--|---------------------------------|
| Existing Water Reclamation Plant | Existing Phase 1 Pipeline | Castaic Lake Water Agency Service Area | Planned Developments |
| Planned Water Reclamation Plant | Proposed Vista Canyon RW Pipeline | Newhall County Water District | Existing Parks and Golf Courses |
| Existing Recycled Water Tank | Planned Phase 2A Pipeline | Santa Clarita Water Division | |
| Proposed Recycled Water Tank | Planned Phase 2B Pipeline | Valencia Water Company | |
| | Planned Phase 2C Pipeline | | |
| | Planned Phase 2D Pipeline | | |

Alternative 2 – Non-Potable Expansion (Future)



Alternatives 1 & 2 – Non-Potable Expansion

■ Source Water (Tertiary)

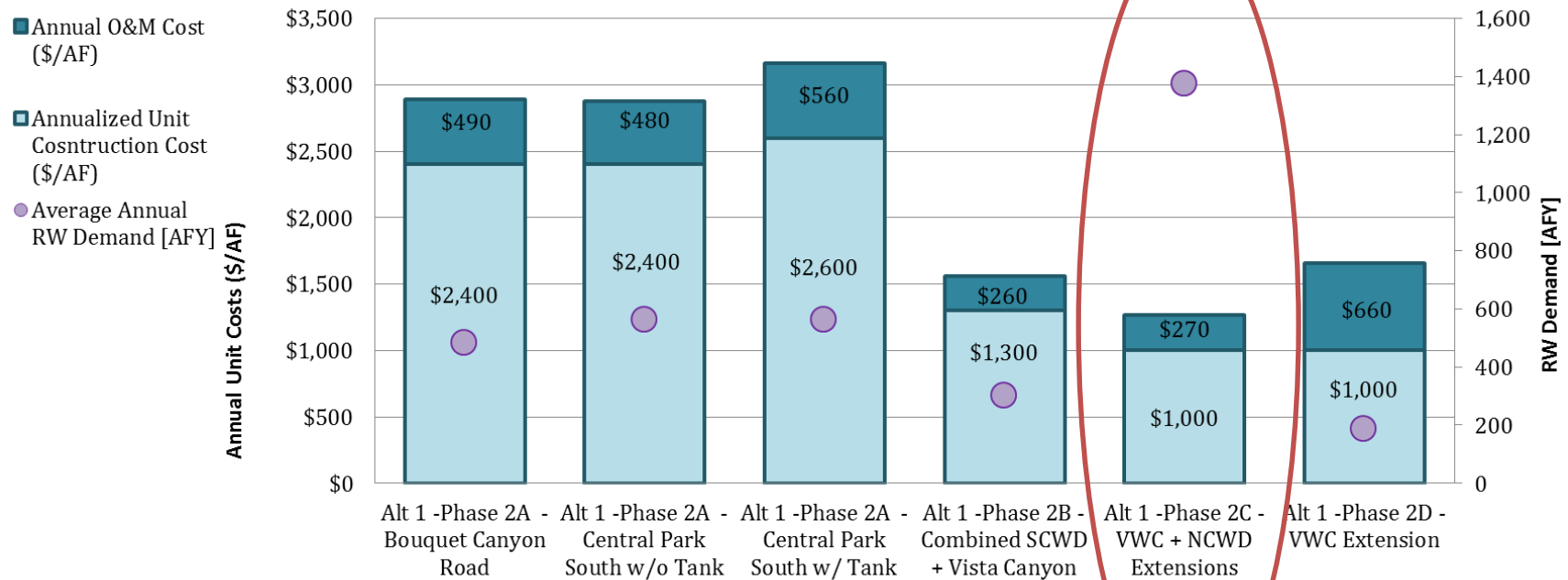
- Valencia WRP.....Existing Phase 1, Phase 2a, 2c, 2d,
Future Expansions North/South,
Part of Westside Communities
- Newhall Ranch WRP.....Part of Westside Communities
- Vista Canyon Water Factory....Phase 2b

■ Limitations

- Total NPR Demand in SCV
- Available supply in summer limits future expansion

Alternative 1 – Engineers Opinion of Probable Costs

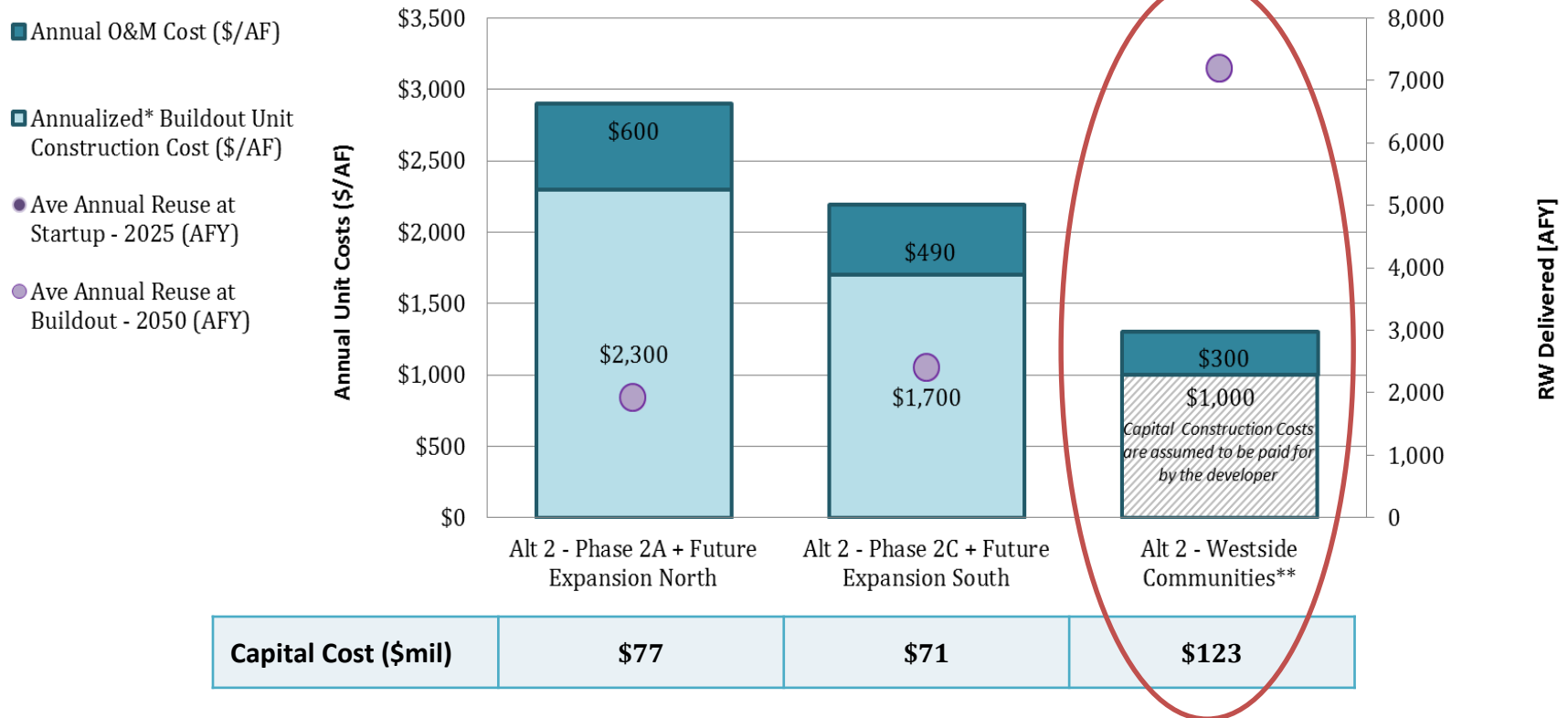
- ✓ Highest flow
- ✓ Lowest unit cost



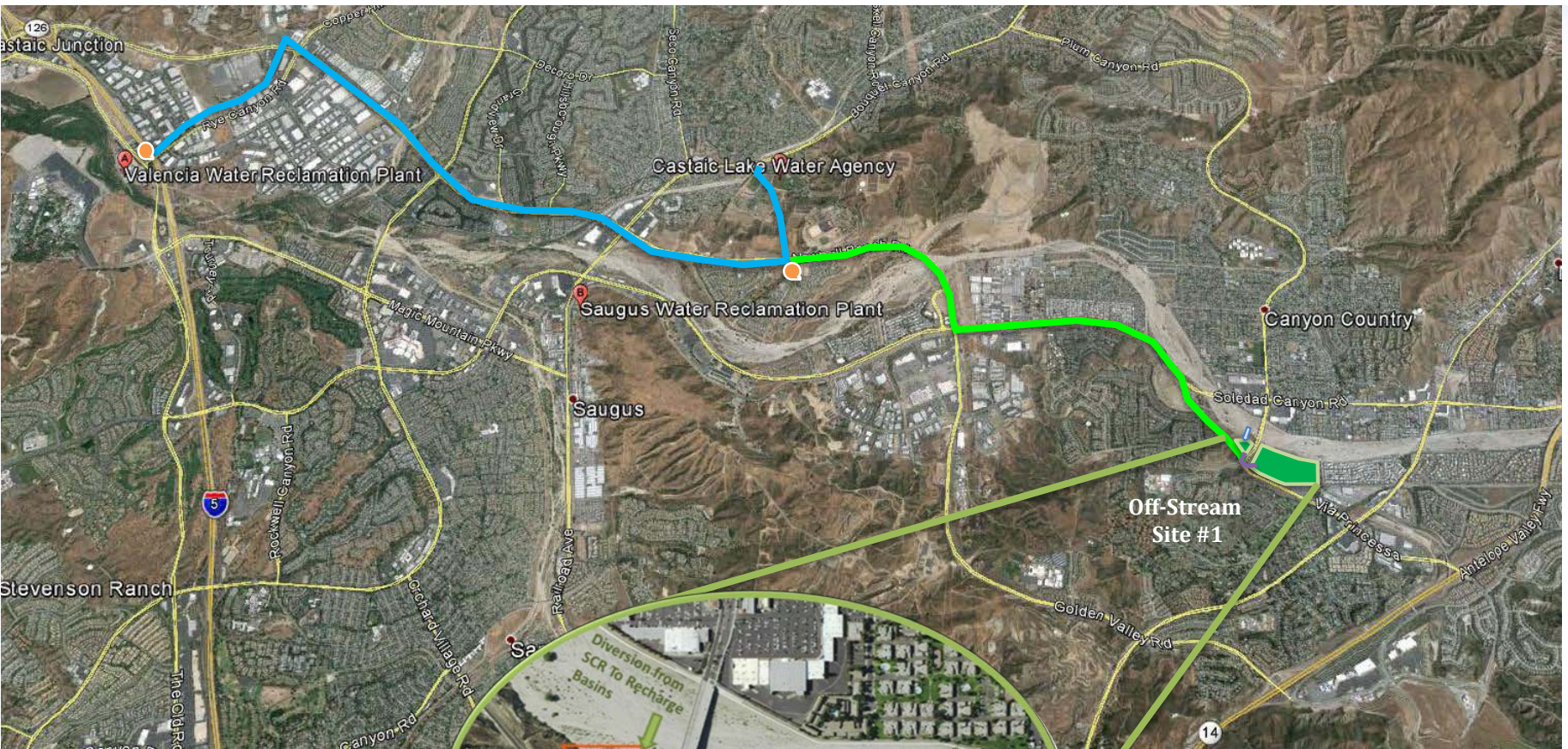
Capital Cost (\$mil)	\$20.2	\$23.6	\$24.8	\$6.7	\$23.5	\$3.3
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Alternative 2 – Engineers Opinion of Probable Costs

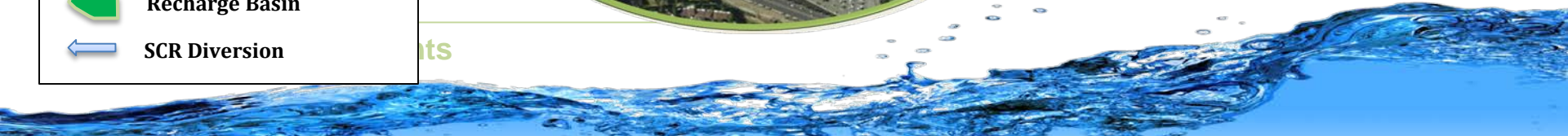
- ✓ Highest flow
- ✓ Lowest unit cost



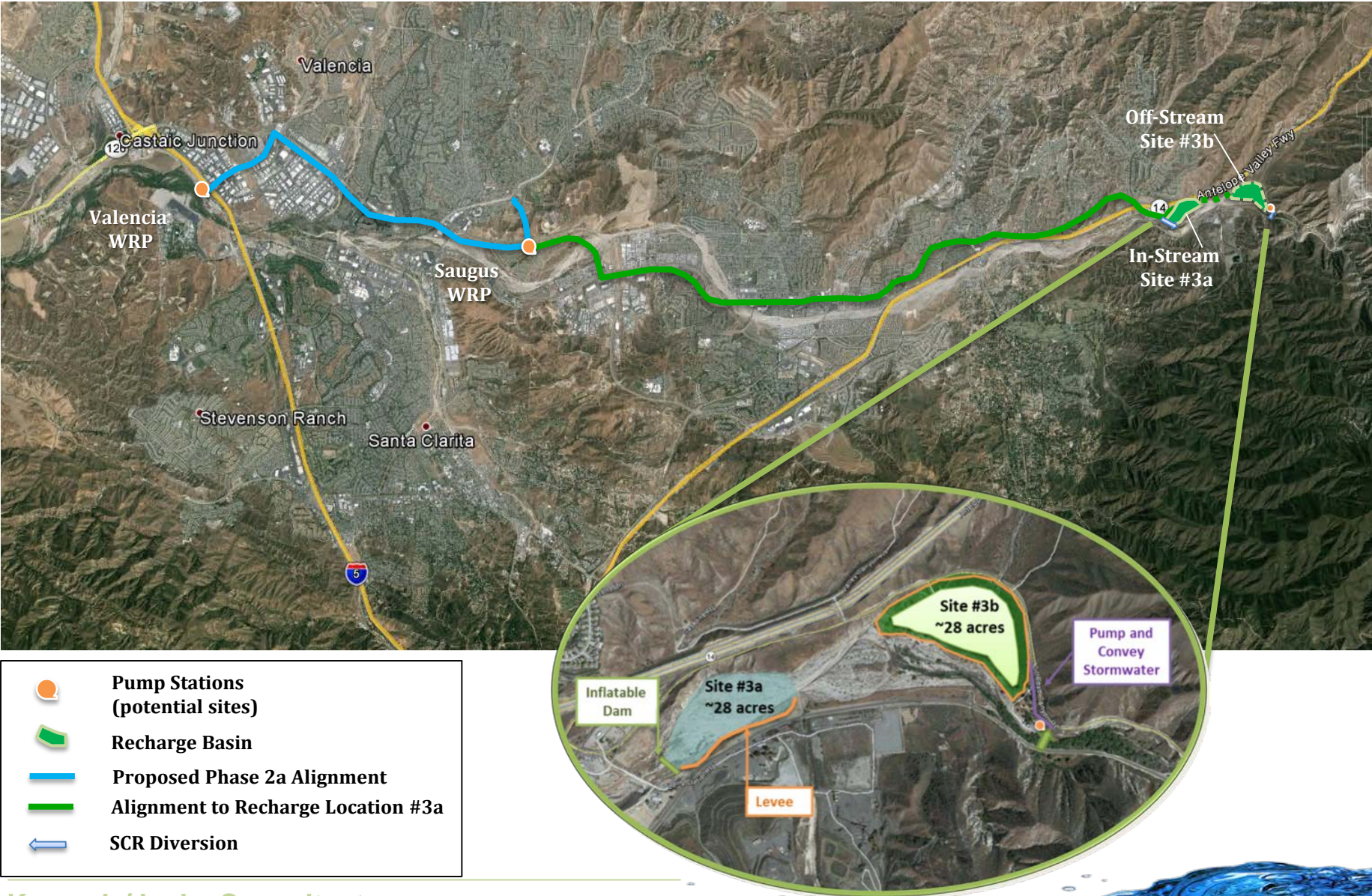
Alternative 3 – GWRR via Surface Spreading Site #1



-  **Booster Pump Station (potential site)**
-  **Phase 2a Alignment**
-  **Alignment to IPR**
-  **Pipeline btw Basins**
-  **Recharge Basin**
-  **SCR Diversion**











Alternative 3 – GWRR via Surface Spreading Site #3a/b



Alternative 3 – GWRR via Surface Spreading Site #1, #3a/b



- | | |
|---|---|
|  Pump Stations (potential sites) |  Proposed Phase 2a Alignment |
|  Existing Honby Pump Station |  Alignment to Recharge Location #3 |
|  Recharge Basin |  Existing 14"-dia Honby Pipeline |
|  SCR Diversion |  Existing 30-33"-dia Honby Lateral alignment |



Alternative 3 – GWRR via Surface Spreading

■ Source Water

- Tertiary RW from Valencia WRP
- Advanced Treated RW from SCVSD Chloride Compliance Project
(Valencia Blend = 70% Tertiary + 30% AWTF)

■ Limitations

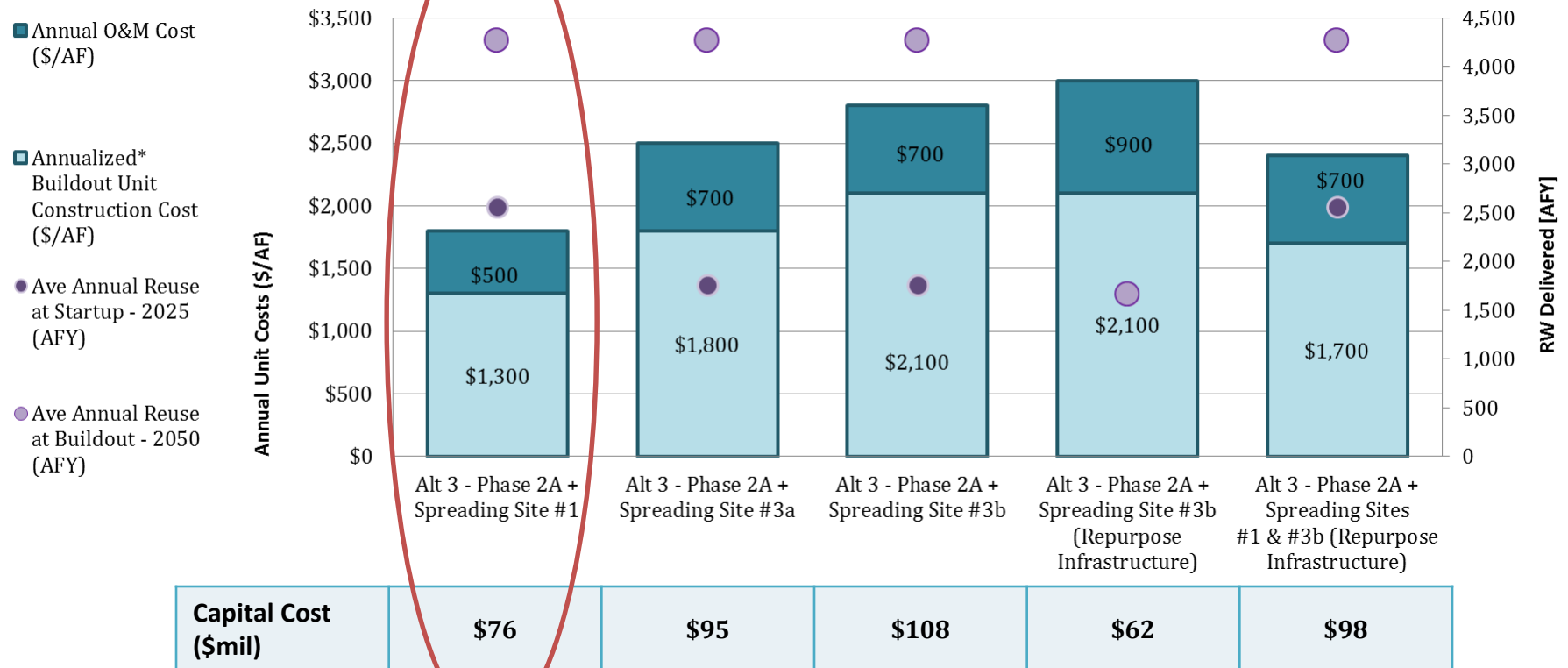
- Available supply of RW
- Prioritize stormwater capture for recharge

■ Other Considerations

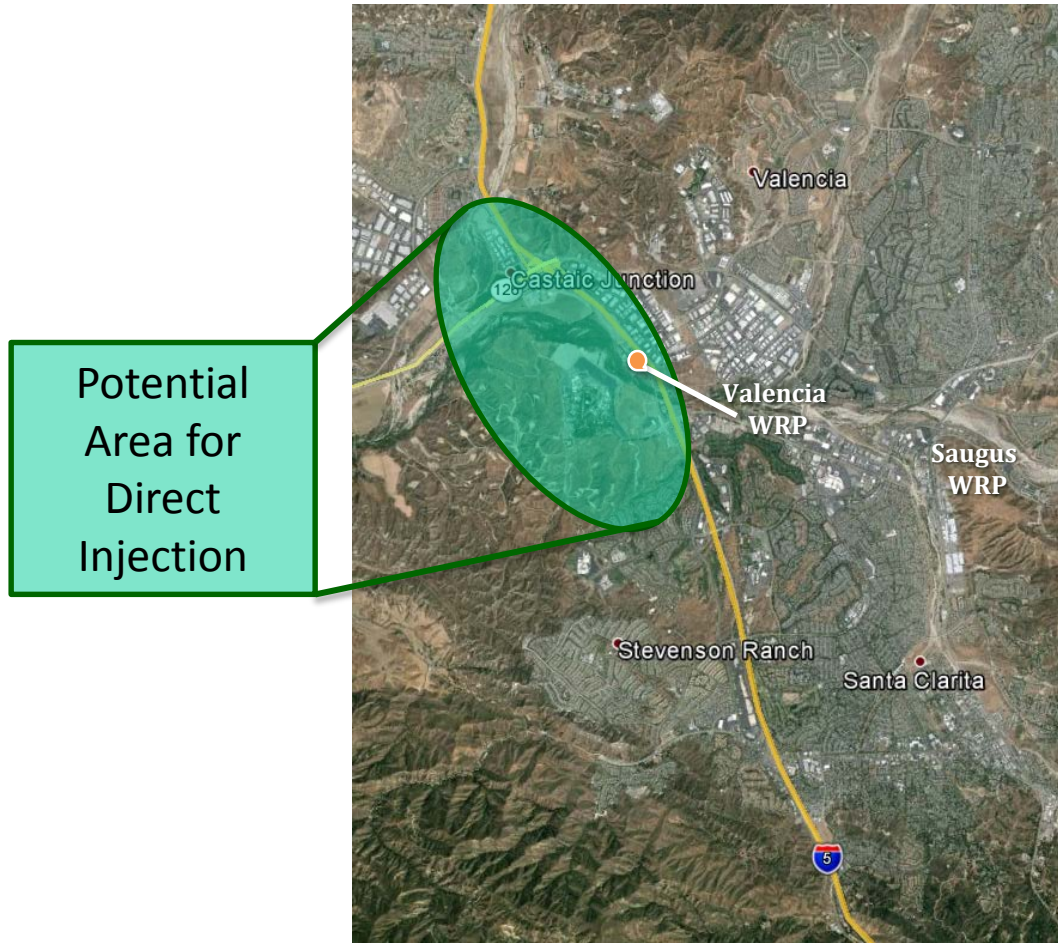
- Diluent water source (underflow)
- Interagency agreements (LACFCD)
- Groundwater management and operations
- Land acquisition

Alternative 3 – Engineers Opinion of Probable Costs

- ✓ High flow
- ✓ Lowest unit cost



Alternative 4 – GWRR via Direct Injection



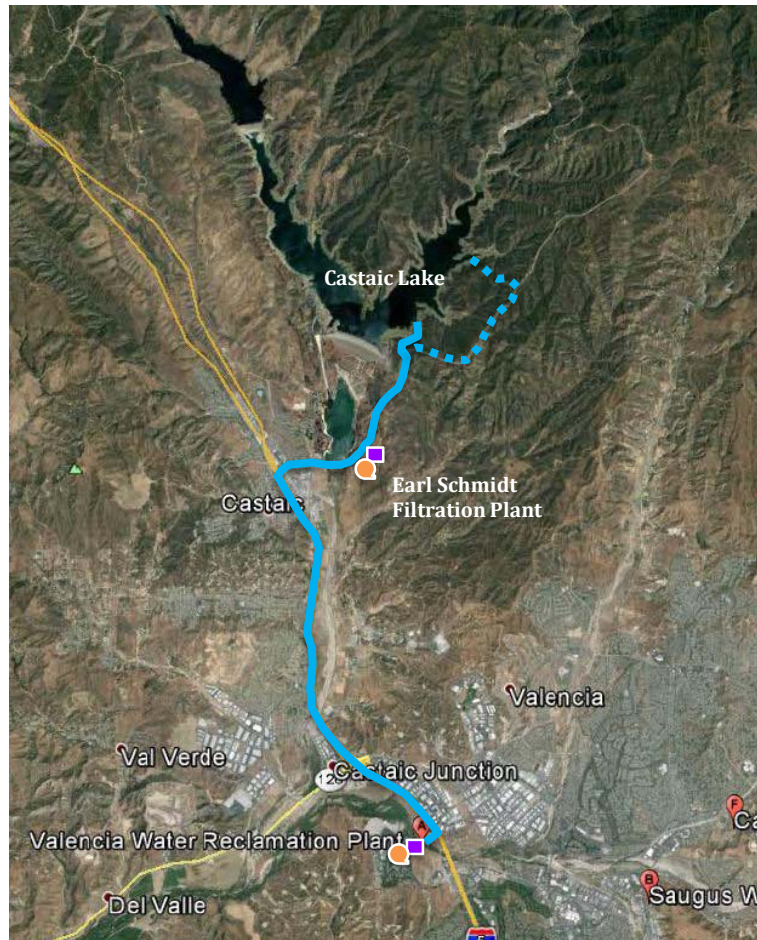
■ Source Water

- 100% Advanced Treatment of Valencia WRP

■ Other Considerations

- Brine disposal
- AWTF siting
- Injection well siting

Alternative 4 – Surface Water Augmentation



■ Source Water

- 100% Advanced Treatment of Valencia WRP

■ Limitations

- Meeting 6-month retention time

■ Other Considerations

- Brine disposal
- AWTF siting
- Interagency Agreements
- Regulatory Uncertainty

- Advanced Water Treatment Facility (potential sites)
- Pump Stations (potential sites)
- Pipeline alignment (Valencia WRP to Lake)
- - - Pipeline extension (to increase retention time)

Alternative 4 – Direct Potable Reuse



Alternative 4 – Engineers Opinion of Probable Costs



Alternative Evaluation

Considerations	High Performing / Few Issues	Low Performing / More Issues
Cost Comparison	Lowest \$ = Alt 2 (Westside Com.) Low \$ = Alt 1 (Phase 2B, 2C, 2D)	Highest \$ = Alt 4 (DPR) High \$ = Alt 4 (SWA, Direct Inject)
Water Supply Availability	Sufficient = Alt 1 and Alt 4	Uncertain / Limited = Alt 2 and Alt 3
Readiness to Proceed	In Progress = Alt 1	Dependencies = Alt 2 (Supply/New Developments), Alt 3 and Alt 4 (Feasibility Study)
Permittability	Current Permit = NPR (Alt 1 and 2) New Permit = GWRR (Alt 3 and 4)	Uncertain Permit Requirements = SWA / DPR (Alt 4)
Required Agency Coordination/ Collaboration	Minimal = NPR (Alt 1 and 2)	Greater = Alt 3 and Alt 4
Ease of Implementation	Easiest = NPR (Alt 1 and 2)	Hardest = Alt 4 Challenging = Alt 3
Environmental Considerations	To be addressed in the Programmatic EIR	

Alternative 1 –
Non-Potable Reuse
Expansion (Phase 2)

Phase 2B

Phase 2C

Phase 2D

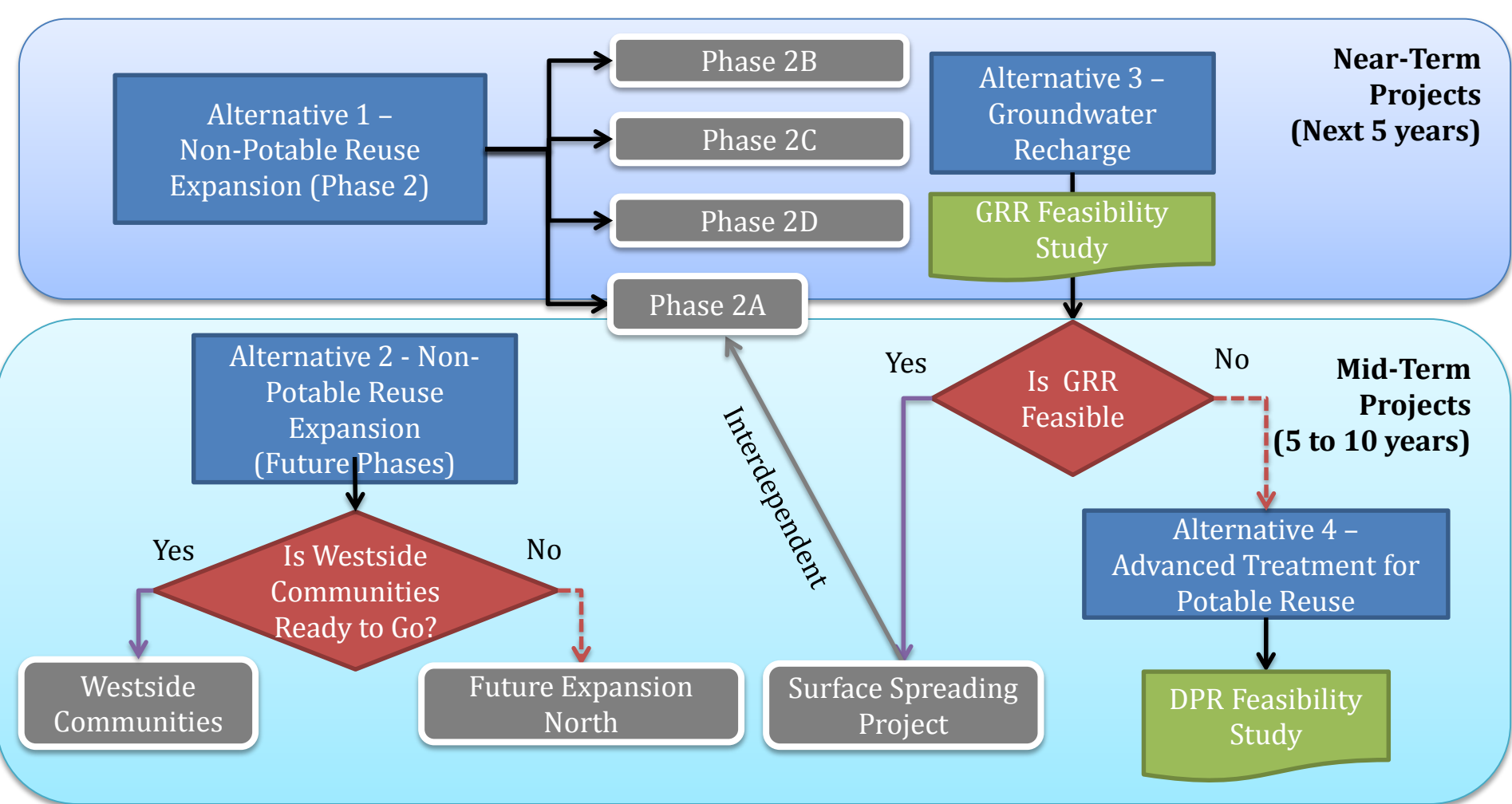
Phase 2A

Alternative 3 –
Groundwater
Recharge

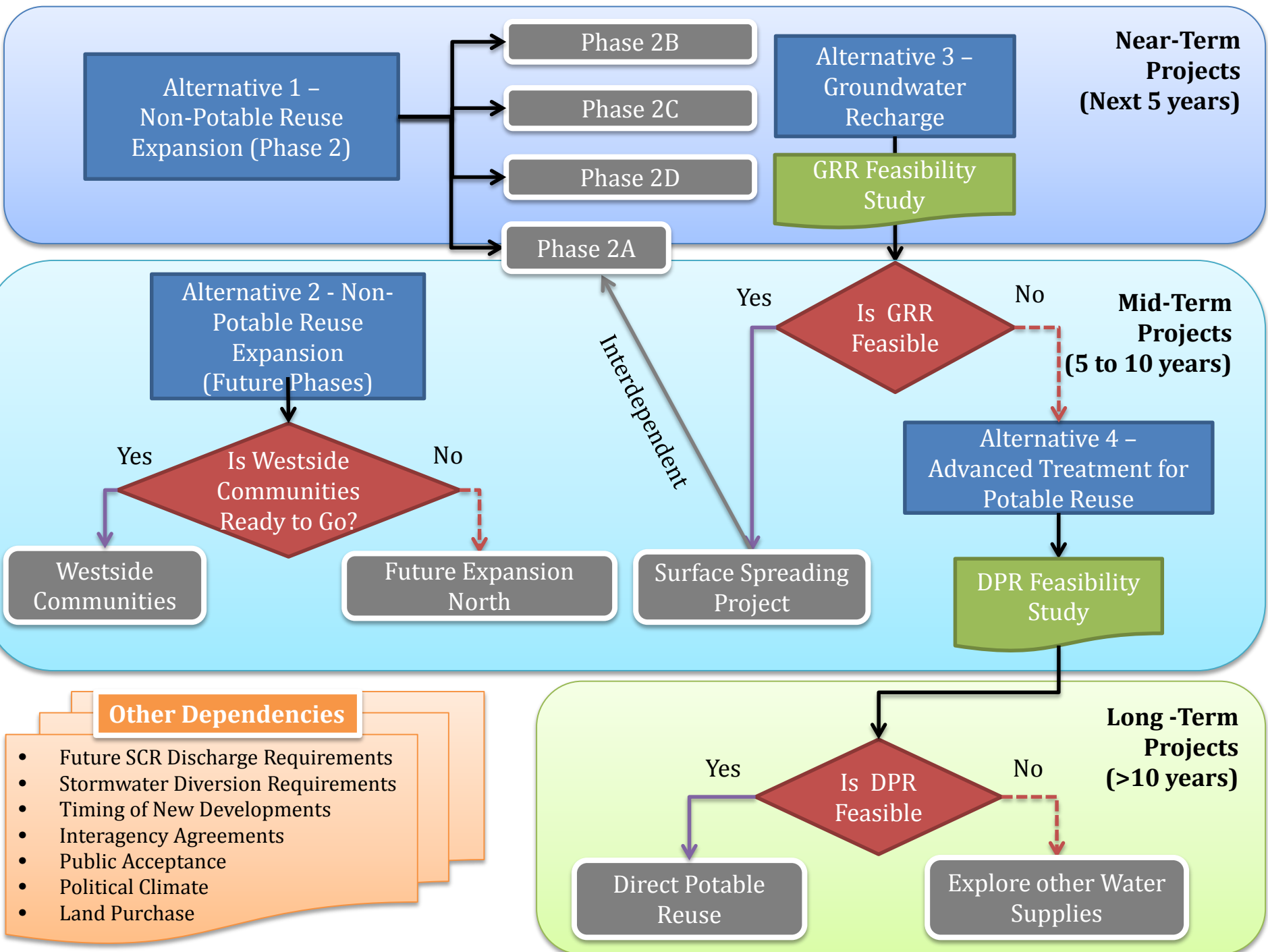
GRR Feasibility
Study

**Near-Term
Projects
(Next 5 years)**

Decision Flow Process



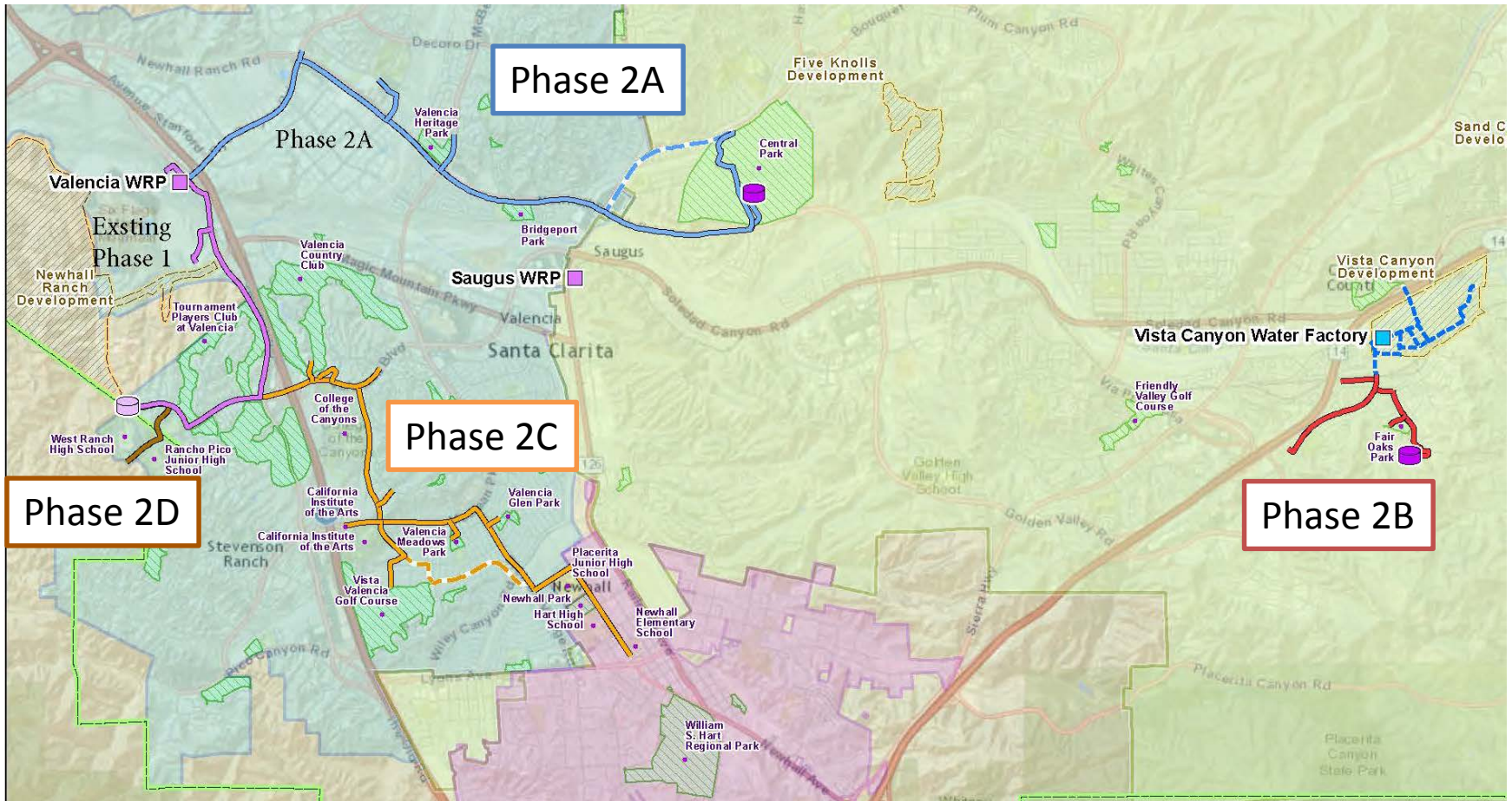
Decision Flow Process



Recommended Project

- **Implement Phases 2B, 2C and 2D** of Alternative 1 Non-Potable Reuse Expansion Projects
 - Total Demand = 1,860AFY
- **Complete preliminary design and environmental work for Phase 2A** of Alternative 1 - Non-Potable Reuse Expansion Project.
 - Total Demand = 560 AFY
- **Initiate a GRR Feasibility Study** to evaluate the viability of Alternative 3 GRR projects.
 - Total Recharge = 1,100 to 3,700 AFY

Recommended Project



Legend

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|----------------------------------|-----------------------------------|--|---------------------------------|
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| Planned Water Reclamation Plant | Proposed Vista Canyon RW Pipeline | Newhall County Water District | Existing Parks and Golf Courses |
| Existing Recycled Water Tank | Planned Phase 2A Pipeline | Santa Clarita Water Division | |
| Proposed Recycled Water Tank | Planned Phase 2B Pipeline | Valencia Water Company | |
| | Planned Phase 2C Pipeline | | |
| | Planned Phase 2D Pipeline | | |

Phasing Plan

Calendar Year	2015				2016				2017				2018				2019				2020				2021				2022				2023				2024																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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Legend

Feasibility Study (FS)

Decision Point on Feasibility

Interdependence

Alternate Path if NOT Feasible



Planning Phase (P)

Design Phase (D)

ROW Land Acquisition (ROW)

Construction (C)

Conversions-Start-up (S)



Next Steps

- Implement Phase 2 Projects
- Development of Agreements for Phase 2 Projects
- Initiate GRR Feasibility Study
- Track Chloride Compliance Project outcomes (instream flow requirements)



QUESTIONS