STAKEHOLDER COMMITTEE MEETING

Los Angeles River Temperature Study

September 10, 2025

SEPTEMBER 10, 2025

Agenda

- Welcome and Introductions
- Project Background
- Study Overview
- Review of Study Data
- Modeling and Scenarios
- Wrap up and Next Steps

Project Background

Los Angeles County Temperature Studies

- Revised temperature standard - *At no time shall these WARM-designated waters be raised above 80°F as a result of the waste*

- Revised standards apply to WRP discharge in all watersheds in Los Angeles County
  - San Gabriel River and Santa Clara River (LA County Sanitation Districts)
  - LA River (Cities of Burbank and Los Angeles)

- Focus for today's meeting is on the LA River and Burbank Western Channel

- Technical issues are similar, but LA River is unique

Water Reclamation Plants

The LA River is a 51-mile-long urban river that flows through 14 cities and unincorporated areas in LA County

Three Water Reclamation Plants (WRPs) discharging tertiary-treated disinfected wastewater effluent in the LA River watershed are part of this Study:

- The City of Los Angeles (CLA), Bureau of Sanitation and Environment (LASAN) operates two Water Reclamation Plants, Donald C. Tillman (DCT or DCTWRP) and Los Angeles/ Glendale (LAG or LAGWRP).
- The City of Burbank Public Works Department operates the Burbank Water Reclamation Plant (BWRP).

Permit Requirements

Basin Plan Temperature Water Quality Objective for WARM Beneficial Uses –

The natural receiving water temperature of all the regional waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Board that such alteration in temperature does not adversely affect beneficial uses. Alterations that are allowed must meet the requirements below:

- *For water designated WARM, water temperature shall not be altered by more than 5°F above the natural temperature.*
- *At no time shall these WARM-designated waters be raised above 80°F as a result of the waste discharges.*

Previous Effluent Limit	New Effluent Limit
86 °F	**80 °F**

Compliance Schedule

- Study (Present-12/25 & 10/26)
  - Identify potential impacts of effluent temperature
  - Identify potential control measures
- Regulatory Process (1/26-TBD)
  - Water Board may consider regulatory revisions, if appropriate given study findings
- Design and Build (2026/27-2031)
  - Cities would design and build project(s) to address effluent temperature impacts, if needed

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

Compliance Schedule

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We are here →

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Compliance Schedule

The Cities developed and implemented a temperature Study.

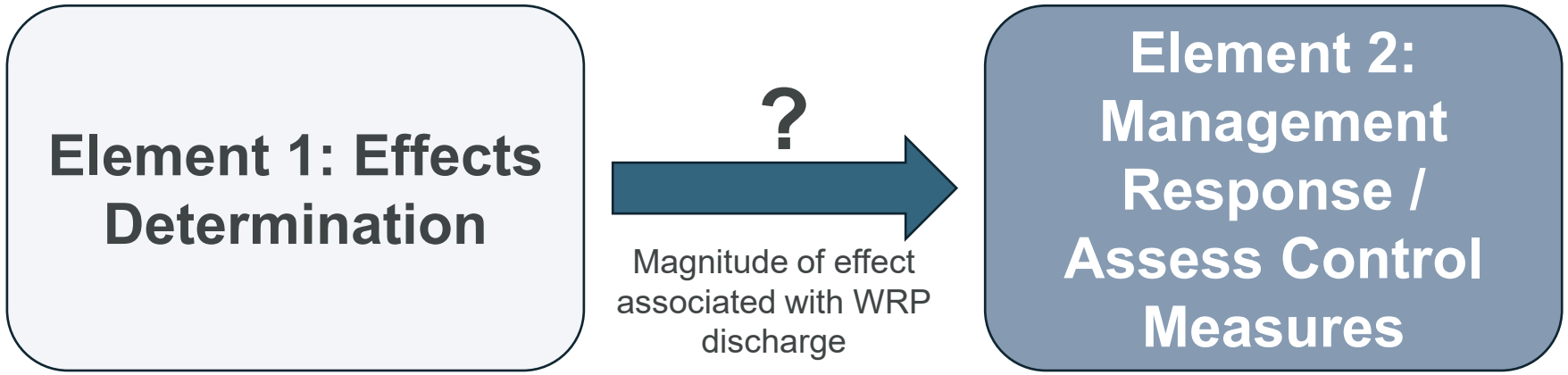
- There are other factors not addressed through NPDES permits that can impact beneficial uses in the Study area such as habitat modifications for flood control purposes.
- Those factors are not controllable by the Cities as they cannot take unilateral action to address habitat modifications in the Study area.
- The focus of this study is on what the Cities can and are required to control through their NPDES permit.
- As such, a primary goal of the Study is to develop a better understanding of the relationship between effluent temperature and potential impacts to the WARM beneficial use downstream of the DCTWRP, LAGWRP, and BWRP discharges.

Study Overview

Study Objectives

1. Determine the wholly or partially aquatic-dependent taxa that are present, were historically present, or could be present given the current habitat conditions in the Los Angeles River.
2. For each taxon identified in Objective 1, describe the relationship between waterbody temperatures and the probability (or likelihood) that different aquatic life stages are supported.
3. Determine how the relationships between waterbody temperature and the support of aquatic life vary based on the taxon's location in the river and seasonality.
4. Determine the critical exposure times, durations, and/or frequencies associated with the temperature relationships described in Objectives 1 through 3.
5. Evaluate how other physical factors (e.g., shading, groundwater discharge, availability of substrate, flow, etc.) and climate change could potentially influence temperature effects on biological communities.
6. Analyze relationships between effluent discharge temperature and in-river temperature, including how river temperature changes as a function of distance from the discharge location and downstream physical characteristics.

Two Main Elements of the Analysis



Study Design – Temperature Data Collection

1. May through October 2024 (27 weeks)
2. Continuous temperature probes (thermistors) with temperature measured on a half-hour basis
3. DCTWRP (10 stations): Effluent (2), LA River (6), and lakes (2)
4. LAGWRP (6 stations): Effluent (1) and LA River (5)
5. BWRP (6 stations): Effluent (1), BWC (3), and LA River (2) up and downstream of the confluence with the BWC

Study Design – Bioassessment Data Collection

1. June 2024
2. BMI, algae, and diatoms
3. DCTWRP (3 stations): LA River
4. LAGWRP (5 stations): LA River
5. BWRP (5 stations): BWC (3) and LA River (2) up and downstream of the confluence with the BWC
6. Coordinated with LARWMP (with Council for Watershed Health)

Review of Study Data

Overview of Temperature Data

- Purpose: Acquire additional stream temperature monitoring data to fill data gaps and supplement existing data
- Predicated on measurements from continuous temperature recording thermistors deployed from May – October 2024
- Strategically located above and below WRPs to answer specific study questions such as Study Objective #6

Analyze relationships between effluent discharge temperature and in-river temperature, including how river temperature changes as a function of distance from the discharge location and downstream physical characteristics.

Monitoring Overview: Temperature

Thermistors deployment

- Attached to cinder blocks to avoid movement due to water flow

Constraints to data collection

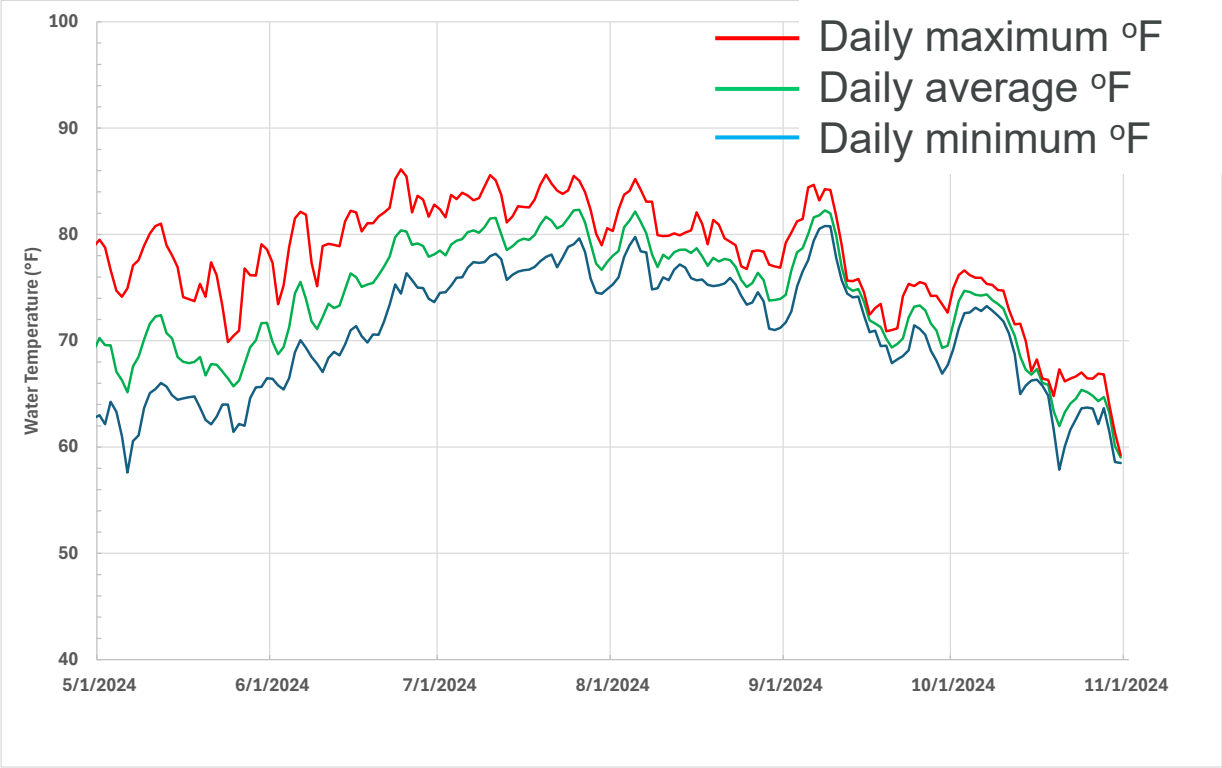
- Variable water levels, tampering
- Two probes needed to be replaced
- Two additional probes added as backups at sites due to tampering

Outcome

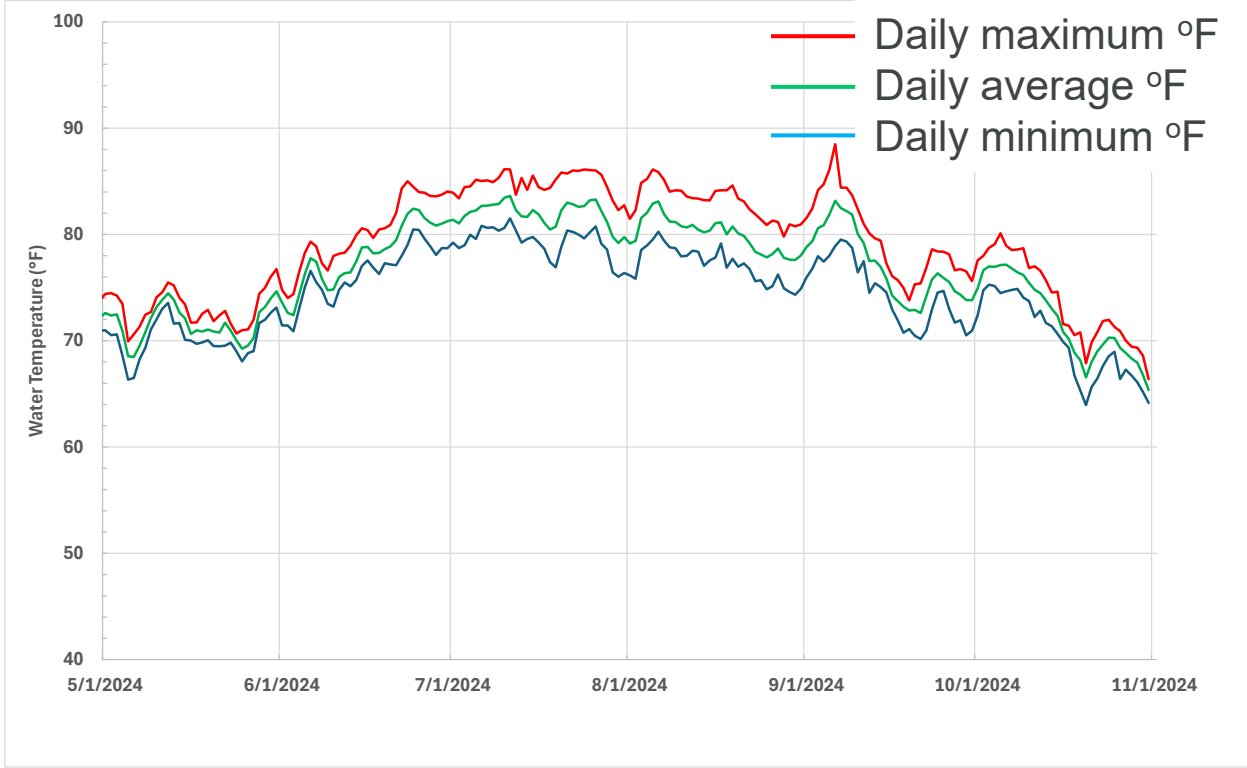
- 189,678 in-water temperature data points were recorded
- 97% of intended data was collected

Temperature Profiles

DCTWRP LAR5 Balboa (Upstream) and LAR5 Hayvenhurst (Downstream)

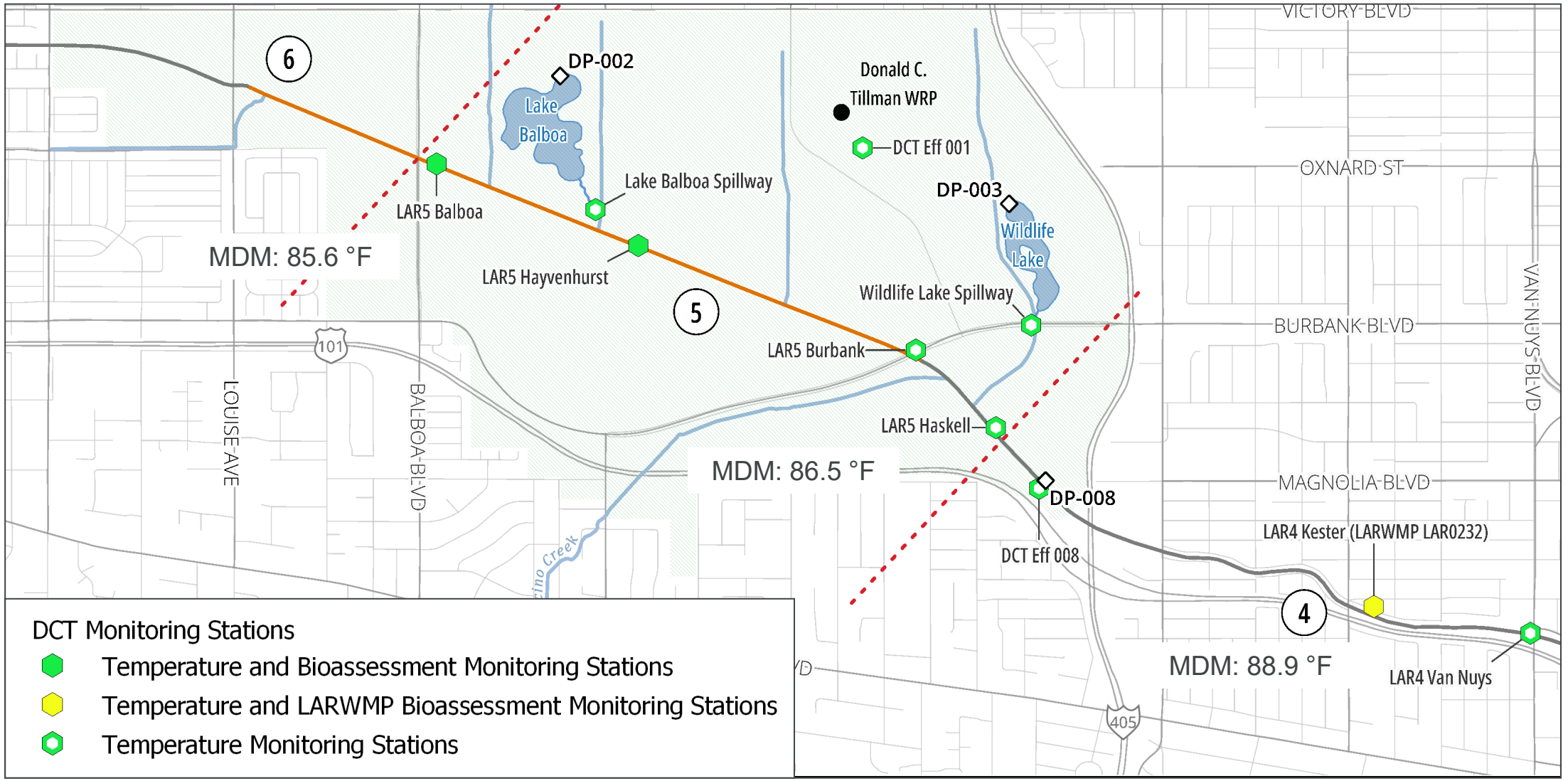


Continuous Temperature at LAR5 Balboa (Upstream)



Continuous Temperature LAR5 Hayvenhurst (Downstream)

DCT and LA River Reaches 5 and 4 (July 2024)

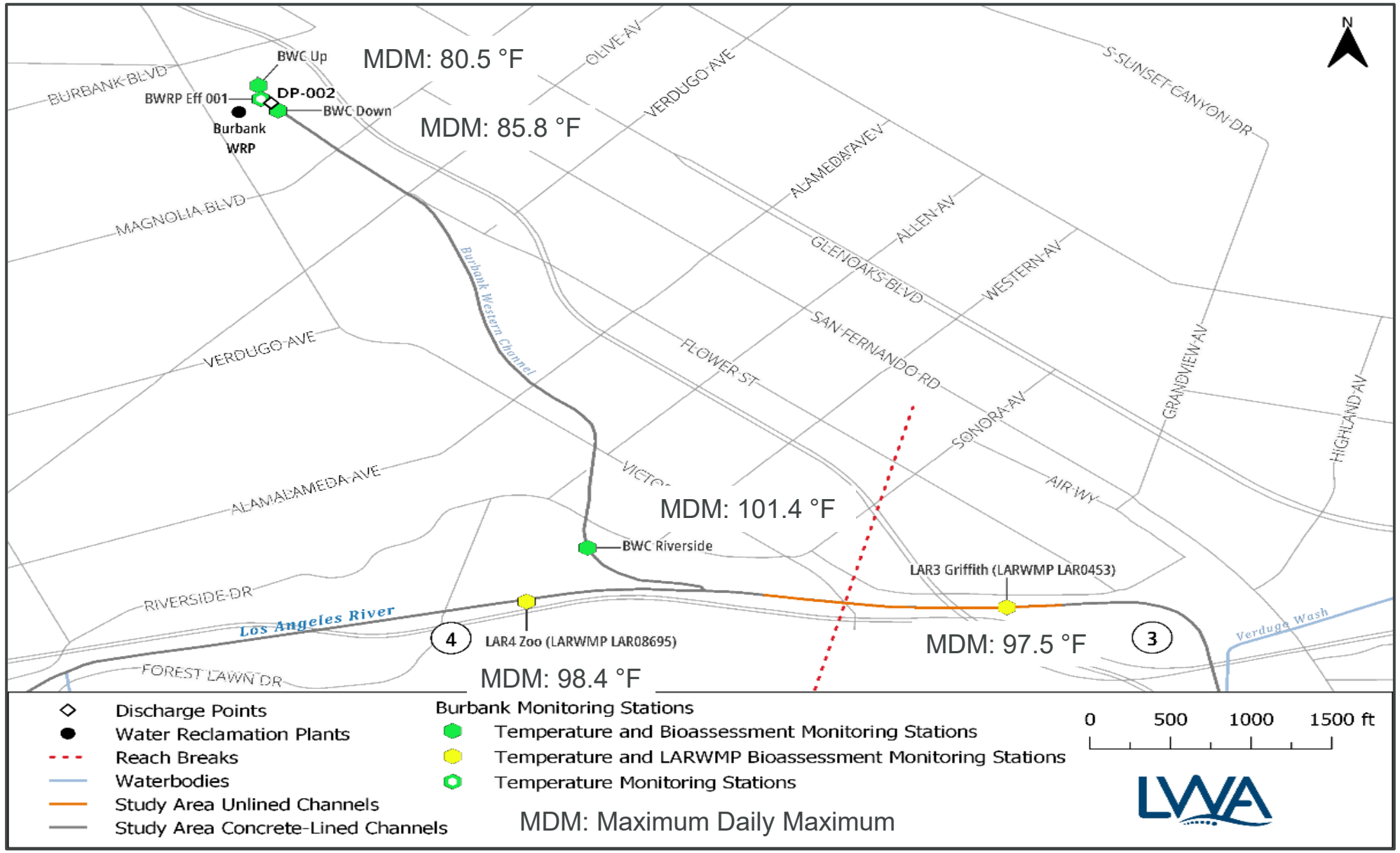


LAR Zoo

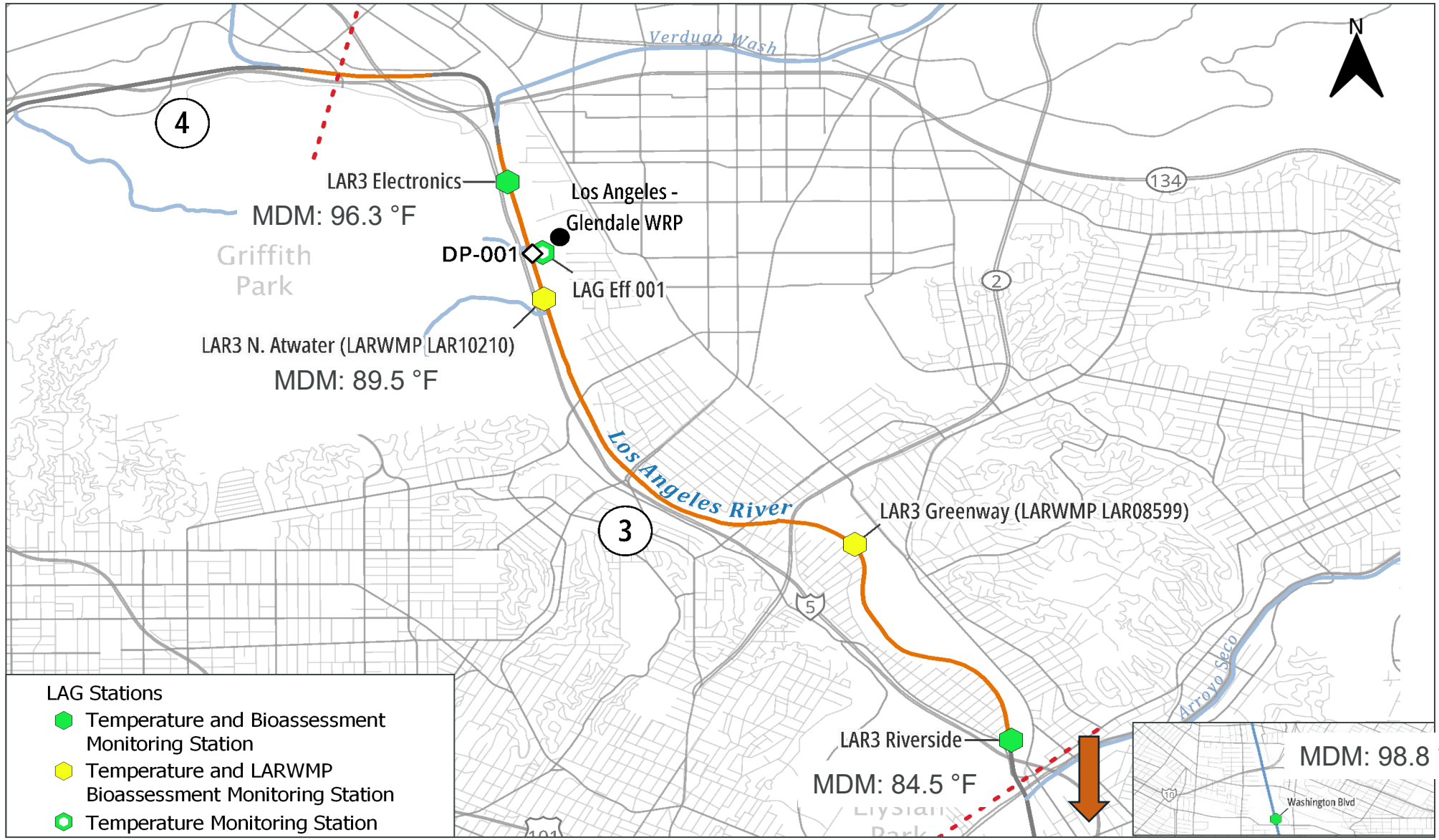
MDM: 98.4 °F

MDM: Maximum Daily Maximum

BWRP, BWC, and LA River Reach 3 and 4 (July 2024)



LAG and LA River Reach 3 (July 2024)



MDM: Maximum Daily Maximum

Observations: Study Temperature Data

- Maximum Daily Maximum (MDM) exceeded 80 °F throughout LA River, regardless of WRP flow
- Strong evidence of solar heating, particularly in concrete channels
- Flow, substrate, shading all factors affecting water temperature

Overview of Biological Data

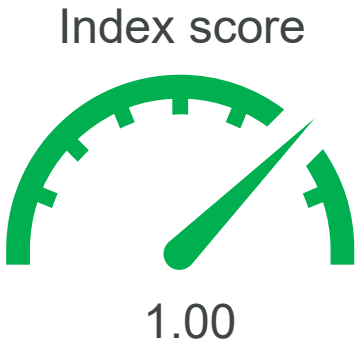
- Purpose: Same - Acquire additional stream biology data to fill data gaps and supplement existing data
- Predicated on historical (not included this presentation) and new data from this study – where BMI and diatoms were sampled in June 2024.
- Strategically located above and below WRPs to answer specific study questions such as Study Objectives # 1 though 5

  Taxa present….relationship between temp and likelihood life stages supported….how relationships vary by location and season….critical exposure times, durations, and or frequencies….how other physical factors influence temp effects on biological communities.

Overview of Biological Data

California Stream Condition Index (CSCI) and Algal Stream Condition Index (ASCI)

- Screening tools used by the state to measure health of wadeable streams using benthic invertebrates and algae
- Calculated using similar approaches and index score is similar



CSCI Field specimens

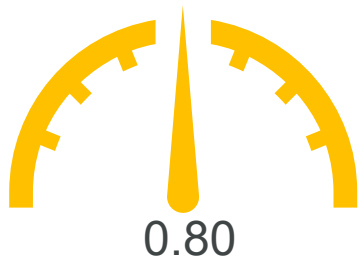
Mazor et al. 2016. Freshwater Science 35(1): 249-271

CSCI Raw taxonomy data

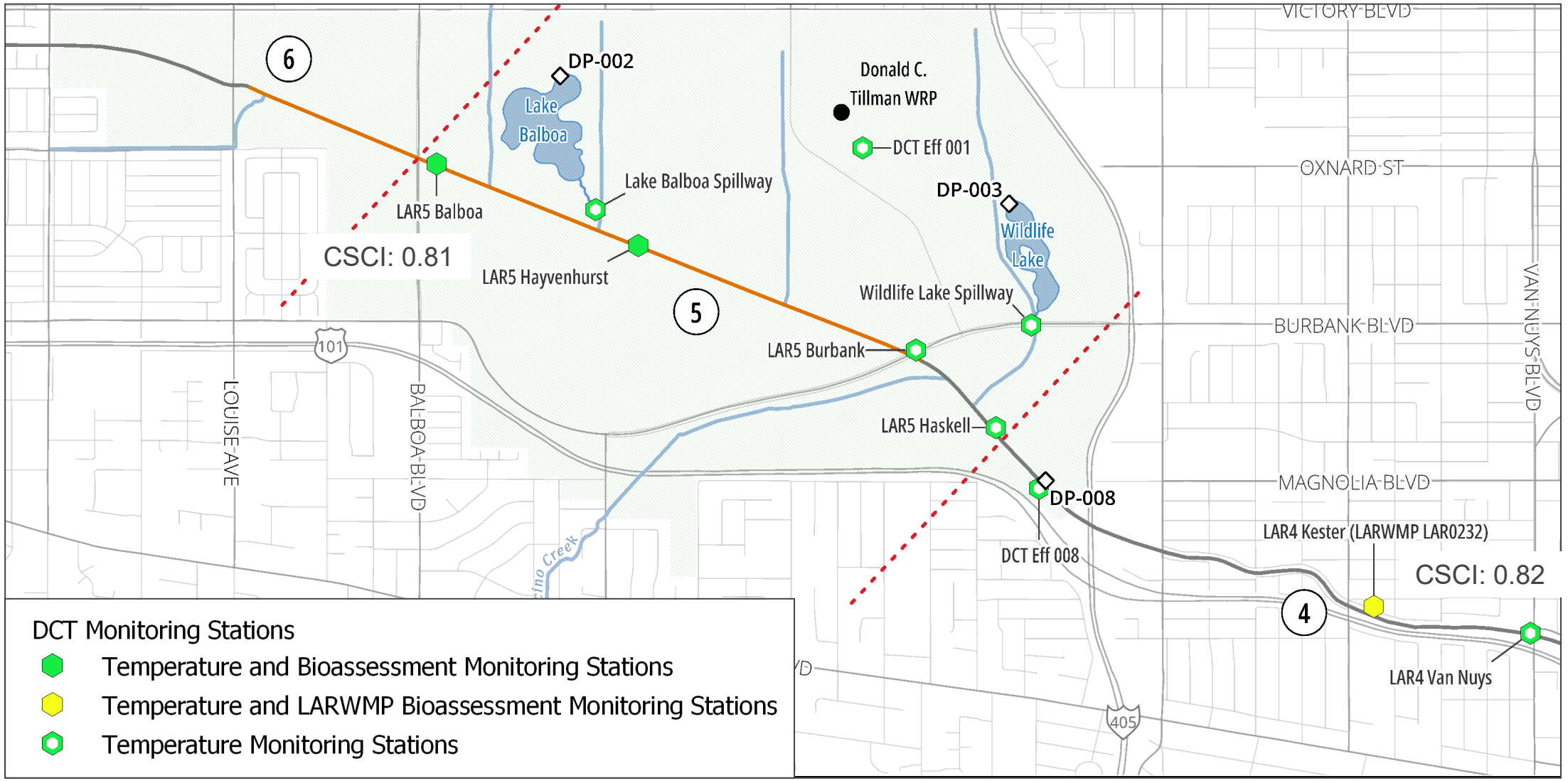
Taxon	Abundance
Acari	3
Chironominae	117
Cinygmula	3
Lepidostoma	15
Micrasema	20
Orthocladiinae	11
Paraleptophlebia	64
Simulium	15
Sweltsa	6

CSCI Processed metrics

Metric	Observed	Expected
# taxa	23	22.5
% clingers	58	56
% beetles	14	8
% mayflies, stoneflies, caddisflies	54	56
% sensitive	35	33
# shredders	6	5.2

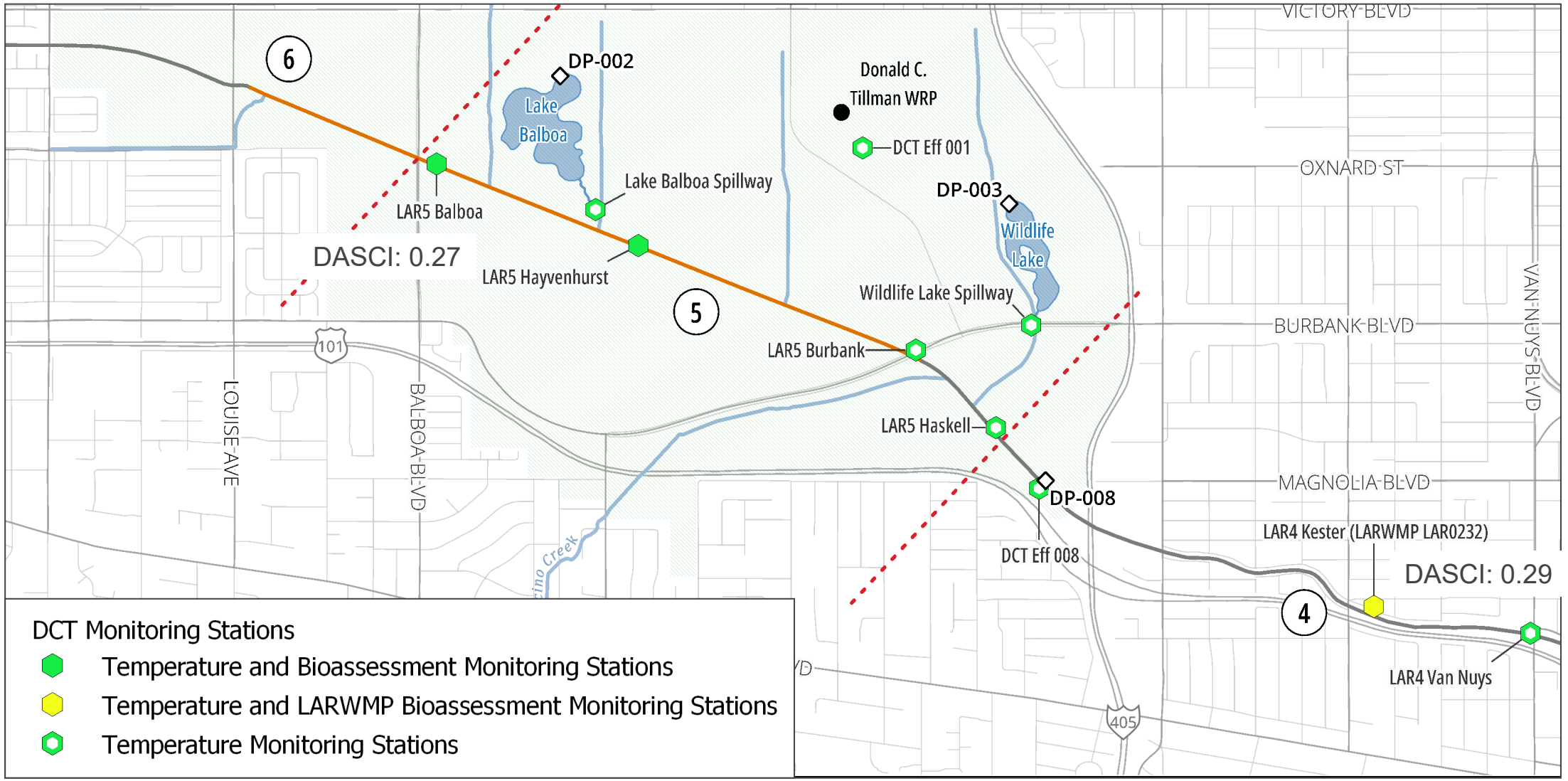


DCT and LA River Reaches 5 and 4 (July 2024): CSCI



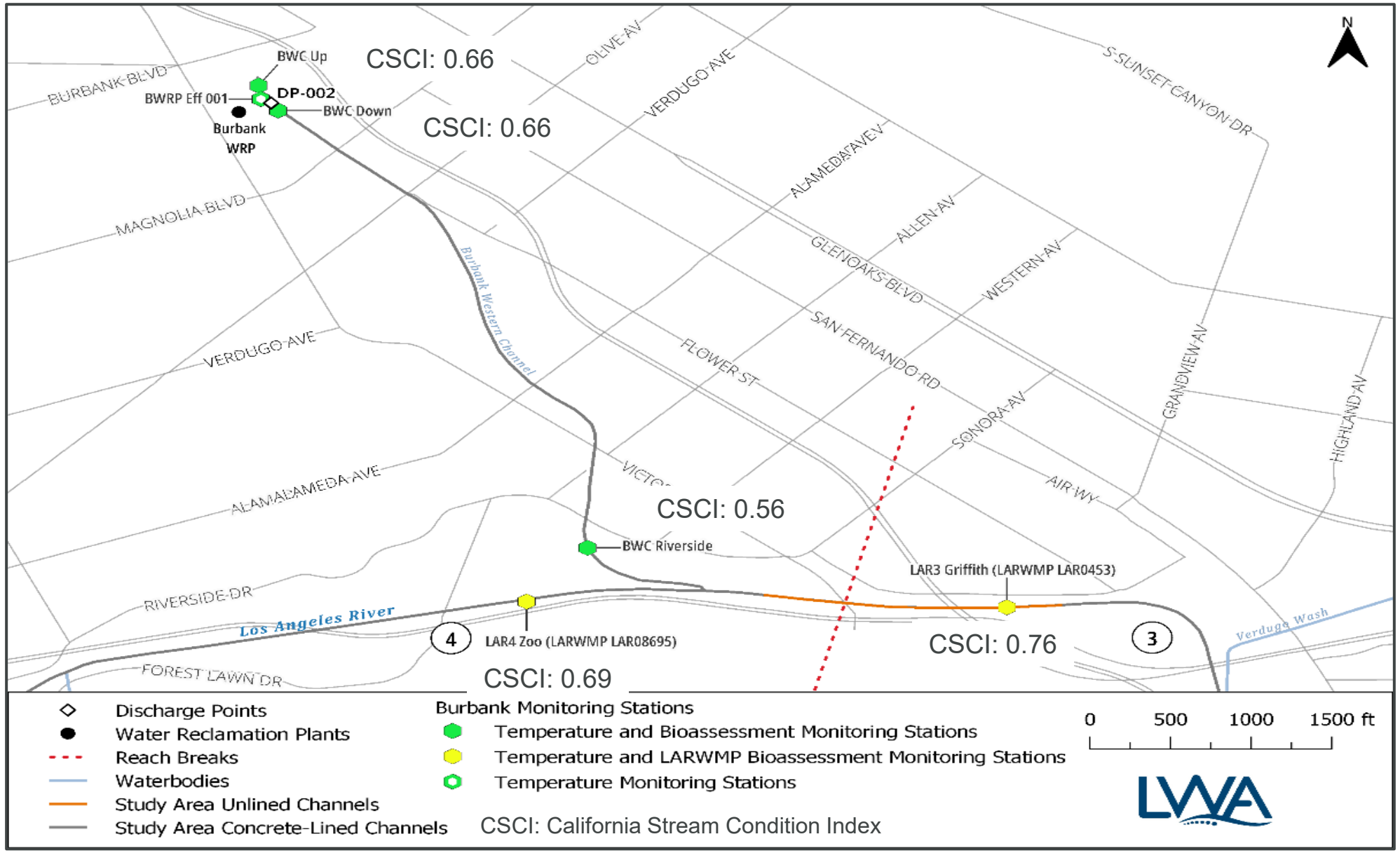
CSCI: California Stream Condition Index

DCT and LA River Reaches 5 and 4 (July 2024): DASCI

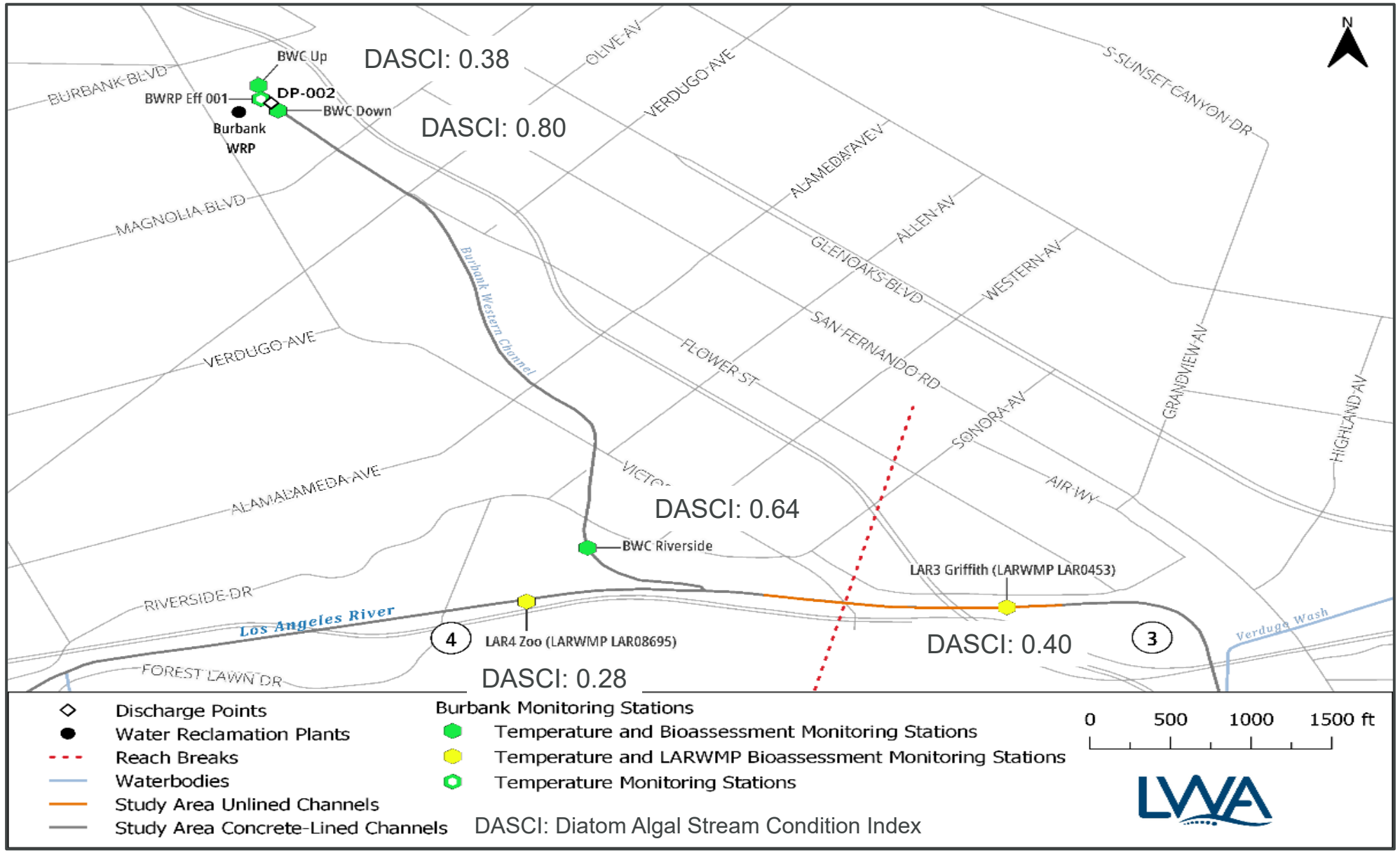


DASCI: Diatom Algal Stream Condition Index

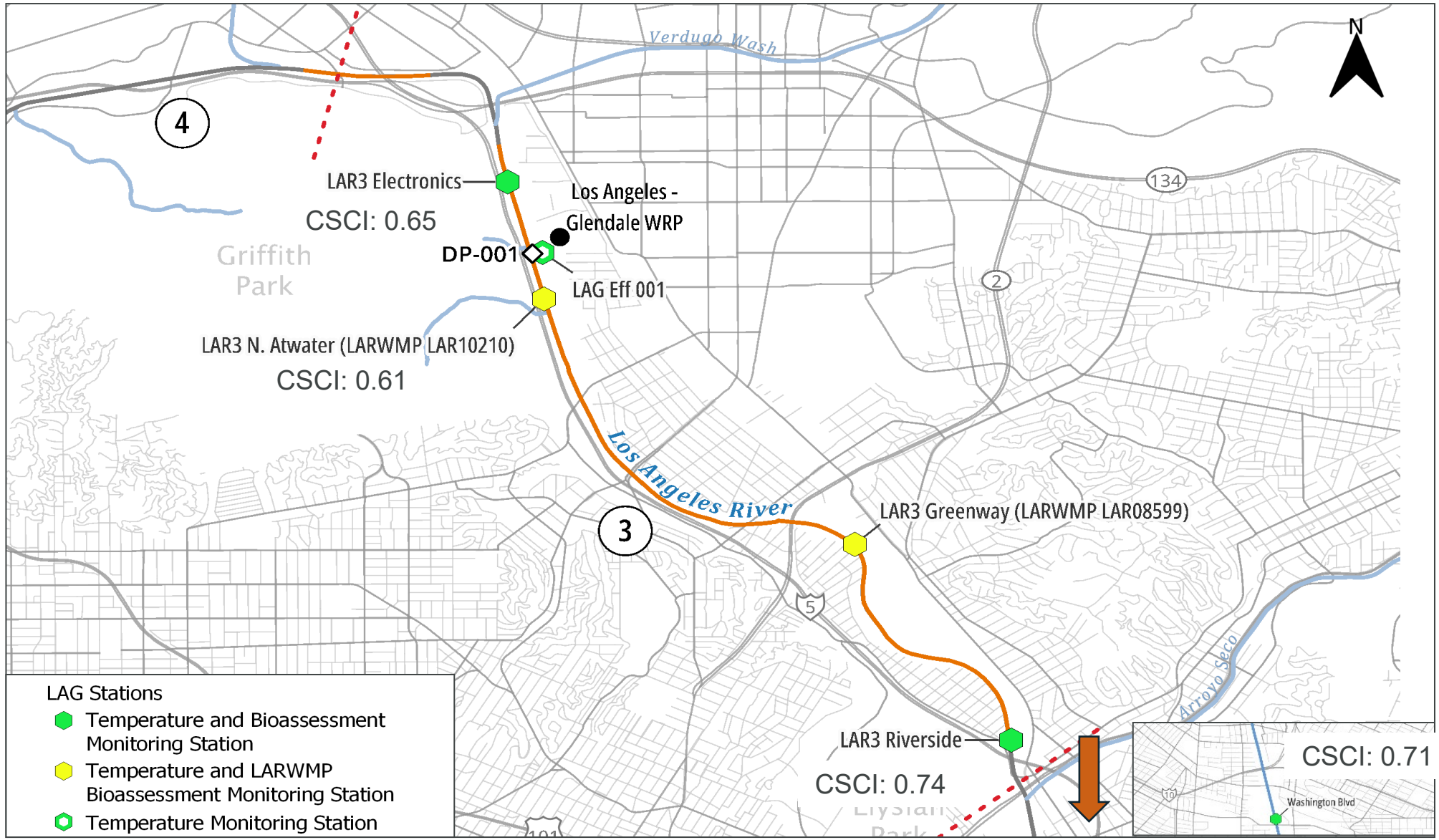
BWRP, BWC, and LA River Reach 3 and 4 (July 2024): CSCI



BWRP, BWC, and LA River Reach 3 and 4 (July 2024): DASCI

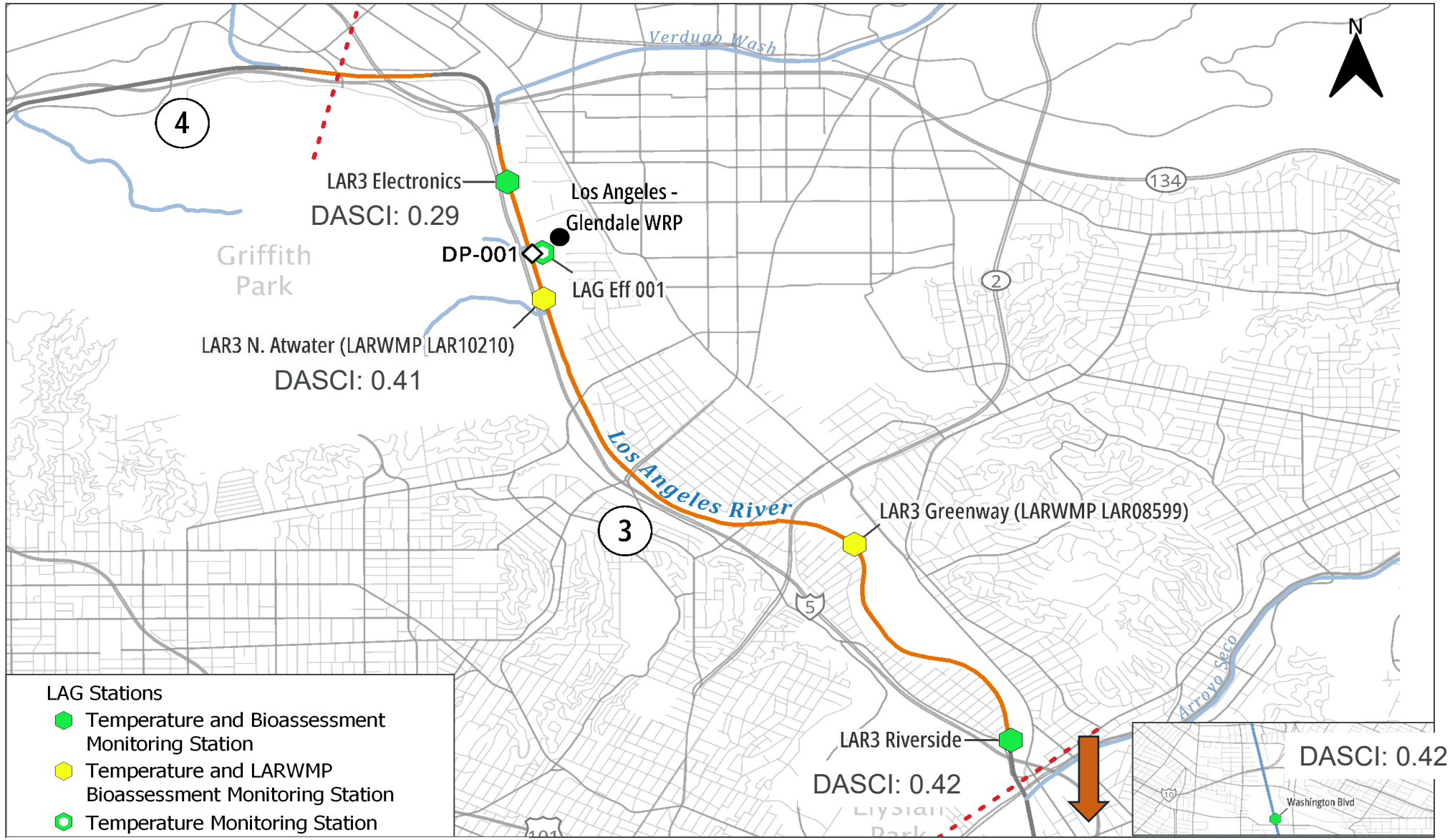


LAG and LA River Reach 3 (July 2024): CSCI



CSCI: California Stream Condition Index

LAG and LA River Reach 3 (July 2024): DASCI



DASCI: Diatom Algal Stream Condition Index

Initial Observations: Study Bioassessment Data

- Differences in CSCI and ASCI scores do not appear to indicate adverse effects of WRP effluent temperature in the LA River Reaches 1 through 5 and Burbank Western Channel (based on Study data)
- Additional data analysis is being completed to further evaluate this initial observation using the combination of Study and historical data

Modeling and Scenarios

If there are temperature effects…What do we want to do about it?

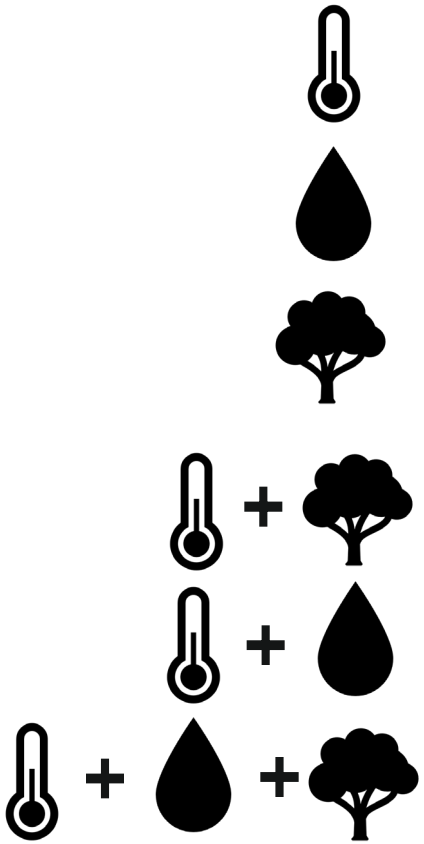
Evaluate potential control measures

management strategies inc. nature-based solutions

Evaluate future conditions based on management strategies

Using predictive tools to understand long-term impacts

Modeling Analysis



- Potential management action analysis
  - Effluent temperature reduction
  - Flow reduction
  - Shading
- Potential combinations of actions for scenario analysis
  - Effluent cooling + shading
  - Effluent cooling + flow reduction
  - Effluent cooling + flow reduction + shading
- Climate change
  - 30 years in future

Modeling Efforts – Preliminary Findings

Analysis	Result 2 - 4 Miles Downstream of WRPs
Effluent Temperature Reduction	No Meaningful Change
Effluent Flow Reduction	No Meaningful Change
Shading	No Meaningful Change
Scenarios	
Effluent Temperature + Flow Reduction	No Meaningful Change
Effluent Temperature Reduction + Shading	No Meaningful Change
Effluent Temperature + Flow Reduction + Shading	No Meaningful Change
Future Baseline (Climate Change)	Increased Temperature
Future Temperature Control	No Meaningful Change from New Baseline

Effluent Temperature Reduction

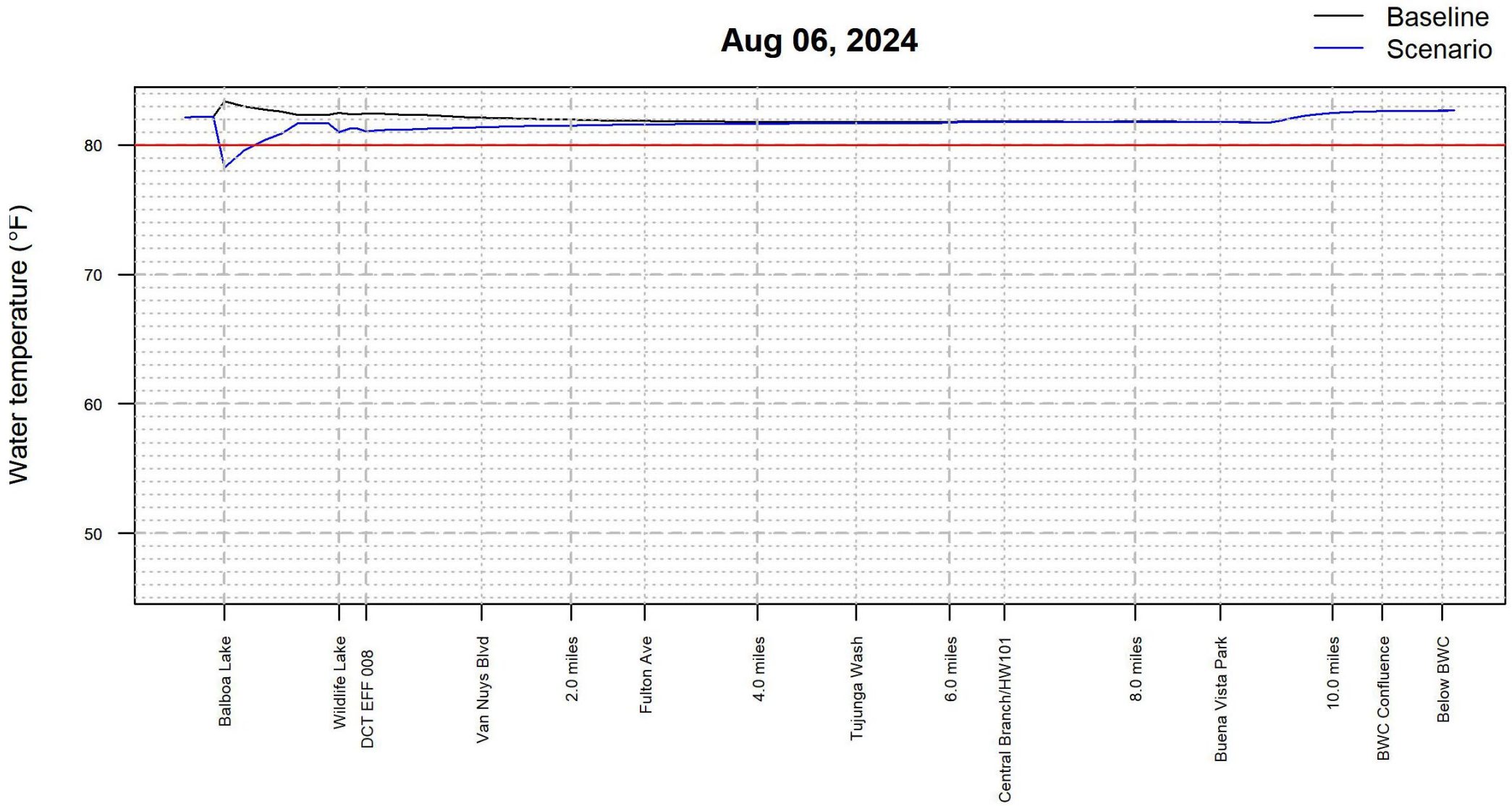
WRP effluent temperatures reduced to ensure limits are met:

- Maximum 80 ^{o}F
- No more than 5 ^{o}F difference between upstream receiving water temperature and temperature downstream of effluent (a.k.a., Δ5°F)

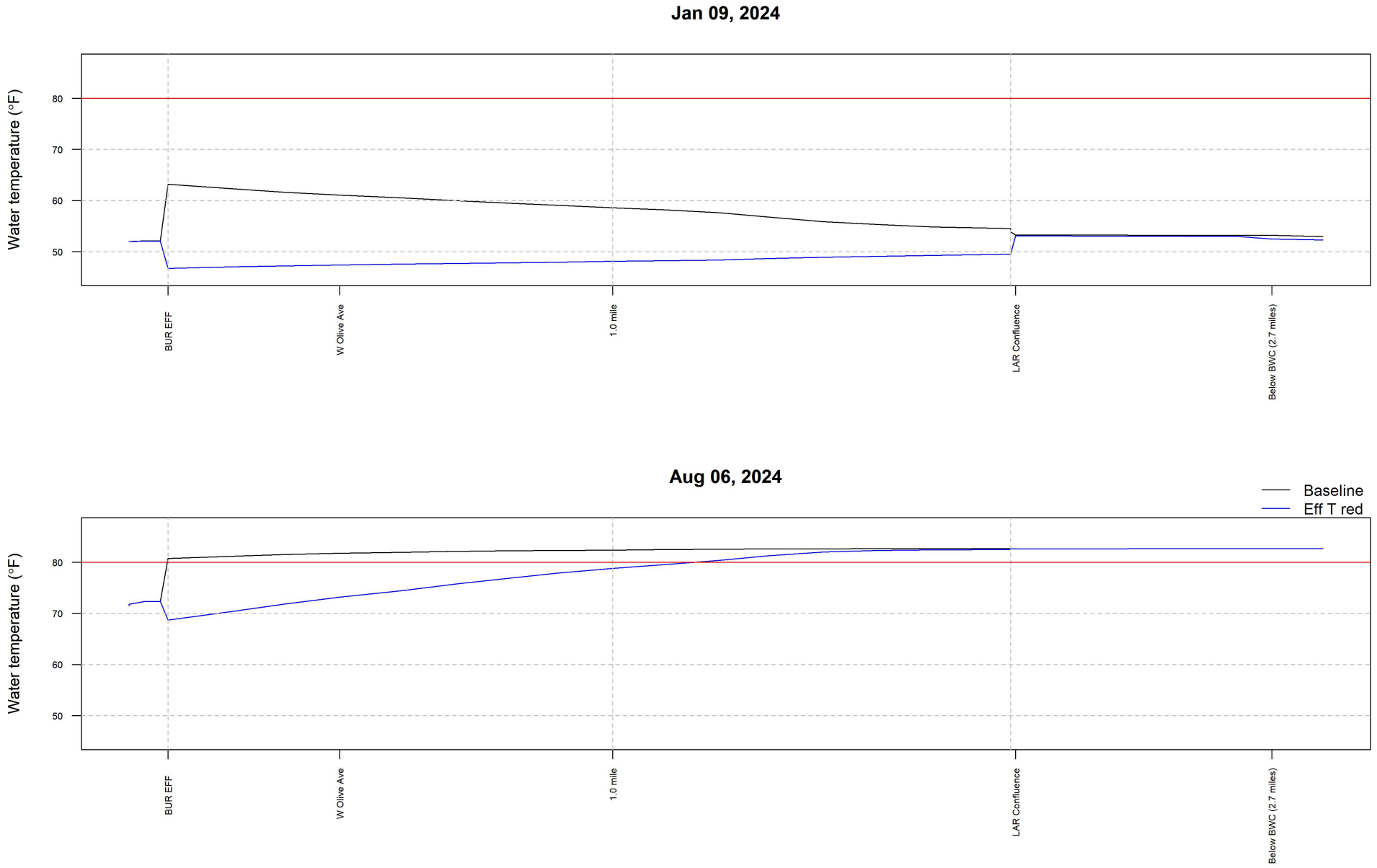
Reviewed 20+ years of data (2000-2024) and found that Δ5°F is the primary driver of reductions needed (fall/winter timeframe)

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

Effluent Temperature Reduction - DCT



Effluent Temperature Reduction - BUR



Effluent Flow Reduction

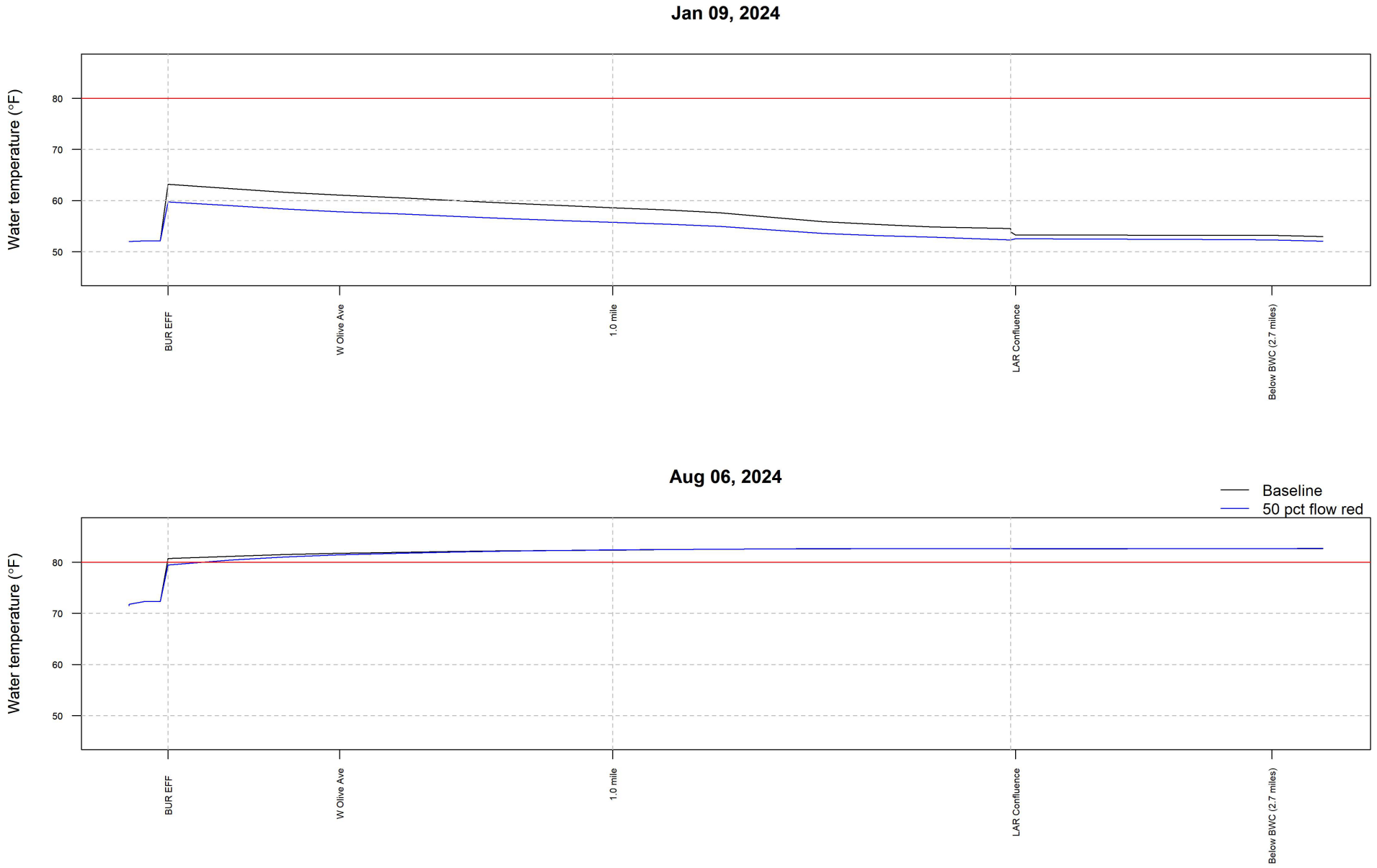
WRP discharge flowrate reduced to reflect increased recycle:

- Current flows 2017-2024 Annual Average Flowrate
- DCT Total Effluent

50% Reduced discharge flowrate results displayed

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

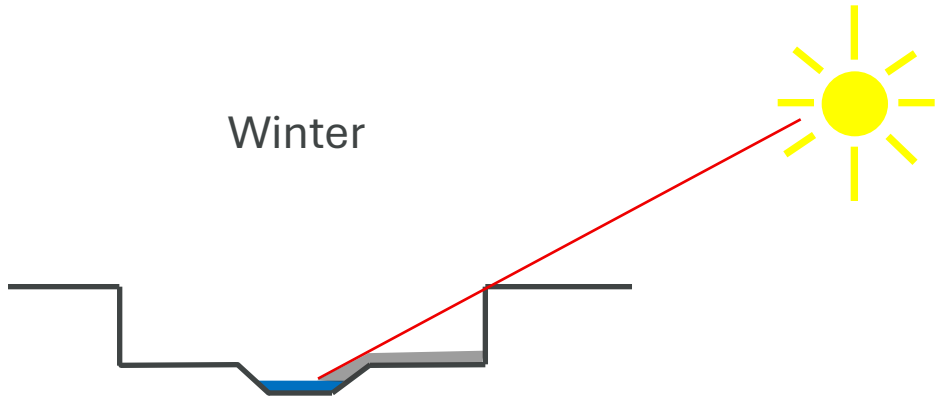
Effluent Flow 50% Reduction - BUR

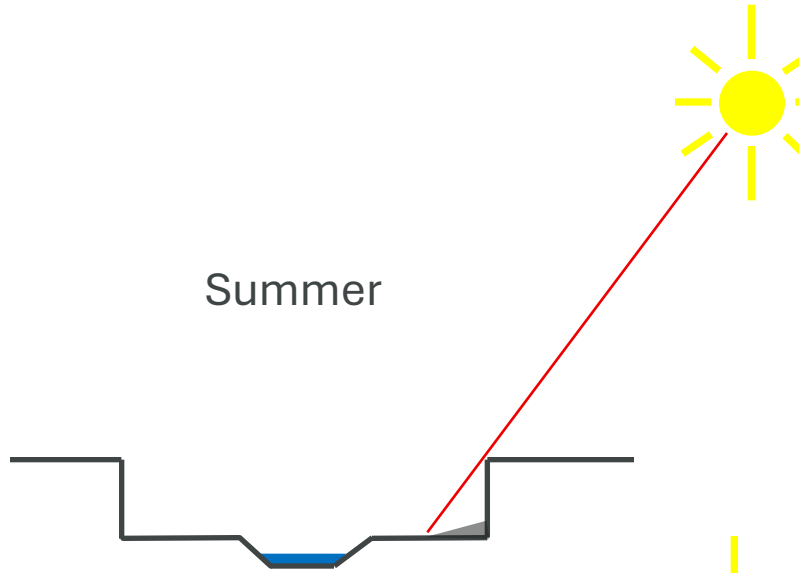


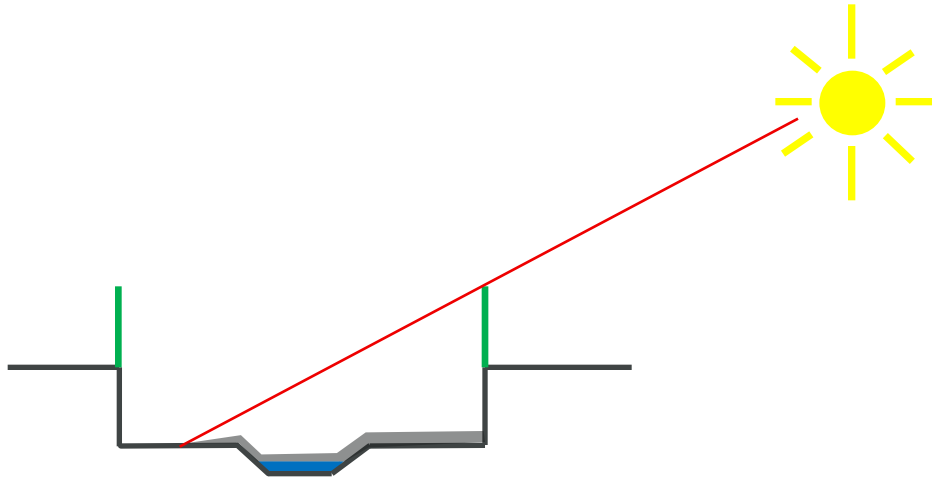
Shading

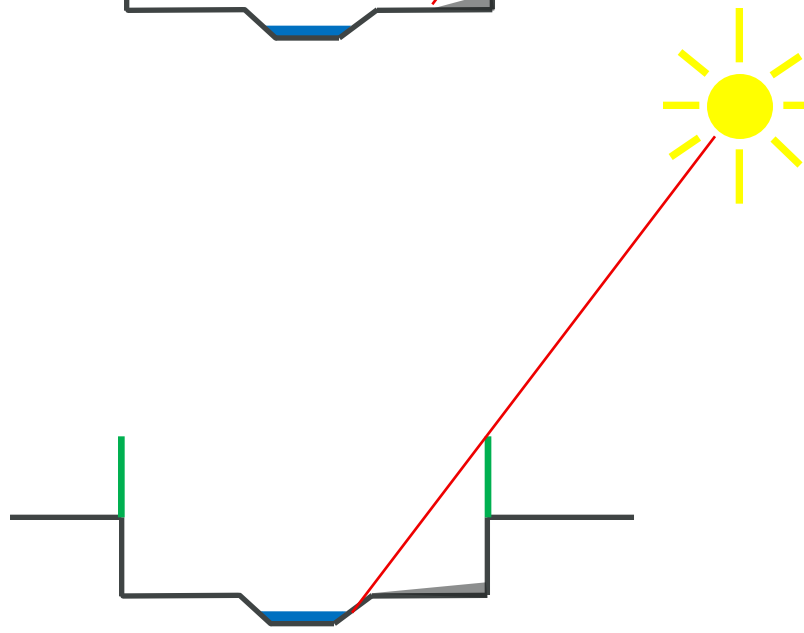
For modeling our first cut was to assume:

- Shading along 100% of the river length
- Each side of the channel
- Height of a mature tree to maximize potential for shading

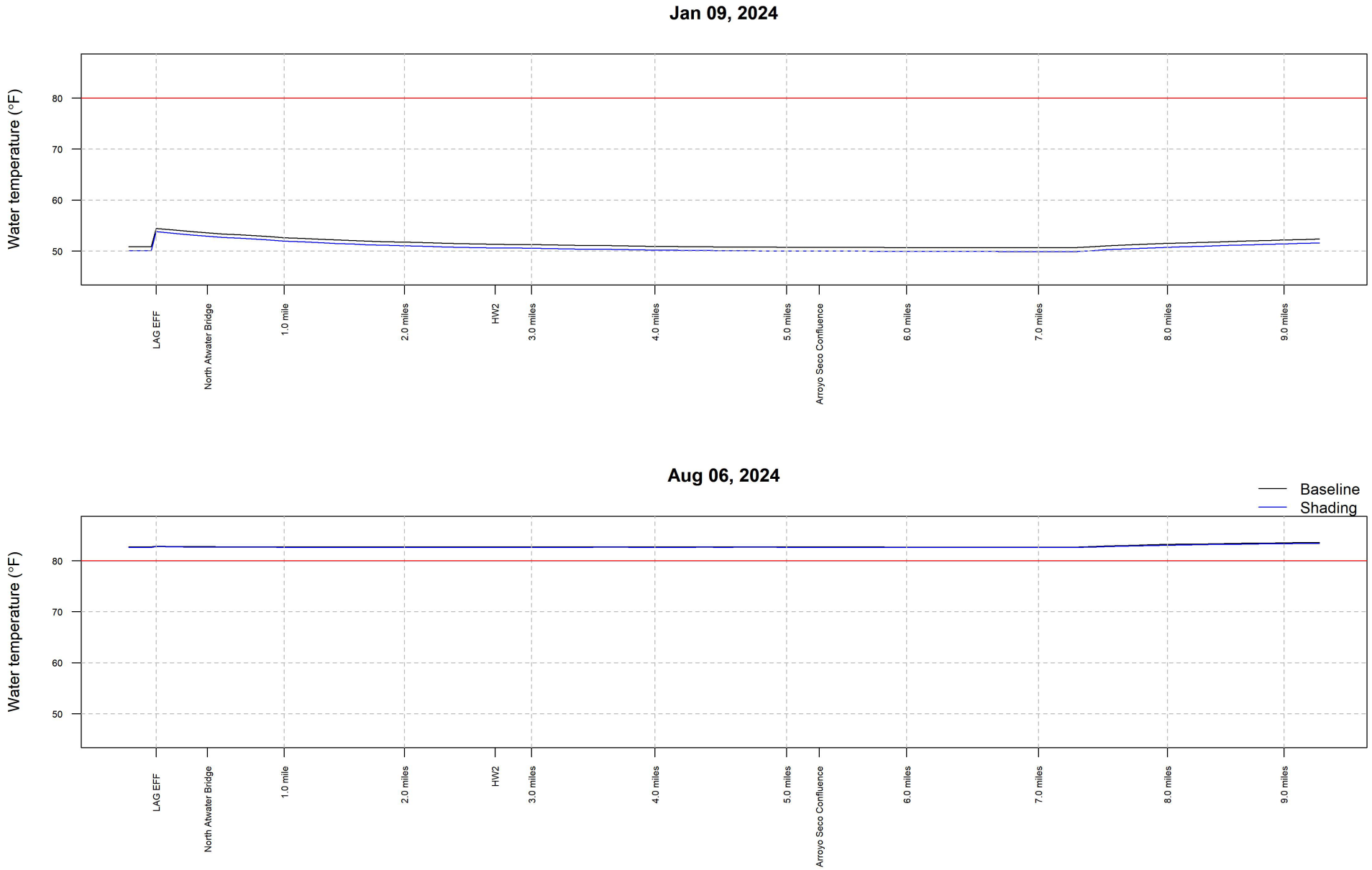








100% Shading - LAG



Scenarios

Scenario: Effluent Temperature + Flow Reduction + Shading

- WRP effluent temperature reduced to ensure limits are met
- 50% Reduced discharge flowrate results displayed
- Shading along channel

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

WRP	Effluent Flowrate (MGD)				
	Current	Reduction			
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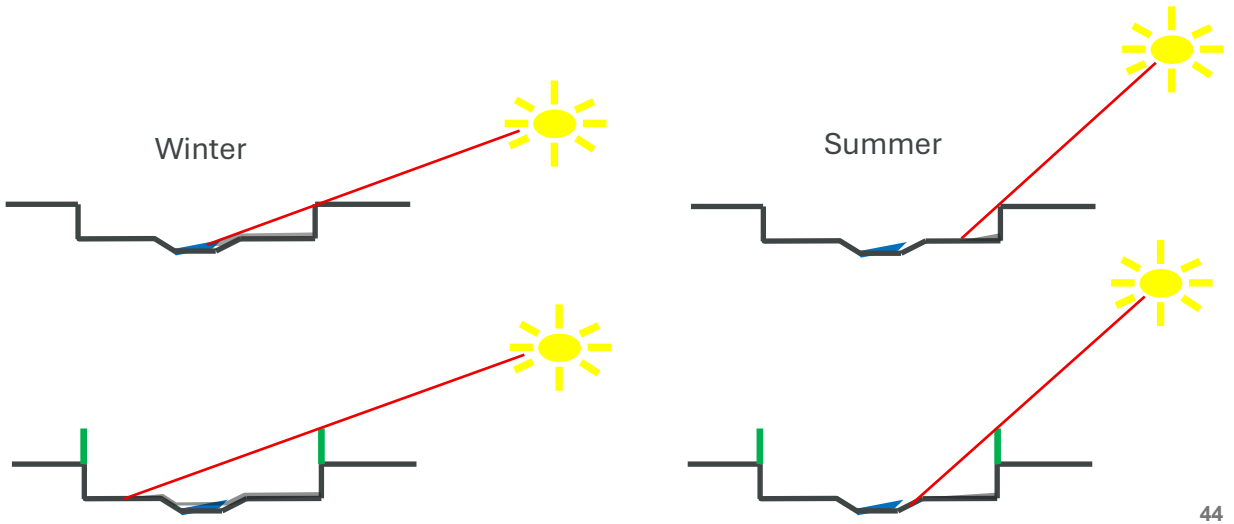
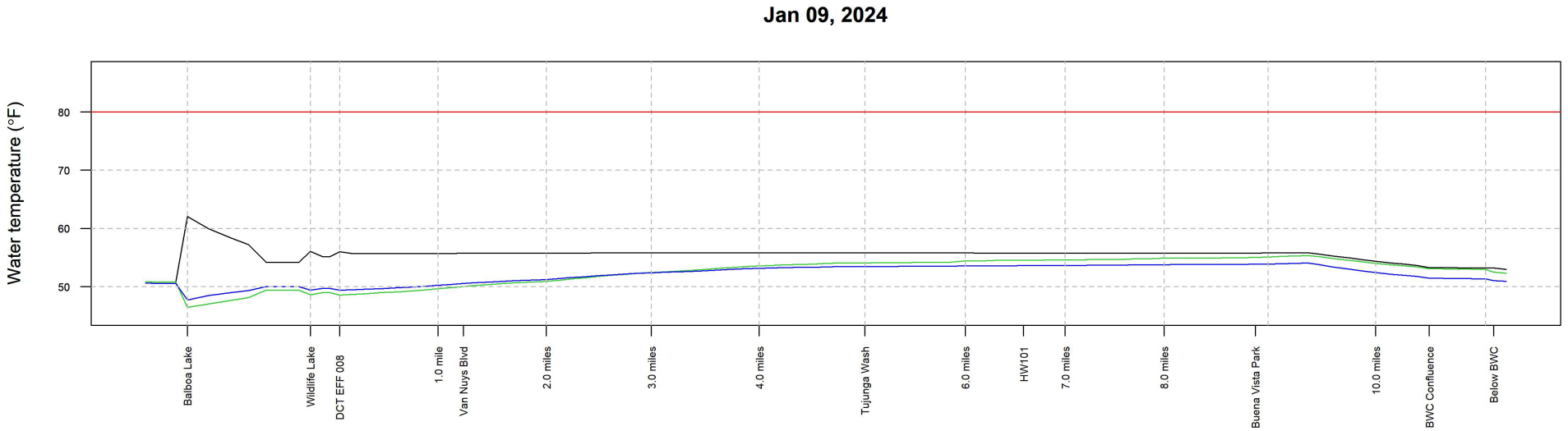
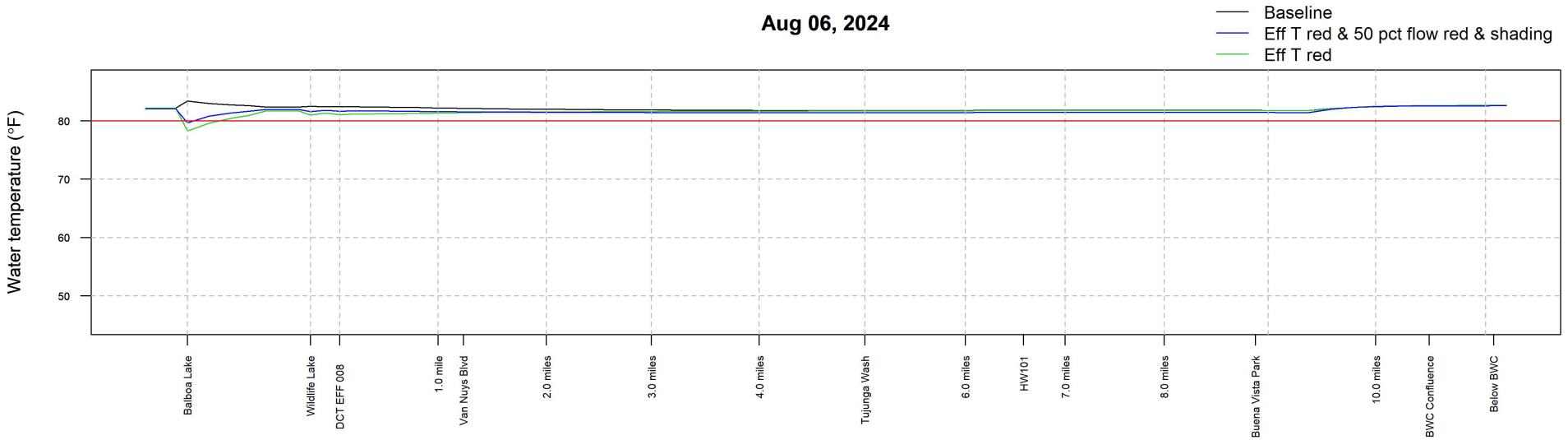


Scenario: Effluent Temperature + Flow Reduction + Shading - DCT





Climate Change

Future Baseline with Effluent Temperature Control

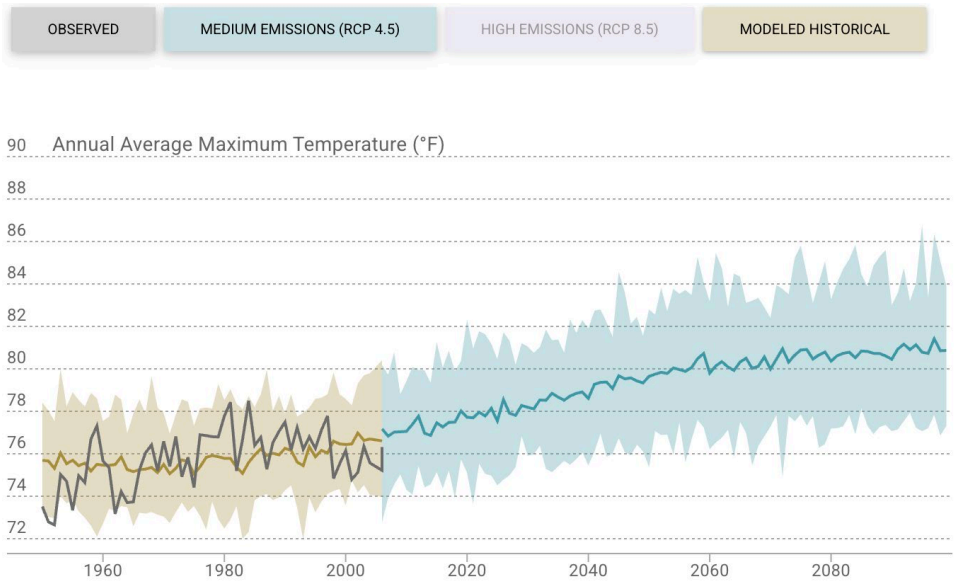
Climate Model: Representative Concentration Pathway (RCP) 4.5

Scripps Institute of Oceanography Downscaling to LA Basin

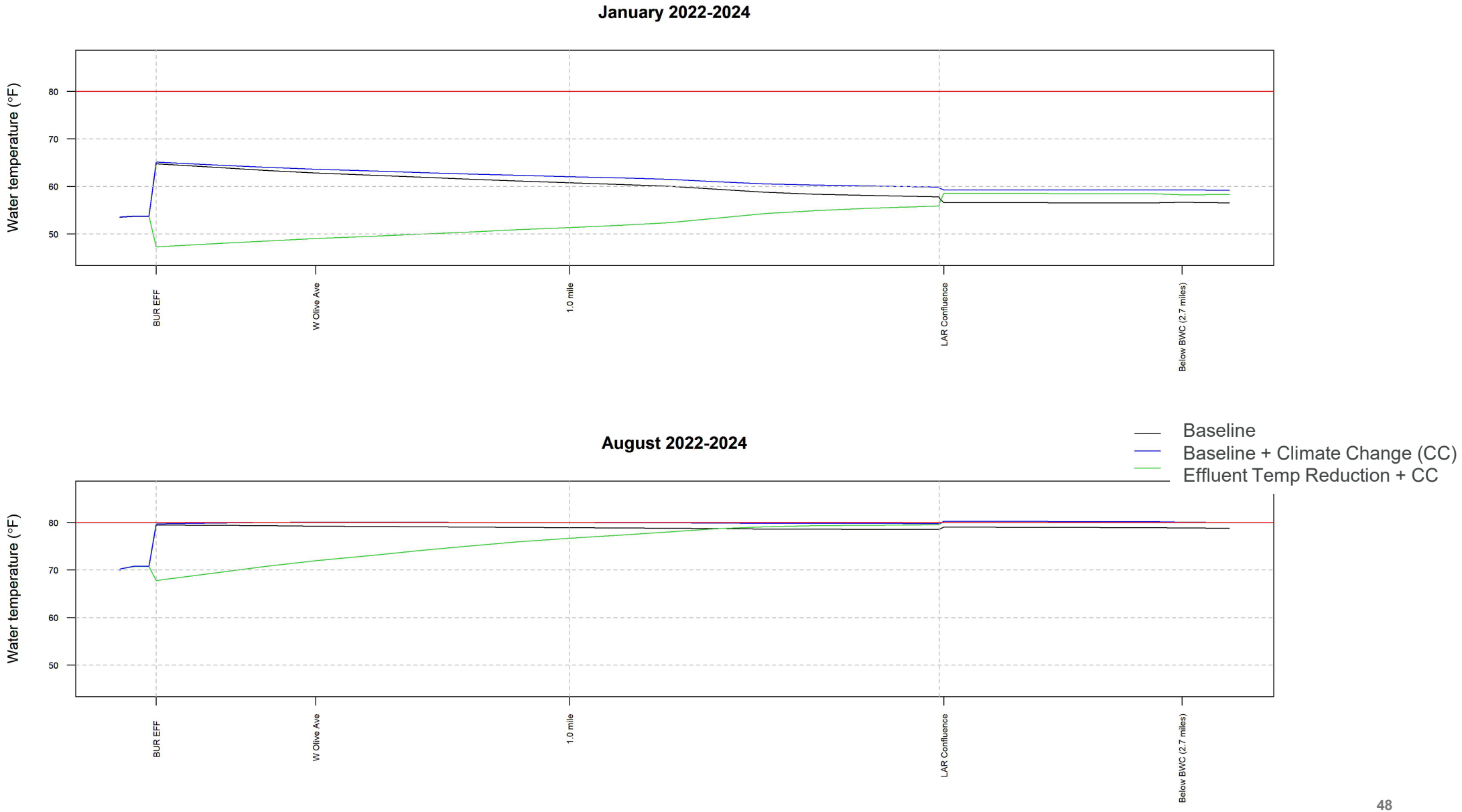
Monthly average climate change effect

WRP effluent reduced to ensure to ensure limits are met

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



30-year Future Baseline with Effluent Temperature Control - BUR

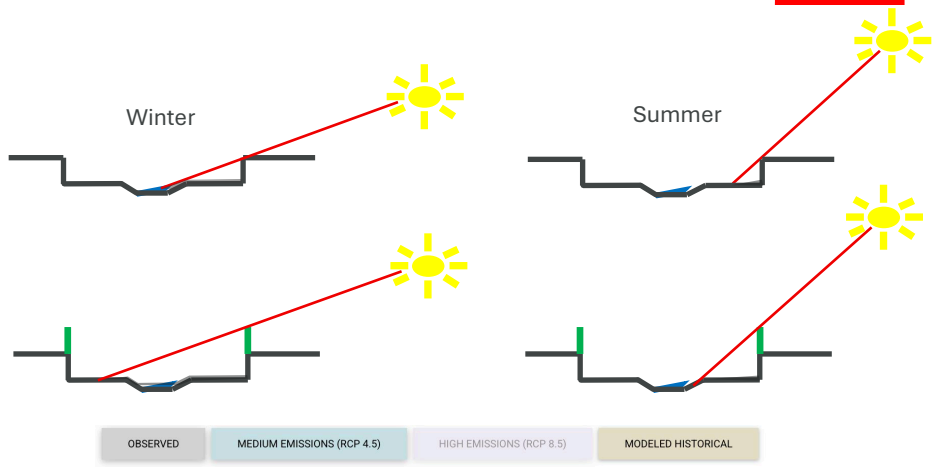


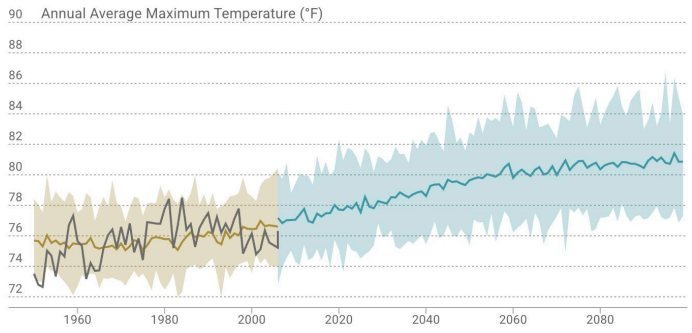
Modeling Summary

- 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
  - Reduces effectiveness of effluent cooling
  - Atmospheric equilibrium achieved in shorter distance
- Shading generally ineffective for LA River
  - Cannot place trees close enough to water
  - Microclimates control water temperature
- Future climate results in 1-2 ^{o}F warmer water in 30 years
- River temperature reaches equilibrium with atmosphere regardless of management action or scenario
  - Generally, within 2 – 4 miles downstream of discharge

Max Temperature Reductions Needed to Attain WQOs		
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





Modeling Efforts – Preliminary Findings

- Regardless of actions there is no meaningful difference in temperatures downstream of the WRPs
- Note that upstream temperatures often already exceed 80^{o}F

Analysis	Result 2 - 4 Miles Downstream of WRPs
Effluent Temperature Reduction	No Meaningful Change
Effluent Flow Reduction	No Meaningful Change
Shading	No Meaningful Change
Scenarios	
Effluent Temperature + Flow Reduction	No Meaningful Change
Effluent Temperature Reduction + Shading	No Meaningful Change
Effluent Temperature + Flow Reduction + Shading	No Meaningful Change
Future Baseline (Climate Change)	Increased Temperature
Future Temperature Control	No Meaningful Change from New Baseline

Wrap Up and Next Steps

Schedule for Implementation

Task	FY 2024/25			FY 2025/26
	10/1-12/31	1/1-3/30	4/1-6/30	7/1-12/31
Workplan Development	Completed			
Secure Permits and Equipment	Completed			
Monitoring	Completed			
Data Compilation + QA/QC	Completed			
Modeling (Validation)	Completed			
Scenario Development	Completed			
Control Measure Evaluation	Nearly Completed			
Modeling (Scenario Analysis)		Nearly Completed		
Reporting				12/1/2025

SC Meetings

Meeting Date	Description
Q1 **Sept 2025**	Meeting to discuss background, project overview, review of Study data, modeling/scenarios, and next steps.

Submittal of Study Report to the Regional Board (and distributed to TAC and SC) December 1, 2025.

Q3 **Jan - Mar 2026**	Meeting to review the Study Report

Questions