Los Angeles River Temperature Study

December 8, 2025

Agenda

Meeting Objective: Provide a brief summary of the Study findings, answer questions/receive preliminary feedback on Study Report, and discuss next steps.

- Project Background
- Summary of Study Findings
- Potential Next Steps
- Wrap Up

Project Background

Compliance Schedule

- Study (Present-12/25)
  - Identify potential impacts of effluent temperature
  - Identify potential control measures

We are here

- Regulatory Process (1/26-TBD)

- Design and Build (2026-2031)

Task		Completion Date	
		LA Permits	Burbank Permit
1	Submit and Begin Implementation of Pollution Prevention Plan (PPP) for Source Control	4/1/23	2/1/24
2	Select members for the Technical Advisory Committee and Stakeholder Committee and regularly convene the committee members to initiate the development of a Technical Workplan that includes a temperature study that identifies the potential impacts of the WRP's effluent temperature and potential control measures (including nature-based solutions) that can be implemented to protect beneficial uses.	5/1/23	3/1/24
3	Finalize and submit a Technical Workplan for the Los Angeles Water Board Approval, secure the necessary permits for Los Angeles River Channel access and deployment of in-situ monitoring devices, and initiate bidding and procurement for any necessary equipment and/or services.	11/1/23	9/1/24
4	Implement the Technical Workplan, initiate testing and deployment of any necessary equipment, and continue securing the necessary permits for Los Angeles River Channel access and deployment of in-situ monitoring devices.	4/1/24	2/1/25
5	Implement the Technical Workplan and begin drafting a Final Technical Report.	12/1/24	10/1/25
6	Complete and submit the Final Technical Report	12/1/25	10/1/26
7	Notify Los Angeles Water Board of Selected Preferred Project and Identify Regulatory Approval Process (if appropriate given the study findings), Present Results of Technical Workplan at Next Scheduled Los Angeles Water Board Meeting	2/1/26	12/1/26
8	Begin Preliminary Design and Environmental Review	7/1/26	5/1/27
9	Complete Preliminary Design	4/30/27	2/28/28
10	Complete Environmental Review	4/30/28	2/28/29
11	Design Preferred Project	4/30/29	2/28/30
12	Issue Notice to Proceed for Project Work	4/30/30	2/28/31
13	Complete Preferred Project	2/1/31	12/1/31

Summary of Study Findings

Biological Summary Overview

What is the biological impact of WRP effluent Temperatures?

?

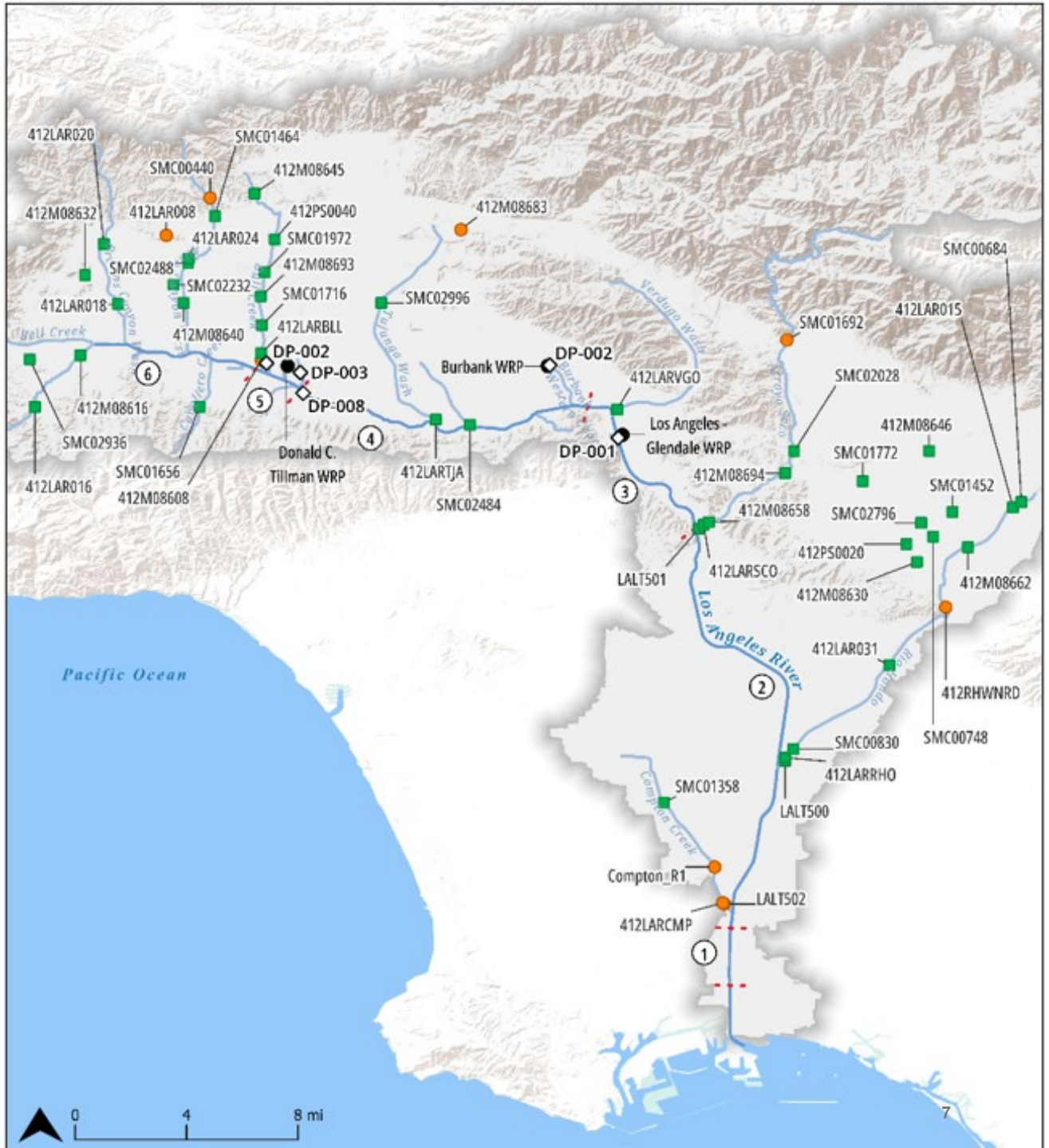
Location and Magnitude of effect?

LA River Temperature Study:

1. **Fill Gaps to Answer Questions**
2. **Address Study Objectives**

Data Summary and Analysis

- **Data Compilation**
  - Reports/publications (includes vertebrate eDNA data)
  - BMI/algae back to 2005/09 (including indices)
  - New BMI/algae data in 2024
- **Questions**
  - Are there differences upstream and downstream of the WRPs?
  - Are there differences between waterbodies with and without WRP discharges?
- **Summary and Analysis**
  - Summarized taxa in Study waterbodies and similar tributaries without WRP flows
  - Wilcoxon analysis
  - Cluster analysis



Biological Analysis and Conclusion

1) **Qualitative:** Summarized BMI, diatom, and algae in mainstem + tributaries to answer the question: Is there an obvious difference between sites up and downstream and with and without WRP flows?
   - No obvious differences
2) **Quantitative:** Analyzed biological data up and downstream of WRPs to answer the question: Is there a difference between sites up and downstream of WRPs?
   - Based on Wilcoxon analysis, there is no statistical differences in upstream and downstream sites
3) **Quantitative:** Analyzed biological data in mainstem + tributaries to answer the question: Did we miss anything?
   - Cluster analysis indicated that communities downstream of WRP discharges are not unique and can be found throughout the Study area, including at locations with no WRP discharges

Conclusion: Alterations to receiving water temperatures due to WRP effluent temperatures does not adversely affect the biological communities in the LA River Mainstem or BWC.

Temperature Data Findings

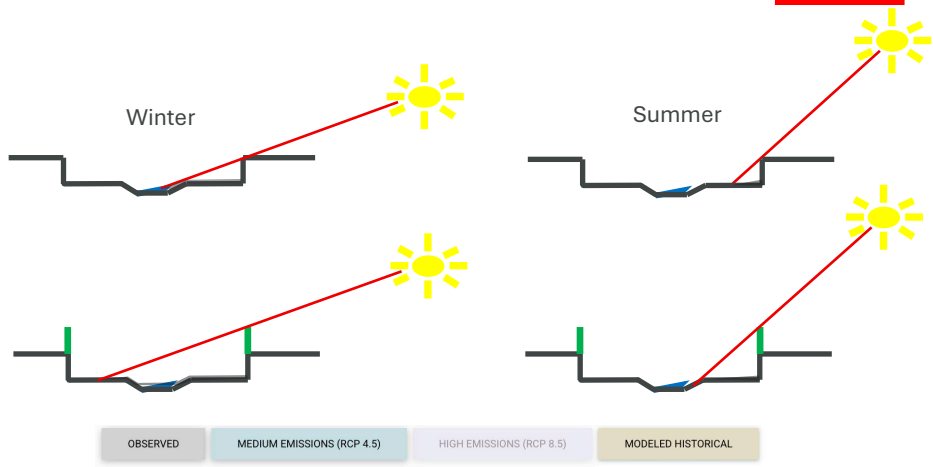
- Daily maximum exceeds 80°F up and downstream of the WRPs
- Diel water temperature fluctuations greater than 5°F are common May through September regardless of location and WRP flow
- The estimated distance downstream of discharge under the influence of thermal input from each WRP is estimated to be between 2 and 5 miles in the winter and less than 0.5 to 2 miles in the summer
- Water temperature in other portions of the LA River is the result of other factors (e.g., air temp, solar radiation) affecting temperature besides WRP effluent temperature

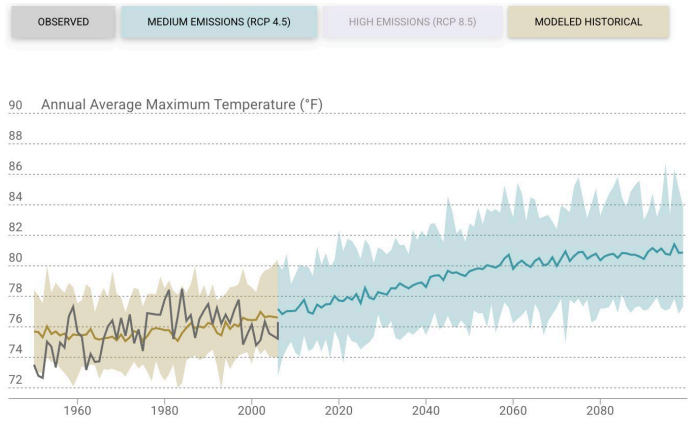
Modeling Summary

- Effluent Temperature Control
  - River temperatures reach equilibrium with atmospheric temperatures short distance downstream in summer
  - Winter river temperatures reach equilibrium generally further downstream
- Reducing effluent discharge, reduces heat addition to river
  - Atmospheric equilibrium achieved in shorter distance
- Shading on the banks and instream is generally ineffective
  - Microclimates control water temperature
- Future climate results in 1-2^{o}F warmer water in 30 years
- Modeling of scenarios did not indicate a significant change in results
- Summary: River temperature reaches equilibrium with atmosphere regardless of potential control measures or scenarios

Max Temperature Reductions Needed to Attain Limits		
DCT	LAG	BUR
32°F	35°F	37°F

WRP	Effluent Flowrate (MGD)				
	Current	Reduction			
		5%	10%	25%	50%
DCT	21.6	20.5	19.4	16.2	10.8
LAG	8.5	8.1	7.7	6.4	4.3
BUR	3.0	2.9	2.7	2.3	1.5





Treatment Controls: Review of Options

- Alternative Control Measures
  - Options evaluated: natural heat flow, evaporative cooling, source control, in-plant process changes (shading was also considered as part of modeling)
  - Evaluation: None of these options will meet the limits
- Traditional Control Measures
  - Options evaluated: Cooling towers and chillers
  - Evaluation:
    - Space limitations at the WRPs create significant challenges which could impact other upgrades (e.g., increased water recycling, plant capacity expansion, etc.)
    - Cooling towers expected to meet 80°F, but not delta 5°F
    - Chillers can meet both
      - Capital Costs of $457M and annual O&M of $15M
      - GHG increases of 18%, 44%, and 59% at the BWRP, DCT, and LAG, respectively
      - Increase use of potable water (up to ~350 MG/year under average conditions)

Study Conclusions

Temperature and Biology	Modeling	Control Measures

▶ Instream temps >80°F and +5°F irrespective of WRP flow or location
▶ No difference in BMI and algae up and downstream of WRPs
▶ Communities downstream of WRPs are not unique in the Watershed
▶ The number of fish taxa are highest in LAR3 and LAR5
▶ Temperatures downstream of WRPs support species that can be present based on current habitat conditions
	▶ Modeling of individual control measures and combinations of control measures demonstrates that temperatures return to baseline conditions downstream of WRPs
	▶ Modeling demonstrates that 80°F and +5°F objectives are exceeded regardless of control measures
		▶ Alternative control measures do not meet 80°F and +5°F limits
		▶ Cooling towers do not meet +5°F limit
		▶ Chillers can meet the limits
		  ▶ $457M Capital $15M O&M
		  ▶ Increases in GHGs (18-59%)
		  ▶ Increases in potable water usage
		  ▶ Other projects (e.g., water recycling) may be impacted due to space constraints

Alterations to temperatures due to WRP effluent does not adversely affect the WARM beneficial use	**No individual or set of control measures will result in consistent attainment of water quality objectives**	**Attaining the limits is costly and energy intensive, while potentially precluding improvements to the WRPs**

Potential Next Steps

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- Primary focus to date has been on completing the Study and submitting the report
- Based on findings of the Study, the Cities would like to work with Regional Board staff to identify and adopt a regulatory approach
- Initial thoughts for discussion?
- The Cities have preliminarily identified potential regulatory approaches to support an initial discussion

Potential Next Steps: Preliminary Options and Considerations

Changes to Objectives

- Options
  - Revise numeric WQO
  - Revise narrative component of the WQO
- Considerations
  - Determining an appropriate and acceptable numeric WQO that reflects site-specific conditions is challenging
  - Revisions to the narrative component could focus the application of the numeric WQO when and where there is a demonstrated adverse impact
  - Requires significant effort from all participants in the process to update the Basin Plan

Changes to Implementation

- Options
  - Language related to when limits are applied based on findings of biological study(ies)
  - Allowable exceedances
- Considerations
  - Does not require modifications to the objectives
  - Can be developed to be protective of current and future conditions and to provide clear and consistent direction to permitting staff
  - Requires basin planning effort

Variances

- Options
  - WQS Variance
  - Thermal Variance
- Considerations
  - WQS Variance
    - Rarely used in CA
    - Similar effort to basin planning
    - Must be revisited every 3 to 5 years
  - Thermal Variance
    - Does not require basin planning (completed during permit reissuance)
    - Must be revisited every permit reissuance
    - Requires determination of alternative limits protective of balanced indigenous population

Potential Next Steps: Discussion

- Additional thoughts for discussion?
- What information is needed to identify and support a regulatory approach?

Wrap Up

- Additional Questions?
- Date for Next Meeting?
  - Week of January 12th or 19th
- Date of Regional Board Meeting to Present Findings?
  - Feb 26th
  - Mar 26th