



# Lake County Storm Water Program and Infrastructure Improvement

ANGELA DE PALMA-DOW | COUNTY OF LAKE WATER RESOURCES  
THURSDAY SEPT 23, 2021

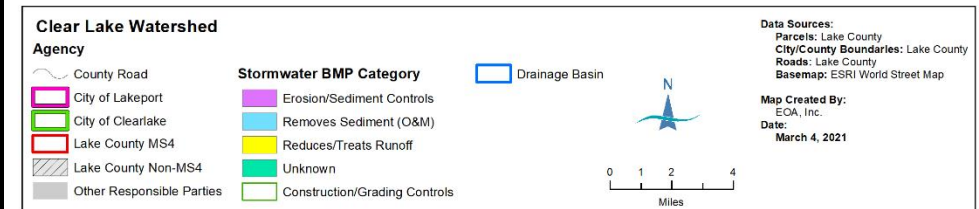
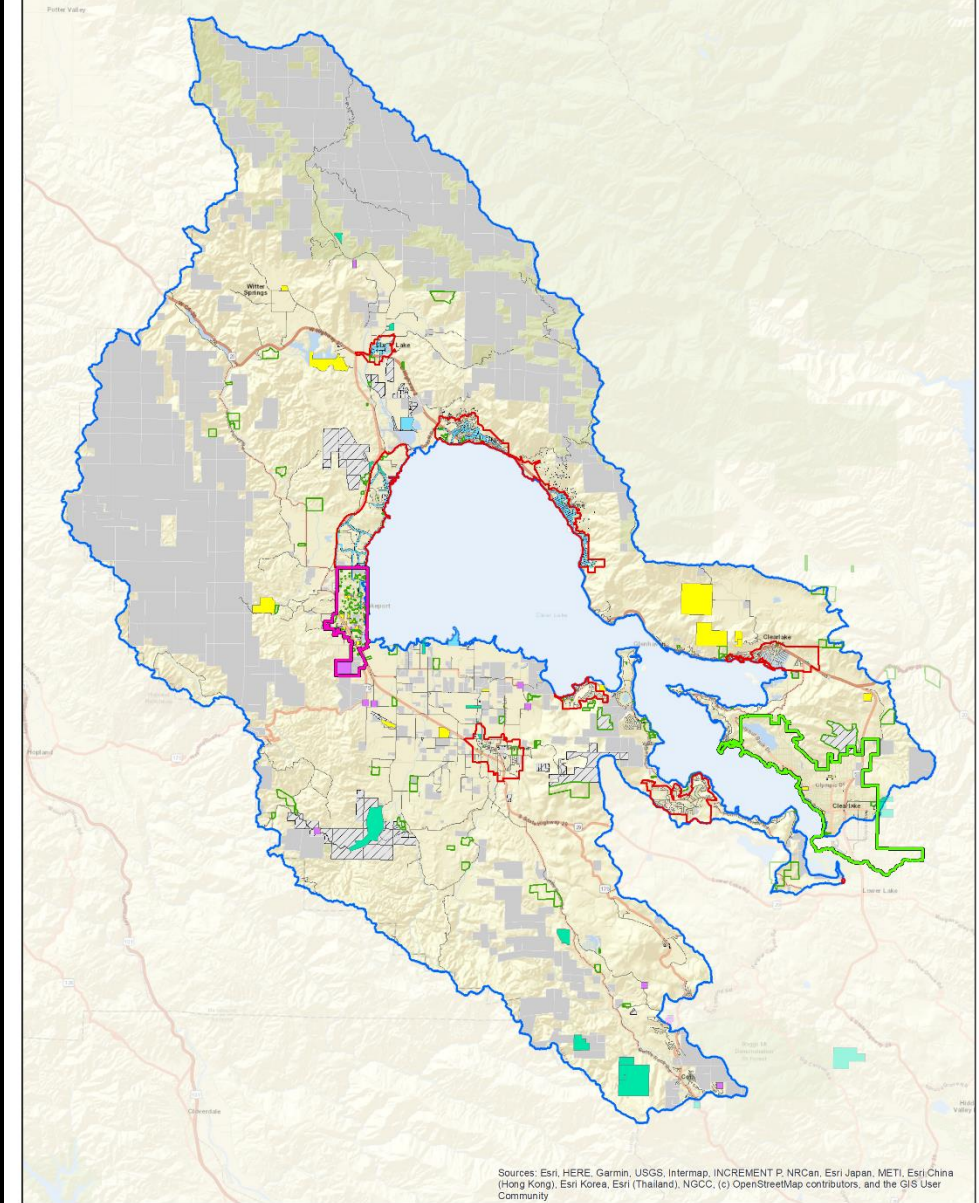
**Blue Ribbon Committee for the  
Rehabilitation of Clear Lake**





# Summary

- ▶ **MOSTLY PROGRAMMATIC PROJECT - 3 YEAR PERIOD \$1.6 M**
  - ▶ Proposed \$500,000 match from County Cannabis Funds
    - ▶ \$300,000 for 3 years of this proposed project
    - ▶ \$200,000 for 2 years following this project → SUSTAINABILITY
- ▶ **NEED FOR THIS WORK**
  - ▶ Direct connection between storm water runoff and lake water quality
    - ▶ Previous Lake Research, Permits and Programs
  - ▶ Sure Bet! UC Davis / USGS conclusion → Improve SW infrastructure to reduce external loads of P & N
- ▶ **NOT AN ISSUE OF GRANT WRITING ABILITY BUT FIT**
  - ▶ WRD awarded \$3.4M in grants Non-stormwater - *since 2018*
  - ▶ WRD not awarded for \$2.8 M in Storm Water / Nutrient Reduction Related Grants – *since 2018*



# Task 1. Project Administration - \$180,590

- ▶ **Lake County Watershed Protection District**
  - ▶ Clean Water Program Oversight and Participation
  - ▶ County of Lake, Lakeport, Clearlake
- ▶ **Legal, Database Management, Purchasing, Monitoring, Training, Reporting**
- ▶ **History of Success**
  - ▶ Clean Water Program Management Council
  - ▶ Formerly Storm Water Advisory Board



Date	Agenda	Minutes	Additional Information
September 9, 2021	<a href="#">Agenda</a>		<a href="#">Attachments</a>
May 13, 2021	<a href="#">Agenda</a>	<a href="#">Minutes</a>	<a href="#">Attachments</a>
February 11, 2021	<a href="#">Agenda</a>	<a href="#">Minutes</a>	
December 10, 2020	<a href="#">Agenda</a>	<a href="#">Minutes</a>	<a href="#">Video</a>
August 27, 2020	<a href="#">Agenda</a>	<a href="#">Minutes</a>	<a href="#">Attachments</a>
February 6, 2020	<a href="#">Agenda</a>	<a href="#">Minutes</a>	<a href="#">Attachments</a> <a href="#">Video</a>
January 16, 2020	<a href="#">Agenda</a>	<a href="#">Minutes</a>	
December 19, 2019	<a href="#">Agenda</a>	<a href="#">Minutes</a>	
December 5, 2019		<a href="#">Minutes</a>	
November 7, 2019		<a href="#">Minutes</a>	
October 17, 2019		<a href="#">Minutes</a>	
September 25, 2019	<a href="#">Agenda</a>	<a href="#">Minutes</a>	
September 19, 2019	<a href="#">Agenda</a>	<a href="#">Minutes</a>	
July 18, 2019	<a href="#">Agenda</a>	<a href="#">Minutes</a>	
April 18, 2019		<a href="#">Minutes</a>	
March 21, 2019	<a href="#">Agenda</a>	<a href="#">Minutes</a>	
February 21, 2019	<a href="#">Agenda</a>	<a href="#">Minutes</a>	
January 17, 2019	<a href="#">Agenda</a>	<a href="#">Minutes</a>	





## Lake County Clean Water Program

County of Lake, City of Lakeport & City of Clearlake  
255 N. Forbes, Lakeport CA 95453  
707.263.2344

[water.resources@lakecountyca.gov](mailto:water.resources@lakecountyca.gov)

September 15, 2021

To: Blue Ribbon Committee for the Rehabilitation of Clear Lake

Re: Letter of Support for consideration of the Lake County Clean Water Program and County of Lake Storm Water Source and Structure Improvement Budget and Project Plan.

Dear Blue Ribbon Committee Voting Members,

We are writing this letter today to ask for your consideration in allocating BRC funding and priority towards the proposed Lake County Clean Water Program and County of Lake Storm Water Source And Structure Improvement Budget and Project Plan. Part of this funding proposed would include:

- i. A physical BMP and storm drain system assessment and improvement plan (including location selection and engineering plans of high-priority and high-impact storm system infrastructure capital improvement projects)
- ii. A review and improvement plan for County and City Programs and Policies guiding storm water management (a previously identified task approved by the BRC)
- iii. A much needed update to the Lake County Storm Water Management Plan (LCSWMP) and related county and city ordinances
- iv. Trash reduction implementation (a previously identified priority project identified by the BRC)
- v. Storm water quality outreach and education (previously identified priority project component by the BRC).

The current LCSWMP was written in 2003, has never been updated, and does not account for current population growth, degraded infrastructure, climate change adaptation needs, nor wildfire impacts and recovery. The LCSWMP has also never been fully implemented in any municipality in the County due to funding and staff shortfalls and disaster recovery efforts. However, the absence of prioritized plans and design projects to guide specific on-the-ground improvements have been the major challenge to improvements that would greatly improve water quality.

For some background, the Lake County Clean Water Program (CWP) is a joint effort between the County's MS4 co-permittees, including the County of Lake, The Watershed Protection District, City of Clearlake and the City of Lakeport, to manage and reduce the impact of storm water on Clear Lake and other aquatic resources in Lake County. The overarching goal of the CWP is to prevent pollutants, including sediment phosphorus and other nutrients, from entering the receiving water bodies through the effective implementation of structural and source Best Management Practices (BMPs) to the maximum extent practicable. Part of the success of any future storm water improvements in Lake County will reside in the concurrent success of the CWP, both in the shared responsibility to protect Clear Lake from storm water runoff from urban areas and the space in between these "urban" jurisdictions (i.e. the unincorporated portions of Lake County). All this space, and potential storm water improvements, are included in this proposed budget and project plan.

## The Clean Water Program Officers and Elected Members

*Jennifer M. Byers*

Jenni Byers, City of Lakeport

*Kylie Clark*

Kylie Clark (Sep 15, 2021 08:25 PDT)

Kylie Clark, City of Clearlake

*Bonne C. Sharp*

Bonne C. Sharp (Sep 15, 2021 08:27 PDT)

Bonne Sharp, City of Lakeport

*Adeline Brown*

Adeline Brown, City of Clearlake

*Angela De Palma-Dow*

Angela De Palma-Dow, County of Lake

*Marina Deligiannis*

Marina Deligiannis (Sep 15, 2021 11:31 PDT)

Marina Deligiannis, County of Lake

*Eddie Crandall*

Eddie Crandall (Sep 15, 2021 11:31 PDT)

Eddie "EJ" Crandall, Lake County Watershed Protection District

*Mireya G. Turner*

Mireya G. Turner (Sep 20, 2021 14:11 PDT)

Mireya Turner, City of Lakeport

*Joyce Overton*

Joyce Overton (Sep 22, 2021 08:36 PDT)

Joyce Overton, City of Clearlake

09/14/2021

Date

09/15/2021

Date

09/15/2021

Date

09/15/2021

Date

09/15/2021

Date

09/15/2021

Date

09/15/2021

Date

09/20/2021

Date

09/22/2021

Date

# Task 2. Infrastructure Assessment & Improvement Planning - \$322,425

- ▶ **Lake County Watershed Protection District**
  - ▶ **Consultant**
- ▶ **Include:**
  - ▶ **On-The-Ground Assessment of Structural Control of Storm Water Infrastructure**
  - ▶ **Prioritization of system upgrades**
  - ▶ **Upgrade designs and plans**





- ▶ Assess & Evaluate Old, Existing Infrastructure (*Left*)
- ▶ Prioritize and Design New Storm Water Infrastructure (*Right*)
  - ▶ Efficient and Effective



What stormwater best management practices (BMPs) to require?



Rain Garden



Biofilter



Subsurface Infiltration



Filter Unit



Porous Asphalt



Pervious Concrete



Retention Pond



Stone Swale



Veg Swale



Gravel Wetland



Sand Filter



Bioretention Unit



Tree Filter

Modified from a presentation by Robert Roseen, PE, PhD, The UNH Stormwater Center

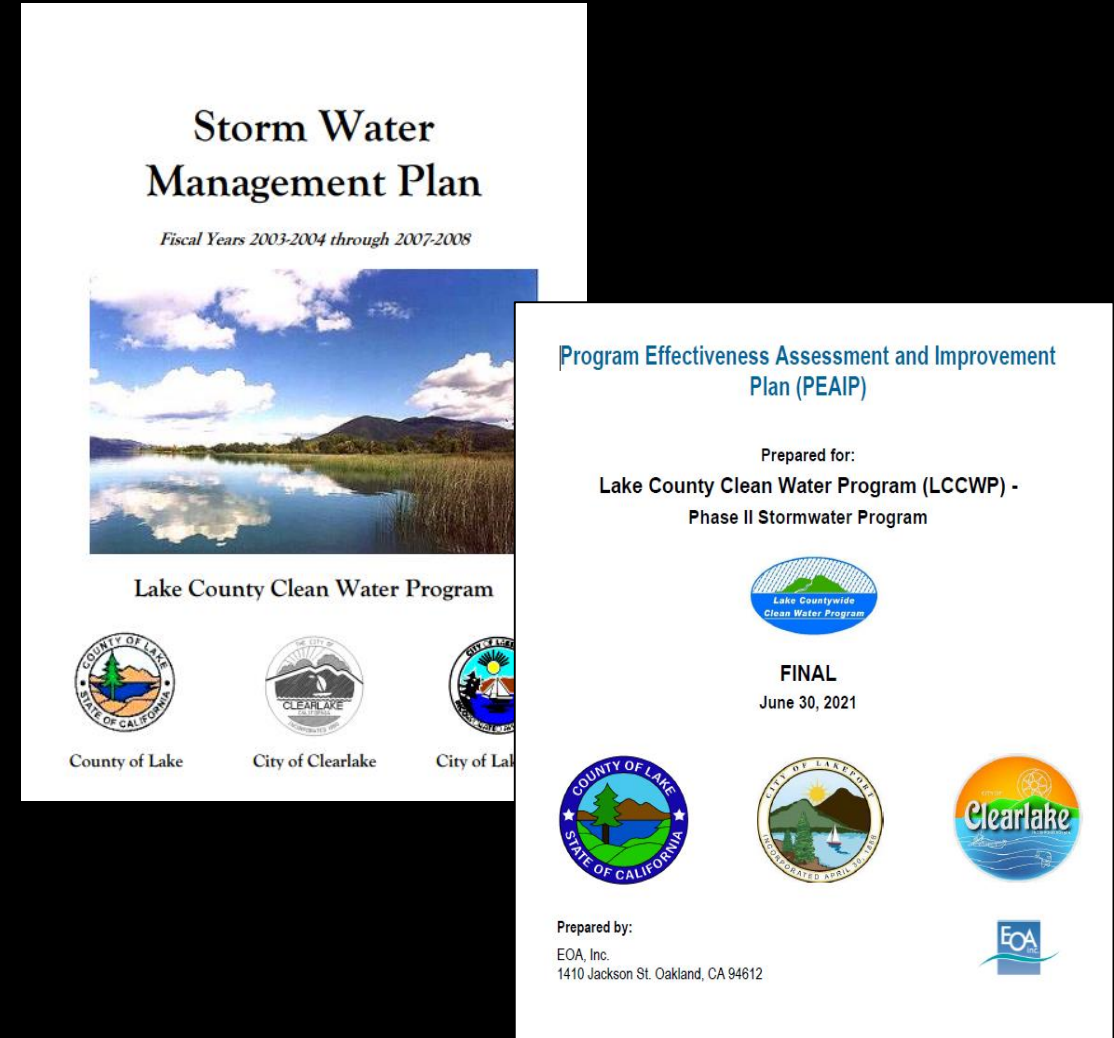






# Task 3. Storm Water Management Policy and Program Review and Improvement - \$339,200

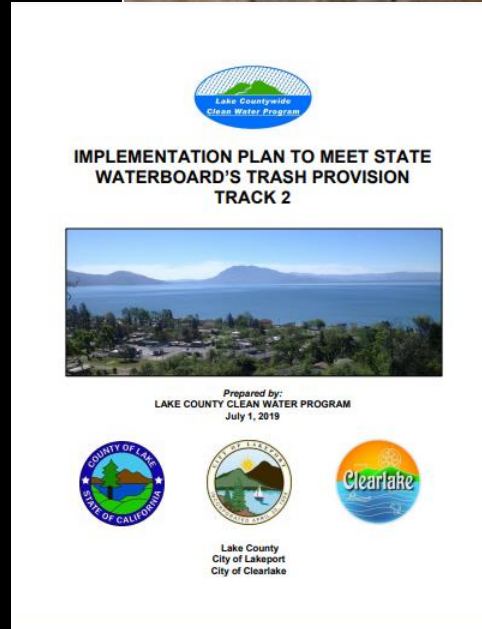
- ▶ Lake County Watershed Protection District, Lake County, Lakeport, Clearlake
  - ▶ Consultant
- ▶ Policy Review & Upgrade
  - ▶ Ordinances, Storm Water Management Plan
- ▶ Program Review
  - ▶ Execution, enforcement, among departments & jurisdictions
  - ▶ Identify true cost, identify Staff needs, O & M for sustainability of program





# Task 4. Trash Plan Implementation - \$706,700

- ▶ Lake County Water Resources, Public Services, Code Enforcement,
  - ▶ Lakeport, Clearlake
  - ▶ Services and contractors
- ▶ Solid Waste Removal & Enforcement
- ▶ Adopt a Drain / Adopt a Street Program
- ▶ Creek And Streets Clean Up Events & Programs
- ▶ Illicit Discharge Spill Response





# Task 5. Outreach and Education - \$179,300

- ▶ Lake County Watershed Protection District, Lake County, Lakeport, Clearlake
- ▶ Create Educational Content
  - ▶ Materials & Curricula
- ▶ Create Outreach Content and Distribution
  - ▶ All formats (video, audio, digital, interactive)
- ▶ Create Legacy of Storm Water and Water Quality Awareness and Appreciation in Lake County



**KPFZ 88.1  
Sunday  
Nov 22nd!**

3pm on KPFZ "What's Next"?  
- Post-Fire WQ Recovery  
- Clean Water Program  
- Storm Water Season  
- Flood After Fire & more!

Join Betsy on Sunday November 22, 2020 from 3-4 pm KPFZ 88.1 with her guest Angela from Water Resources Department. They will discuss many seasonal topics about Lake County aquatic resources. Listen & Learn about your favorite Lake County Lakes & Streams!

**What can  
you do to  
help protect  
Clear Lake?**

**Nutrient Management in the  
Clear Lake Watershed**

Logos: Clear Lake Watershed Council, County of Lake Water Resources, Clear Lake National Recreation Area, Lake County Water Board, Clear Lake Regional Water Treatment Plant, MCRC, and a green leaf logo.



		2022				2023				2024				2025	2026
Task	Subtask	W	SP	SU	F	W	SP	SU	F	W	SP	SU	F		
1.0 Project Administration	1.1 Project Coordination (multiple staff)	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	1.2 Accounting	x	x	x	x	x	x	x	x	x	x	x	x		
	1.3 Legal / County Counsel	x	x	x											
	1.4 Data Collection, Analysis, Summary, Reporting*	x	x	x	x	x	x	x	x	x	x	x	x		
	1.5 Supplies, Office and Field Materials*	x	x	x	x	x	x	x	x	x	x	x	x		
	1.6 Monitoring (nine sites, multiple events, multiple staff)*	x			x	x			x	x			x	x	x
	1.7 Purchase Monitoring Supplies*			x	x			x	x			x	x		
	1.8 Purchase and install Software	x				x				x				x	x
	1.9 Conduct Training			x	x			x	x			x	x	x	x
2.0 Infrstructure Assessment and Improvement Planning	2.1 Consultant RFP Development, Selection, Agreements, Meetings, Facilitation	x	x	x											
	2.2 Storm Water System Infrastructure Assessment				x	x	x	x	x	x					
	2.3 Storm Drain Upgrade Prioritization				x	x	x	x	x	x					
	2.4 Upgrade Designs and Engineering Plans							x	x	x	x				
	2.5 Final Reporting and Presentations											x	x		
3.0 Storm Water Management P & P Review and Improvement	3.1 Consultant RFP Development, Selection, Agreements, Meetings, Facilitation	x	x	x											
	3.2 Task Coordination (tracking, faciliation, meeting, reporting)	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	3.3 Policy Review and Improvement Plan (Ordinance, Storm Water Management Plan)				x	x	x	x	x						
	3.4 Program Review and Improvement Plan (Execution, Implementation of the policy, multiple jurisdictions & departments )				x	x	x	x	x	x	x				
	3.5 Storm Water Improved Policy and Program Reporting and Reccomendations (Draft updated ordinance, program needs, O & M funding cost estimation etc.)				x	x	x	x	x	x	x	x	x		
4.0 Trash Plan Implementation	4.1 Task Coordination (Trash Workgroup Facilitation)	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	4.2 Creek Clean up Events		x		x		x		x		x		x	x	x
	4.3 Solid Waste Removal and Enforcement (towing, dumping, vessel pick up)* ~higher estimates	x	x	x	x	x	x	x	x	x	x	x	x		
	4.4 Adopt a Drain / Street Program	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	4.5 Illicit Dicharge, spill response program audit and tracking	x	x	x	x	x	x	x	x	x	x	x	x		
	4.6 Purchase Materials and Supplies			x	x			x	x			x	x		
5.0 Outreach and Education	5.1 Task Coordination and Facilitation*	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	5.2 Outreach Coordinator (Interns, Civic Spark Fellows)				x	x	x	x	x	x	x	x			
	5.3 Materials (factsheets, brochures, billboards, signs)				x	x	x	x							
	5.4 Digital marketing (social media, ads)				x	x	x	x	x	x					
	5.5 Stormwater PSA and videos				x	x	x	x	x	x					



# Thank you for your consideration!

**QUESTIONS?**

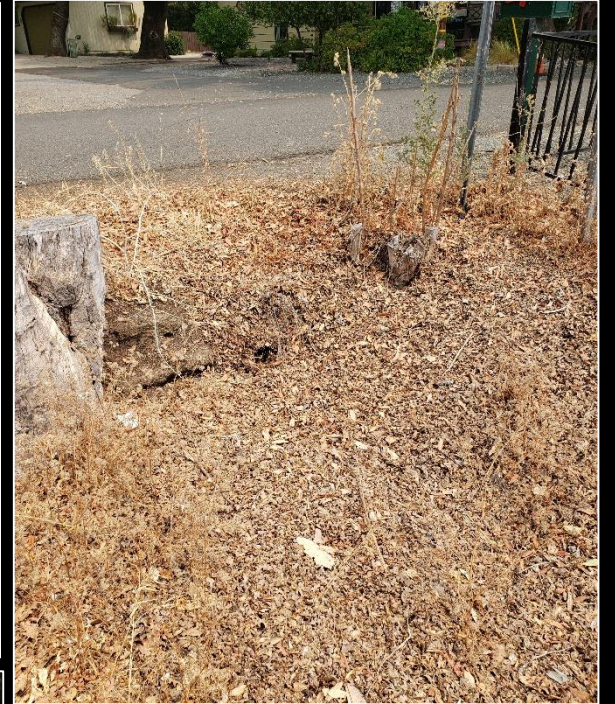
**LAKE COUNTY WATERSHED  
PROTECTION DISTRICT**

**(707)263-2344**

**PROGRAM CONTACT:**

**ANGELA D. DOW**

**ANGELA.DEPALMA-  
DOW@LAKECOUNTYCA.GOV**





Task Description (brief- 1 sentence)	Suggested Response Party	Amount
1. Project Administration	County of Lake & Clean Water Program (Co-Permittees City of Clearlake and Lakeport)	Estimated ~\$180, 590
2. Infrastructure Assessment and Improvement Planning	County of Lake will coordinate, work completed by a consultant	Estimated ~ \$322,425
3. Storm Water Management P & P Review and Improvement	County of Lake will coordinate, work completed by a consultant	Estimated ~\$339,200
4. Trash Plan Implementation *	County will coordinate and execute, with assistance from Public Services and other partners	~706,700.00
5. Outreach and Education	County will coordinate with Partners from <u>AmeriCorp</u> and consultants.	~\$179,300
	<b>Subtotal</b>	\$1,728,215.00
	<b>Expected Overhead or Administrative Fees:</b>	(10% Estimated) ~\$172, 821.50
	<b>BRC Projected Total:</b>	<b>~\$1,601,036.50</b>
	<b>Expected Match From County</b>	<b>(\$300,000)</b>
	<b>Project Cost Over 3 year</b>	~\$1,901,036.50
	<b>Project Cost Over 5 years</b>	~\$2,101,036.50

\*This component is estimations, still waiting on information from Public Services on Free Dump Day and solid waste removal costs and tracking. Amounts provided are very rough estimates and based on informal conversations with other counties who already have well-established counties.



## BMP Calculator Training June 2021

[BMP Effectiveness Calculator Tool Training Powerpoint](#)

[BMP Effectiveness Calculator Tool Guidance document](#)

[BMP Calculator Training Video](#)

[printer-friendly](#)



Search

Excel spreadsheet titled "LCCM BMP Calculator Tool V.3.1.5-21 For Training.xlsx". The spreadsheet displays a table for "Section I - Stormwater BMP Inventory". The table has columns for Permittee/Agency, Project Identifier (ID), City/Town, Is the BMP within an MS4 boundary?, Location Name/Description, APN 1, APN 2, APN 3, Street Address (if Available), Latitude, and Longitude. The data rows show various locations in Lakeport, MS4, including Lakeport Fire District, Community Center, and several Public Park & Parking lots.

Permittee/Agency	Project Identifier (ID)	City/Town	Is the BMP within an MS4 boundary?	Location Name/Description	APN 1	APN 2	APN 3	Street Address (if Available)	Latitude	Longitude
Lakeport MS4	LP75			Lakeport Fire District	02537402			445 N MAIN ST		
Lakeport MS4	LP74			Community Center	02538108			500 N MAIN ST		
Lakeport MS4	LP79			Public Park & Parking lot	02538109			20 FIFTH ST		
Lakeport MS4	LP86			Public Park & Parking lot	02538225			15 FIFTH ST		
Lakeport MS4	LP80			Public Park & Parking lot	02538324			20 THIRD ST		
Lakeport MS4	LP71			Parking lot	02541102			75 THIRD ST		
Lakeport MS4	LP215			Parking lot	02541102			75 THIRD ST		

Lake County Storm Water BMP Calculator Training - Lake County Water Resources & EOA, Inc.

Unlisted

## Program Documents & Links

### Lake County Documents & Links

- Phase II Lake County Program Effectiveness Assessment and Improvement Plan - 2021
- \*NEW\* Nutrient Management Brochure for the Clear Lake Watershed [English only at this time, hardcopies available upon request]
- Stormwater Management Plan
- Clear Water Program Management Council
- Clean Water Program Agreement - 2019
- County of Lake CWP Management Council Bylaws
- Erosion Control Flyer
- Final 2008.09 Annual Report
- Clear Lake Nutrient TMDL
- Lake County MS4 TMDL Drainage Areas-2019
- Lake County Clean Water Program Trash Track II Implementation Plan 2019
- Clean Water Program Agreement - 2004 (Stormwater Program Agreement)

### Clean Water Annual Reports

- Lake County Clean Water Program Program Effectiveness Assessment - Report 2021
- FY 2010-2011
- FY 2011-2012
- FY 2012-2013
- SMARTS Public User Access Page

### Training Resources

[BMP Calculator Training June 2021](#)

### General Stormwater Documents & Links



# Examples of Success

## ► Annual Baseline Monitoring



Table 1: Representative Monitoring Locations

Region Name	Site Name	Latitude	Longitude	Closest Address
City of Clearlake	CL1	38.95184	-122.642	14460 Lakeshore Drive, Clearlake, CA
Clearlake Oaks	CO1	39.02295	-122.667	520 Schindler St, Clearlake Oaks, CA
Clearlake Riviera	CR1	38.9628033	-122.731071	9427 Konocti Bay Rd, Kelseyville, CA
Kelseyville	K1	38.98224692	-122.8438834	3616 Merritt Rd, Kelseyville, CA
City of Lakeport	LP1	39.040489	-122.912023	Outfall on First Street, Lakeport, CA
Lower Lake	LL1	38.9137229	-122.609976	9585 Lake St, Lower Lake, CA
Lucerne	L1	39.09584919	-122.8014967	5915 CA-20, Lucerne, CA
Nice	N1	39.12203823	-122.8660893	2503 Lakeshore Blvd, Nice, CA
North Lakeport	NL1	39.09049812	-122.9030792	4220 Lakeshore Blvd, Lakeport, CA
Soda Bay	SB1	39.00403358	-122.7874332	6630 Soda Bay Rd, Kelseyville, CA
Upper Lake	UL1	39.16194759	-122.9115898	9850 Bridge Arbor N, Upper Lake, CA
Hidden Valley Lake	HVL1	38.78406829	-122.5429399	19917 Mountain Meadow S Hidden Valley Lake, CA
Middletown	M1	38.75639598	-122.6078505	St. Helena Creek Rd, Middletown, CA

