

SOUTH TAHOE PUBLIC UTILITY DISTRICT
RECYCLED WATER
STRATEGIC PLAN

Stakeholder Advisory Group / Public Information Meeting

May 23, 2023



Meeting Agenda



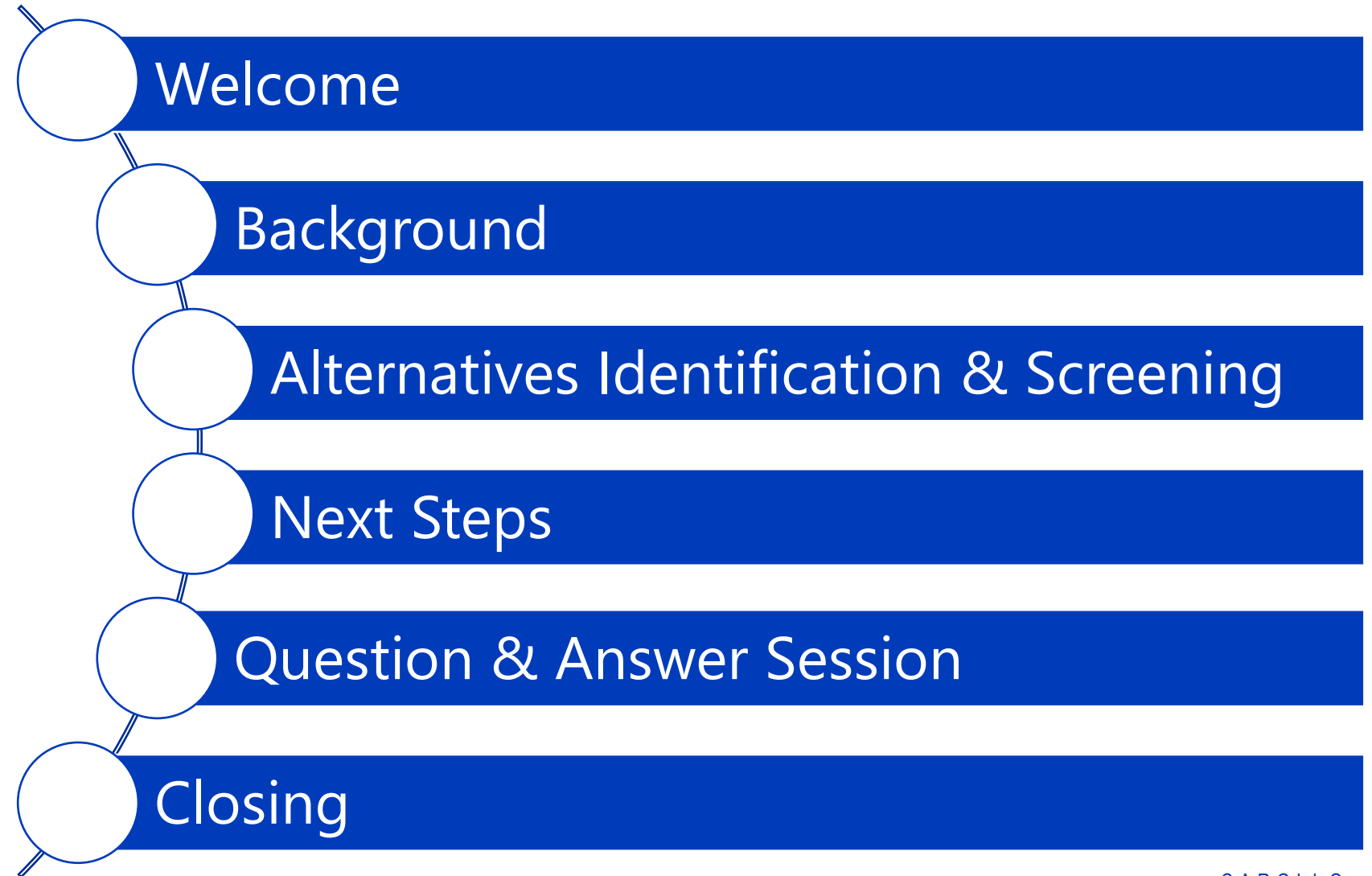
SOUTH TAHOE PUBLIC UTILITY DISTRICT
**RECYCLED WATER
STRATEGIC PLAN**

CAROLLO / 2

Tonight's Schedule

Topic	Timeframe (PST)
Presentation – same for in-person and virtual attendees	6:00 – 6:45 pm
Q&A Session – for in-person and virtual attendees	6:45 – 7:00 pm
-- Break --	7:00 – 7:10 pm
Open House Engagement – for in-person attendees only	7:10 – 8:00 pm
-- Meeting Adjourned --	8:00 pm

Presentation Outline



Welcome



SOUTH TAHOE PUBLIC UTILITY DISTRICT
**RECYCLED WATER
STRATEGIC PLAN**

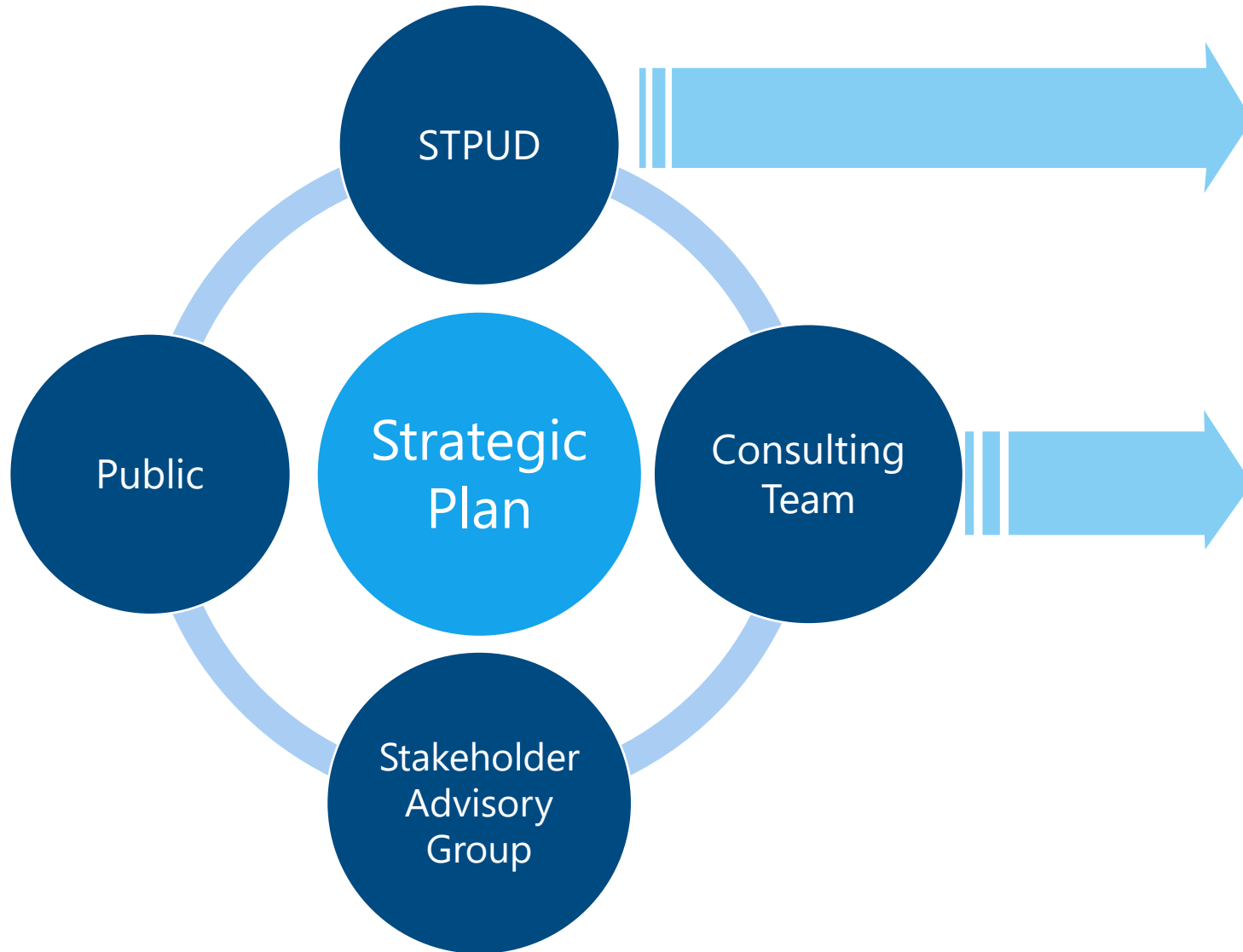
CAROLLO / 5

Why are we here today?

- To update the public and SAG on the Recycled Water Strategic Plan
- To obtain feedback and input from the public and SAG
- To remind or inform you on how to stay involved in the strategic plan development process



// Who will you hear from today?



Steve Caswell



Shelly Thomsen



Elisa Garvey



Coral Taylor

Background



SOUTH TAHOE PUBLIC UTILITY DISTRICT
**RECYCLED WATER
STRATEGIC PLAN**

CAROLLO / 8

Brief History of Existing System

- STPUD established in 1950
- The District began exporting recycled water to Alpine County in 1968
- Porter Cologne Act (1969) required export of treated wastewater out of Tahoe Basin by 1972
- STPUD history of innovation / achievement
 - » 100% of treated effluent is reused
 - » 100% of biosolids recycled as fertilizer
 - » Electricity produced off the export system



District Recycled Water Strategic Plan Objectives

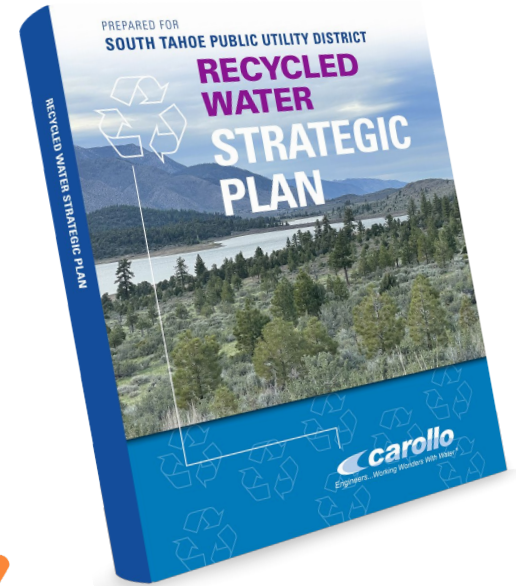
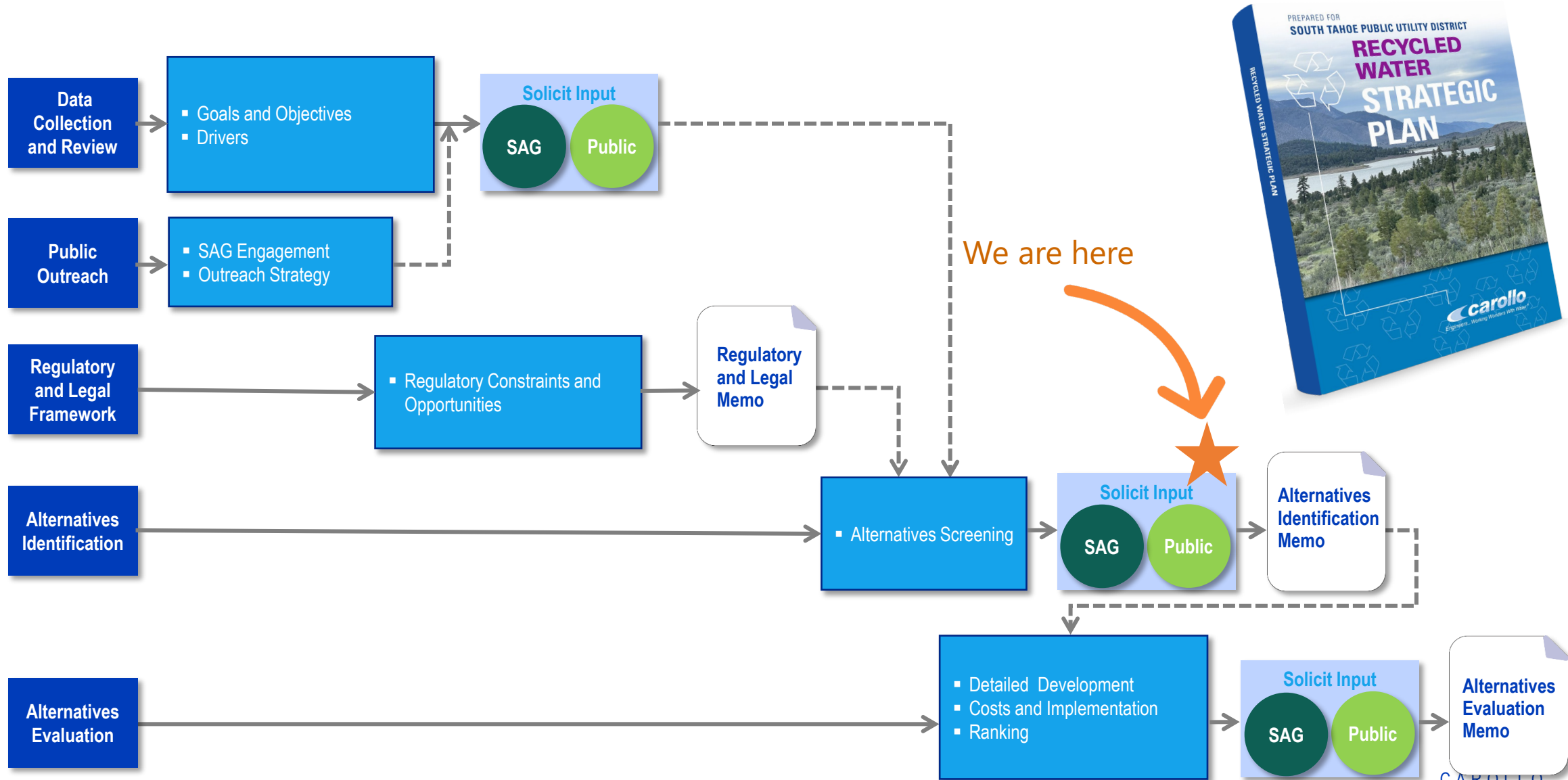


50 Year Planning Horizon

Develop a long-term strategy for District wastewater effluent disposal/reuse that incorporates viable alternatives to the existing system.

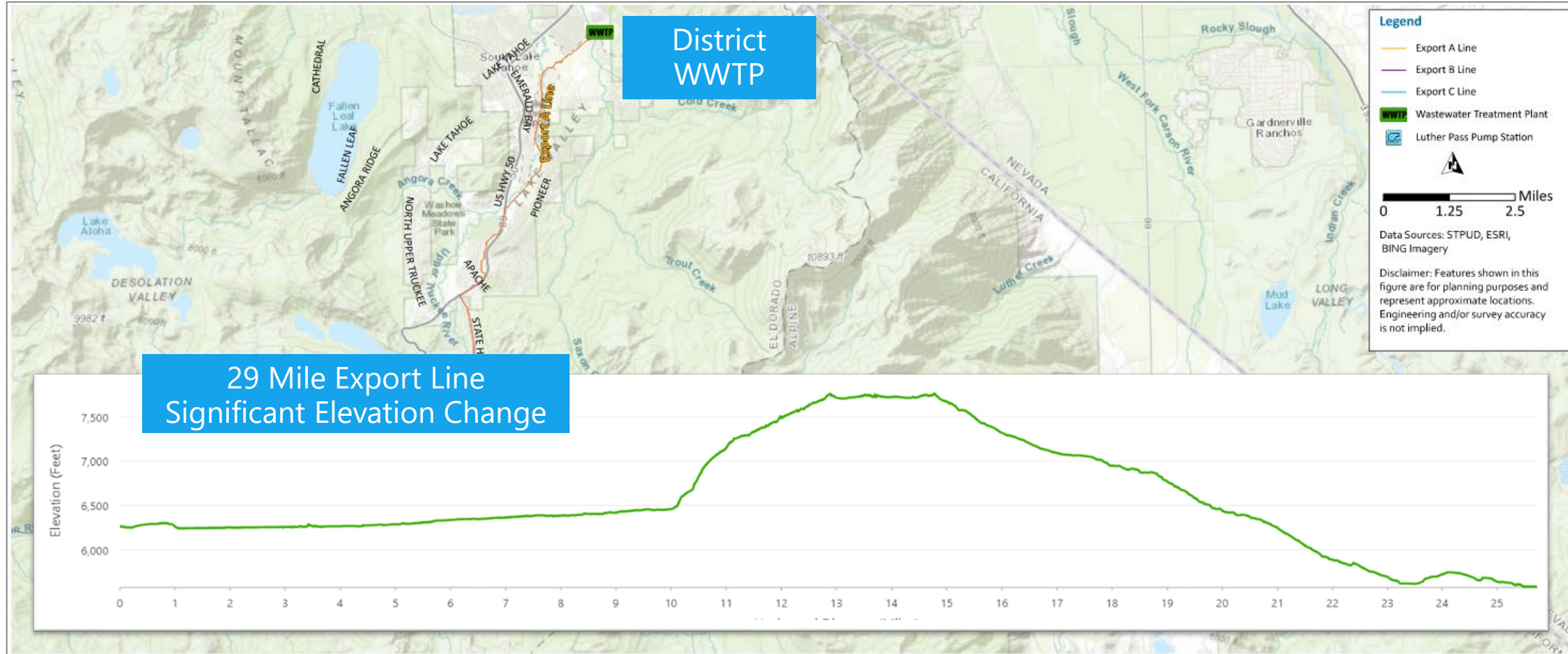
These alternatives would be triggered for implementation by existing or future drivers and/or constraints.

Recycled Water Strategic Plan Development Process

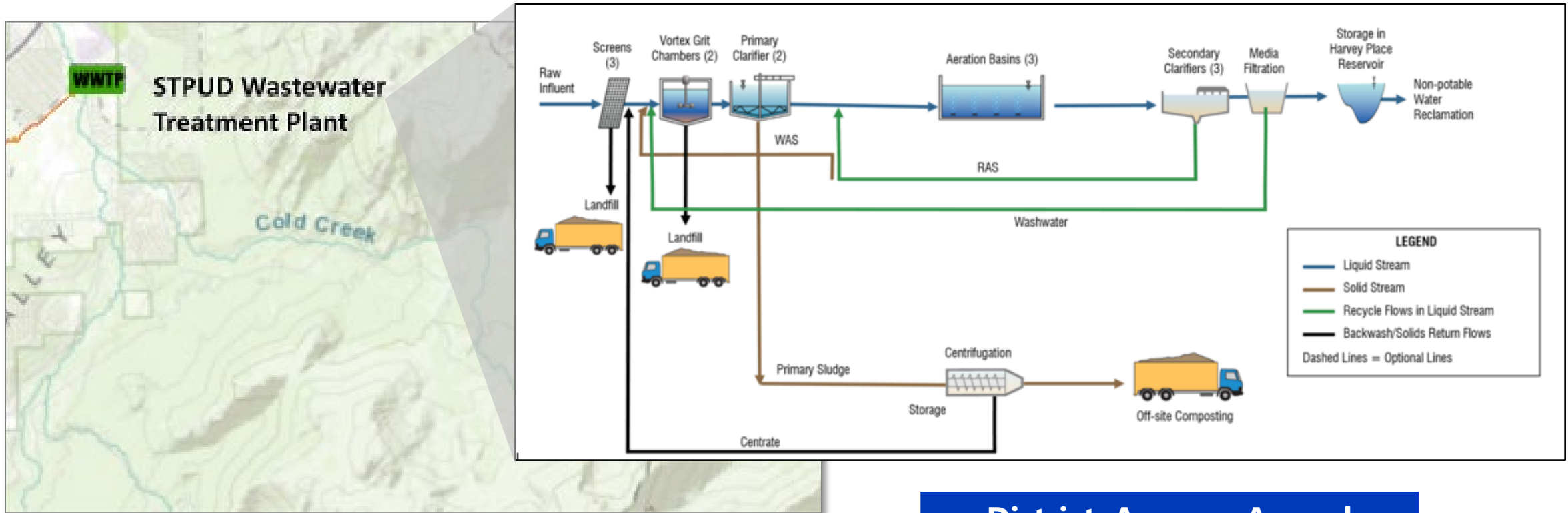


SAG = Stakeholder Advisory Group

District Existing System – Alternative 1



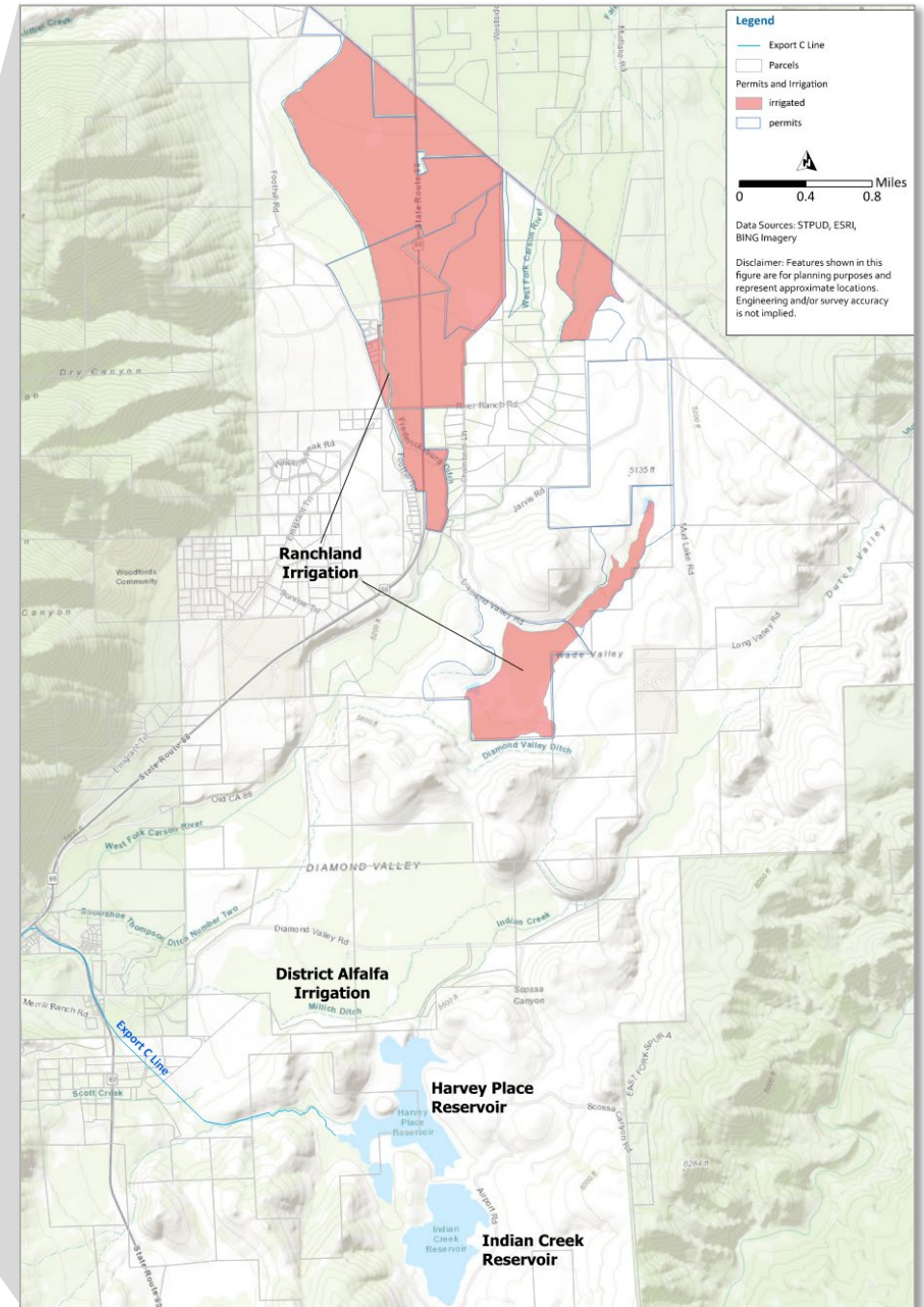
District – Advanced Secondary Treatment



District Average Annual Effluent Flow		
Existing	3.8 mgd	4300 AFY
Future	5.4 mgd	6000 AFY

mgd = million gallons per day
AFY = acre feet per year

District – Restricted Reuse



Existing System Challenges

Economic

- Operation and Maintenance cost for the system is ~\$6M per year. Cost for export system energy is ~\$1.2M per year.
- Limited or no revenue from alfalfa and recycled water.

Regulatory

- Any permit changes may trigger Salt and Nutrient Management Plan (SNMP) requirements.

Technical

- Current operations require continued investment to maintain District established level of service.

Institutional

- Litigation between the District and Alpine County.
- Rancher agreements will expire in 2028.

Environmental and Sustainability

- Energy consumption and production of greenhouse gas emissions

Public

- General concern with the cost of service to treat and export effluent.

Alternatives Identification and Screening

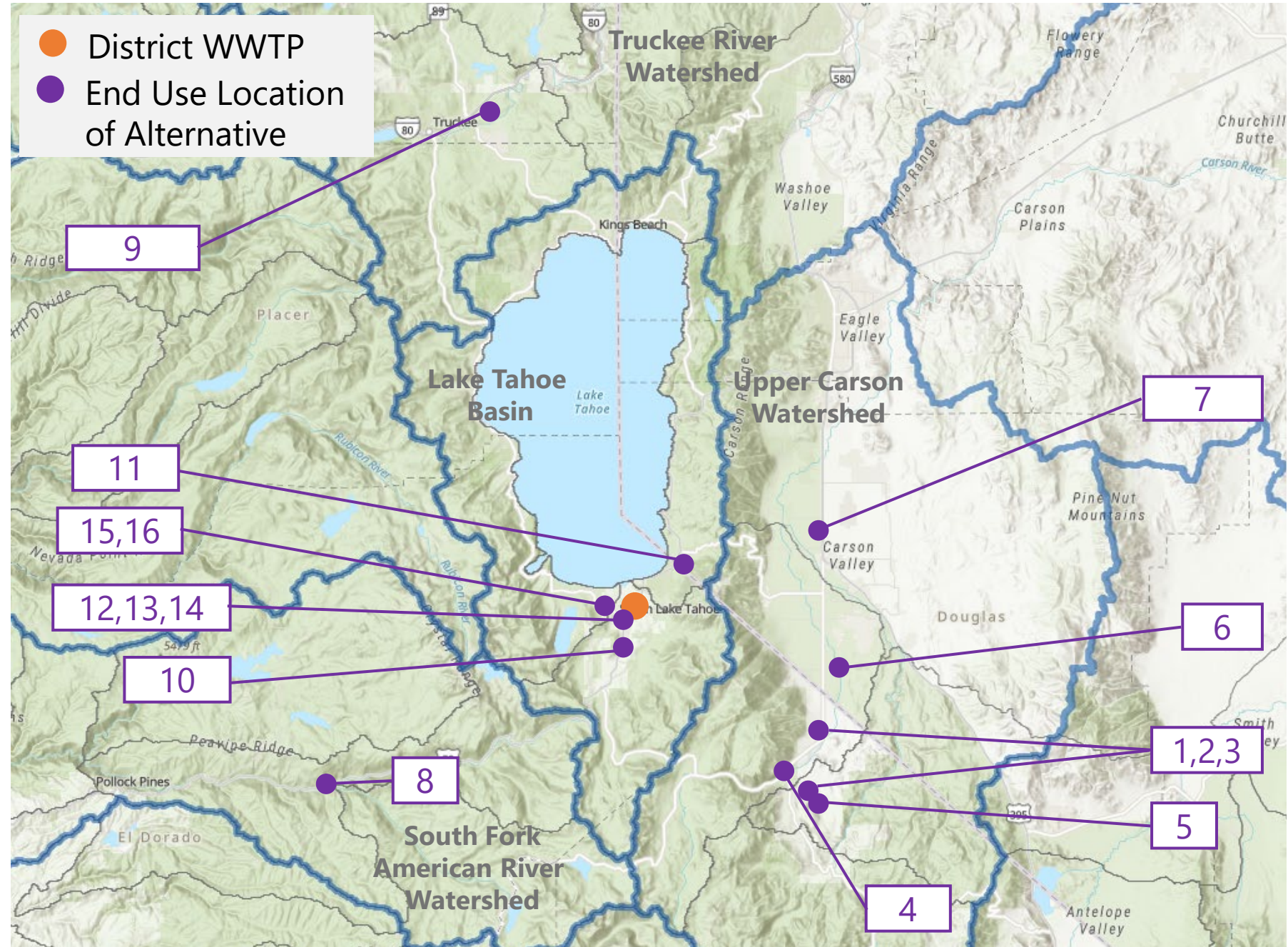


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STRATEGIC PLAN**

CAROLLO / 16

Alternatives Identification and Screening

- Brainstorming exercise – 16 alternatives
- Wide net of potential options
- Identify most viable options for detailed evaluation



WWTP = wastewater treatment plant

Alternatives Identification and Screening

Truckee River Watershed



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Truckee River Watershed Alternative

- Conveyance to TTSA for subsurface discharge to Truckee River



TTSA = Tahoe Truckee Sanitation Agency
WWTP = wastewater treatment plant

Key Challenges – Truckee River Watershed Alternative 9

Regulatory

- LRWQCB – New wastewater discharge permit
- US Congress Settlement Act – potential litigation

Institutional

- Tahoe Truckee Sanitation Agency – Ordinance Modifications
- Tahoe City Public Utility District - Ordinance Modifications

Technical

- 15-mile pipeline to connect to TCPUD infrastructure
- Challenging construction
- Requires increased pipeline capacity (TCPUD & TTSA) and treatment facility capacity (TTSA)

Environmental

- Potential environmental impacts of pipeline construction

Alternatives Identification and Screening

South Fork American River Watershed

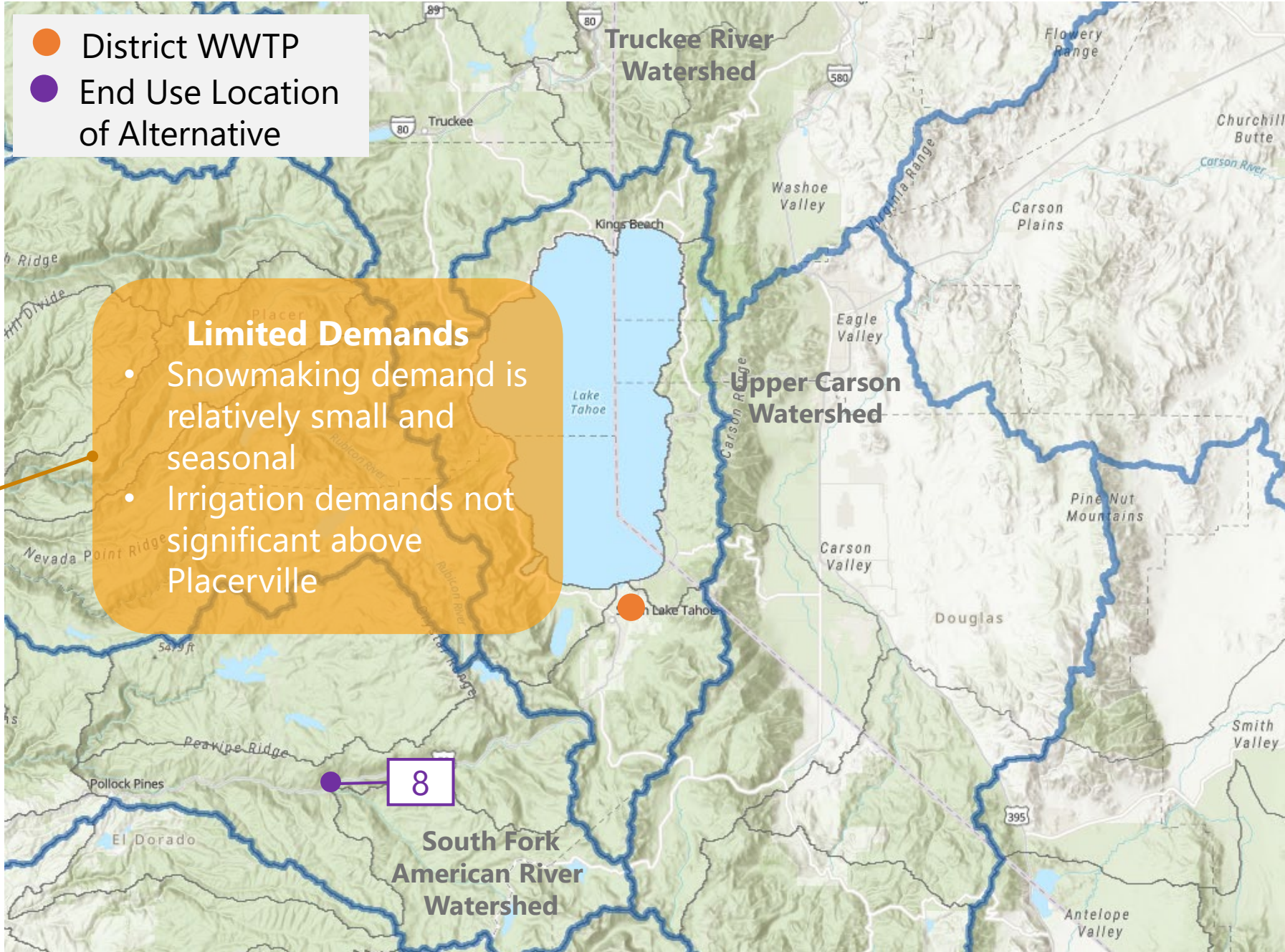


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CAROLLO / 21

South Fork American River Watershed Alternative

- Non-potable recycled water use in American River Watershed
 - » Snowmaking
 - » Irrigation
- Discharge to the American River



WWTP = wastewater treatment plant

Key Challenges – South Fork American River Watershed Alternative 8

Regulatory	Technical	Environmental
<ul style="list-style-type: none">• CVRWQCB – New wastewater discharge permit• CVRWQCB 1977 Decision – Discharge of District Effluent to location near Kyburz• US Congress Settlement Act – potential litigation	<ul style="list-style-type: none">• 28-mile pipeline to Kyburz, CA• Challenging pipeline construction• Treatment upgrades to meet American River Water Quality Objectives	<ul style="list-style-type: none">• Potential environmental impacts of pipeline construction

Alternatives Identification and Screening

Lake Tahoe Basin

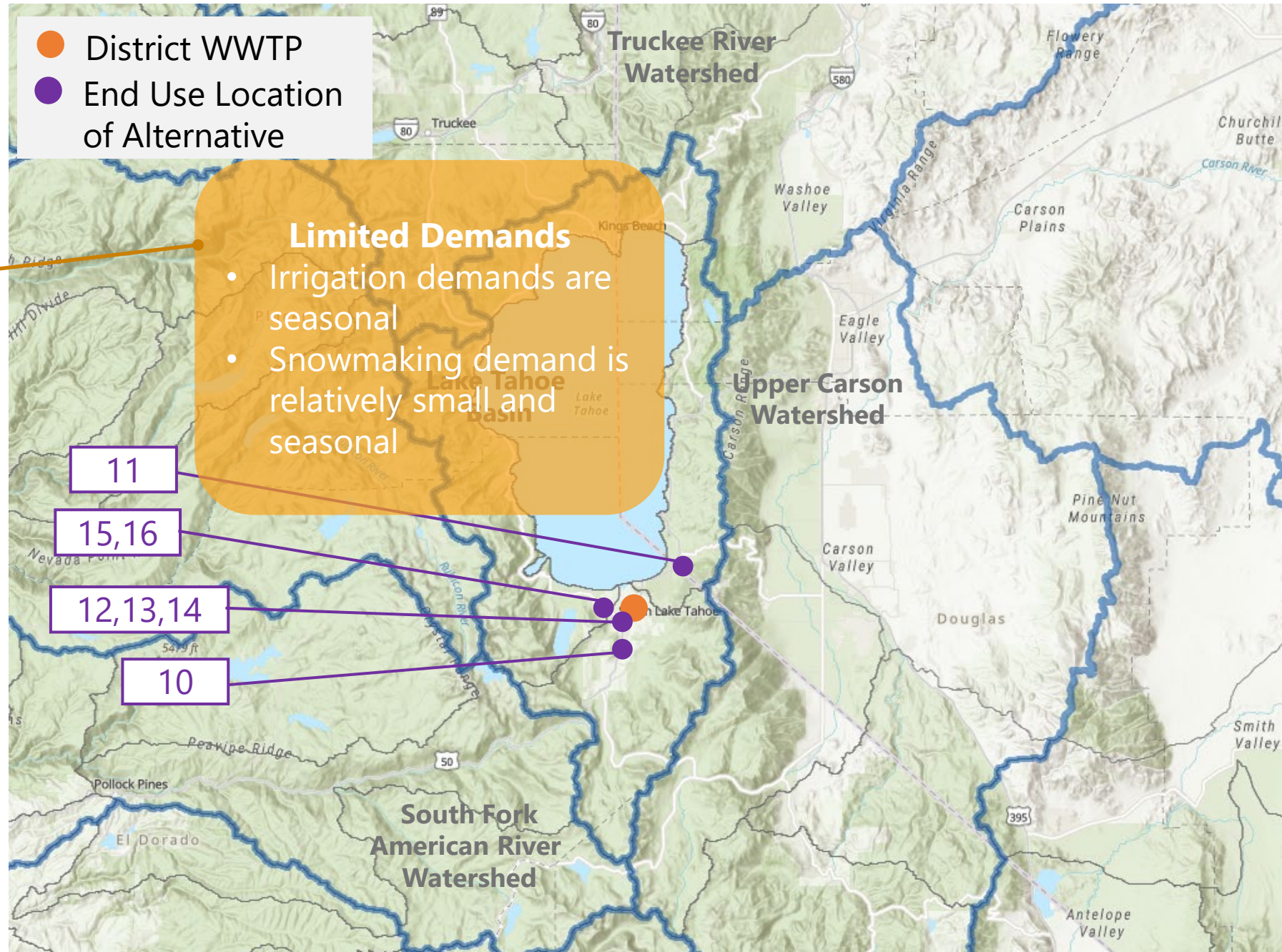


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CAROLLO / 24

Lake Tahoe Basin Alternatives

- Land Application
- Discharge to waterways
- Potable Reuse
 - » Indirect Potable Reuse
 - » Direct Potable Reuse

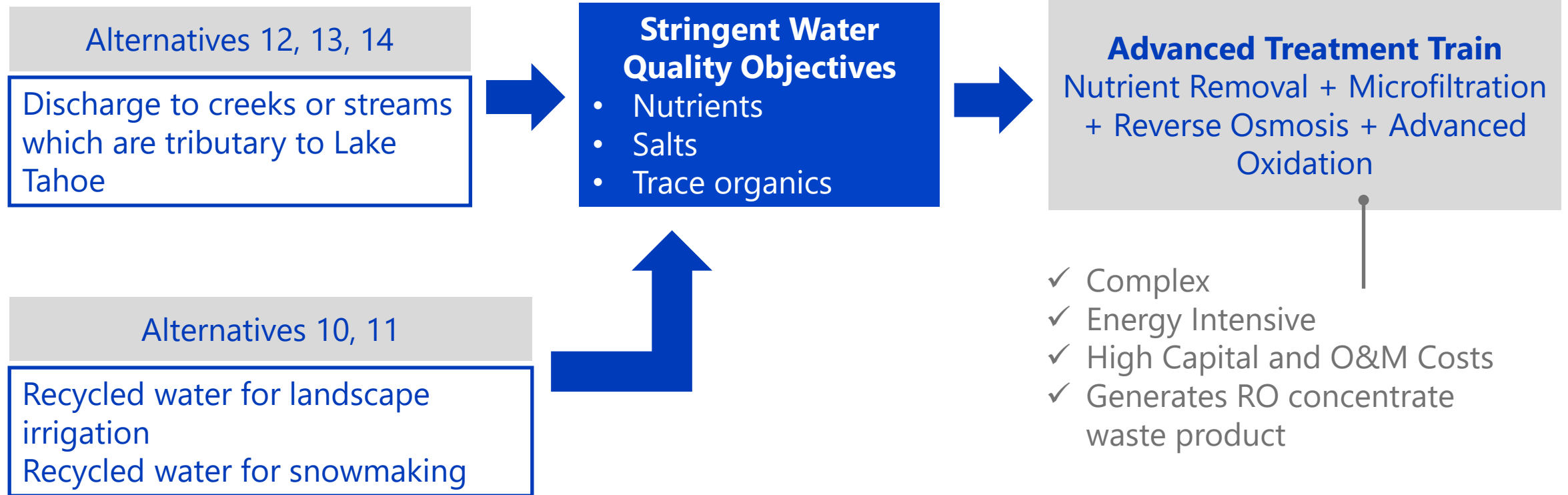


WWTP = wastewater treatment plant

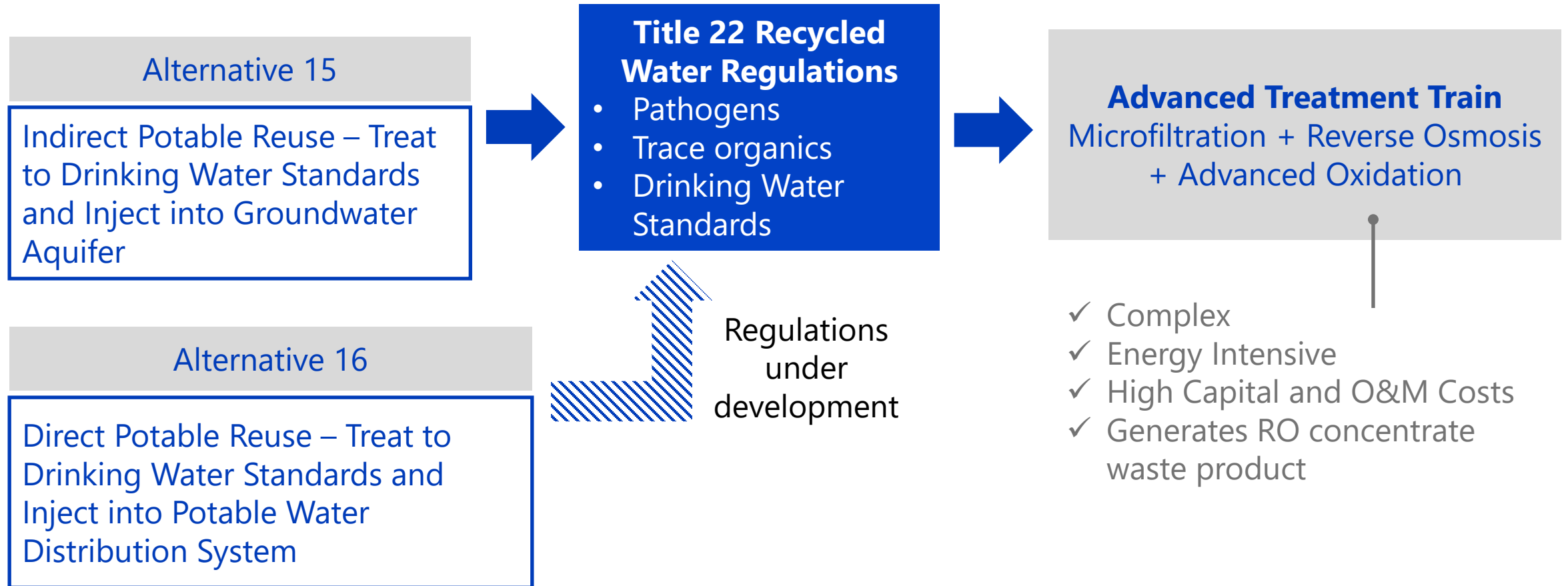
Key Challenges – Regulatory

Authority	Regulation/ Agreement/ Policy/ Permit	Description	Challenge
State of California	Porter-Cologne Act	Requires export	<ul style="list-style-type: none"> Porter-Cologne Act modification Approval by CA Legislature
LRWQCB	Basin Plan	Designates Lake Tahoe as an Outstanding National Resource Waters (ONRW)	<ul style="list-style-type: none"> De-designation of Lake Tahoe ONRW Or meet water quality objectives at discharge
TRPA	Code or Ordinances	Prohibits municipal wastewater discharge to Tahoe region	<ul style="list-style-type: none"> Requires modification of TRPA code
US Congress	Settlement Act	Stipulates the allocation of Carson River water between CA/NV	<ul style="list-style-type: none"> Requires modification Potential litigation
State of California	SGMA	Annual reporting on water supply and demands	<ul style="list-style-type: none"> Ample water available
State of California	Title 22	Defines approved uses of recycled water	<ul style="list-style-type: none"> Treatment requirements for various types of reuse Not enough demand

Lake Tahoe Basin Alternatives



Lake Tahoe Basin Alternatives



Key Challenges – Lake Tahoe Basin Alternatives 10, 11, 12, 13, 14, 15, 16

Regulatory	Technical	Environmental	Public
<ul style="list-style-type: none">• Porter Cologne Act (among many)	<ul style="list-style-type: none">• Advanced treatment to achieve standards and or Title 22 Regulations for potable reuse• Limited demand/need for additional water supply	<ul style="list-style-type: none">• Reverse osmosis waste product• Energy intensive treatment processes	<ul style="list-style-type: none">• Acceptance of recycled water use in the Tahoe Basin• Acceptance of potable reuse

Alternatives Identification and Screening

Carson River Watershed

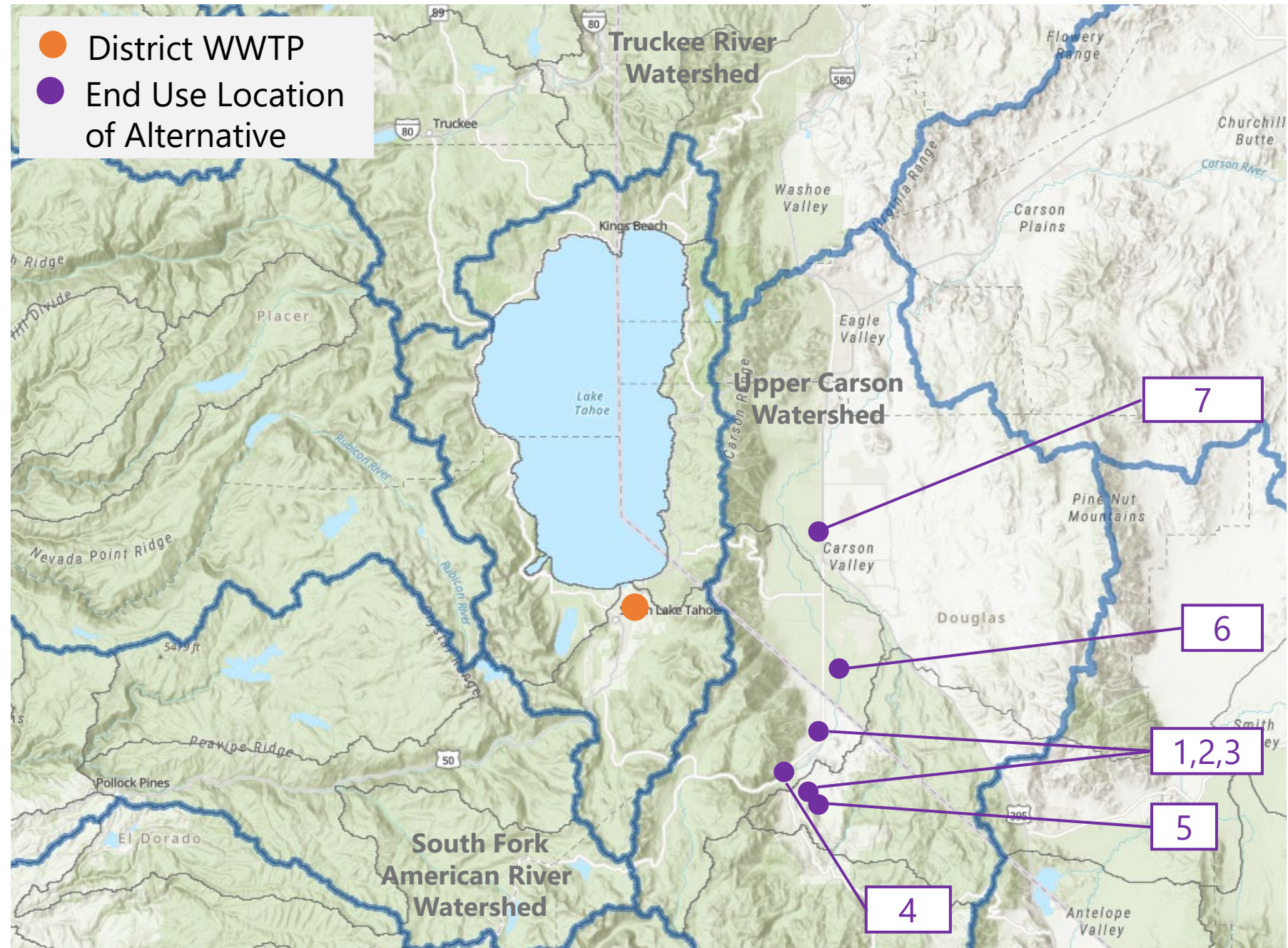


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Carson River Watershed Alternatives

- Existing System
- Non-potable reuse in CA and NV

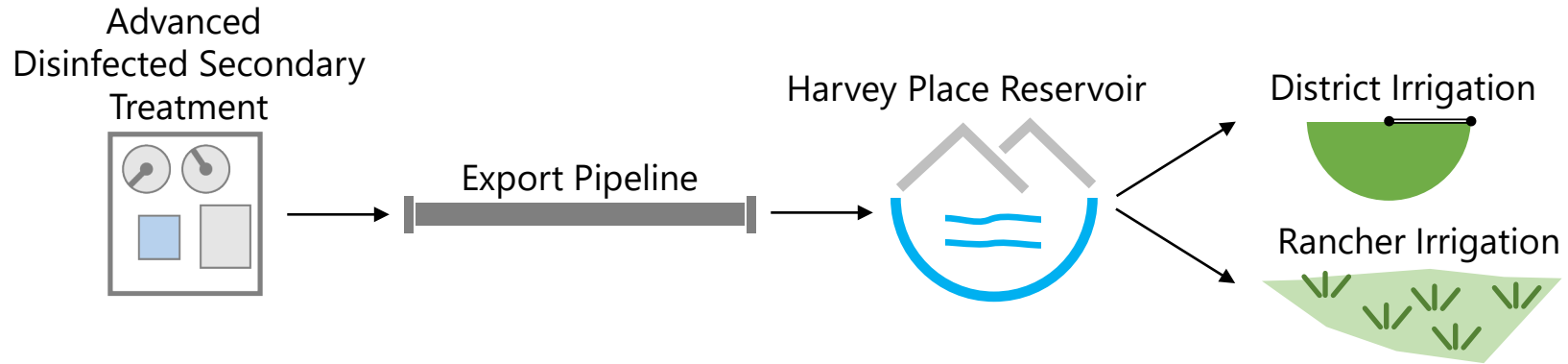


WWTP = wastewater treatment plant

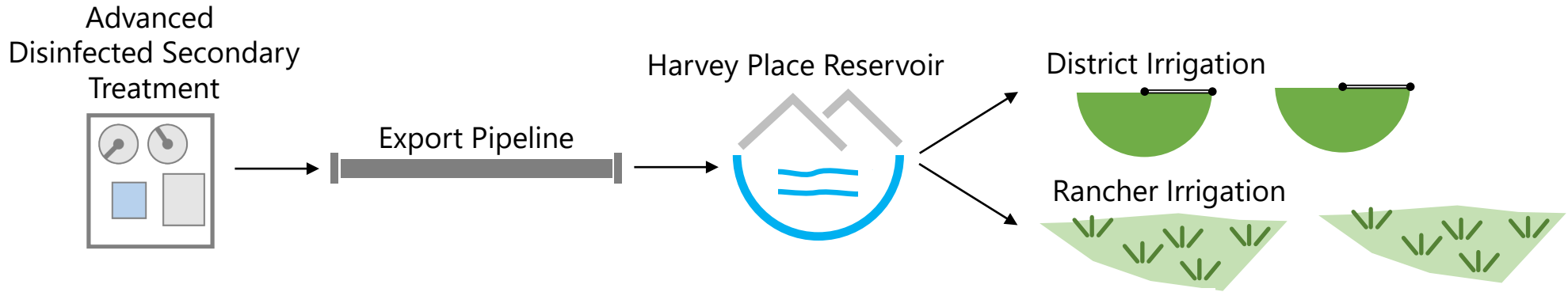
Key Regulatory Challenges

Authority	Regulation/ Agreement/ Policy/ Permit	Description	Challenge
State of California	Title 22	Defines approved uses of recycled water	<ul style="list-style-type: none"> Limited options
LRWQCB	Basin Plan	Water quality objectives Surface water discharge permit	<ul style="list-style-type: none"> Attainment of objectives
NDEP	Discharge Regulations	Water quality objectives Surface water discharge permit	<ul style="list-style-type: none"> Attainment of objectives
State of Nevada	Reuse Regs	Defines approved uses of recycled water – Class A and Class B	<ul style="list-style-type: none"> Class A may require treatment upgrades Crossing State lines
NDEP	DCLTSA Permit	Recycled water permit	<ul style="list-style-type: none"> Modifications to accommodate additional flow from the District
DCLTSA	DCLTSA Ordinance	Agreement needed between the two entities	<ul style="list-style-type: none"> Negotiating agreement

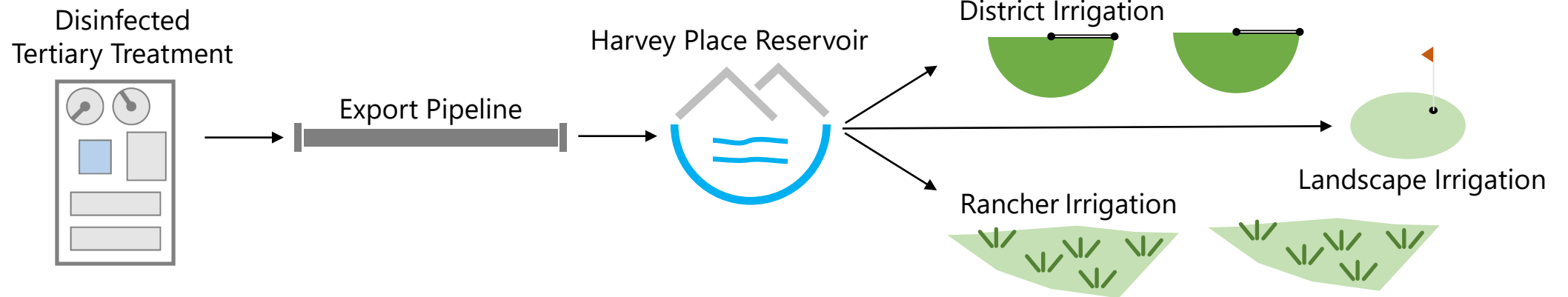
1 – Existing System



2 – Expanded Disinfected Secondary Effluent Reuse

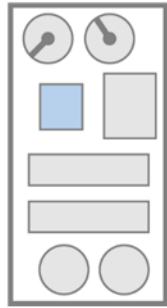


3 – Expanded Disinfected Tertiary Effluent Reuse



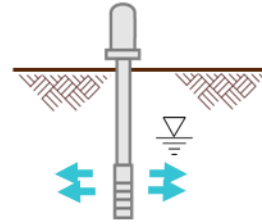
5 – Groundwater Injection For Disposal in Alpine County

Microfiltration + Reverse Osmosis + Advanced Oxidation



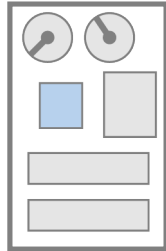
Export Pipeline

Injection – Carson Valley Basin



6 – Expanded Class A or B Reuse in NV

Treatment to Meet Class A or B Reuse in NV

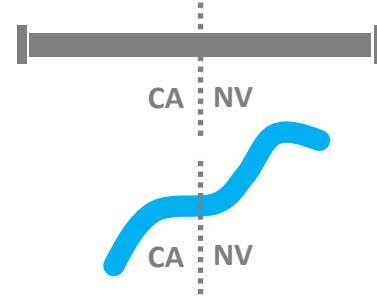


Export Pipeline

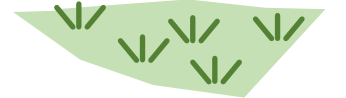
Harvey Place Reservoir



Conveyance Pipeline or Indian Creek

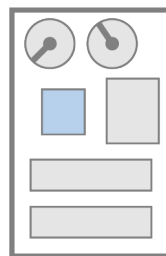


Landscape Irrigation
Pastureland Irrigation



7 – Conveyance to DCLTSA

Tertiary Treatment
Nutrient Removal



Pipeline to DCLTSA



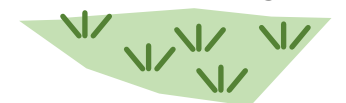
DCLTSA Export Pump Station



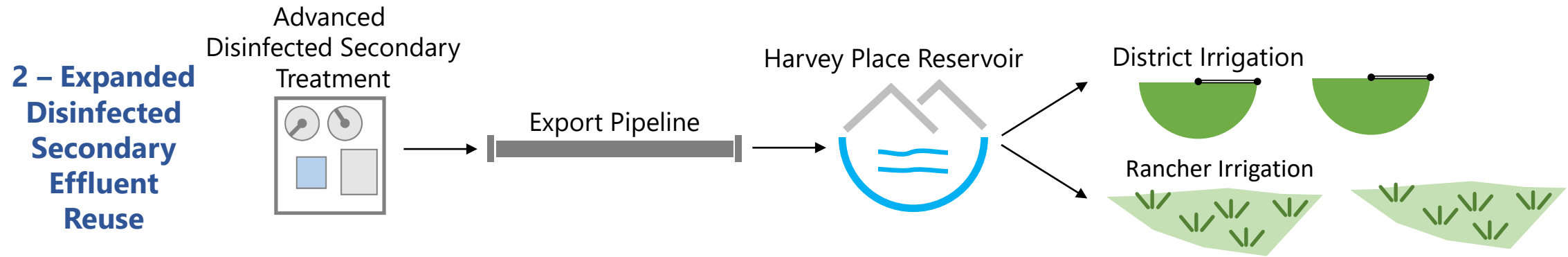
DCLTSA Export Pipeline

Alfalfa Irrigation

Pastureland Irrigation



Alternative 2 – Expanded Reuse with Advanced Secondary Recycled Water



Components

Existing Treatment

Expanded Recycled Water Use on District Property

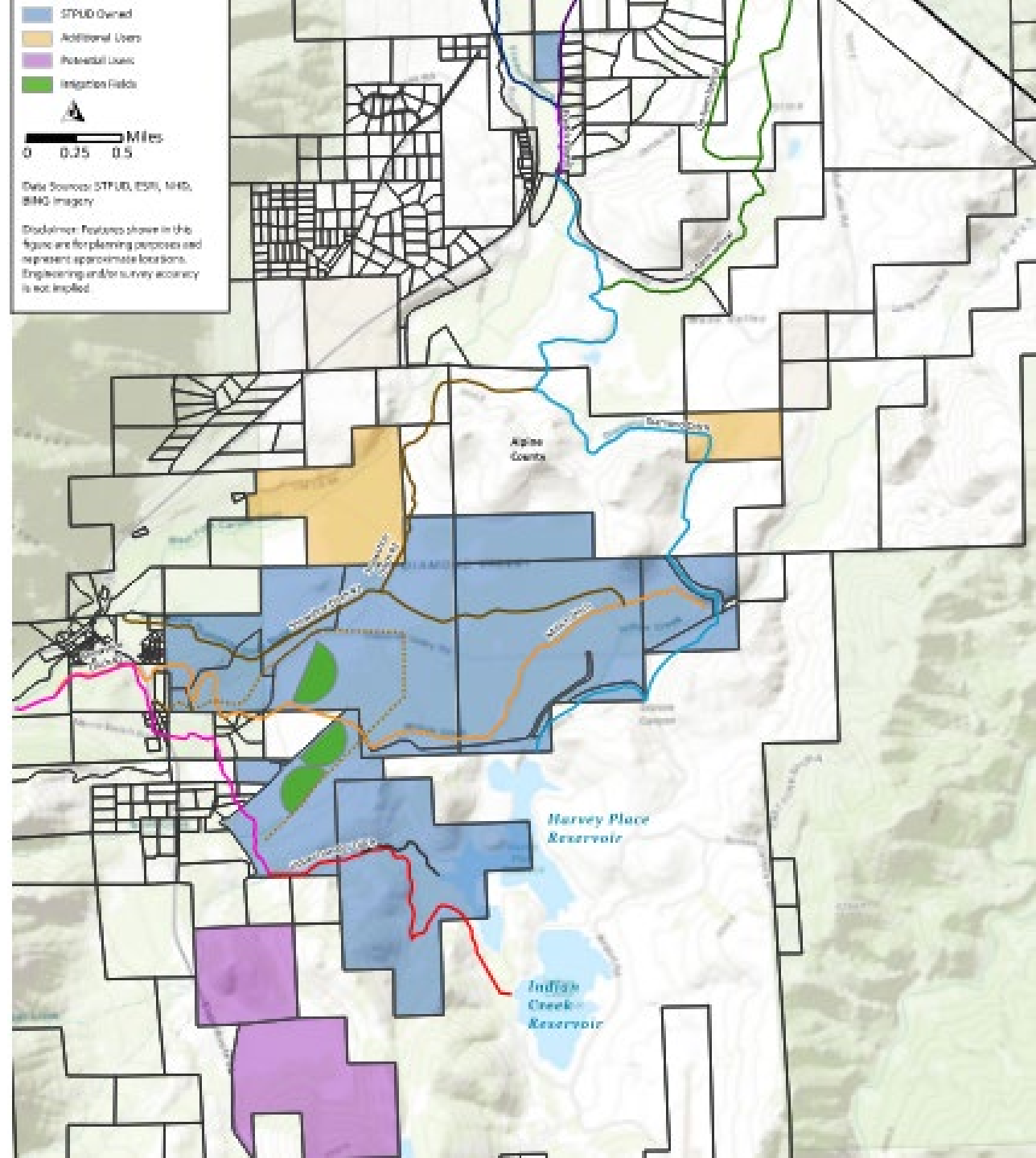
Existing Export

Expanded Recycled Water Use on Other Properties

Possible Infrastructure Modifications/Expansion

Potential Recycled Water Demands

- Expanded District Irrigation Operations
 - » Additional fodder crop irrigation areas
 - » Wetlands on property may limit expansion potential
- New Users
 - » Few parcels identified to date



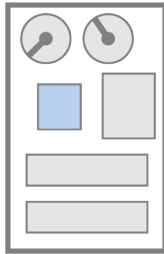
Key Challenges – Expanded Advanced Secondary Reuse in Alpine County Alternative 2

Regulatory	Technical	Environmental	Institutional
<ul style="list-style-type: none">• Updated Recycled Water Permit• Salt and Nutrient Management Plan	<ul style="list-style-type: none">• Limited new demands• Potential new recycled water delivery infrastructure	<ul style="list-style-type: none">• Potential construction impacts of any new infrastructure	<ul style="list-style-type: none">• Renewal/extension of rancher contracts• New contracts with new users

Alternative 3 – Expanded Reuse with Disinfected Tertiary Recycled Water

3 – Expanded Disinfected Tertiary Effluent Reuse

Disinfected Tertiary Treatment



Export Pipeline

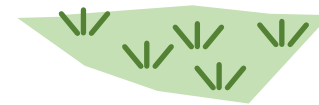
Harvey Place Reservoir



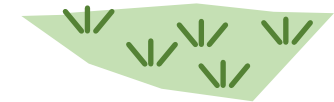
District Irrigation



Rancher Irrigation



Landscape Irrigation



Components

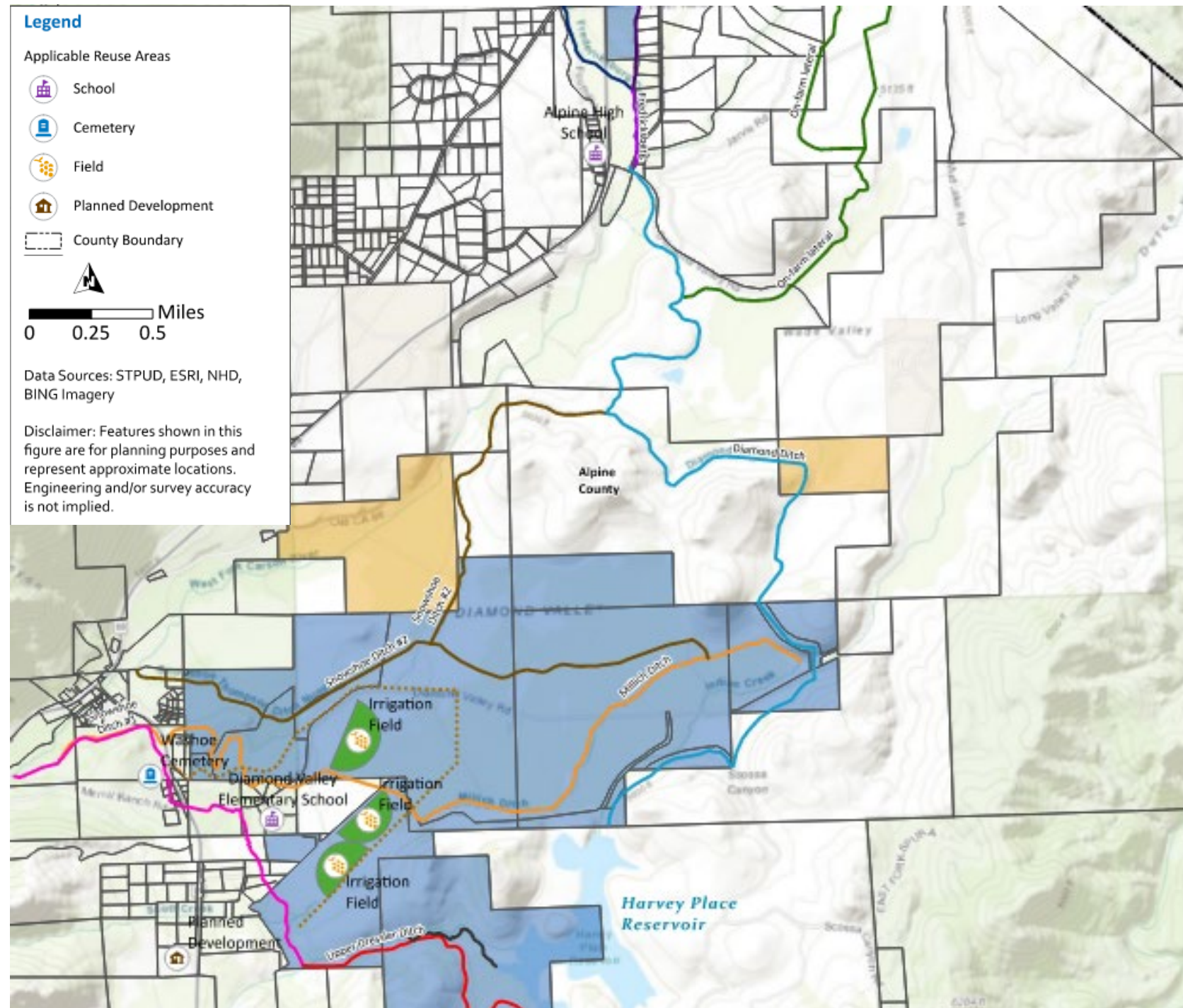
Existing Export

Disinfected Tertiary Treatment

Infrastructure for delivery of recycled water

Potential Recycled Water Demands

- Region is dominated by Ag and open space
- Ag areas not used for food crops due to climate
- Limited demand for urban landscape irrigation



Key Challenges – Expanded Disinfected Tertiary Effluent Reuse Alternative 3

Regulatory

- Updated Recycled Water Permit
- Salt and Nutrient Management Plan

Technical

- Limited new demands even with higher level of treatment
- Potential new recycled water delivery infrastructure

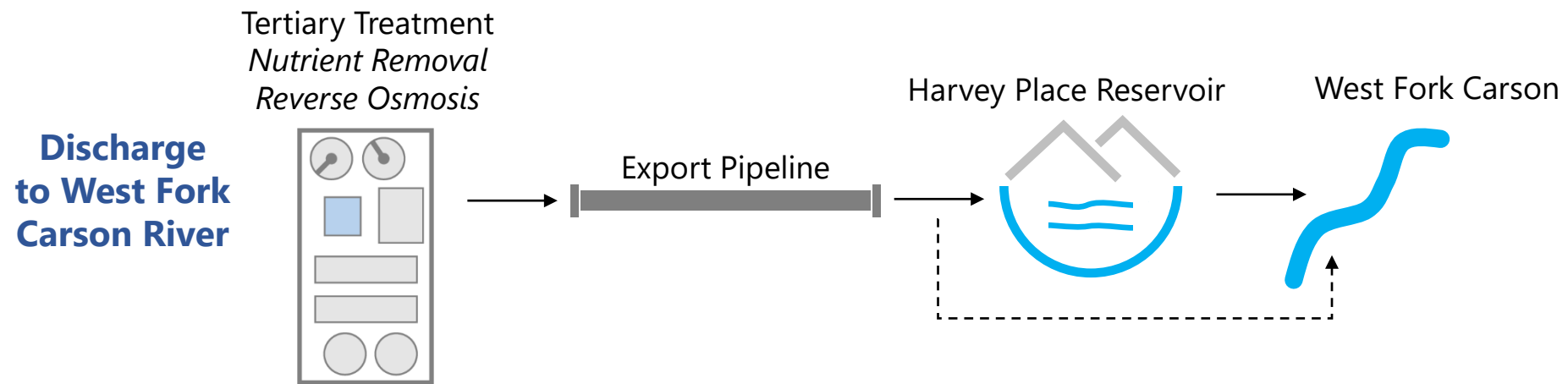
Environmental

- Potential construction impacts of any new infrastructure

Institutional

- Renewal/extension of rancher contracts
- New contracts with new users

Alternative 4 – Discharge to West Fork Carson River



Components

Existing Export

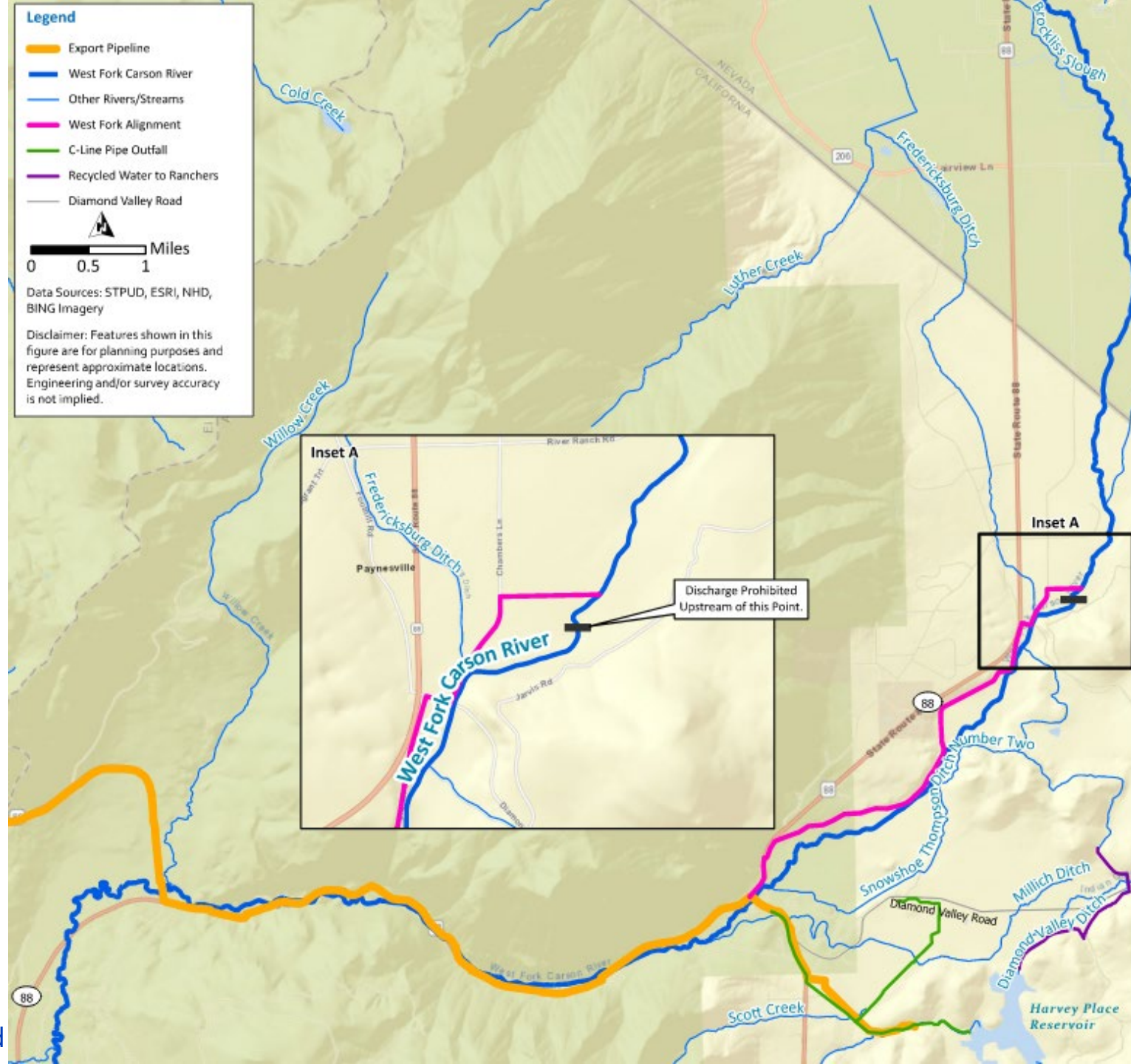
Potential Treatment Upgrades

Seasonal Discharge

New surface water discharge to West Fork Carson

Location of Potential West Fork Discharge

- Alpine County
 - 1965 Ordinance Regulating Recycled Water



Key Challenges – Discharge to West Fork Carson River Alternative 4

Regulatory

- LRWQCB – Surface water discharge permit
- LRWQCB – Basin Plan Amendment
- NDEP approval
- NDEP - Approval for conveyance into NV
- Consistency with West Fork Vision Project

Technical

- Potential treatment upgrades – Nutrient removal, partial salt and chloride removal
- Generation of RO concentrate

Environmental

- Potential construction impacts of pipeline to discharge location

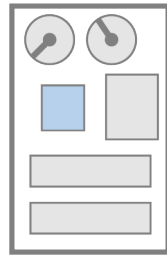
Institutional

- Use of recycled water during time of discharge

Alternative 6 – Expanded Class A or B Reuse in Nevada

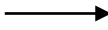
6 – Expanded Class A or B Reuse in NV

Treatment to Meet Class A or B Reuse in NV



Export Pipeline

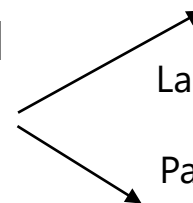
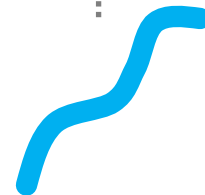
Harvey Place Reservoir



Conveyance Pipeline or Indian Creek

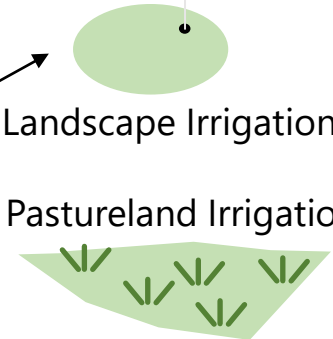


CA NV



Landscape Irrigation

Pastureland Irrigation



Components

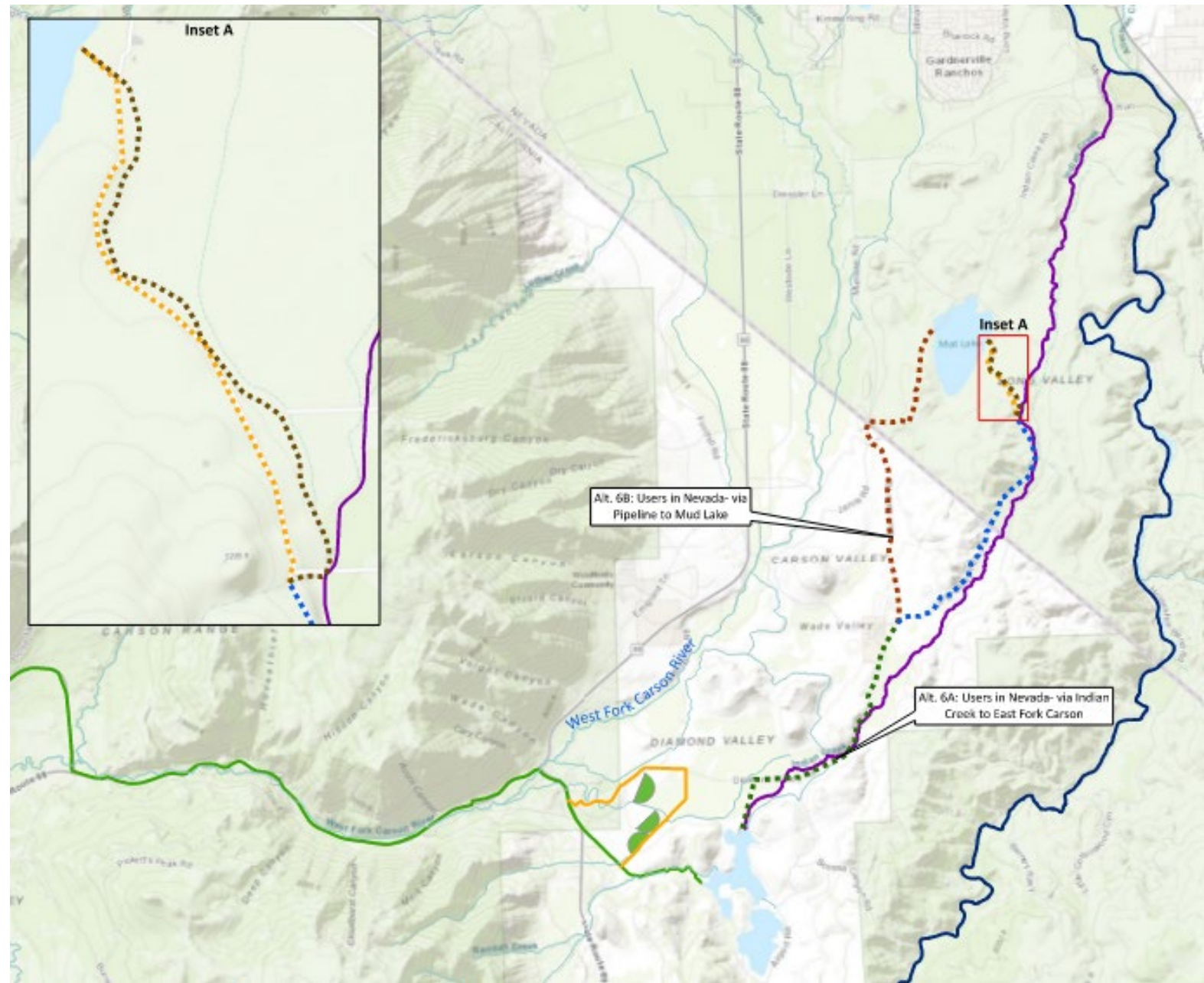
Existing Export

Potential Treatment Upgrades

Infrastructure for delivery of recycled water or approval for alternative conveyance

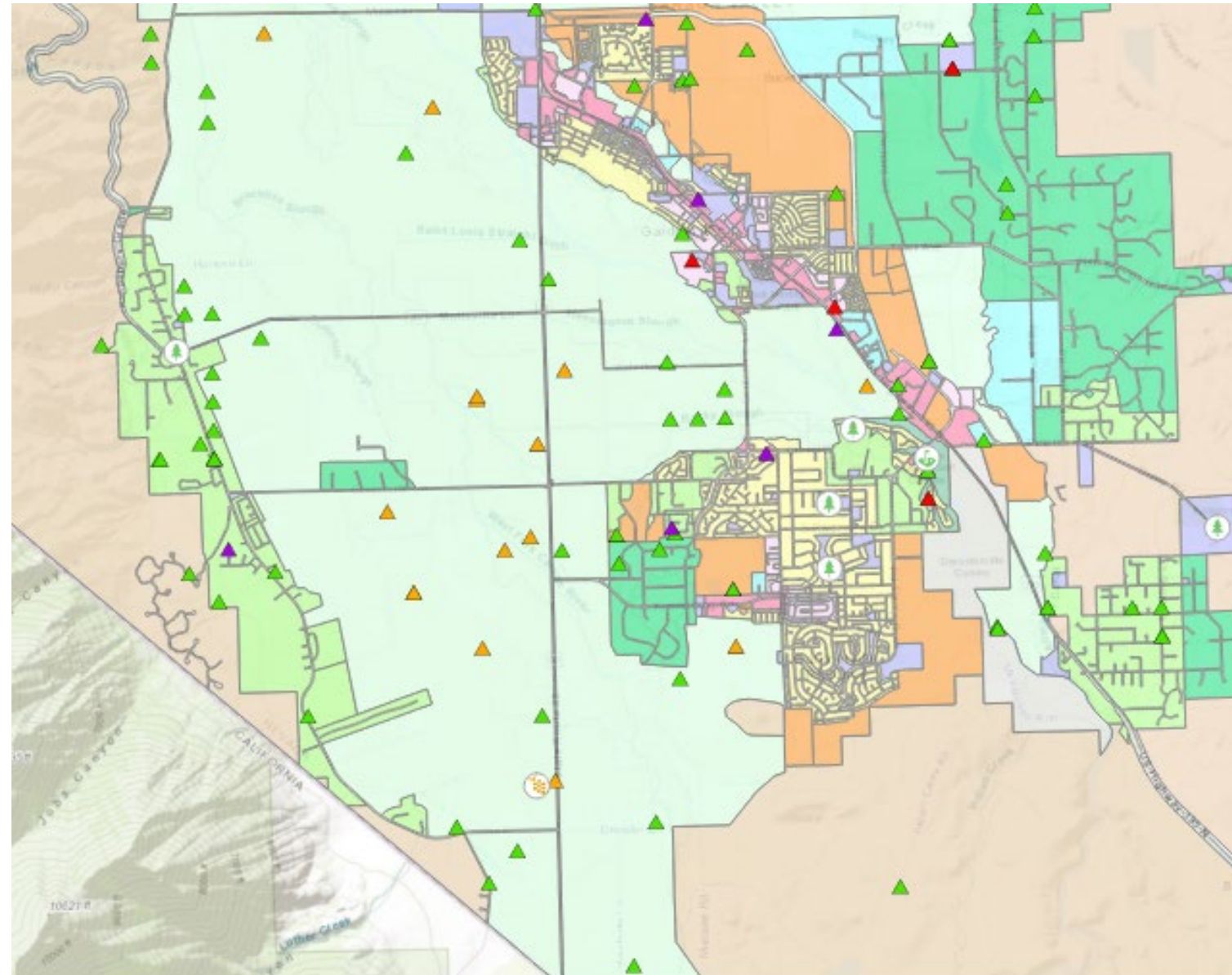
Conveyance Options

- Potential conveyance from Harvey Place Reservoir
 - » Pipeline
 - » Indian Creek



Class A or B Reuse in Nevada

- Agricultural Areas
 - » Cattle ranching / farming
 - » Hay farming
 - » Other animal production – bees, goats, sheep, hogs
- Urban Irrigation
 - » Golf Courses
 - » Parks
 - » Schools



Key Challenges – Expanded Class A or B Reuse in Nevada Alternative 6

Conveyance pipeline to Mud Lake

Regulatory	Technical	Environmental	Institutional
<ul style="list-style-type: none">• NDEP Discharge permit for Mud Lake• Approval for use by NDEP	<ul style="list-style-type: none">• New conveyance pipeline• Potential treatment upgrades – depending on level of reuse	<ul style="list-style-type: none">• Potential construction impacts of any new infrastructure	<ul style="list-style-type: none">• New contracts with new users

Key Challenges – Expanded Class A or B Reuse in Nevada Alternative 6

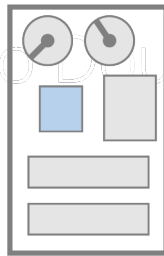
Conveyance via Indian Creek

Regulatory	Technical	Environmental	Institutional
<ul style="list-style-type: none">• LRWQCB discharge permit• Approval for use by NDEP	<ul style="list-style-type: none">• Potential treatment upgrades to meet water quality objectives	<ul style="list-style-type: none">• Potential construction impacts of any new infrastructure	<ul style="list-style-type: none">• New contracts with new users

Alternative 7 – Conveyance to DCLTSA

7 – Conveyance to DCLTSA

Tertiary Treatment
Nutrient Removal



Pipeline to DCLTSA

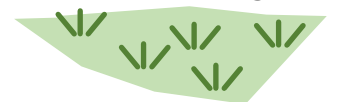
DCLTSA
Export Pump Station

DCLTSA
Export Pipeline

Alfalfa Irrigation



Pastureland Irrigation



Components

Potential Treatment Upgrades

Capacity Increase of DCLTSA
Export Line (Partial)

Conveyance Pipeline to
DCLTSA

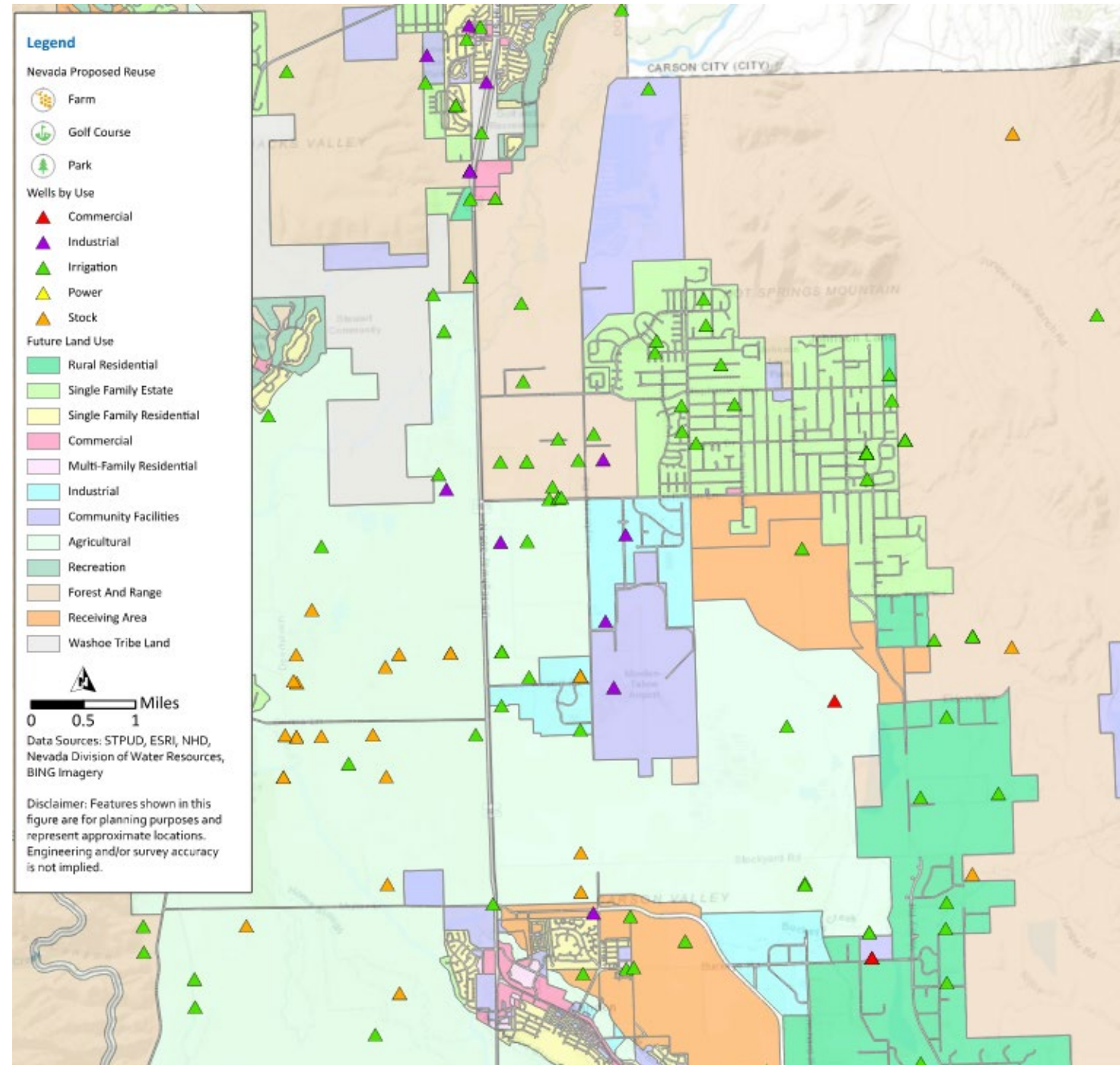
Infrastructure for delivery of
recycled water to new users

DCLTSA Export Pipeline and Recycled Water Use



Demands in Vicinity

- Existing Demands
 - » Ranches / livestock
 - » Fodder crop
- Potential Demands
 - » Ranches / livestock
 - » Fodder crop
 - » Urban irrigation – Golf Courses
 - » Snowmaking – NV side of Heavenly Ski Resort
- Conveyance to New Users



Key Challenges – Conveyance to DCLTSA Alternative 7

Regulatory

- Approval for use by NDEP
- Approval/permit for connection to DCLTSA system

Technical

- Conveyance pipeline to DCLTSA
- Capacity increase for pressurized section of DCLTSA export system

Environmental

- Potential construction impacts of pipeline to DCLTSA

Institutional

- Agreement with DCLTSA
- Contracts with new users

Summary and Next Steps

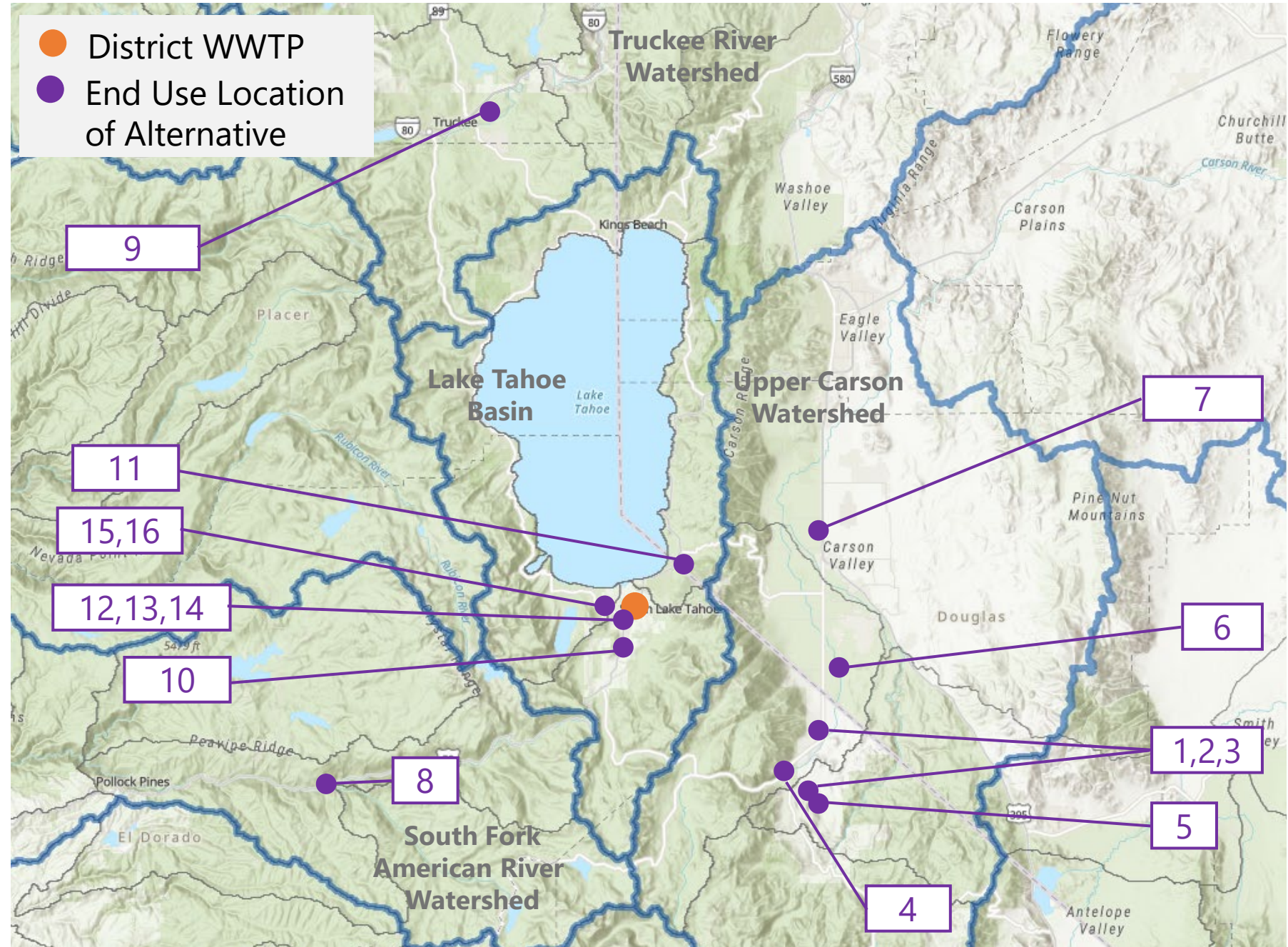


SOUTH TAHOE PUBLIC UTILITY DISTRICT
**RECYCLED WATER
STRATEGIC PLAN**

CAROLLO / 53

Summary

16 Alternatives

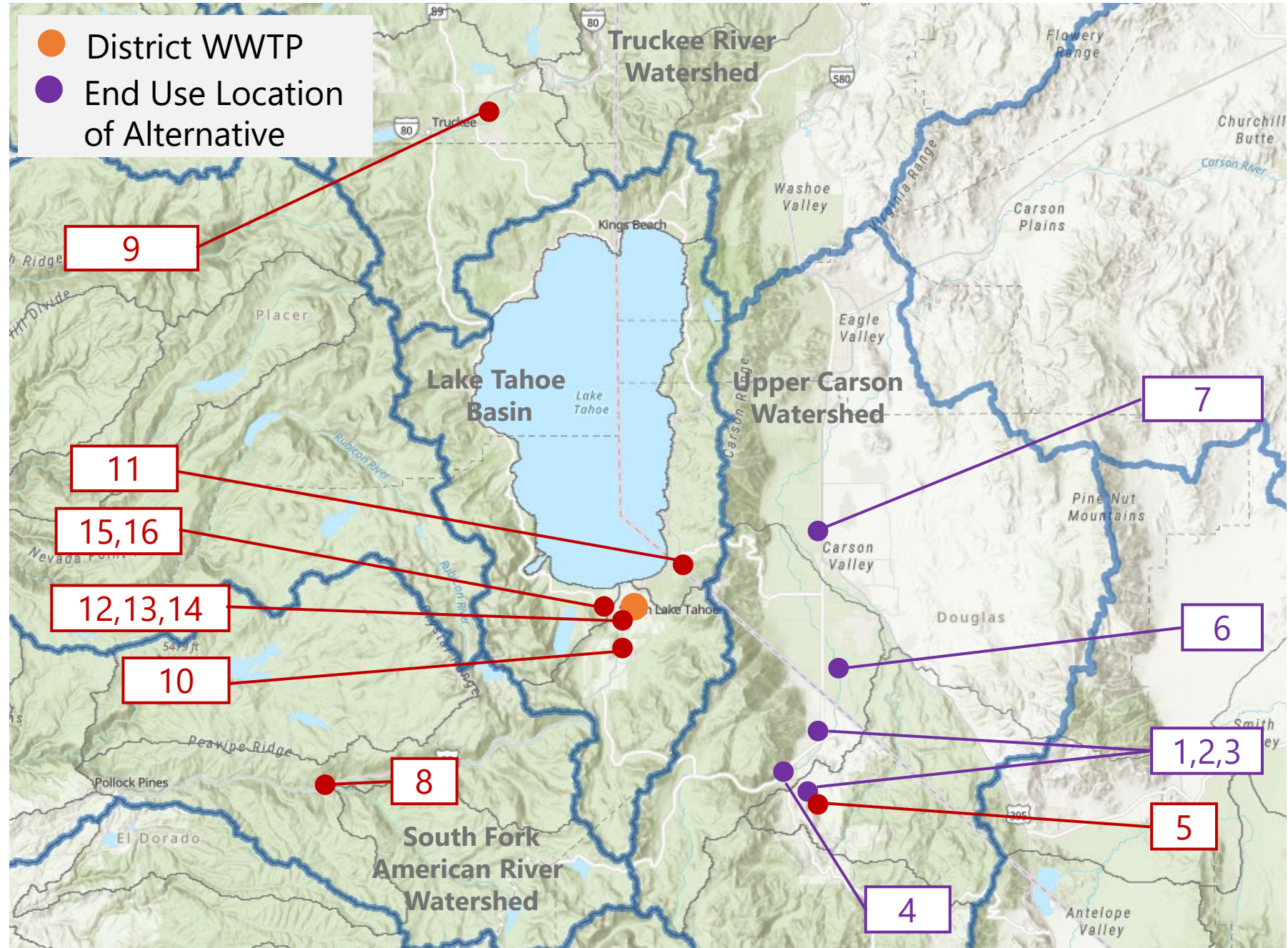


WWTP = wastewater treatment plant

Summary

16 Alternatives

 10 Not Considered for Further Evaluation



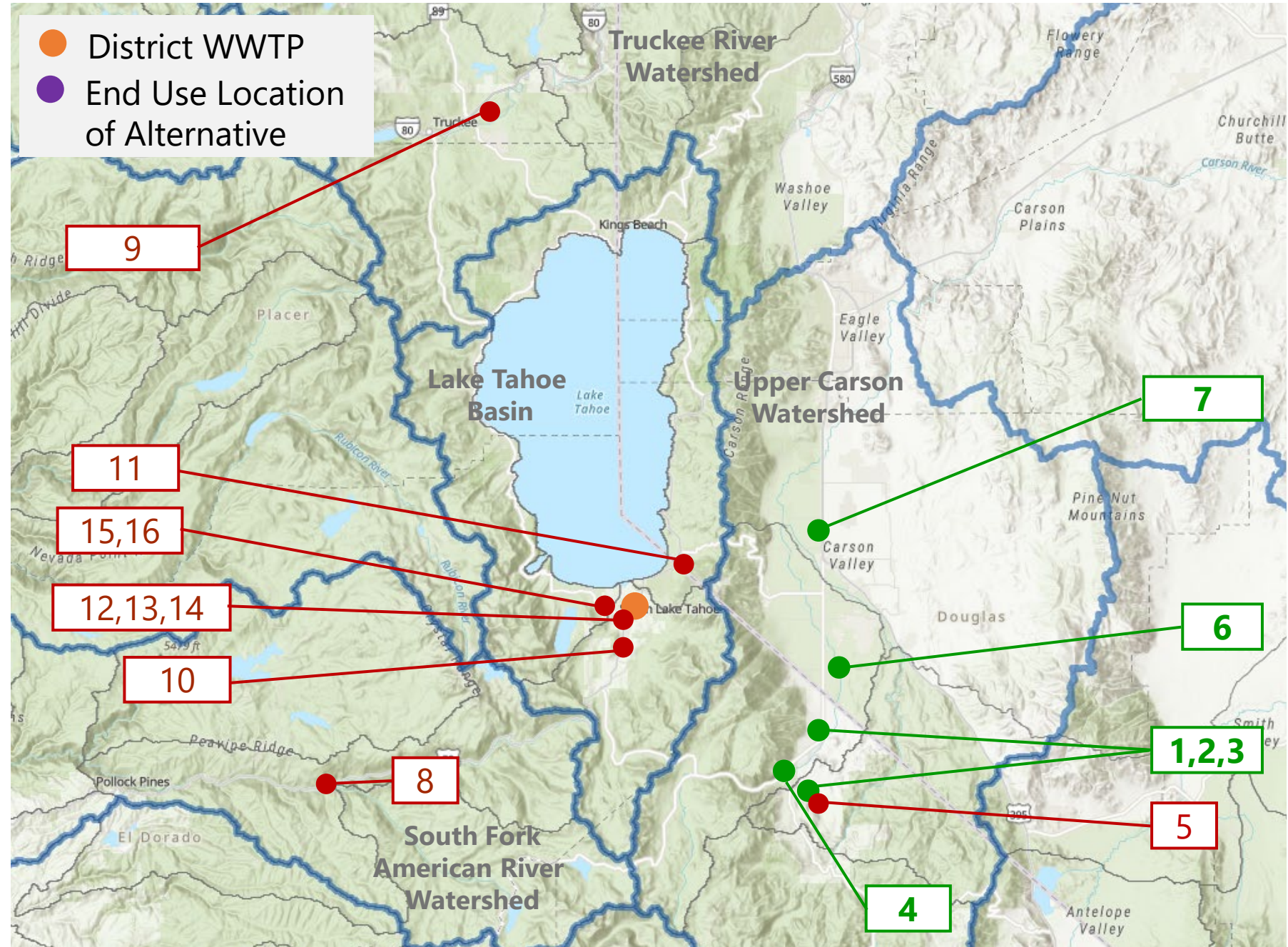
WWTP = wastewater treatment plant

Summary

16 Alternatives

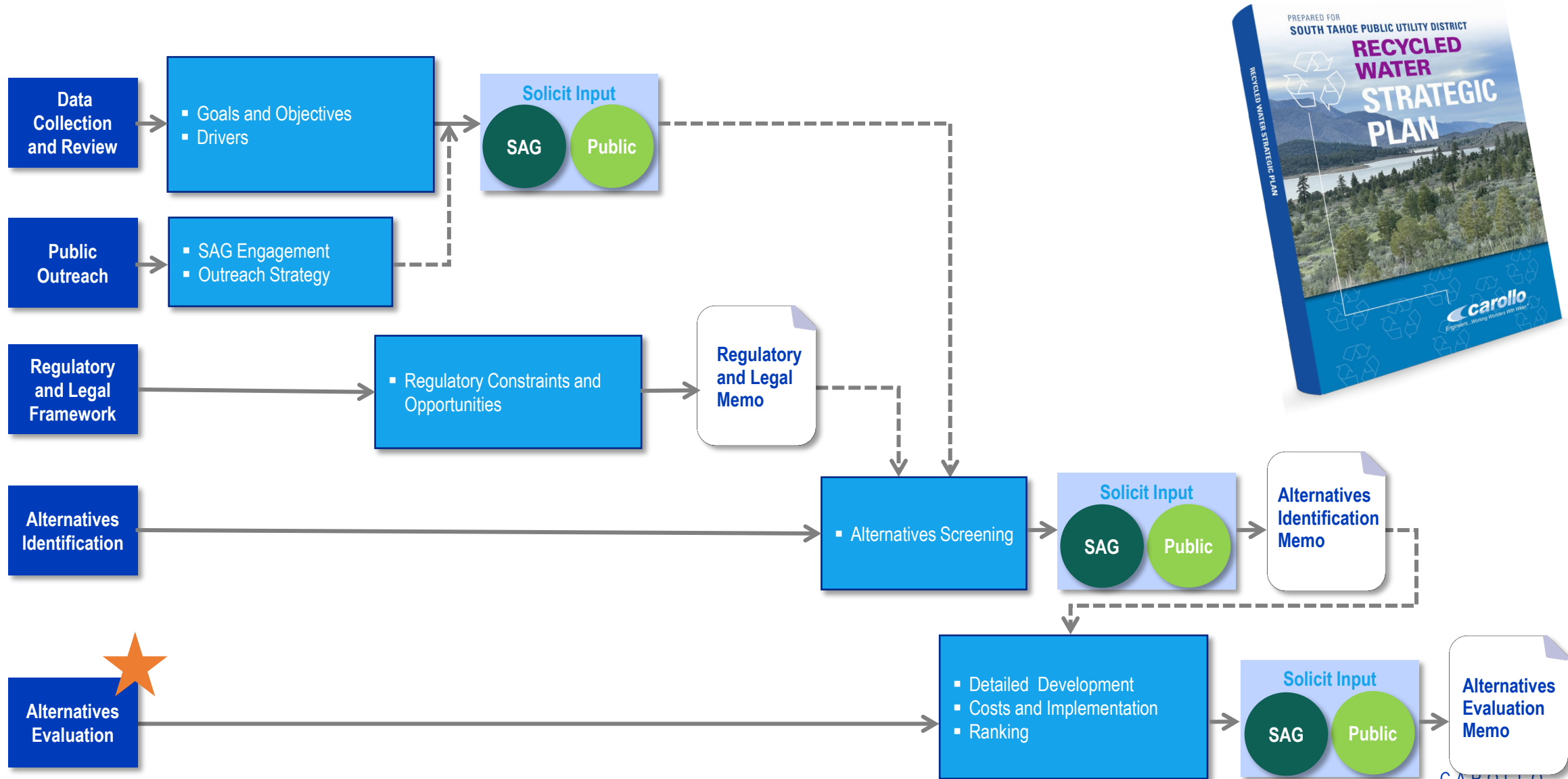
 10 Not Considered for Further Evaluation

 6 Considered for Further Evaluation



WWTP = wastewater treatment plant

Recycled Water Strategic Plan Process Next Steps



SAG = Stakeholder Advisory Group

Questions?



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**RECYCLED WATER
STRATEGIC PLAN**

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How to ask questions

- In-person participants:
 - » Raise hand
 - » Ask questions when called upon
 - questions will be repeated for virtual participants
- Computer participants:
 - » Raise hand, ask question when called upon – un-mute to speak
 - » Ask question in the chat box
- Phone participants:
 - » Press “*6” to un-mute



Microsoft Teams

Closing

- Thank you for being here!
 - » Comment cards
- Project webpage: <https://stpud.us/recycled-water-strategic-plan/>
- E-blast updates/public meeting notices/questions:
 - » Email your name to recycledwater@stpud.us
- Phone: (530) 544-6474 x 6202
- Social media sites:



Instagram: www.instagram.com/southtahoe pud/



Facebook: www.facebook.com/SouthTahoePUD



Twitter: @SouthTahoePUD

End of Presentation



SOUTH TAHOE PUBLIC UTILITY DISTRICT
**RECYCLED WATER
STRATEGIC PLAN**

CAROLLO / 61

In-Person Interactions

- Open House Format until 8:00 pm
- Four boards set up
 - » Carson Watershed Alternatives schematics
 - » 3 maps
- Computers set up
 - » Various treatment schematics
- Feel free to wander around, learn more, ask questions, and provide feedback