Arcata Wastewater Treatment Facility Feasibility Study

CALIFORNIA COASTAL COMMISSION

CALIFORNIA WATER BOARDS North Coast - R1

City of ARCATA

GHD

RCAC www.rcac.org

CALIFORNIA Water Boards STATE WATER RESOURCES CONTROL BOARD REGIONAL WATER QUALITY CONTROL BOARDS

Arcata Wastewater Treatment Facility Feasibility Study
Project Purpose

Purpose

- Evaluate strategies to protect, relocate, or otherwise adapt the City's wastewater facilities to maintain safety and regulatory compliance and prepare for future sea level rise and coastal hazards beyond 2055 – the design life of the Arcata Wastewater Treatment Facility Improvement Phase I Project

Arcata Wastewater Treatment Facility Feasibility Study Project Goals and Funding

Goals

- Analyze current and future coastal hazards at the existing AWTF
- Identify multiple top-ranking alternatives to support future decisions
- Inform the City on options if/how to move forward on concurrent levee resilience improvements around the core of the AWTF

Funding

- Feasibility Study funded through a State Water Resources Control Board (SWRCB) grant administered through Rural Community Assistance Corporation with cooperation from the Coastal Commission and Regional Water Quality Control Board

Arcata Wastewater Treatment Facility Feasibility Study Scope

Feasibility Study Report:

- Background Information Review
- Sea Level Rise Risk Vulnerability Assessment
- Adaptation Alternatives Development
- Alternatives Analysis
- Identification of Top Ranked Alternatives
- Cost Analysis and Funding Plan
- Final Feasibility Study Findings

(Final Alternative Selection not included in the Feasibility Study)

Wastewater Treatment System Coastal Hazards Risk Assessment

- Assessment consistent with Arcata's Sea Level Rise Adaptation Plan for Capital Improvement Projects and the Draft Local Coastal Program
- Ocean Protection Council (OPC) – Intermediate Sea Level Rise Scenario used to approximate planning time frames
- Under the OPC Intermediate High and High scenarios, the planning timeframe would be shifted earlier

Treatment Facility and Arcata Marsh Risk without the AWTF Levee Project

Risk Rating
Very High
High
Medium
Low
Very Low

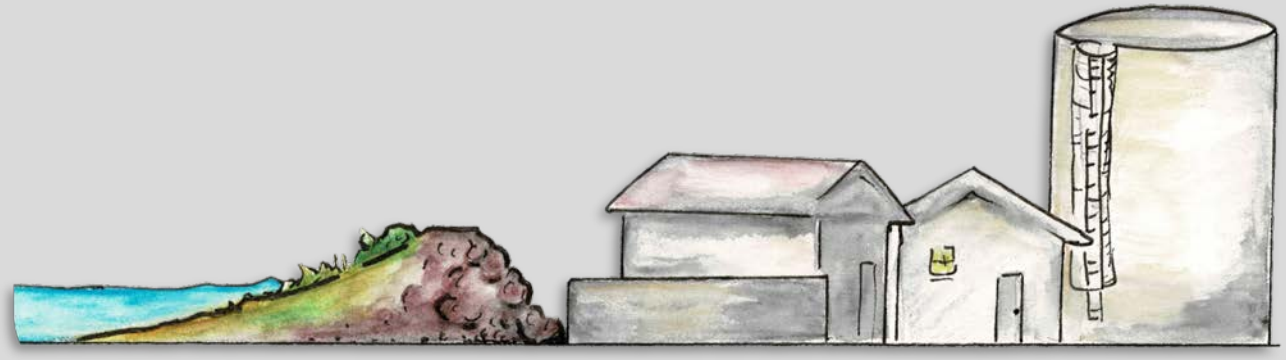
	Flood Elevation Threshold for Impacts	Timeline/ Risk Rating			
		Today	Near-Term	Mid-Term ~2055	Long Term ~2105
Site and Facility Access	11.2 ft				
Essential Treatment Facilities	10.7 ft – 16.7 ft				
Enhancement Marshes	11.7 ft - 13.3 ft				

(Analysis based on Ocean Protection Council – Intermediate Sea Level Rise Scenario)

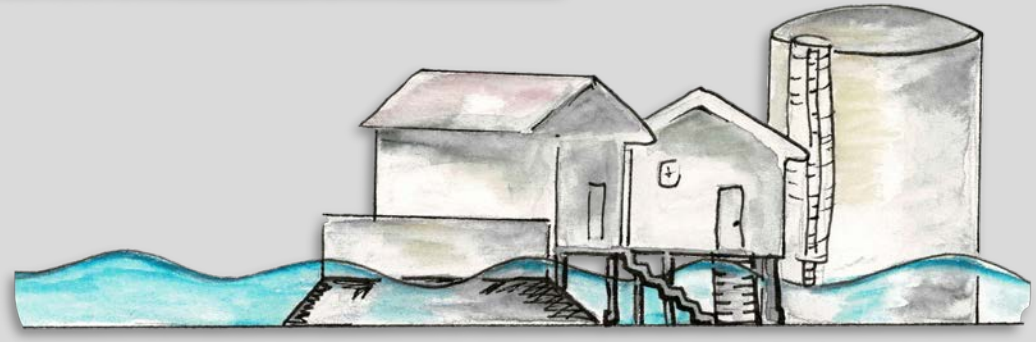
Outreach and Coordination

- Project Partners Monthly check-in
  - City Staff
  - RCAC
  - GHD
  - State Water Resources Control Board Division of Financial Assistance
  - Coastal Commission
  - Regional Water Quality Control Board
- Outreach with McKinleyville Community Services District, Humboldt Bay Harbor Recreation Conservation District, and City of Eureka
- Public Outreach Meeting #1 November 2024
- Public Outreach Meeting #2 August 2025

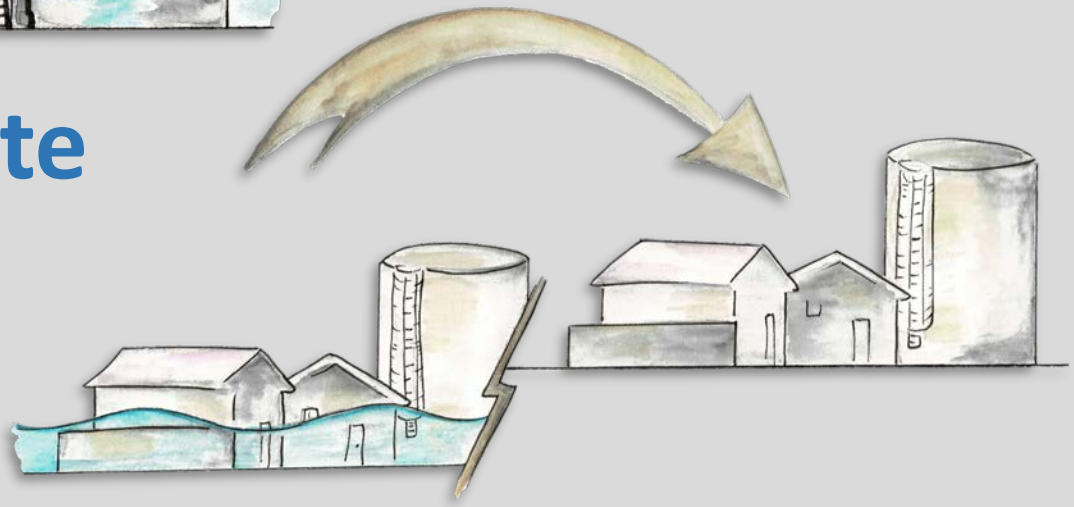
Adaption strategies



Protect



Accommodate



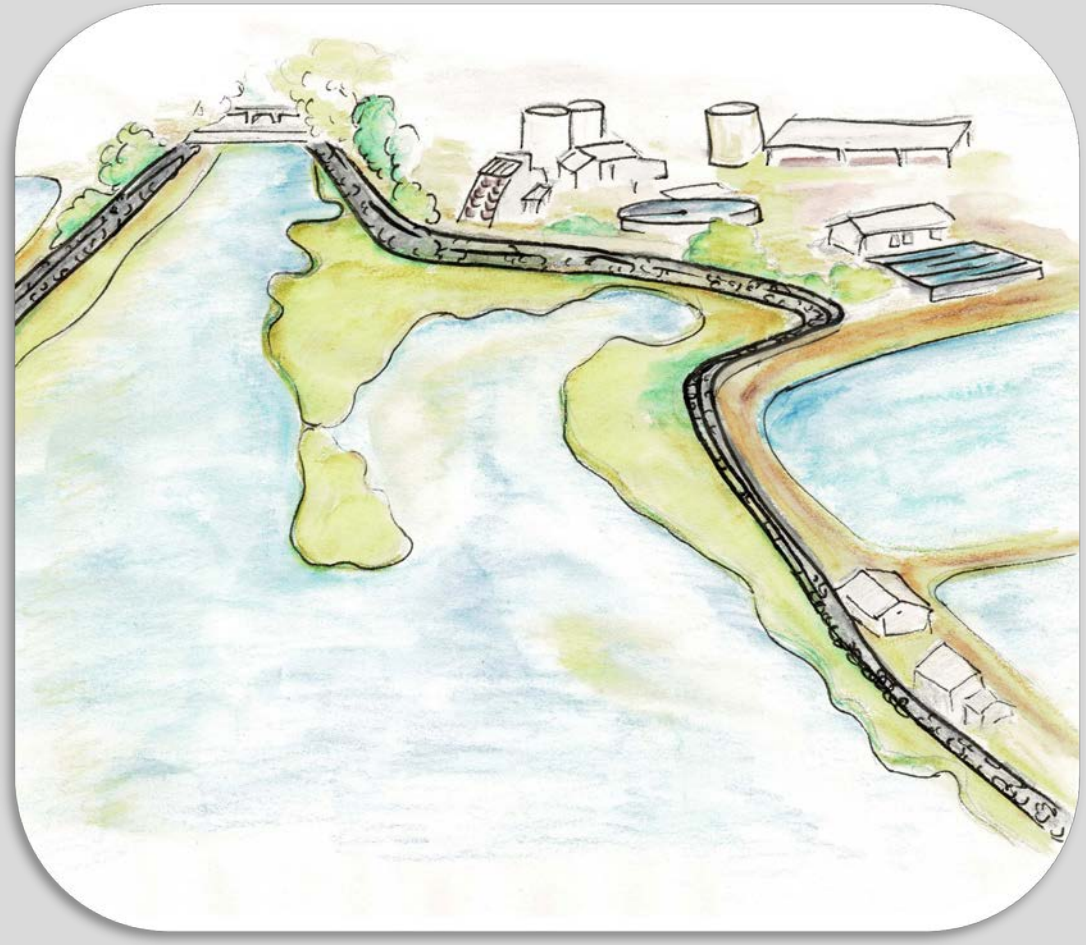
Retreat

Wastewater Treatment System Strategies

Option	AWTF Levee Augmentation Project	Relocate the Wastewater Treatment Facility
Adaptation Types(s)	Protection	Retreat
Timeline	Effective until ~2105	Effective until ~2105 and beyond
Summary	Elevate the existing levee to 15 ft and add new levee sections to protect the central plant facilities, possibly including a living shoreline	Relocate the treatment facility within the same elevation range as the existing facility, approximately 10-15 acres needed for the new site, existing AWTF site would be restored.

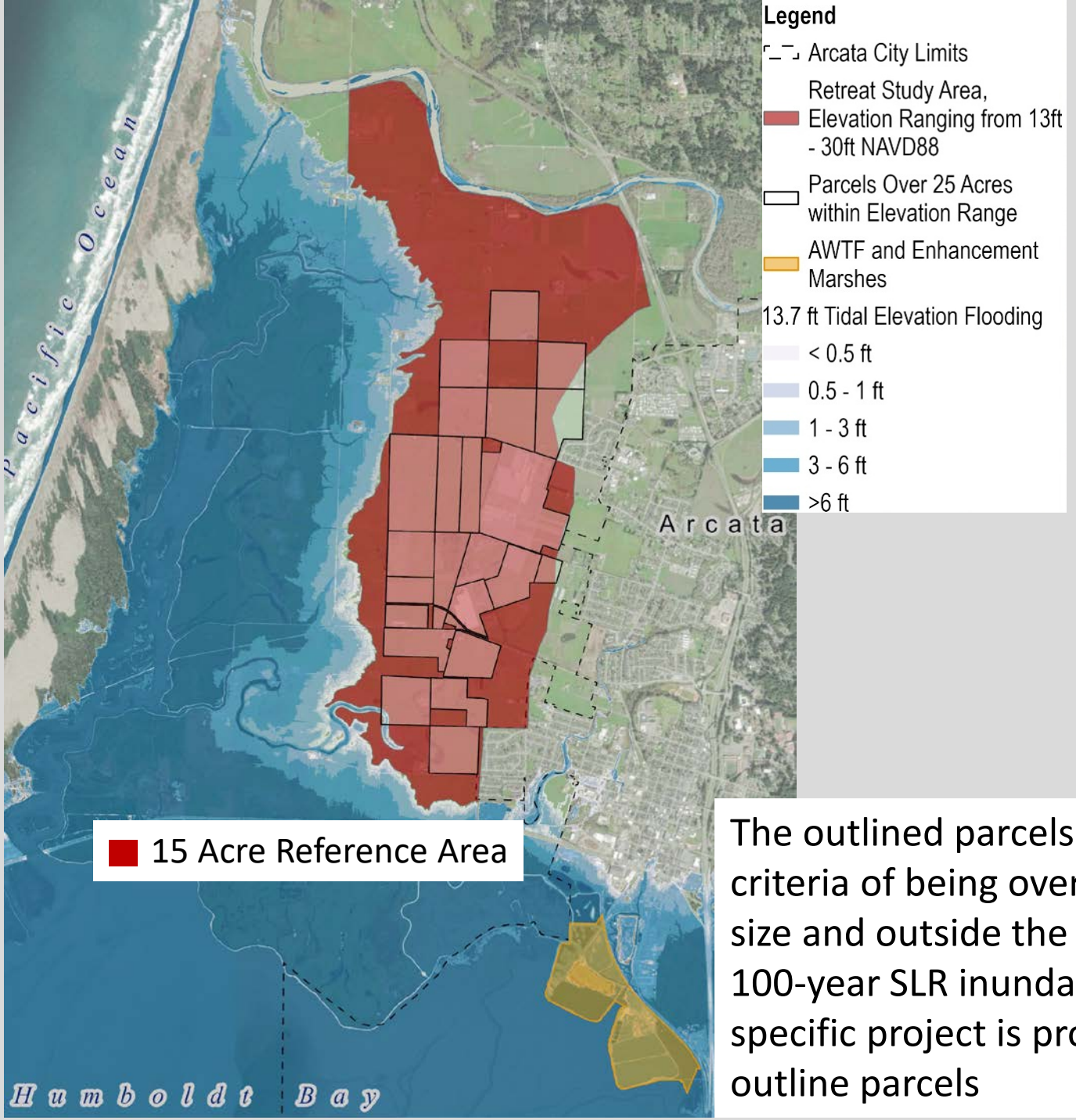
AWTF Levee Augmentation Project

Hard Armored Levee Augmentation



Hybrid Green/Gray Levee Augmentation

Treatment System Relocation



The outlined parcels meet the criteria of being over 25 acres in size and outside the 2015 projected 100-year SLR inundation zone. No specific project is proposed on the outline parcels

Wastewater Treatment System Option Costs

Option	AWTF Levee Augmentation Project	Relocate the Wastewater Treatment Facility
Capital Cost	Levee Augmentation Only • $20.4 to 24.5 Million With a Living Shoreline • $34.7 to $38.7 Million	Conventional Treatment • $100 to $213 Million Membrane Treatment • $104 to $224 Million
Change in Annual Operations Cost	No Significant Change from Existing System	~ $203,000 for Electricity and Pump Station Maintenance/ Replacement

Wastewater Treatment Adaptation Strategies Considered, but not further evaluated

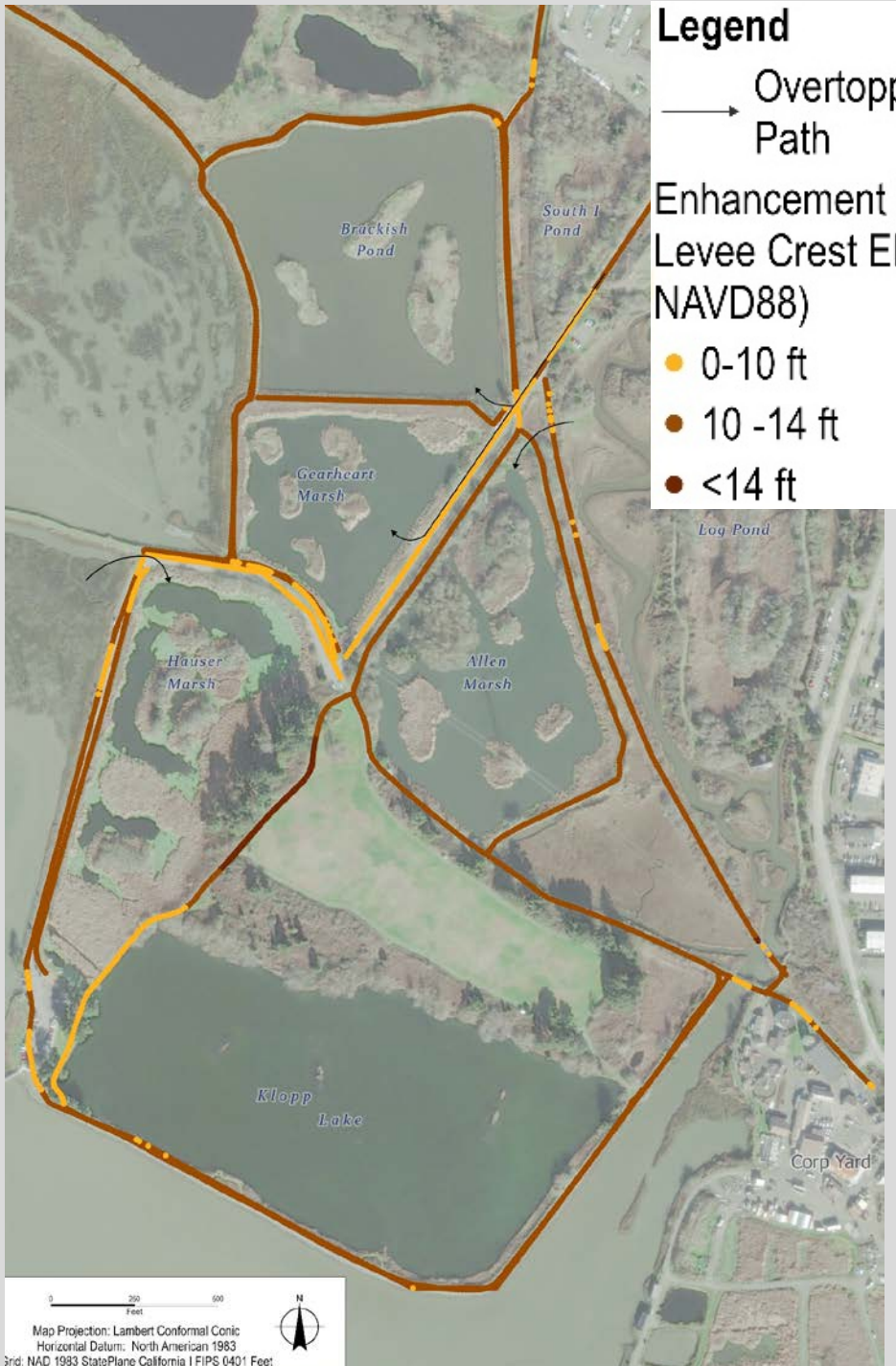
- **Consolidation**
  - Discussions conducted with Arcata City staff and staff from both McKinleyville Community Services District and City of Eureka.
  - No high value synergies identified for further consideration.
- **Decentralized Treatment**
  - There was no stand alone decentralized solution identified that would avoid the need for a full treatment plant at the current location or a retreated location.
  - Small water recycling systems, residential greywater reuse, composting toilets, and other focused wastewater reuse that can be incorporated into the City’s future planning documents.

Wastewater Discharge Options – Part 1

Option	Enhancement Marshes Levee Maintenance and Adaptive Management	Enhancement Marshes Levee Augmentation
Adaptation Types(s)	Protect/ Accommodate	Protect
Timeline	Effective until ~2055	Effective until ~2105
Summary	Maintain the berm around the enhancement marshes to10 ft. Study the adaptive capacity of the marshes to overtopping.	Elevate/ augment the levees surrounding the Arcata Marsh to 15 feet

Enhancement Marshes Levee Maintenance and Adaptation

Photo: January 3, 2026, Emily Sinkhorn



Enhancement Marshes Levee Augmentation

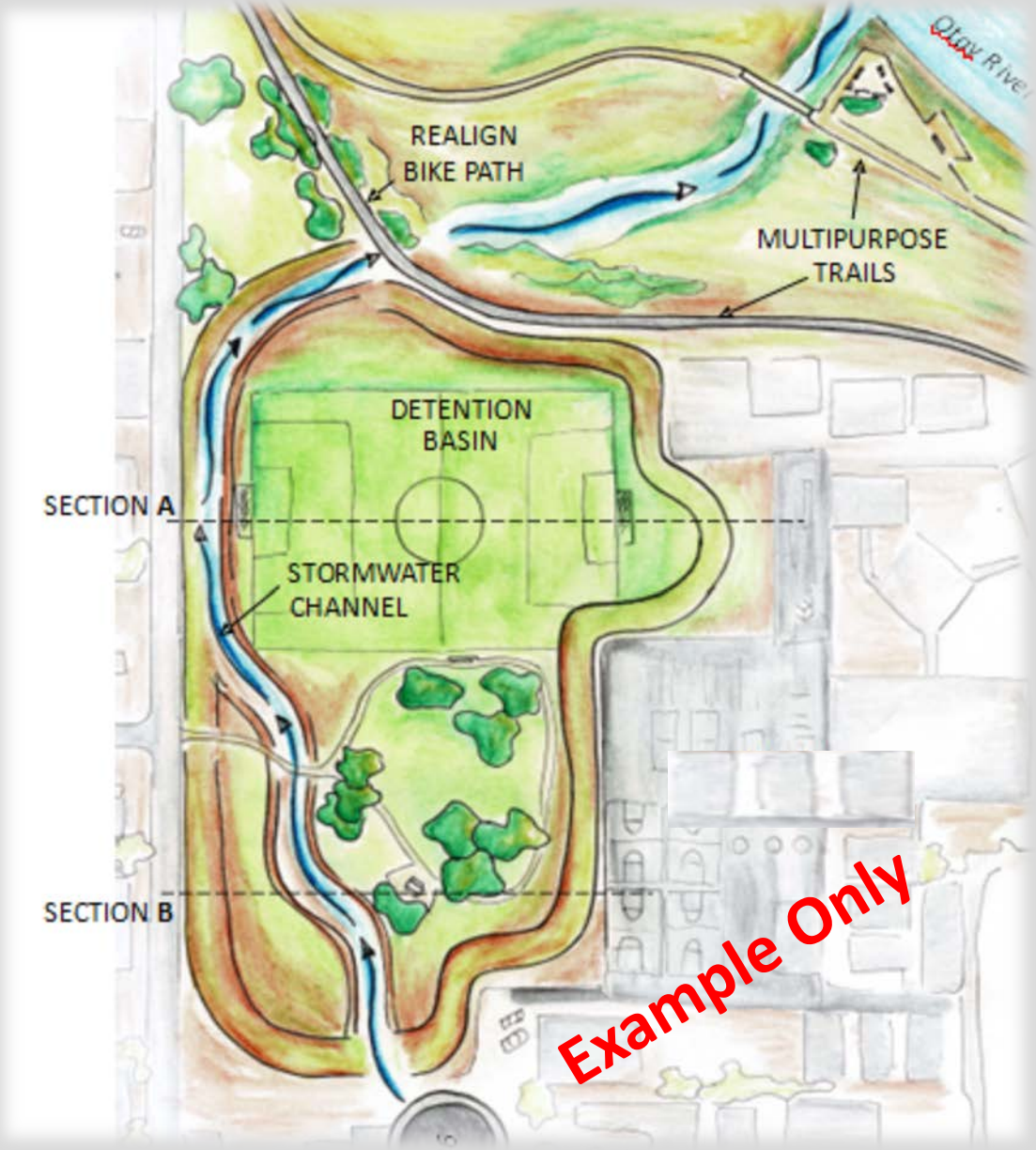
Photo credits to HSU Photographer Kellie Jo Brown and Pilot Dave Marshall.

Wastewater Discharge Options – Part 2

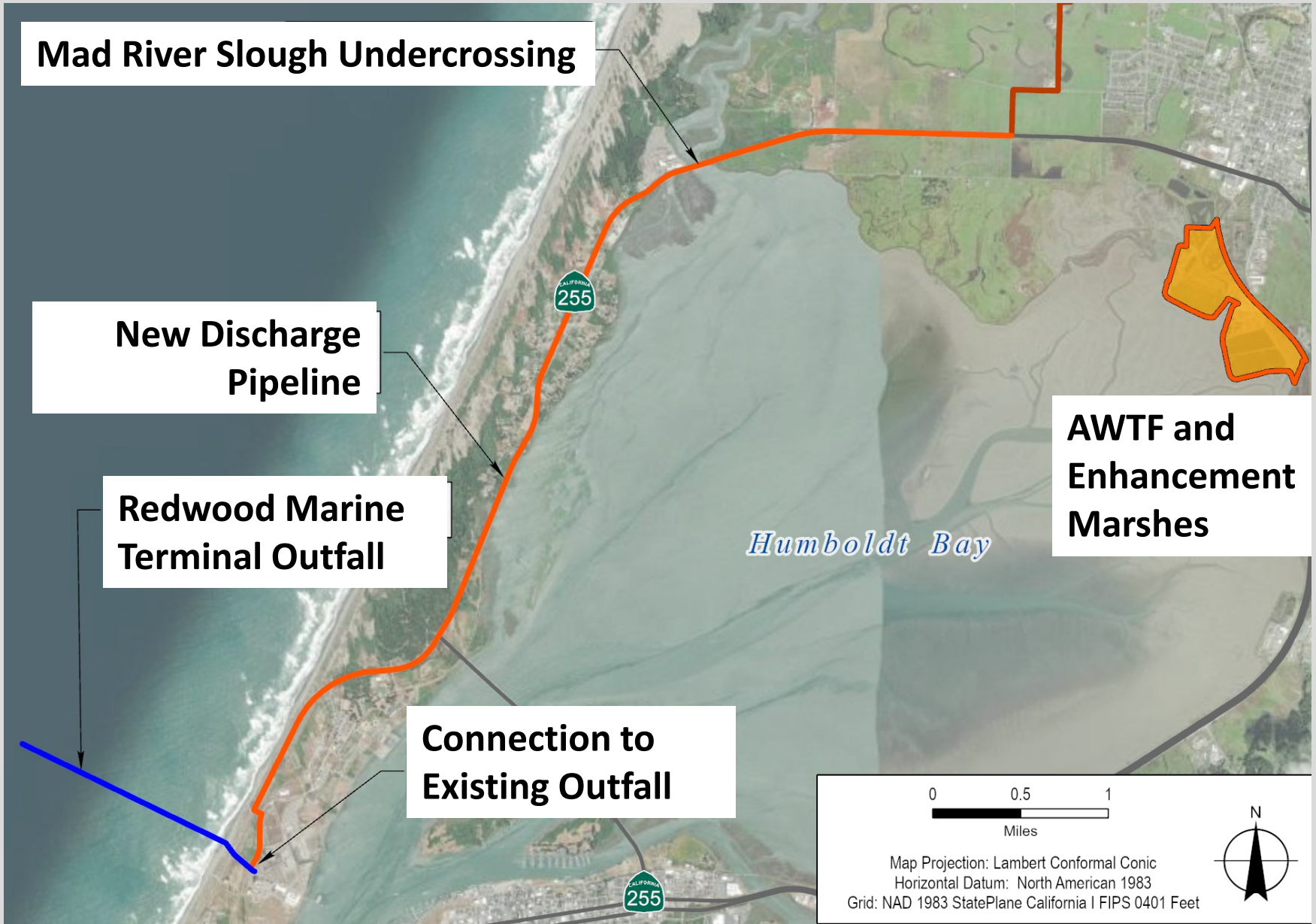
Option	New Enhancement Project with Continued Bay Discharge	RMTII Ocean Outfall
Adaptation Types(s)	Retreat	Retreat
Timeline	Effective until ~2105 and beyond	Effective until ~2105 and beyond
Summary	Continued Bay Discharge and meet the Enclosed Bays and Estuary Policy requirements with new Bay enhancement project supporting climate resilience, habitat restoration/ creation, removal of legacy pollutant, and/ or public health.	Re-route treated effluent to the existing Ocean Outfall at the Redwood Marine Terminal on the Samoa Peninsula

New Enhancement Project with Continued Bay Discharge

- The guidelines for a potential a future enhancement project are under review by the Regional Board.
- A future enhancement project may not be tied to the treatment train, but still provide water quality benefits.



Redwood Marine Terminal Ocean Outfall



Wastewater Discharge Options

Option	Enhancement Marshes Levee Maintenance and Adaptive Management	Enhancement Marshes Levee Augmentation	New Enhancement Project with Continued Bay Discharge	RMTII Ocean Outfall
Capital Cost	• 4.6 to $10 Million	Levee Only • $10.7 to $23 Million With a Living Shoreline • $20.8 to $33 Million	• $38 to 82 Million	• $63 to $136 Million
Change in Annual Operations Cost	No Significant Change from Existing System	No Significant Change from Existing System	~ $202,000 for Electricity and Pump Station Maintenance	~$496,000 for Electricity, Pump Station Maintenance/ Replacement and Outfall Use Fees

Wastewater Disposal Adaptation Strategies Considered, but Deemed Not Feasible

- **Groundwater injection**
  - No similar examples permitted in CA for wastewater disposal only
  - Would not be able to dispose of all effluent, still requiring secondary disposal method
- **Year-round land disposal**
  - Would require over 2,000 acres of land for irrigation and storage of effluent during the rainy season
- **Summer land disposal and winter surface water discharge**
  - Would require almost 600 acres of land for irrigation
  - May conflict with McKinleyville CSD effluent discharge
- **Year-round surface water disposal**
  - Currently not permitted by Regional Water Quality Control Board Regulations

Fall 2024 and Summer 2025 Community Meetings

Goals

- **Inform** the community on the AWTF Feasibility Study and efforts to address sea level rise
- **Discuss and solicit input** from the community on adaptation strategies through envisioning future AWTF retreat and protection scenarios

Key Take Aways from 11/14/24 Public Meeting

- Strong support to maintain the ecological and recreational benefits of the marsh which are integral to Arcata's culture and values
- Collaborate with partner government agencies, regional stakeholders and regulatory agencies to align efforts and maximize opportunities
- Ensure cost effectiveness and leverage project phasing and grants to reduce impact on rate payers
- Align AWTF adaptation with overall Arcata shoreline adaptation strategy
- Participants showed an interest in innovative technologies like composting toilets and small-scale, decentralized solutions, but emphasized the need for careful consideration of location and environmental suitability for each method.

Key Take Aways from 8/28/25 Public Meeting

Retreat Option Common Discussion Points

- Shared sense of maintaining the community benefits of the existing enhancement marshes with no net loss of ecological or recreational benefits
- Consider land banking for a new wastewater treatment facility and careful attention to the future site characteristics and aesthetics
- Incorporating future population growth and climate change in project planning and design
- Conduct regional collaboration that involves local/state government, tribal and regulatory partners.
- Need attention to cost-effectiveness leveraging project phasing, grants, and potential consolidation opportunities to reduce impact on rate payers.

Key Take Aways from 8/28/25 Public Meeting

Protection Option Common Discussion Points

- Incorporate protection of other low-lying areas such as South G Street, 255 / 101 between Arcata and Eureka, and agricultural land
- Cost analysis should include phasing options, energy considerations, and equity impacts of protecting private property
- Maintenance of the ecological and other benefits of the marsh is integral to Arcata's culture and values
- Phased approach that continues assessing land options and technology advancements for future relocation

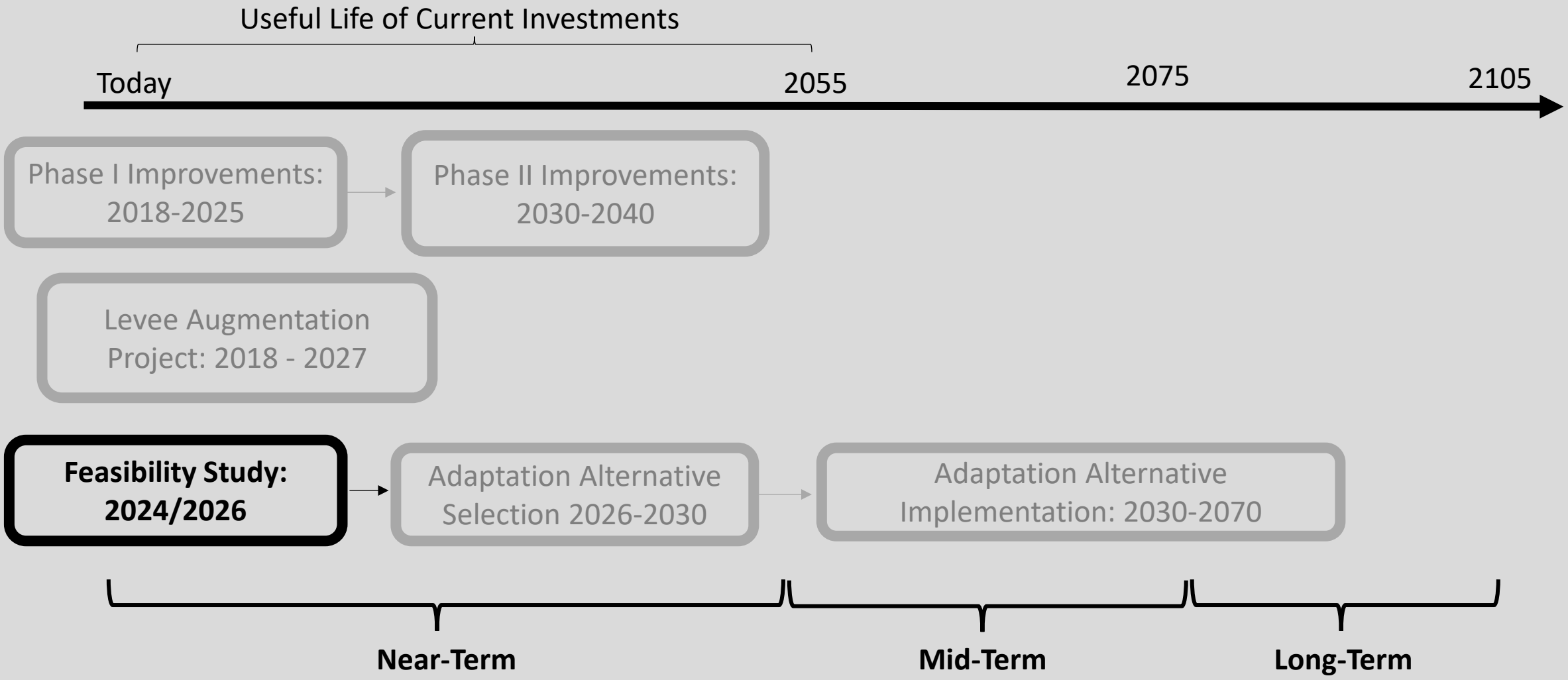
Criteria for Alternative Prioritization

- Meets Regulatory Requirements
- Constructability
- Operability
- Flexibility of system for future treatment concerns
- Resource efficiency and minimal environmental impact
- Cost efficient
- Use of natural systems as part of the treatment process
- Proactive climate change readiness

Summary of Feasible Adaptation Strategies

- Treatment System
  - AWTF core area Levee Augmentation
  - AWTF Relocation
- Discharge
  - Enhancement Marshes Adaptive Management with Levee maintenance
  - Enhancement Marshes Levee Augmentation
  - New Enhancement Project with Bay Discharge
  - Ocean Discharge via existing Harbor District’s Redwood Marine Terminal Outfall

Arcata Wastewater Treatment Facility Improvement Timeline



Final Steps for the Feasibility Study

- Preliminary Environmental Analysis of Priority Alternatives
  - Identification of future technical studies (i.e. biological, archeological, groundwater)
  - Permitting Evaluation
- Presentation to City Council - January 2026
- Completion of Final Report - ~March 2026
- Potential Council decision later in 2026