



TOWN OF PARADISE SEWER PROJECT

Town Council Meeting

June 9, 2026





Agenda

- 2025 Alternatives Analysis
- Project Update
- Carollo Analysis of Hybrid vs. Full-STEP Collection System
- Beneficial Re-Use Update
- Ad Hoc Committee Recommendation
- Funding Update
- Rate Analysis/Model Update
- Environmental Review Next Steps/Plan
- Action Requested



Project Development

Winter 2025

- Council decision to pursue local treatment options
- Sewer Project Ad Hoc Committee Reformed

Spring 2025

- Alternatives Analysis
- Community input
- Equipment vendor input
- Wastewater facility tours
- Water Board coordination
- Comparative cost estimates

Summer 2025

- Presented findings to the public and Town Council
- Ad Hoc Committee Recommended Alternative 1
- Council approved revised project description for Alt 1

Fall 2025

- Hired Carollo for WWTF design services
- Identified potential sites for WWTF
- Began environmental analysis of a local treatment facility

Winter/Spring 2026

- Resumed sewer design
- Began WWTF design
- Soils desktop study
- Soils testing and analysis at potential WWTF sites
- Continued funding pursuits

Today

- Updated Ad Hoc Committee Recommendation for Alternative 3



Whole Project Alternatives (2025)

Collection Types	Treatment Types	Discharge Options
Gravity Sewer	Aerated Lagoon	Land Application
Low-Pressure Sewer (STEP)	Fixed Growth	Surface Water
Hybrid Gravity/Low-Pressure (STEP)	Suspended Growth/ Activated Sludge	Beneficial Reuse
	Membrane Bioreactor (MBR)	



Whole Project Alternatives (2025)

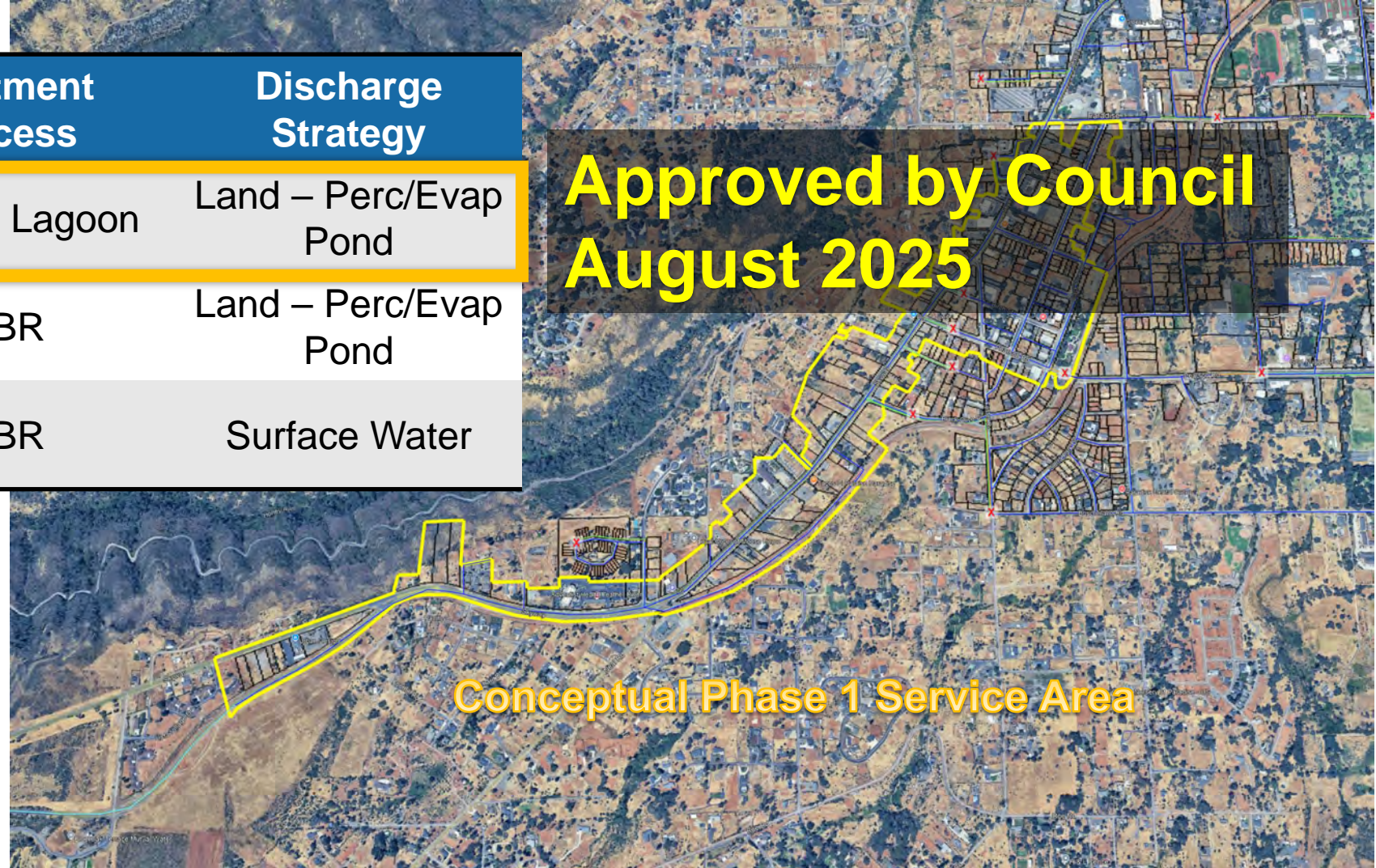
Collection Types	Treatment Types	Discharge Options
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Phase 1 Alternatives Evaluated

Alt	Collection System	Treatment Process	Discharge Strategy
1	Hybrid Gravity/STEP	Aerated Lagoon	Land – Perc/Evap Pond
2	Hybrid Gravity/STEP	MBR	Land – Perc/Evap Pond
3	Hybrid Gravity/STEP	MBR	Surface Water

**Approved by Council
August 2025**





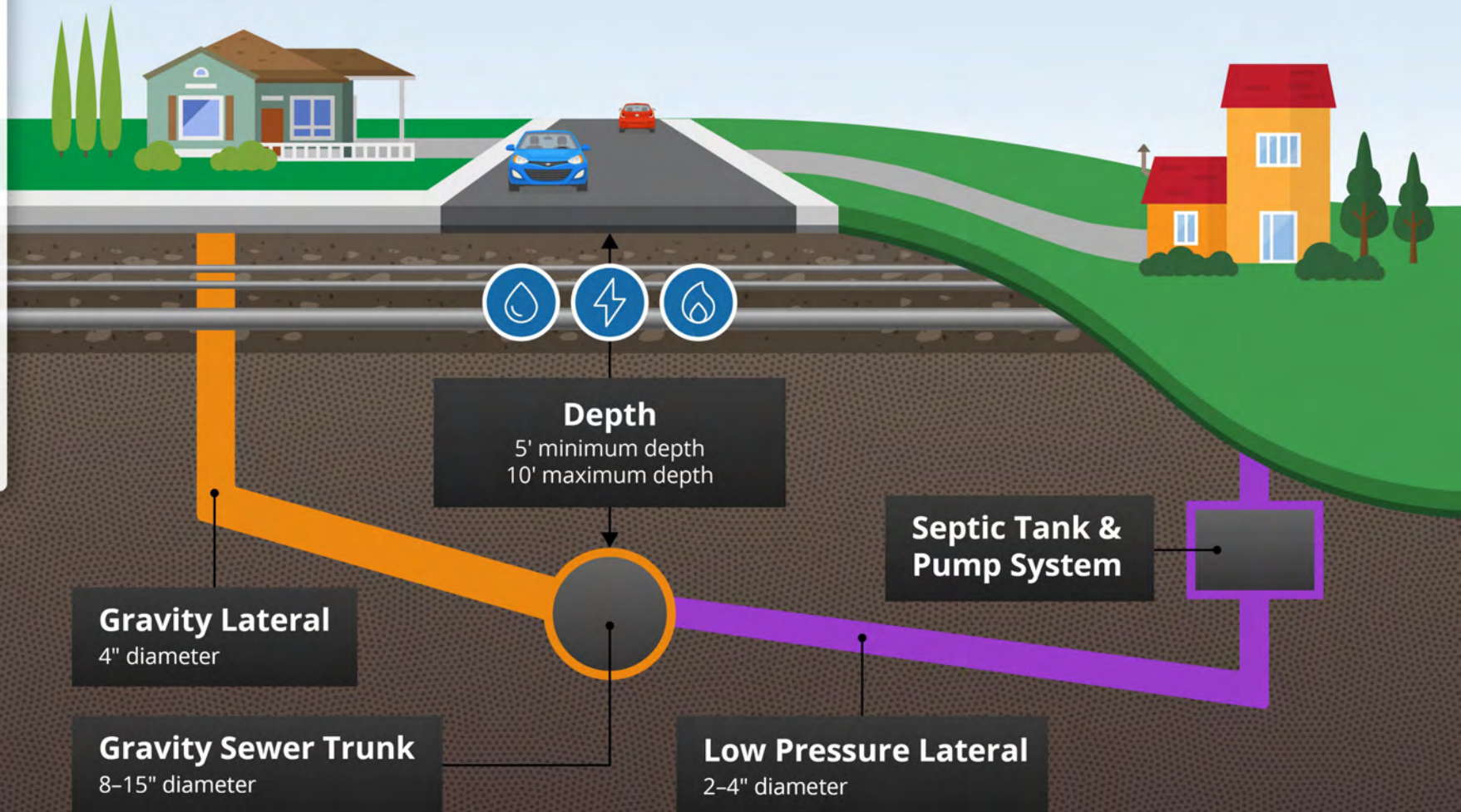
Hybrid Gravity/Low-Pressure (STEP) Collection System Concept

Hybrid

New construction elects NOT to raise finished floor elevation

OR


Existing home is lower than engineered trunk depth






Alternative 1 WWTF Concept

CONCEPT RENDERING ONLY

Paradise Sewer Project
Skyway South WWTF Alternative
Subsequent Environmental Impact Report Analysis





Treatment Facility Update

- Desktop data study indicates soils will be challenging for percolation pond construction and discharge in or near Paradise
- Subsurface investigations at 2 locations (Skyway South and Clark Rd.)
 - Shallow bedrock
 - High groundwater
 - Percolation rates incompatible with percolation ponds for the volume needed
 - Confirmed desktop study information

CONCLUSION: Percolation ponds are not feasible for Paradise



Whole Project Alternatives (2026)

Collection Types	Treatment Types	Discharge Options
<p>DOES NOT MEET OBJECTIVES</p> <p>Gravity Sewer</p> <p>Low-Pressure Sewer (STEP)</p> <p>Hybrid Gravity/Low-Pressure (STEP)</p>	<p>NOT FEASIBLE</p> <p>Aerated Lagoon</p> <p>DOES NOT MEET OBJECTIVES</p> <p>Fixed Growth</p> <p>DOES NOT MEET OBJECTIVES</p> <p>Suspended Growth/Activated Sludge</p> <p>Membrane Bioreactor (MBR)</p>	<p>NOT FEASIBLE</p> <p>Land Application</p> <p>Surface Water</p> <p>Beneficial Reuse</p>



Treatment Recommendation: MBR

- Relatively high capital cost and O&M cost
- Can be pre-engineered design and pre-fabricated for quick construction
- Controls can be automated to ease operational burden
- Future-proof – high quality effluent can produce tertiary treated water for surface discharge or future reuse
- Small footprint, can be hidden inside structures if desired
- Easily scalable for a growing community



Source: Cloacina
<https://www.cloacina.com/municipal-system-upgrade>



Community Proposal Response

Collection Types	Treatment Types	Discharge Options
<p>DOES NOT MEET OBJECTIVES</p> <p>Gravity Sewer</p> <p>Low-Pressure Sewer (STEP)</p> <p>Hybrid Gravity/Low-Pressure (STEP)</p>	<p>NOT FEASIBLE</p> <p>Aerated Lagoon</p> <p>DOES NOT MEET OBJECTIVES</p> <p>Fixed Growth</p> <p>DOES NOT MEET OBJECTIVES</p> <p>Suspended Growth/Activated Sludge</p> <p>Membrane Bioreactor (MBR)</p>	<p>NOT FEASIBLE</p> <p>Land Application</p> <p>Surface Water</p> <p>Beneficial Reuse</p>



TOWN OF PARADISE SEWER PROJECT



Collection System Analysis (Carollo)

Prepared for
Town of Paradise

Paradise Sewer Project

Town Council Meeting Collection System Alternatives Technical Evaluation

Carollo Engineers

June 9, 2026



Intro to Carollo Engineers

- ▶ Civil Engineers
- ▶ Water Treatment Engineers
- ▶ Structural Engineers
- ▶ Electrical Engineers
- ▶ Mechanical Engineers
- ▶ Environmental Engineers
- ▶ Electrical, Programming, and Instrumentation and Control Specialists
- ▶ Program/Project Managers
- ▶ Construction Managers
- ▶ Planners
- ▶ Architects
- ▶ CAD Designers

55+
offices in
**North
America**

1800+
employees

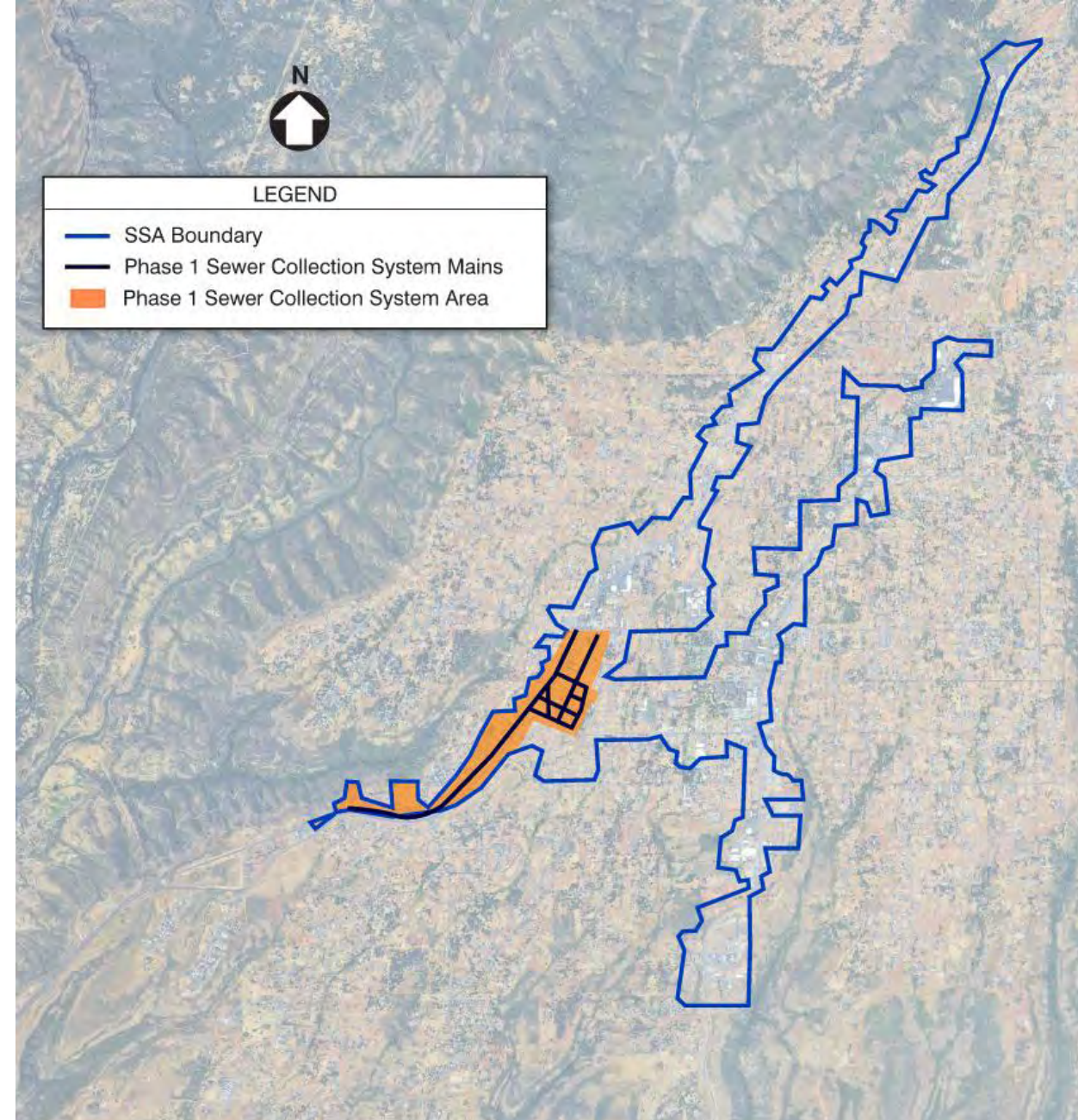
600+
professional
engineers

93
years
providing
water
solutions



Paradise sewer project goals

- Implement collection system for Phase 1 of the sewer service area (SSA) in a manner that is:
 - » Affordable
 - » Scalable
 - » Permittable



Phase 1 and Buildout SSA

01

Purpose of today's
presentation

—
Town requested Carollo develop a technical evaluation to compare collection system alternatives

Hybrid Gravity and Low-Pressure Collection System

- Gravity system to WWTF.
- Potential low-pressure system in low lying areas.
- Carollo developing preliminary design of this alternative.

Full Low-Pressure Collection System

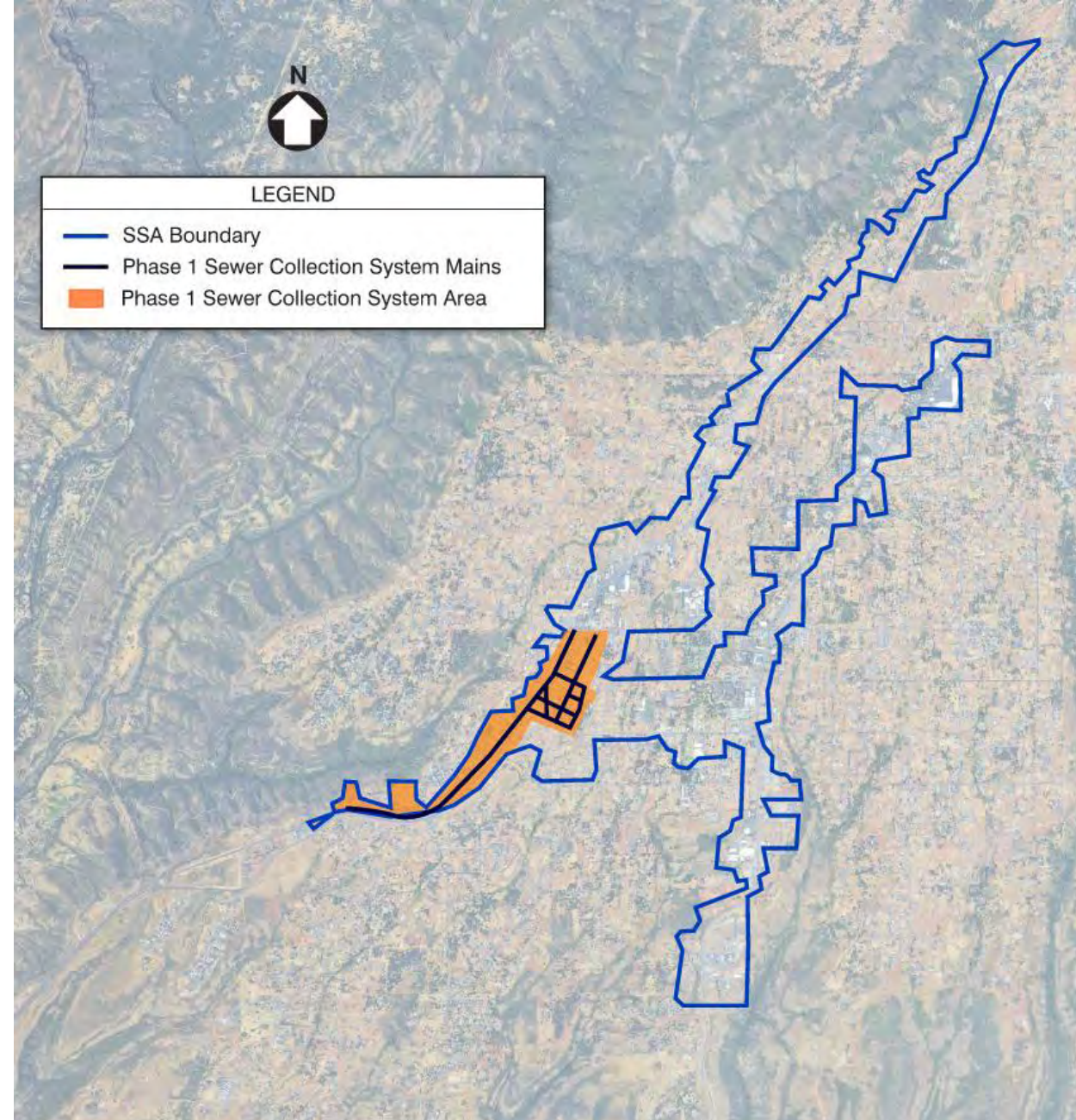
- STEP tanks or grinder pump stations at each connection.
- Pressurized wastewater pipelines to WWTFs
- Potential alternative.

02

Hybrid gravity and low-pressure
collection system overview

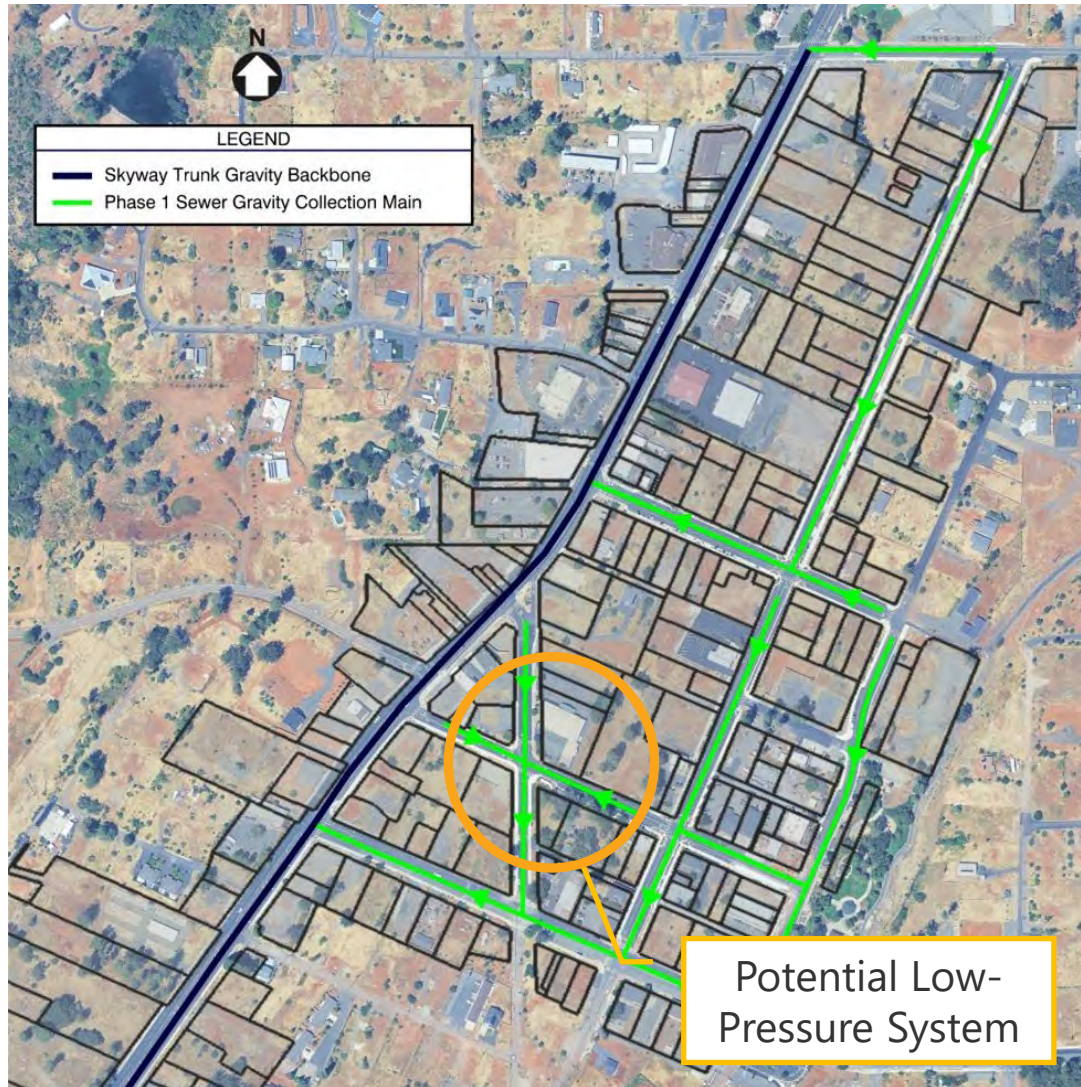
— Sewer Ad Hoc Committee recommended moving forward with hybrid low-pressure gravity system in 2025

- Public outreach and technical evaluation performed in 2025.
- Carollo hired to design hybrid low pressure and gravity system.
- Carollo is developing the preliminary design.



Phase 1 and Buildout SSA

Hybrid low-pressure gravity collection system overview



Phase 1 of Collection System

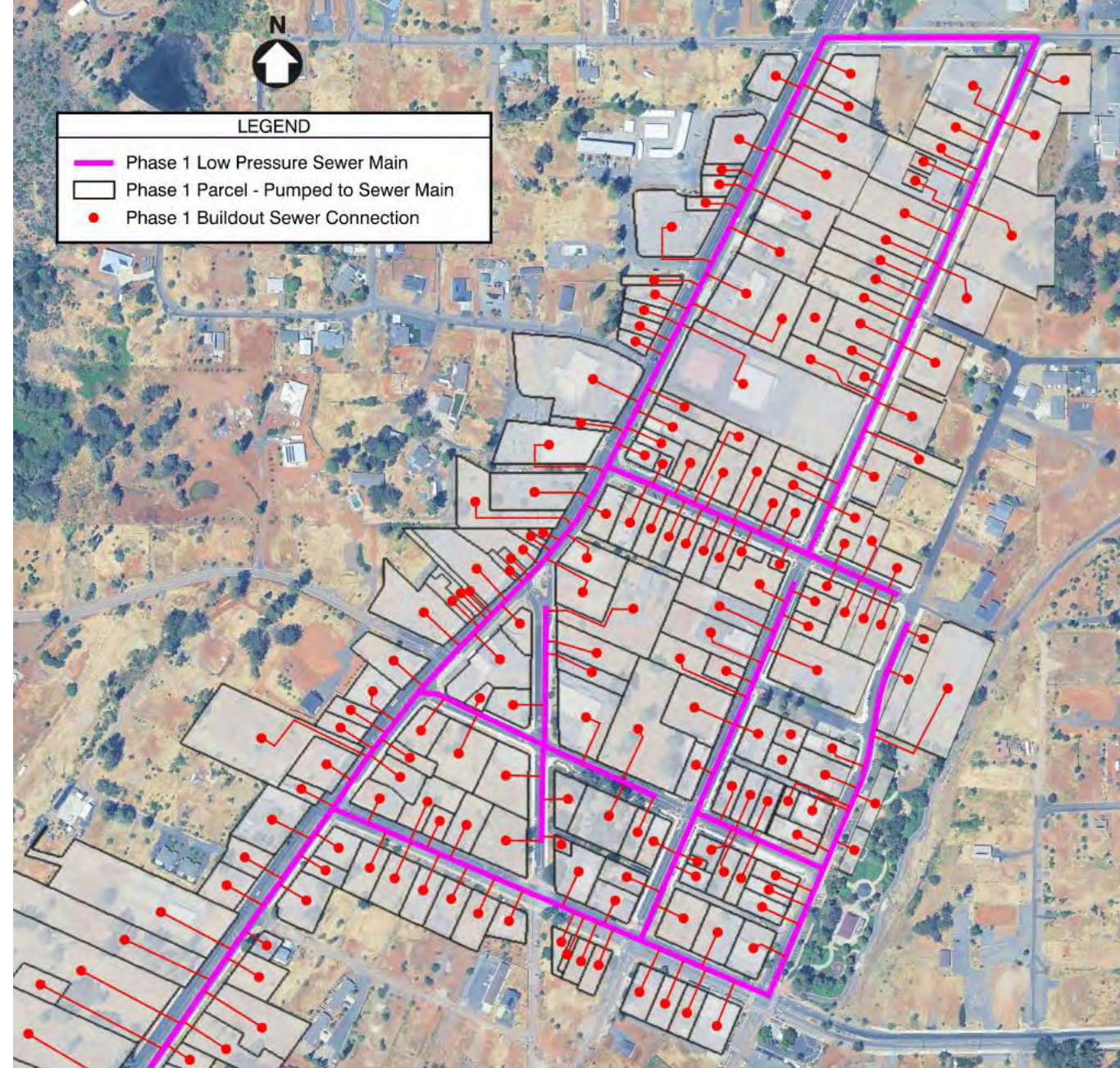
- Gravity collection pipelines and laterals where system can flow by gravity.
- 20,900 feet of gravity collection pipe.
- Evaluating low-pressure collection systems in low lying areas of Town.

03

Full low-pressure
system overview

Full low-pressure collection system

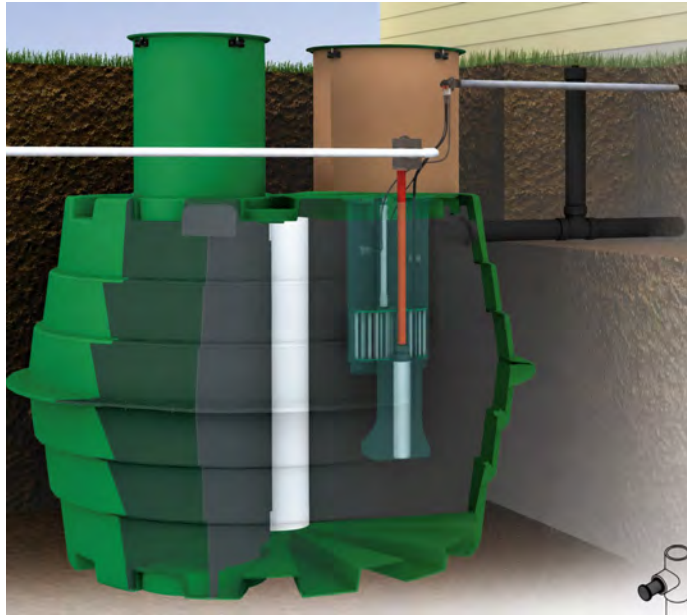
- Pump from each home/business into low-pressure system.
- System is hydraulically interconnected.



Phase 1 of Collection System

Types of low-pressure system – STEP and Grinder

Septic Tank Effluent Pump Station (STEP)



- STEP system conveys liquid waste only into low pressure system.

Grinder Pump Station



- Grinder pump station grinds solids and pumps into low pressure system.

Septic tank effluent pump (STEP) overview

- STEP tanks separate liquid from solids.
- Solids stay in the tank.
 - » Requires pump out every 3 to 5 years.
- Tank Dimensions.
 - » 1,000-to-1,500-gallon tank.
 - » 10'L x 5'W x 4.5'D for 1000 gallons.



Grinder pump station system overview

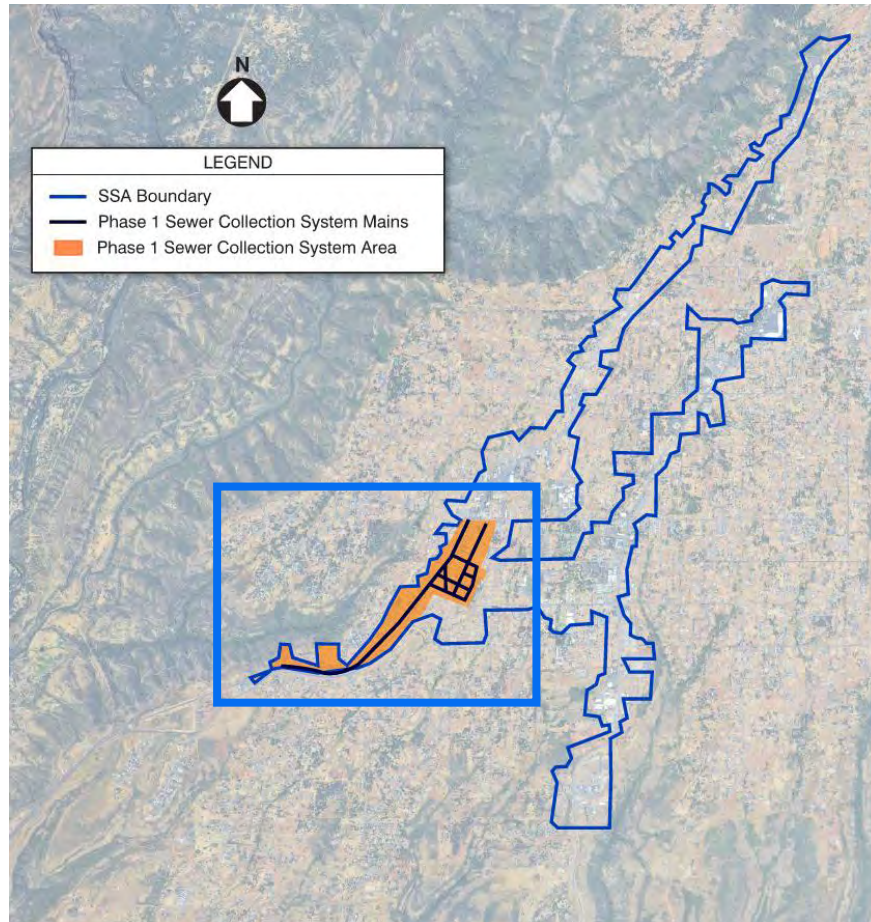
- Grind solids and pump a fine slurry waste to low pressure system.
- Package can have 1 or 2 pumps.
 - » Tank holds 150 gallons to 350 gallons.
 - » Dimension: 3' to 5' diameter x 5' deep.



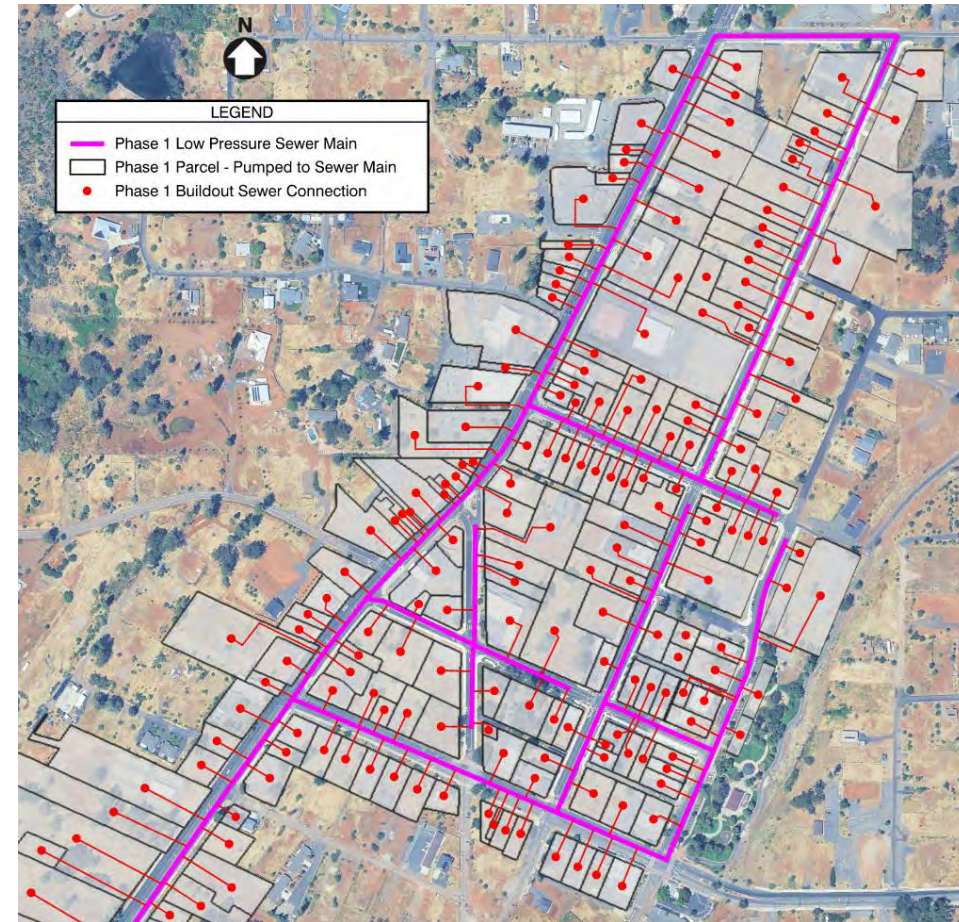
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Summary of
technical evaluation

Full low-pressure system is hydraulically interconnected (STEP or Grinder PS)

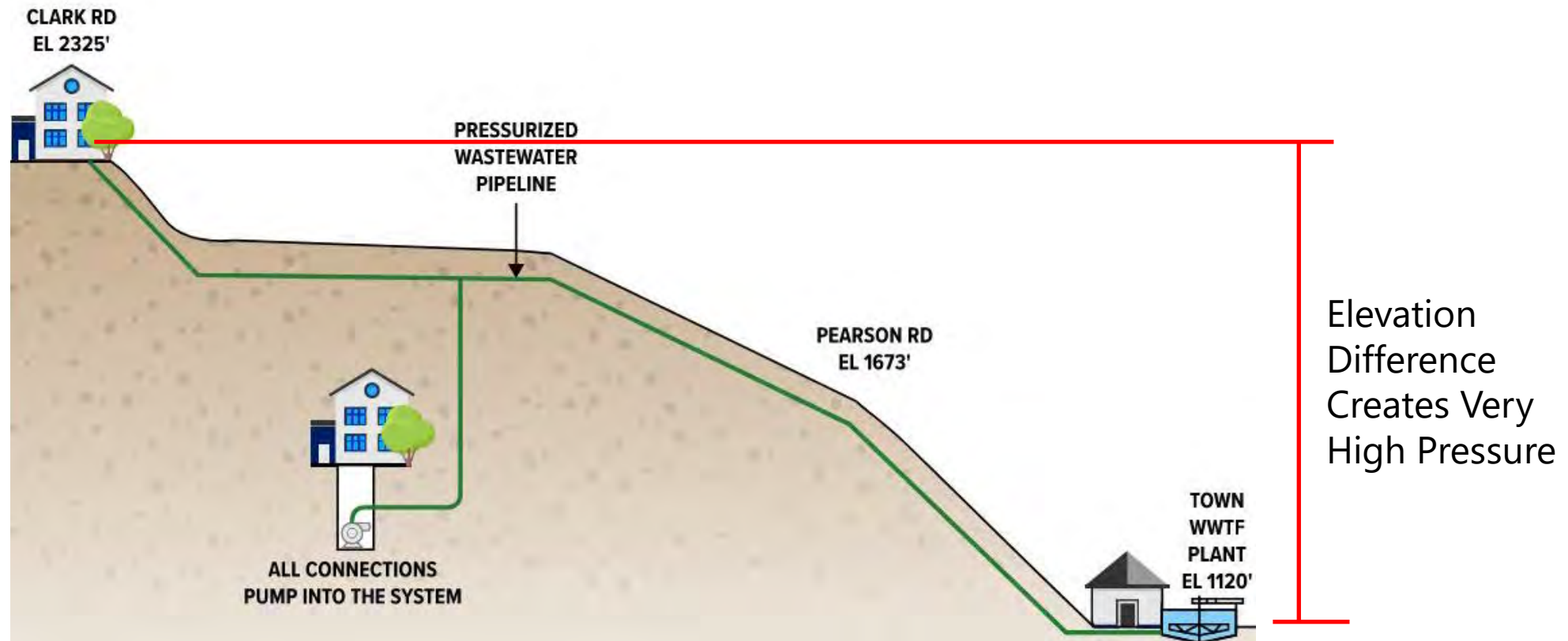


Collection system at buildout



Phase 1 of Collection System

Full low-pressure system develops high pressure due to elevation difference (STEP or Grinder PS)



PROFILE VIEW

Full low-pressure system has technical fatal flaws due to high system pressure

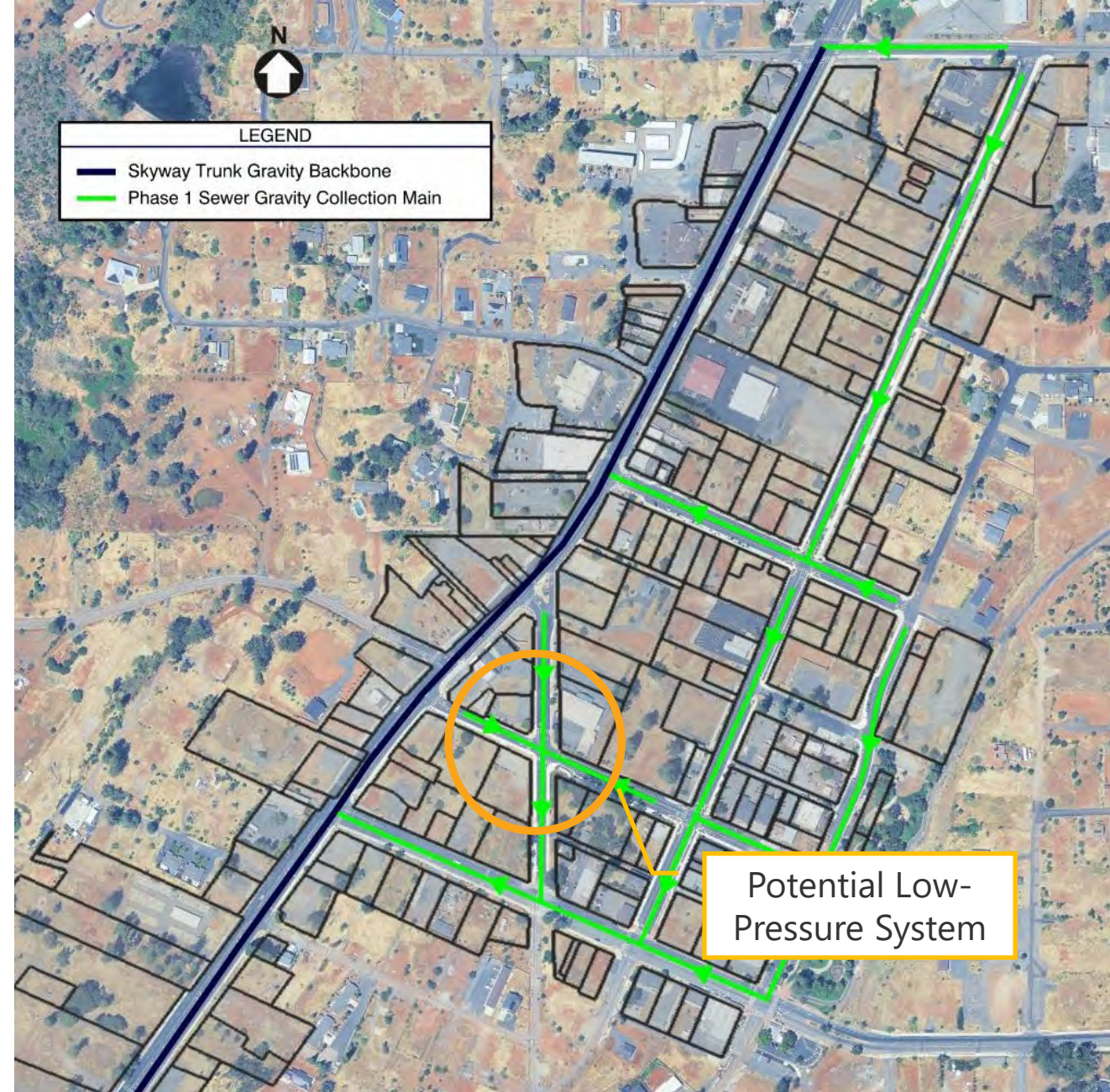
- Phase 1:
 - » 635-feet of elevation change from high point in system (near Almond and Elliot) to WWTF (assumed Skyway South for this analysis).
 - » 276 psi at WWTF.
- Buildout:
 - » 1205-feet of elevation change from high point in system (along Skyway between Clark Road and Pentz Road) to WWTF (assumed Skyway South for this analysis).
 - » 523 psi at WWTF.
- Extremely high pressure.
- Confirmed with Low-Pressure Grinder Pump Station manufacturer that the elevation difference in Town is a fatal flaw.
- HDR identified the high pressure technical fatal flaw in 2025.

— Full low-pressure system has technical fatal flaws due to high system pressure

- Common operating pressure for low pressure collection systems is approx. 20-80 psi
- 276-523 psi is beyond the pressure rating of common pipes, pumps, valves and other wastewater system components
- Multiple pressure zones in a full STEP system may be possible, but require highly specialized valves and control systems not commonly used in the wastewater industry

Hybrid gravity and low-pressure system is feasible

- Gravity backbone on Skyway and other key streets.
- Low pressure system could be used to pump to gravity pipelines.
- Carollo is evaluating where low-pressure system might be beneficial.
- Hybrid approach is a typical intended use.



05

Agency Outreach
and Case Studies

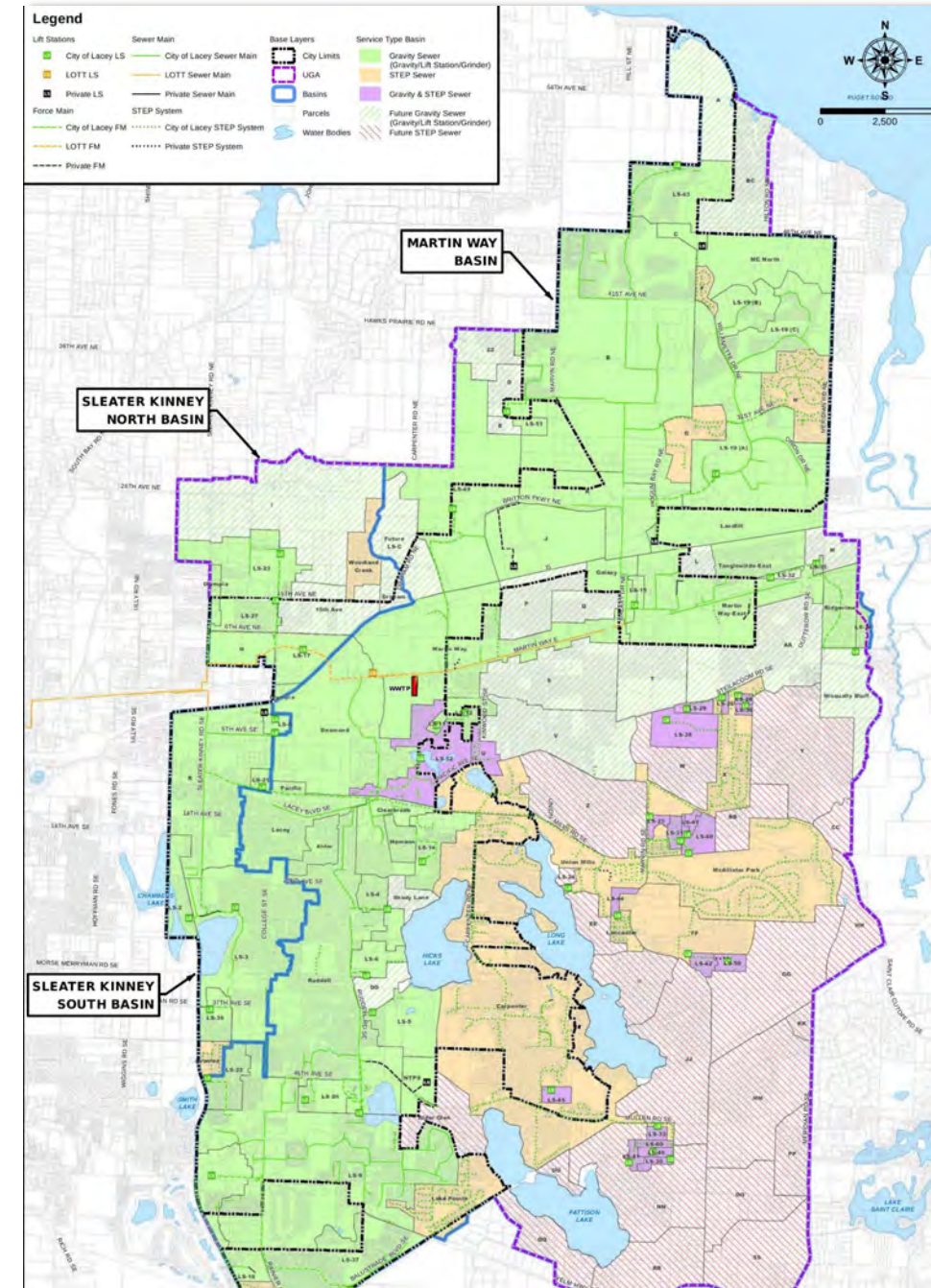
—
Carollo interviewed 9 agencies that operate low pressure (STEP and grinder pump station systems)

- **Summary of findings:**

- » Most agencies have a hybrid gravity and low pressure system – gravity for most of the system with low-lying areas pumped to the main gravity system
- » Ownership and maintenance responsibilities must be clearly defined early - most agencies owned and maintained on-lot equipment
- » Disposal of solids from STEP tanks needs to be planned

Case Study - City of Lacey, WA

- Gravity hybrid system with gravity pipes, pump stations, STEP systems, and grinder PS's that convey sewage to WWTF
- Elevation change across the City is ~50 feet
- Gravity system backbone
 - » 743,000 LF of gravity lines
 - » 27 lift stations
 - » 80,000 LF of force mains
- STEP system in low lying areas
 - » 275,000 LF of low-pressure mains
 - » 4,200 STEP connections
- 300 grinder pump stations



06

Summary and
recommendations

Summary and recommendations

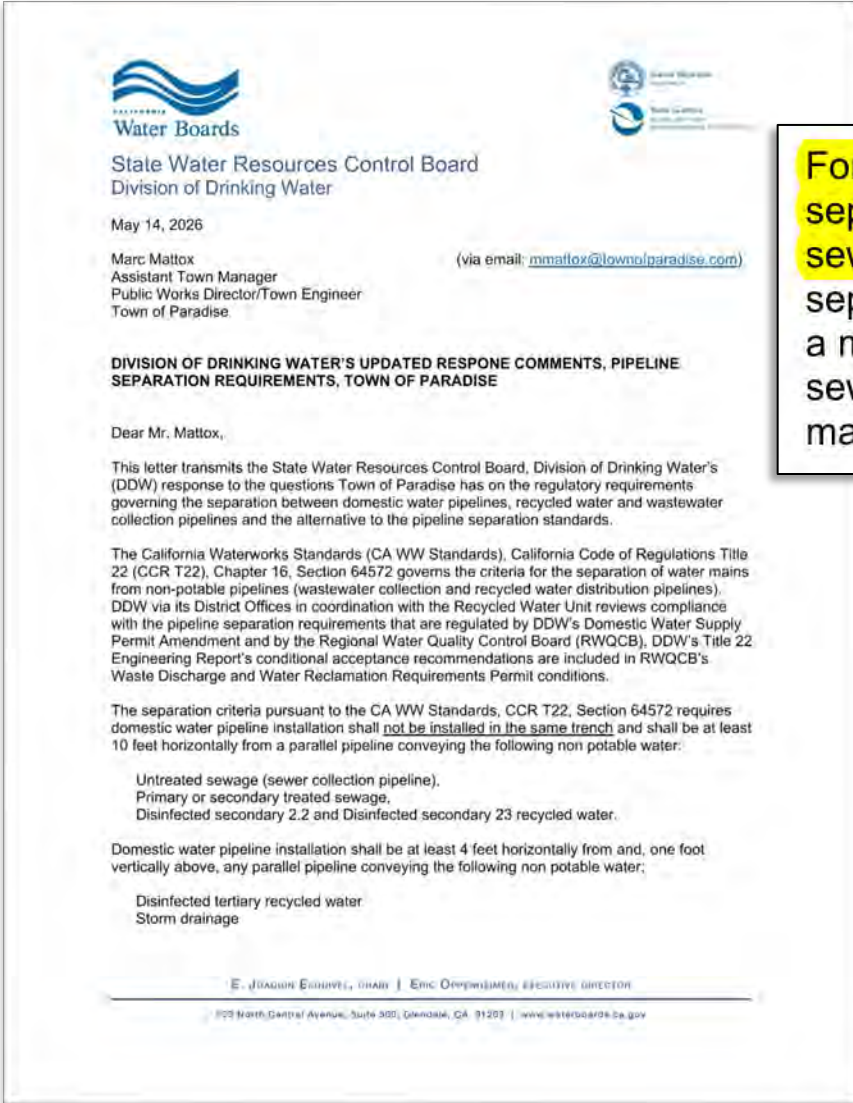
- The full Low-Pressure System (STEP or grinder pump station) is not technically feasible due to high system pressure.
- Since the Town is planning to pursue a single WWTF site, breaking head at multiple WWTF sites is not realistic due to:
 - Site availability with suitable discharge location(s)
 - Permitability (with or without beneficial reuse)
 - Cost for capital and O&M (no economies of scale)
- We do not recommend performing a cost comparison between the Hybrid Gravity and Low-Pressure Collection System vs. Full Low Pressure System alternatives

07

Questions and answers



Recycled Water & Sewer Separation



For instances of separation of recycled water lines and sewer lines, DDW applies pipeline separation requirements similar to those for potable water lines and pipelines conveying sewage. For horizontal separation between recycled water lines and sewer lines, a minimum separation of **6 feet should be maintained**, though a 10-foot separation is preferred. In addition, a minimum vertical separation of 1 foot should be maintained between recycled water lines and sewer lines; with the exception for gravity sewers where a 6-inch vertical separation may be maintained - though the 1-foot vertical distance is preferred.

Typical trench width is 1.5 to 2 feet

CONCLUSION: Recycled water and sewer pipes cannot be installed in the same trench and as a result, beneficial reuse is cost-prohibitive



Whole Project Alternatives (2026)

Collection Types	Treatment Types	Discharge Options
<p>DOES NOT MEET OBJECTIVES Gravity Sewer</p> <p>NOT FEASIBLE Low-Pressure Sewer (STEP)</p> <p>Hybrid Gravity/Low-Pressure (STEP)</p>	<p>NOT FEASIBLE Aerated Lagoon</p> <p>DOES NOT MEET OBJECTIVES Fixed Growth</p> <p>DOES NOT MEET OBJECTIVES Suspended Growth/Activated Sludge</p> <p>Membrane Bioreactor (MBR)</p>	<p>NOT FEASIBLE Land Application</p> <p>Surface Water</p> <p>NOT FEASIBLE Beneficial Reuse</p>



Phase 1 Alternative Recommendation (2026)

Alt	Collection System	Treatment Process	Discharge Strategy
1	Hybrid Gravity/STEP	Aerated Lagoon	Land – Prec/Evap Pond
2	Hybrid Gravity/STEP	MBR	Land – Prec/Evap Pond
3	Hybrid Gravity/STEP	MBR	Surface Water

NOT FEASILBE

NOT FEASILBE

Updated Ad Hoc Committee Recommendation



Alternative 3: Hybrid Gravity/Low Pressure Collection System, Membrane Bioreactor Wastewater Treatment Facility, and Surface Water Discharge

- Conceptual service area includes downtown where recovery and growth has lagged
- MBR is flexible for future expansion or reuse implementation
- Serves project mission to be fundable (affordable), permittable, and scalable to meet Paradise's needs today and into the future





Updated Project Funding Picture

Secured Funding

	<u>2025</u>	<u>2026</u>	
(1) CDBG-DR APA-2 Design	\$30,000,000	\$30,000,000	(active for pre-construction)
(2) CDBG-DR APA-3, -4, -5 Infrastructure	\$35,000,000	\$94,450,000	(secured for construction)
(3) EPA Community Grant	\$1,750,000	\$1,750,000	(pending)
TOTAL Secured Funding	\$66,750,000	\$126,200,000	

Clean Water SRF Funding Opportunities

(4) Clean Water SRF (Grant)	\$28,000,000	(Requested)
(5) Clean Water SRF (Grant)	up to \$47,000,000	(Future)

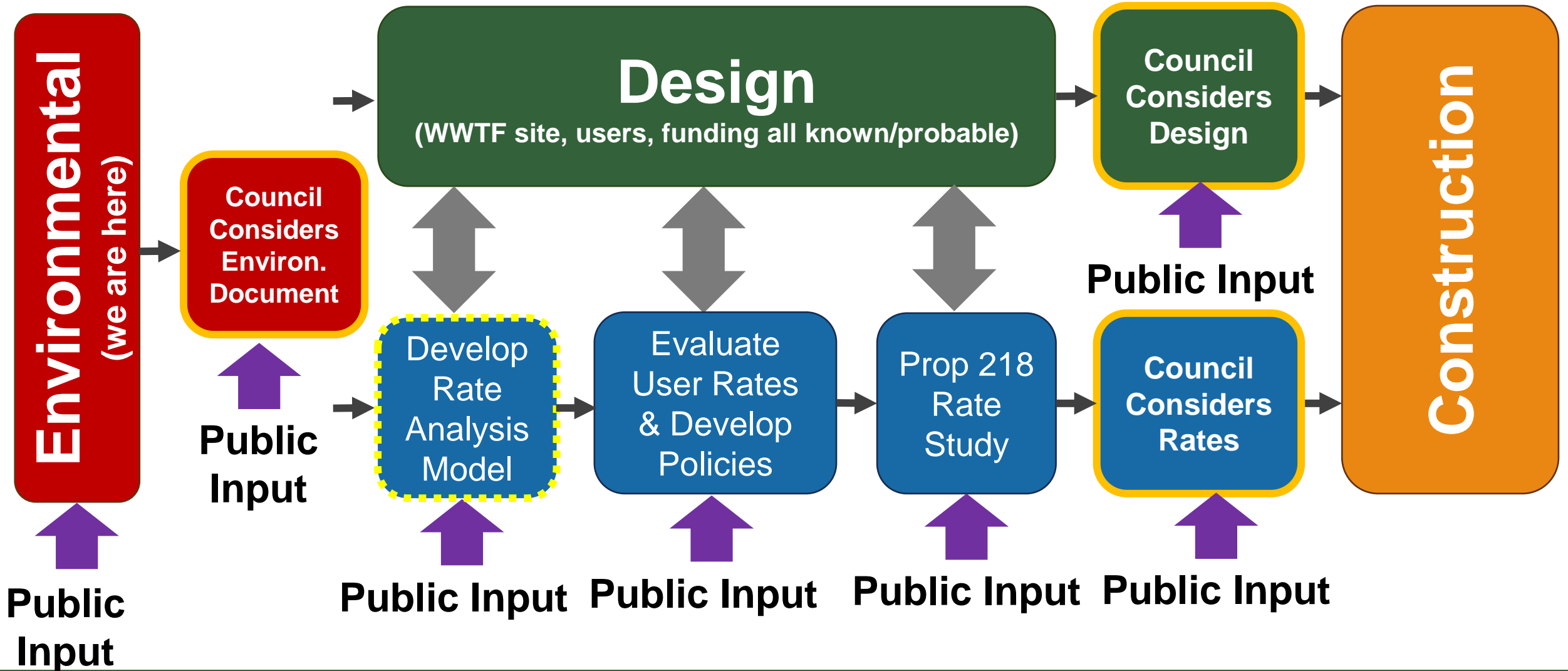


Additional Funding Pursuits (Future Project Phases)

(6) USACE 219 – Initial Request	\$2,000,000	(Requested)
(7) USACE 219 – Remaining Allocation	\$48,000,000	



Opportunities for Continued Public Input





Environmental Review

Council action tonight directs staff to advance project work associated with the revised Alternative 3, as action did last August for Alternative 1.

Tonight's action does not:

- Commit to a WWTF site
- Finalize a Sewer Service Area
- Authorize immediate property or Right-of-Way acquisition
- Circumvent forthcoming environmental reviews and studies



Next steps for Environmental Review include:

- Review project alternatives within Alternative 3
- Prepare Subsequent PEIR which incorporates the 2022 Final PEIR record as well as studies the new impacts associated with revised project description
 - Subsequent PEIR includes an analysis of General Plan consistency as did the 2022 PEIR. Additional benefits of revised analysis include the additional Sewer Service Overlay performed in the adopted Housing Element as well as the underway General Plan.
 - A Subsequent PEIR is deemed appropriate as the project is substantially different with a new level of analysis. The new resource topics and scope of analysis will be defined and analyzed.
- Public Review – Winter 2027
- Council Review and certification – Summer 2027



Resolution Correction

Current published resolution reads:

Section 3. The Town Council directs staff to continue advancing the Paradise Sewer Project through environmental review, permitting, site acquisition, engineering design, funding pursuits, and related implementation activities consistent with the modified project description.

Correction to be clearer:

Section 3. The Town Council directs staff to continue advancing the Paradise Sewer Project through environmental review, permitting, **site acquisition right of way engineering**, engineering design, funding pursuits, and related implementation activities **with required Council consideration of major milestones and actions** consistent with the modified project description.



Action Requested

1. Consider adopting Resolution No. 2026-____, "A Resolution of the Town Council of the Town of Paradise Modifying the Paradise Sewer Project Description to Include a **Hybrid Gravity/Low Pressure Collection System, Membrane Bioreactor Wastewater Treatment Facility, and Surface Water Discharge,**" consistent with the recommendation of the Sewer Project Ad Hoc Committee and based upon the findings of subsequent site suitability investigations completed following Council action on August 14, 2025; and
2. Direct staff to proceed with environmental review, permitting, **site acquisition right of way engineering**, engineering design, funding pursuits, and related implementation activities **with required Council consideration of major milestones and actions** consistent with the modified project description; and
3. Direct staff to continue pursuing state, federal, and other funding opportunities necessary to maximize the Phase 1 Sewer Service Area and preserve opportunities for future system expansion.



TOWN OF PARADISE
SEWER PROJECT



Questions?