PASO BASIN COOPERATIVE COMMITTEE
September 25, 2024

Agenda Item #6e – Update on Blended Irrigation Water Supply Project Draft Preliminary Engineering Report

Recommendation
None; information only.

Prepared By
Michael Goymerac / Rob Morrow, Water Systems Consulting

Discussion
In 2022, the Paso Basin was awarded a $7.6 million grant from the California Department of Water Resources for the implementation of its Groundwater Sustainability Plan (GSP).

The grant spending plan is composed of six (6) components, and Component 6, Water Supply Feasibility/Engineering Studies, includes a Blended Water Supply Feasibility Study project.

An RFP was issued for this project, and Water Systems Consulting (WSC) was the selected consultant. WSC provided a presentation on demand and supply characterization at the May 22, 2024, PBCC meeting, and an overview on the draft alternatives analysis at the July 24, 2024, PBCC meeting.

A presentation on the draft preliminary engineering report is provided as Attachment 1.

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Paso Basin Cooperative Committee

Paso Basin Blended Water Supply Project Update

September 25, 2024

1. Introduction and Background
2. Supply & Demand Assessment
3. Common Alternatives
4. System Alternatives Analysis
5. Next Steps

Draft Preliminary Engineering Report

Report Organization

Report Organization

Report Overview

Supply & Demand Assessment

Supply Scenarios

1

"Firm" future availability

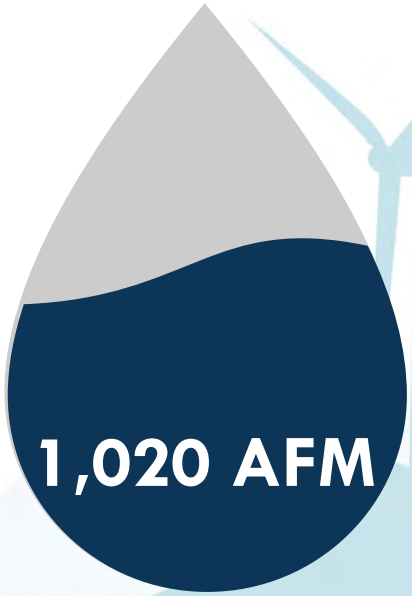
Similar to capacity at max use month

2 640 NWP + 170 RW

Historically available during maximum participant deliveries

3 850 NWP + 170 RW

Historically available during average participant deliveries



Demand Assessment

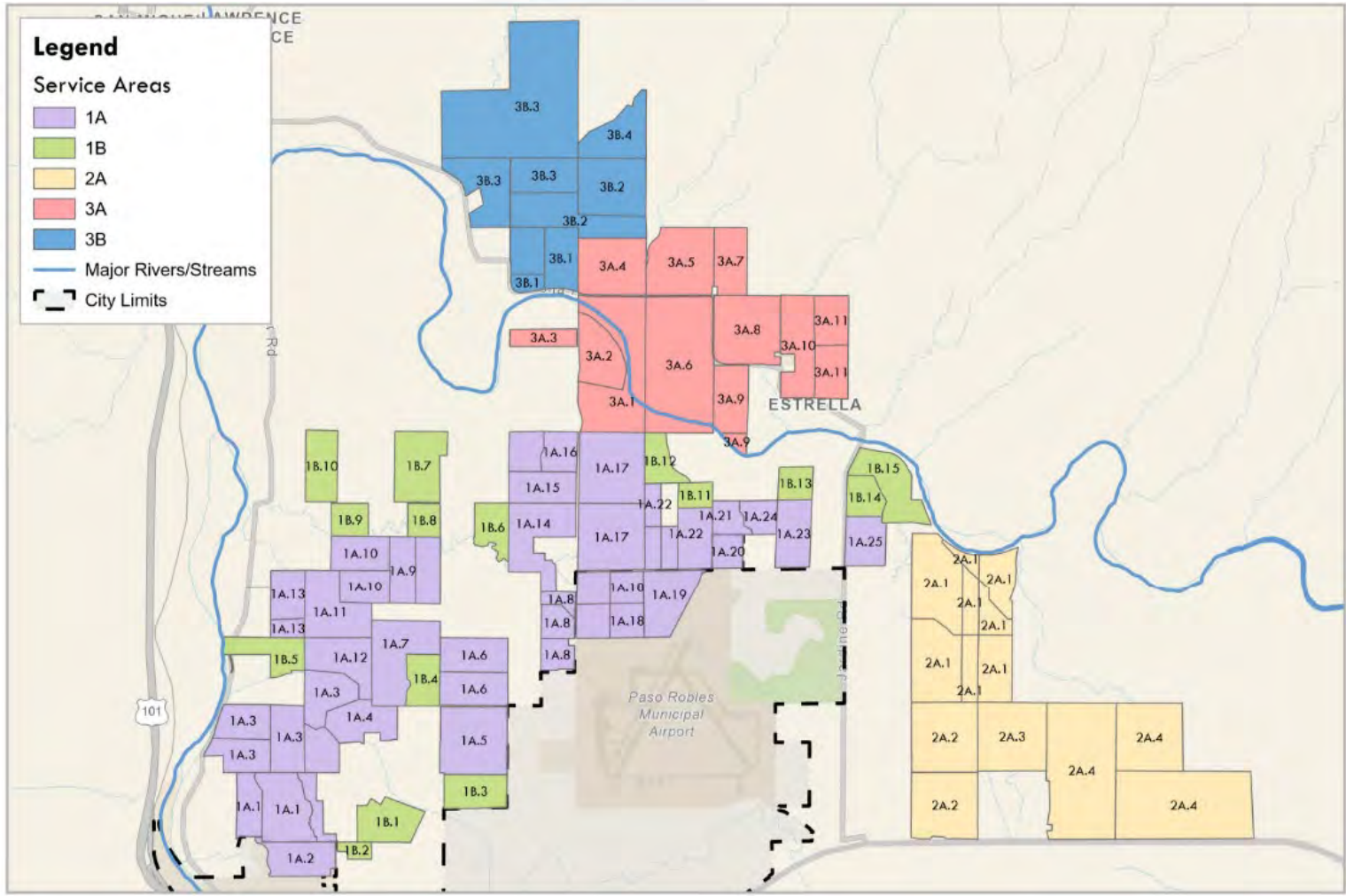
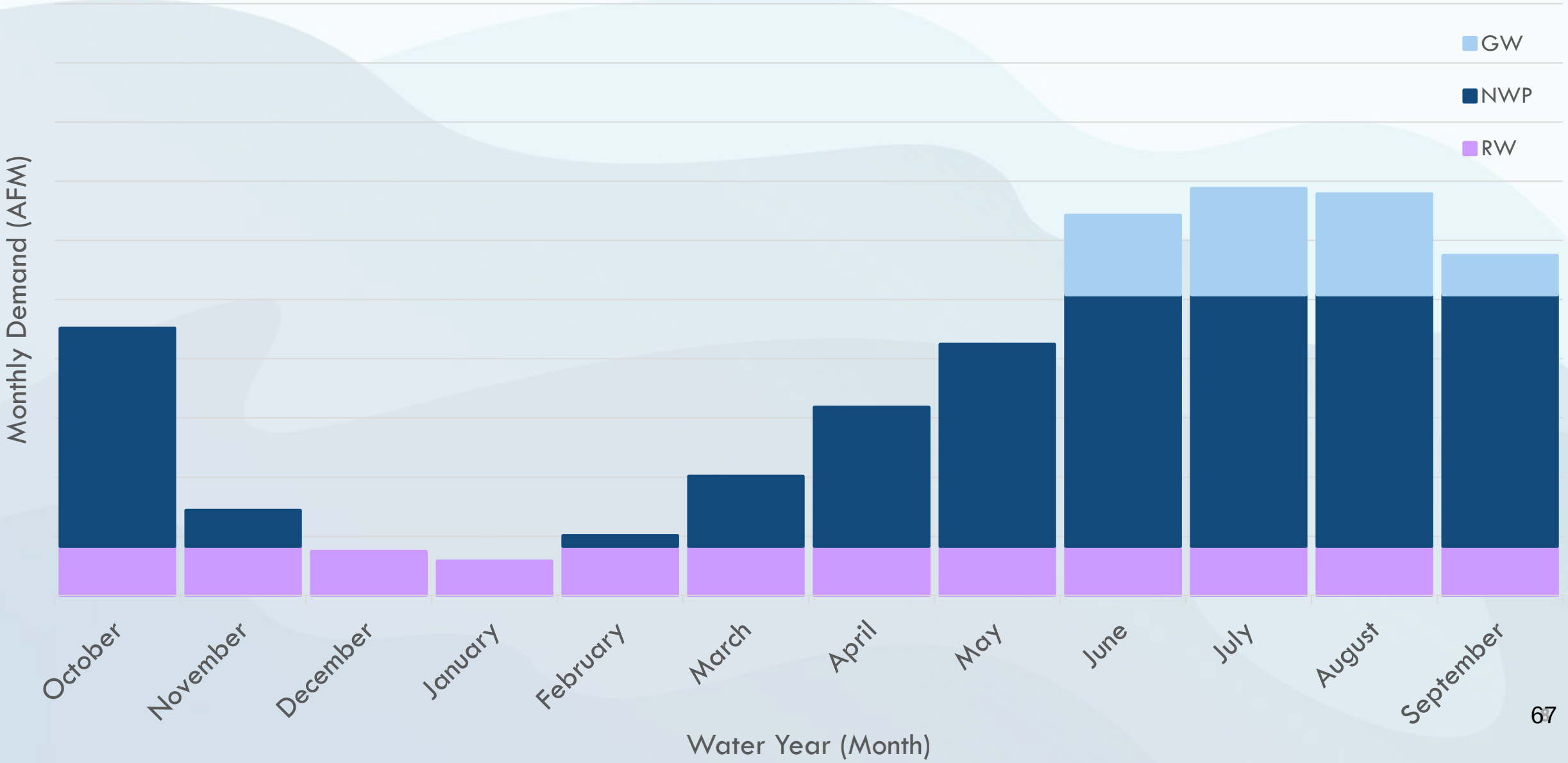


Figure 3-4 Project Service Areas


GW
NWP
RW
Monthly Demand (AFM)
October
November
December
January
February
March
April
May
June
July
August
September
Water Year (Month)

Report Overview

Common Alternatives

Common Facilities

- NWP Turnout
- NWP Pipeline to Blend Station
  - 6,200 LF of 18-in to 30-in pipe
- RW Turnout
  - Included in City's recycled water project
- RW Pipeline to Blend Station
  - 3,600 LF of 12-in pipe
- Blend Pond:
  - 25 AF existing
- Blended Water Pump Station
- Blended Water Booster Station

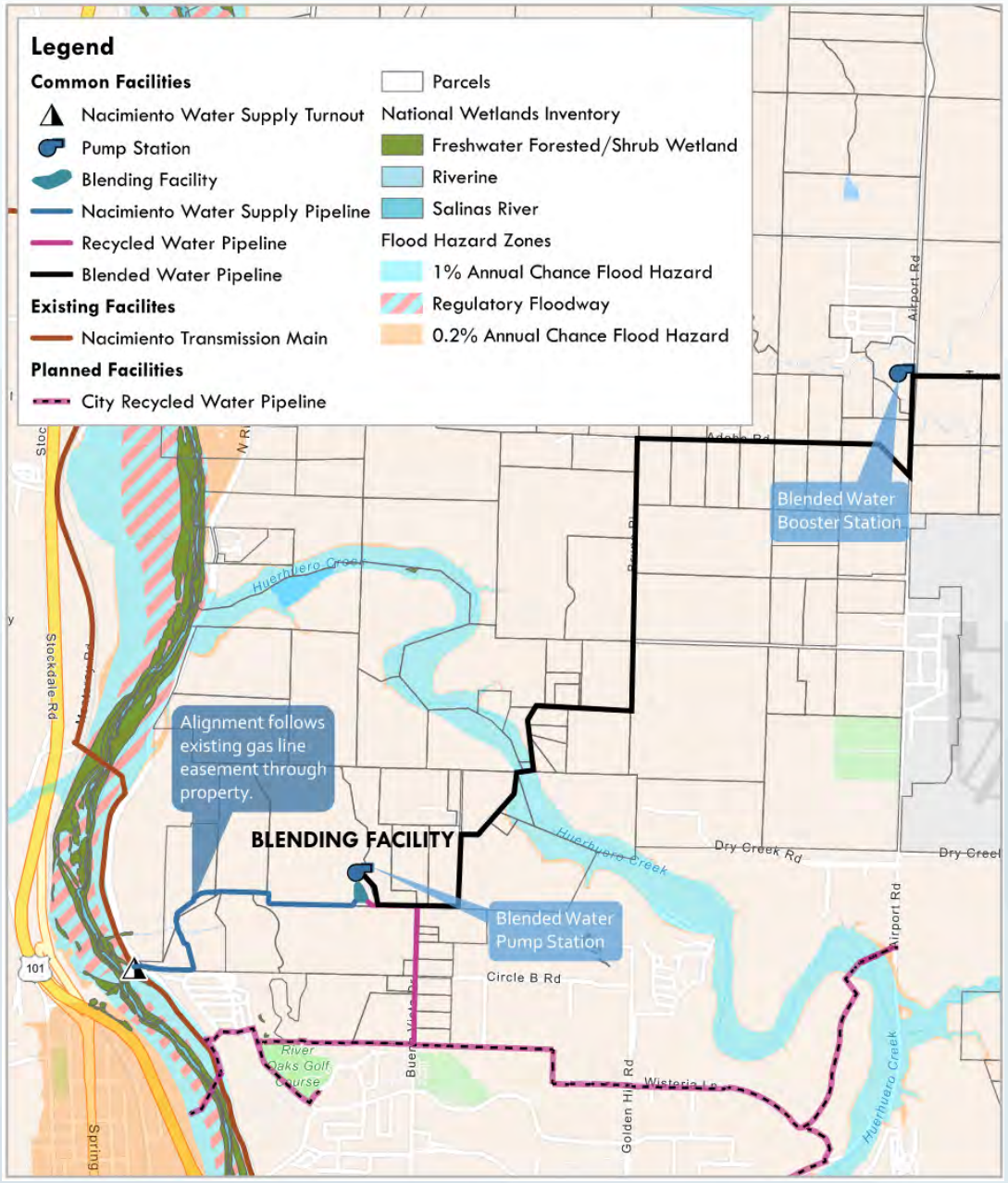
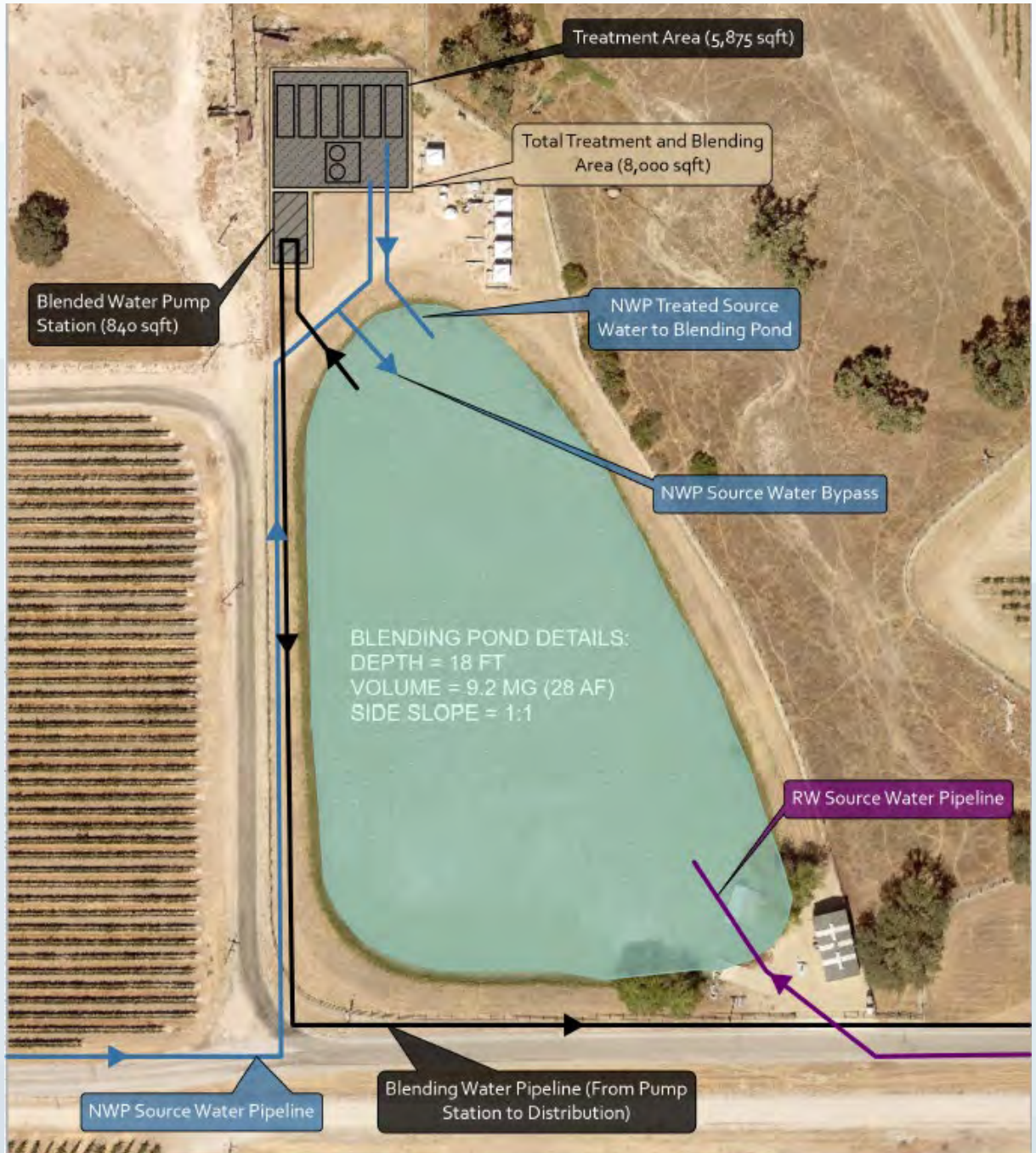


Figure 4-1. Project Alternatives Common Facilities

- Located on Patricia Diane Vineyard Property
- Blending Pond
  - Est. Volume: 25 AF
  - Est. Depth: 18 ft
- Treatment Facility
  - Filters
  - Pumps
  - Chemical storage
- Blended Water Pump Station
  - 3 duty, 1 standby pump



Water Quality

Constituent	Units	Water Quality Objective	NWP	RW	% NWP that Meets WQO
Salinity - Average					
Chloride	mg/L	**140**	5.3	207	> 34%
TDS	mg/L	**620**	161	828	> 32%
Fe/Mn – 90th Percentile					
Iron	mg/L	**0.10**	0.740	0.03	< 10%
Manganese	mg/L	**0.10**	0.150	0.02	< 40%

Treatment Overview

Treatment Strategy

- Maintain blending percentages to keep chronic constituents (TDS, chlorides) under WQOs
- Address SAR through agricultural operations (gypsum addition), as needed
- Treat NWP constituents (iron, manganese, and turbidity) through oxidation and filtration

Report Overview

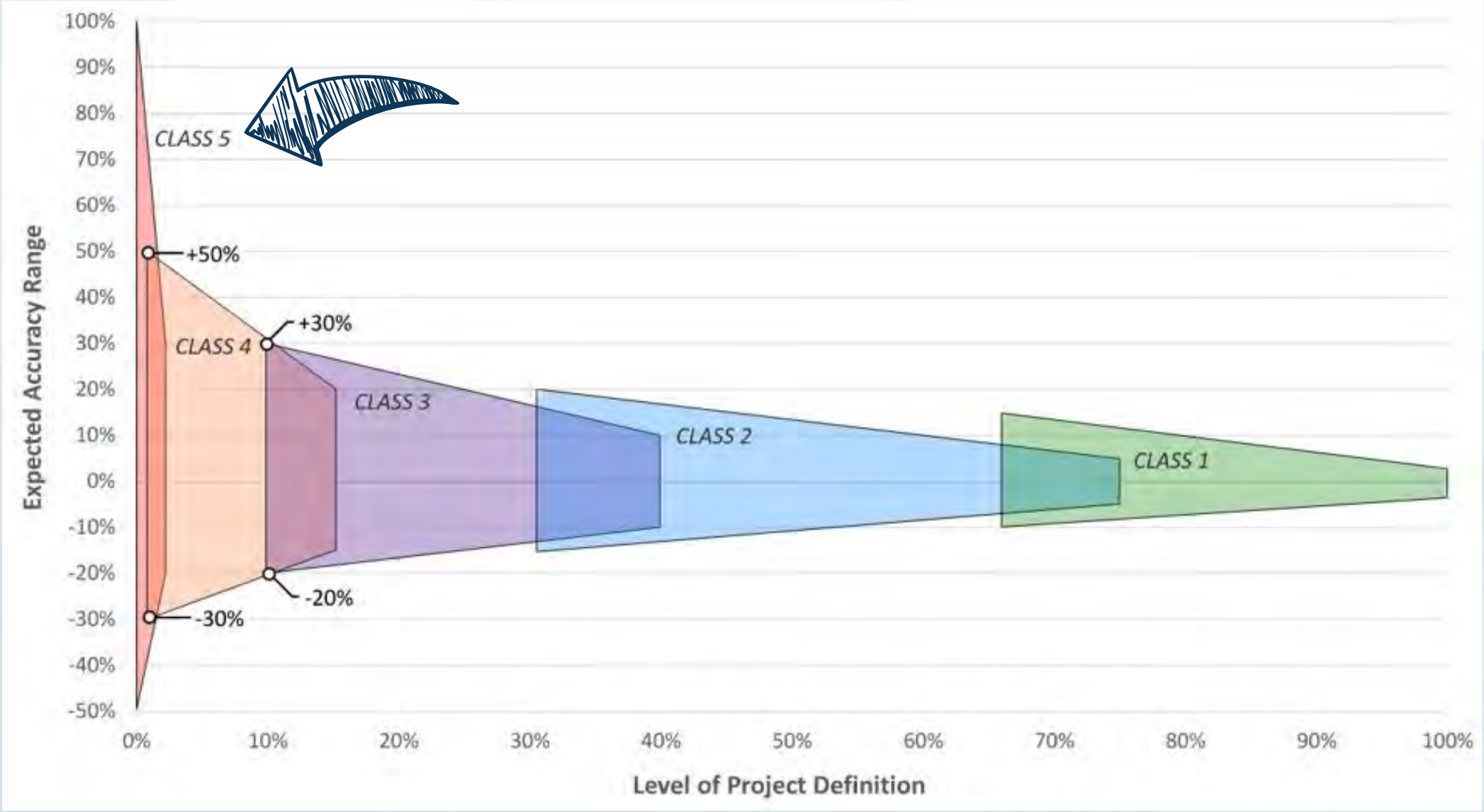
System Alternatives

Cost Assumptions

- Pipeline (varies but on average $17/in-dia ft, ex. 20” HDPE $250/LF)
- Creek Crossings (Jack and Bore 24-in conductor, $1,300/ft)
- NWP Turnout ($650,000)
- Customer Turnout ($45,000 - $95,000)

- 3% (SRF loan)
- 30 years

Project Definition



Additional Cost Components

___ shown in cost estimates:

- Connection fee
- Unit water cost

System Alternatives Overview

4.0

Supply Scenario 1 + Small Demands

Medium Systems:

- Alternatives 2, 3, 4, and 5
- 3,400-4,900 AFY
- 2,400-2,900 irrig. acres

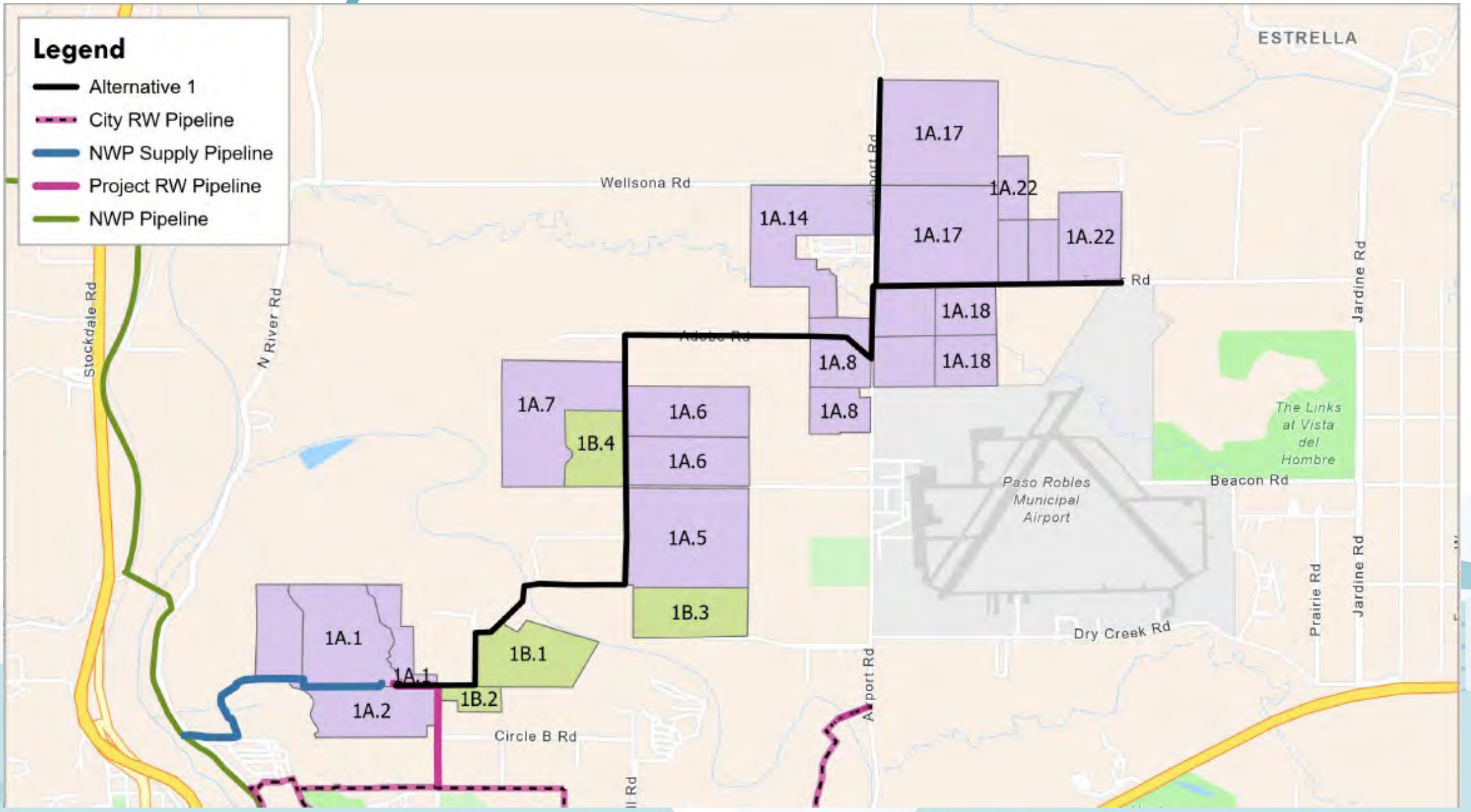
Supply Scenario 2 + Medium Demands

Large Systems:

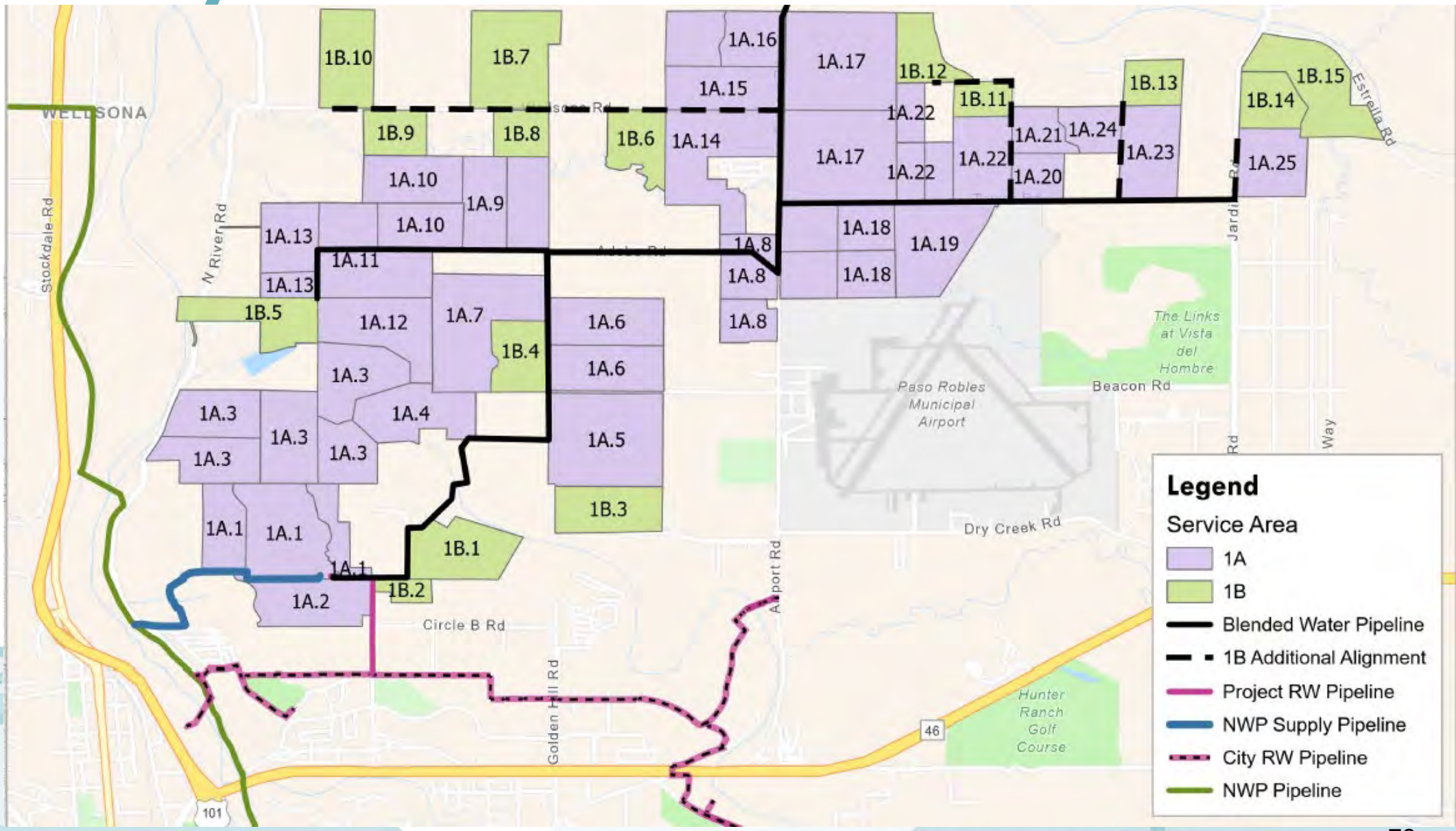
- Alternatives 6, 7, and 8
- 6,700-7,100 AFY
- 3,900-4,900 irrig. acres

Supply Scenario 3 + Large Demands

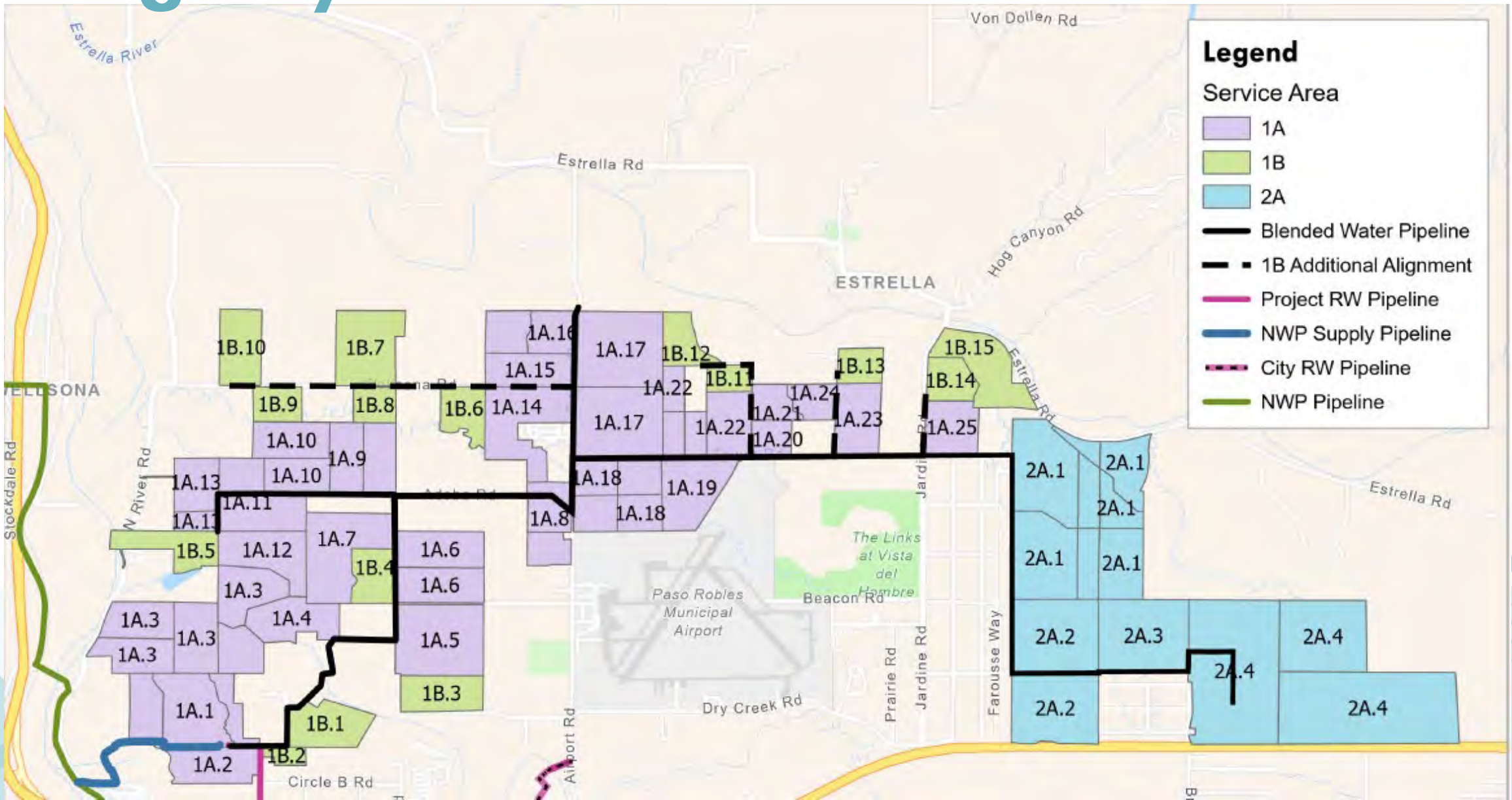
Small System – Alternative 1



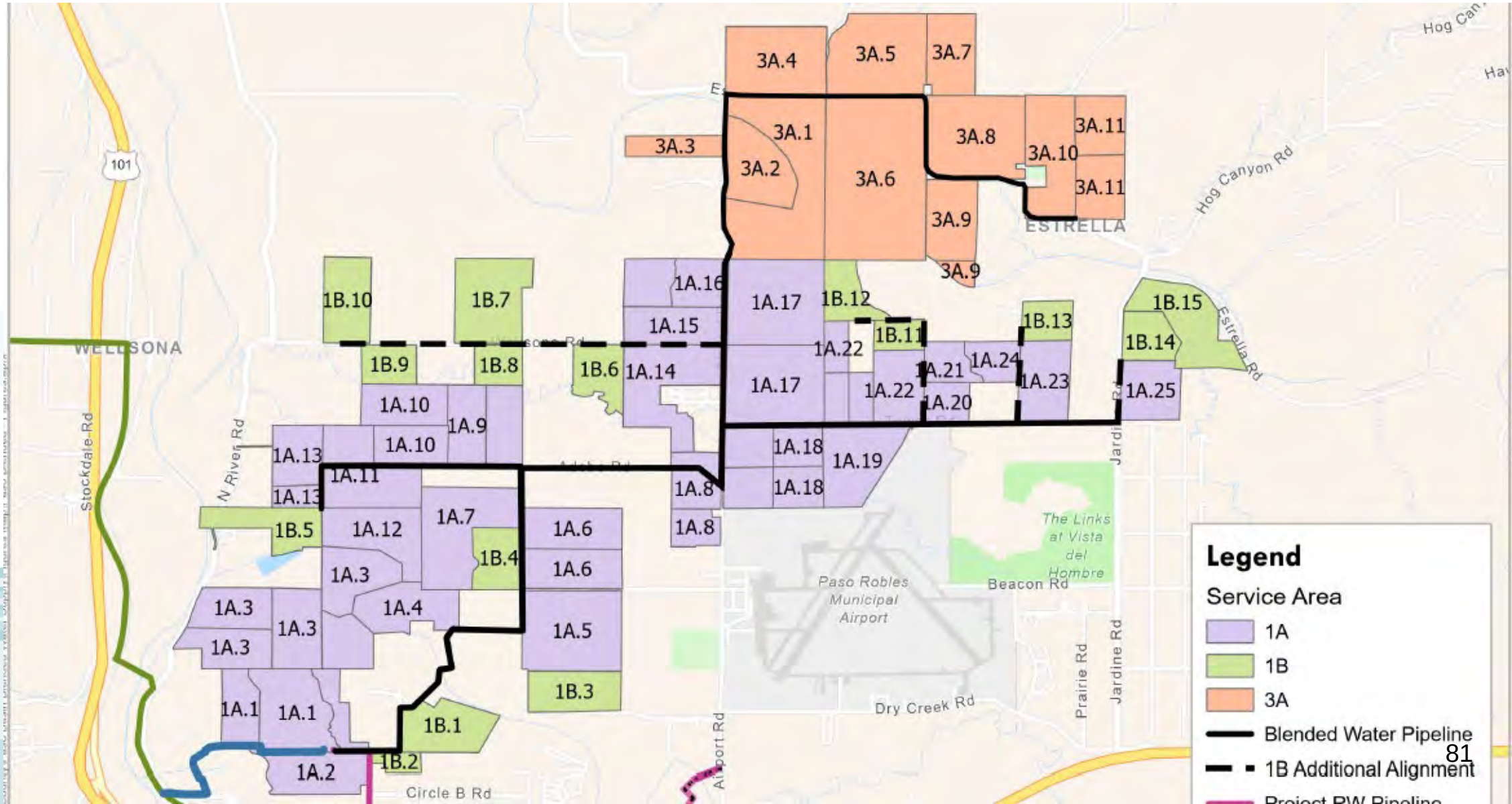
Medium System – Alternatives 2 to 5



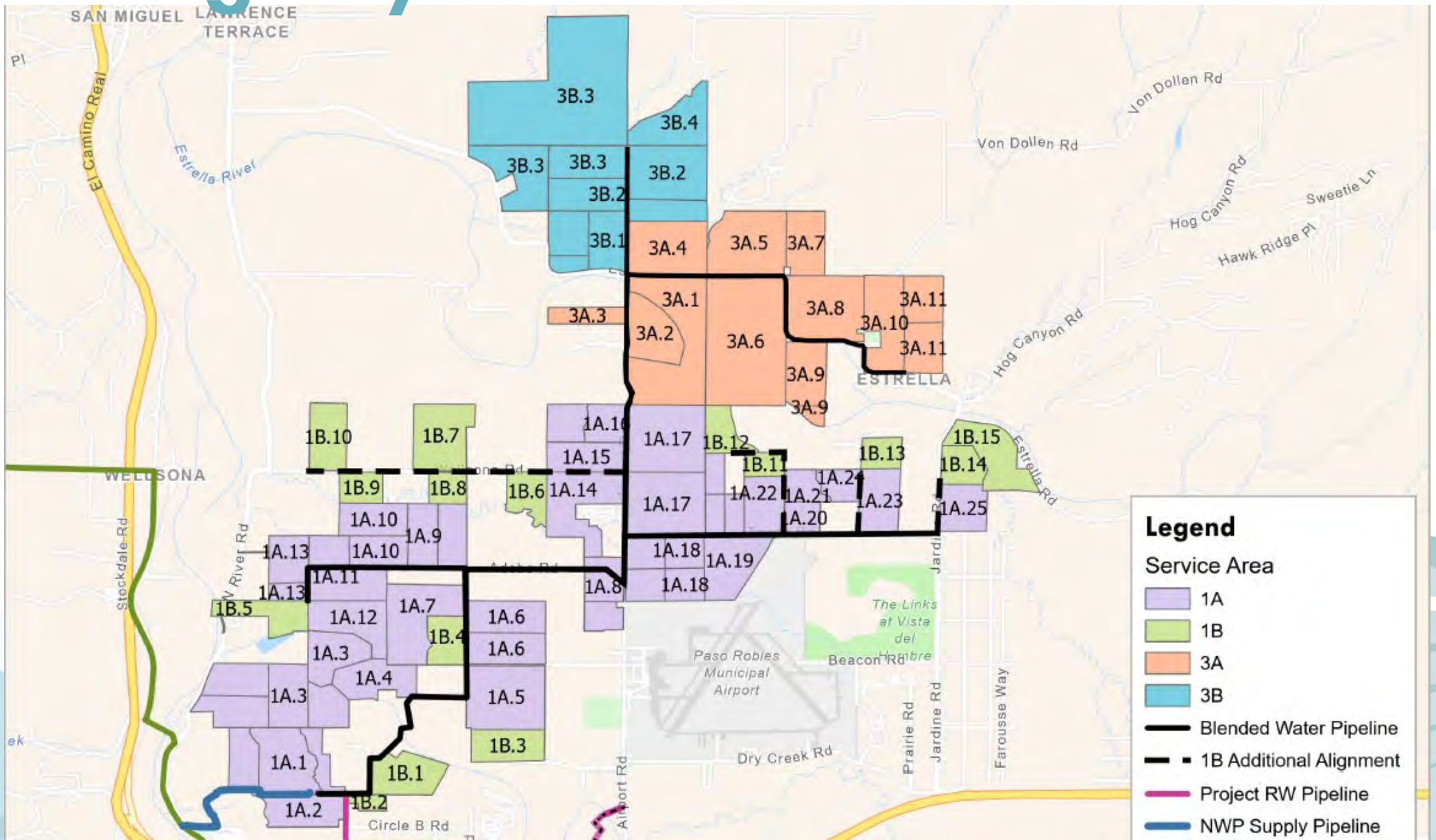
Large System – Alternative 6



Large System – Alternative 7



Large System – Alternative 8



System Alternatives: Overview

4.0

Supply Scenario 1 + Small Demands

Medium Systems:

- Alternatives 2, 3, 4, and 5
- 3,400-4,900 AFY
- 2,400-2,900 irrig. acres

Supply Scenario 2 + Medium Demands

Large Systems:

- Alternatives 6, 7, and 8
- 6,700-7,100 AFY
- 3,900-4,900 irrig. acres

Supply Scenario 3 + Large Demands

Conclusions:

- Unit costs within ~25%
- Yield and cost scale (~3x) between smallest and largest
- Smaller system considerations:
  - Less benefit to basin
  - Less customers = higher risk
- Larger system considerations:
  - Supply risk
  - Larger capital investment

System Alternatives: Future Sizing

4.0

- **Alt 1.1** Right sized system (smaller pipes)
- **Alt 1.2** Oversized system for future expansion (larger pipes)

Medium Systems:

- Alternatives 3 and 4:
  - **Alt 3** Right sized system (smaller pipes)
  - **Alt 4** Oversized system for future expansion (larger pipes)

Conclusions:

- Sizing for future adds 20-25% in capital cost
- And 15-20% in unit cost

System Alternatives: Storage

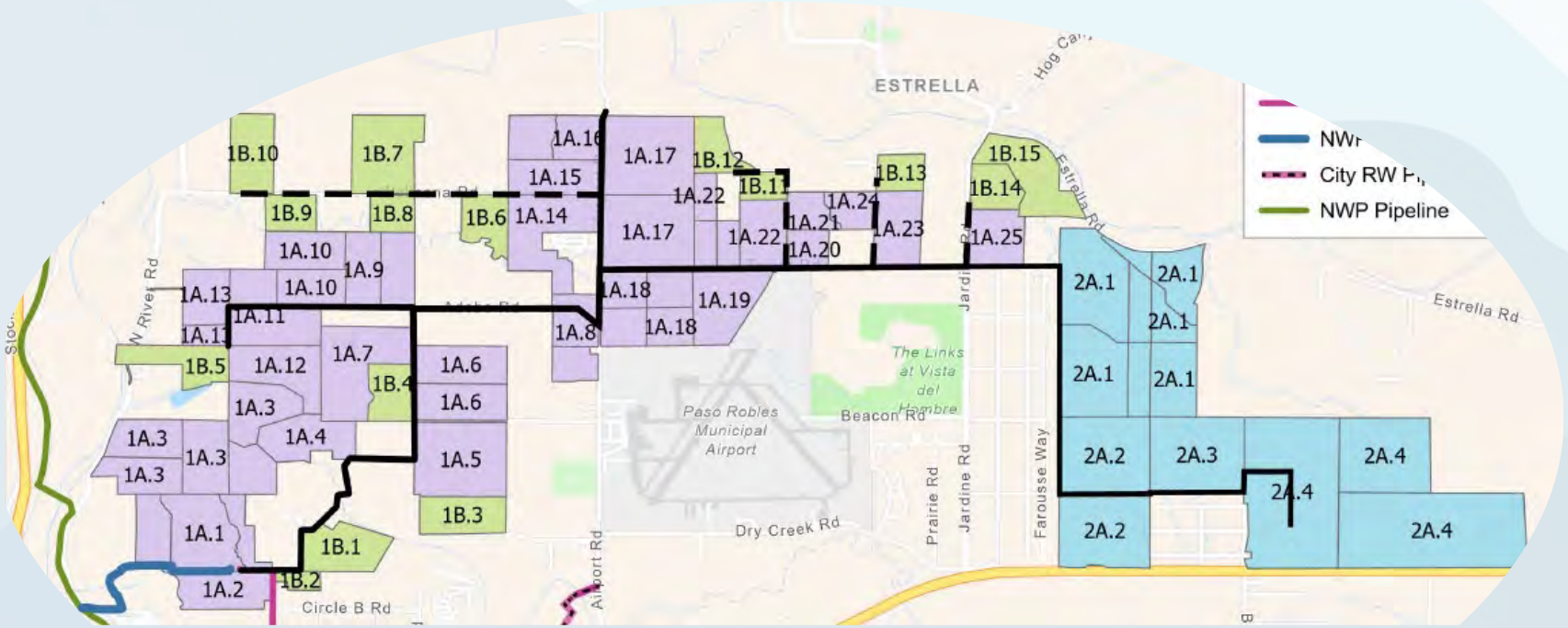
Medium Systems:

- Alternative 5:
  - **Alt 5.1** Baseline alternative – larger pipes, pumps, etc.
  - **Alt 5.2** Lower pressure – smaller pumps, different turnout style
  - **Alt 5.3** Same as 5.2 – adds 1,000AF of distributed storage
  - **Alt 5.4** Same as 5.3 – removes treatment and RW supply

Alt 5 Conclusions:

- Turnout style/pressure no significant impact on unit cost
- Adding storage reduces system capital cost but will add customer connection cost
- Adding storage reduces pipeline size but yield impacted by evaporation
- Removing treatment reduces capital cost by ~30%

System Alternatives: Reduced Supply



Alt 6 Conclusions:

- Alt 6.2 capital costs are 25% less
- Alt 6.2 produces about 50% less yield (AFY)
- Alt 6.2 unit cost is 30% more
- Delivering less water, through smaller pipes to same customers

Large Systems:

- Alternative 6:
  - **Alt 6.1** Baseline alternative – larger pipes, pumps, etc.
  - **Alt 6.2** Uses ½ supply (Sc. 1) – adds storage, smaller pipes

Alternatives Overview

Alt No.	Capital ($M)	O&M ($M/yr)	Unit Cost ($/AF)	User Cost ($M)
Small System				
1.1	$39.8	$1.4	$1,400	$0.4
1.2 (upsize)	$47.3	$1.4	$1,600	$0.4
Medium System				
2	$61.6	$2.0	$1,300	$0.7
3	$77.6	$2.4	$1,400	$0.9
4 (3 upsize)	$93.9	$2.8	$1,700	$0.9
5.1	$90.9	$2.6	$1,300	$1.0
5.2	$90.7	$2.5	$1,300	$4.4
5.3	$73.3	$2.8	$1,300	$35.7
5.4	$42.6	$0.8	$1,000	$35.7
Large System				
6.1	$100.0	$2.8	$1,100	$1.0
6.2	$75.0	$1.7	$1,400	$39.7
7	$114.2	$3.2	$1,300	$1.4
8	$127.5	$3.2	$1,300	$1.4

Report Overview

Next Steps

Next Steps

5.0

- Preferred alternative
- Recommended next steps
  - Treatment piloting and costs
  - Nacimiento water cost and availability
  - Recycled water cost
  - Customer engagement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