

2<sup>nd</sup> Steelhead Summit

October 27 & 28, 2016 in San Luis Obispo, CA



#### **Session Overview**



- California Trout
- City of San Luis Obispo
- Sustainable Conservation
- California Conservation Corps
- Cachuma Operation and Maintenance Board
- Wildnote

The year's Summit agenda highlighted adaptive genomic variation, steelhead recovery planning, coastal monitoring status reports, fish passage planning, and water conservation efforts.

The full-day symposium was followed by concurrent field tours to restoration sites that showcase fish passage improvements and water conservation projects.



# + Presentations

#### **Instream Flow Needs for Improving for Steelhead Recovery** Part 2

(Slide 4) Building a Community Water Conservation Program Regina Hirsch, Sierra Watershed Progressive

### Building a Community Water Conservation Program

Oct 2016 Steelhead Summit













21st CENTURY SOLUTIONS FOR A SUSTAINABLE WATER SUPPLY FOR CALIFORNIA





# Water Conservation Projects



# Water Conservation Projects

What is meaningful?



# Potable water savings

# Water Conservation Projects

Potable water savings

What is meaningful? (More water for instream flow

### groundwater protection

# Water Conservation Projects

Potable water savings



catastrophic resiliency

groundwater protection

# Water Conservation Projects reduced of

reduced carbon footprint

Potable water savings



#### more connected user

economic incentives

catastrophic resiliency

groundwater protection

habitat restoration

# Water Conservation Projects reduced of

reduced carbon footprint

watershed resource protection

Potable water savings



more connected user

job creation

catastrophic resiliency

habitat restoration

economic incentives

groundwater protection

self-reliance

efficiency

modeling

reduced carbon footprint

reduced

Water Conservation

Projects

change in consumer behavior

water balance

watershed resource protection

**Potable** surplus water savings

self-reliance

What is meaningful?

grass roots empowerment

More water for instream flow

### meaningful flow:



### meaningful flow:

how to change upland effects (one county at a time)



"People are always looking for the single magic bullet that will totally change everything. There is no single magic bullet."

-Temple Grandin

# steps to success to meaningful conservation

#### STEP 1: identify

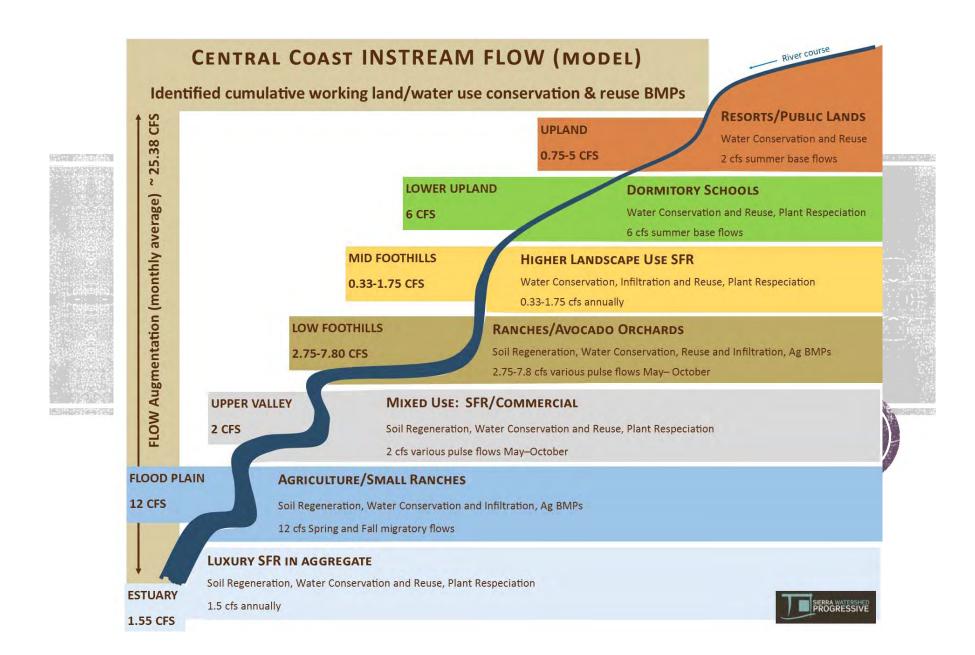
# where, who, why, why, what?

Watershed characteristics

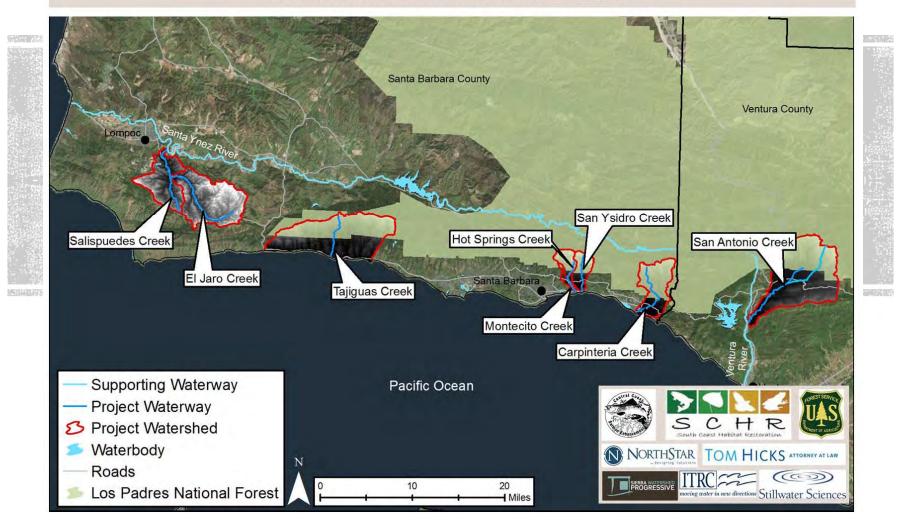
Decision maker

Your objective, Their objective

Appropriate tools



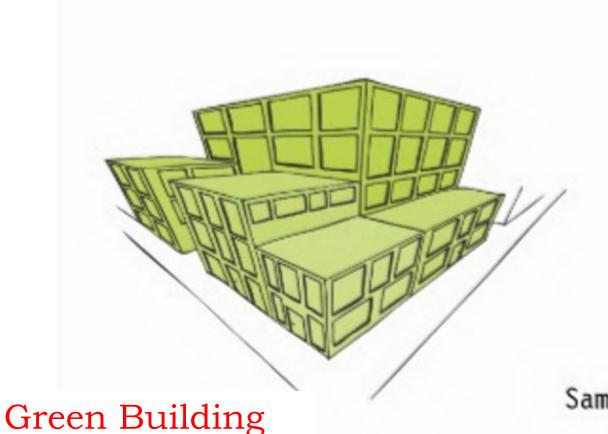
### PLANNING AND FEASIBILITY STUDY FOR INTEGRATED WATER CONSERVATION, REUSE, AND TRANSACTIONAL STRATEGIES TO ENHANCE STREAMFLOWS IN SANTA BARBARA AND VENTURA COUNTIES



#### STEP 2: the interview

## only connect

"objectives over tea will outlast you and me"



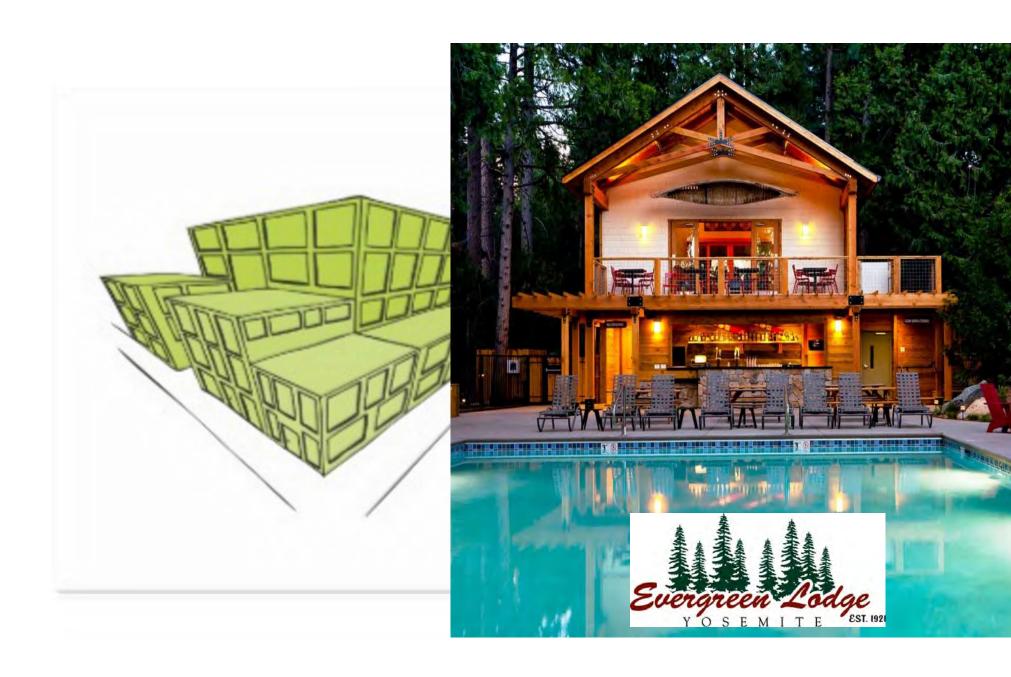
Department

### YOUR

Company County Neighborhood HERE

(4586) 59531 your@email.com 338 Sample Str. Sample Town, CA 42086

23













#### STEP 3: identify

# stengthen the weak link first

everyone wants their problems heard





## PROPOSED Project Catalog

OUSD Stormwater LID Project

1)

**V** 1)







#### 200 . . **PRELIMINARY** PROJECT Project Area **PROJECT** Asphalt Removal/Naturescapes Playground TOPA TOPA 695,128 1 Permeable Pavement Parking Lot TOPA TOPA 222,654 1 Bioswale Center School TOPA TOPA **RANKING** Bloswale Upper Playground 47,6601 Rainwater Capture for Food for Thought Garden Project TOPA TOPA 113,000 113,000 141,467 Bioswale Front School TOPA TOPA 3,420 **OUSD Stormwater LID Project** Bioswale Heavy Metal Remediation Parking Lot TOPA TOPA 470,988 11,400 Bioswale Corridor Project TOPA TOPA 65,041 7,600 Asphalt Removal Playground MATILIJA JR HIGH 172,696 1 Permeable Pavement Parking Lot MATILIJA JR HIGH 722,182 1 Rainwater Capture for Food for Thought Garden Project MATILIJA JR HIGH 228,000 152,000 Rainwater Capture for Ocean Friendly Gardens Project, Irrigation and Toilet 1) Use this table to see valued benefits to OUSD, MATILIJA JR HIGH 716,000 230,000 as well as ranking for SWRGP Prop 1 Grant ask. Bioswale Lower Athletic Field/Erosion Control MATILIJA JR HIGH 3,100,000 1 HERSELET. SHAPE TO Note: water savings, stormwater calculations Rainwater Capture for Irrigation Reuse NORDOFF HIGH SCHOOL 183,600 136,000 are draft/preliminary pending more data. Rainwater Capture for Library Toilet and Food for Thought Garden NORDOFF HIGH SCHOOL 391,900 235,300 Stormwater Bioswale Overflow to Ojai Meadows Preserve NORDOFF HIGH SCHOOL 1.800.000 1 2) Note that ROI is based on preliminary con-Bioswale Heavy Metal Remediation Parking Lot NORDOFF HIGH SCHOOL 114.383 1 struction/planning budgets, within 20% error. Grasscrete Parking Lot NORDOFF HIGH SCHOOL 1,844,423 11,400 3) Construction time frame for grant is 4 years, Pool deck replacement - Permeable Pavers NORDOFF HIGH SCHOOL 170,000 MEINERS OAKS ELEMENTARY Bloswale Corridor Project 1,200,000 including planning. MEINERS OAKS ELEMENTARY Rainwater Capture for Food for Thought Garden Project 85,000 MEINERS OAKS ELEMENTARY 3,515,589 1 Nature Play Scapes with Irrigation Stormwater Reuse

Project TOTALS\*\*

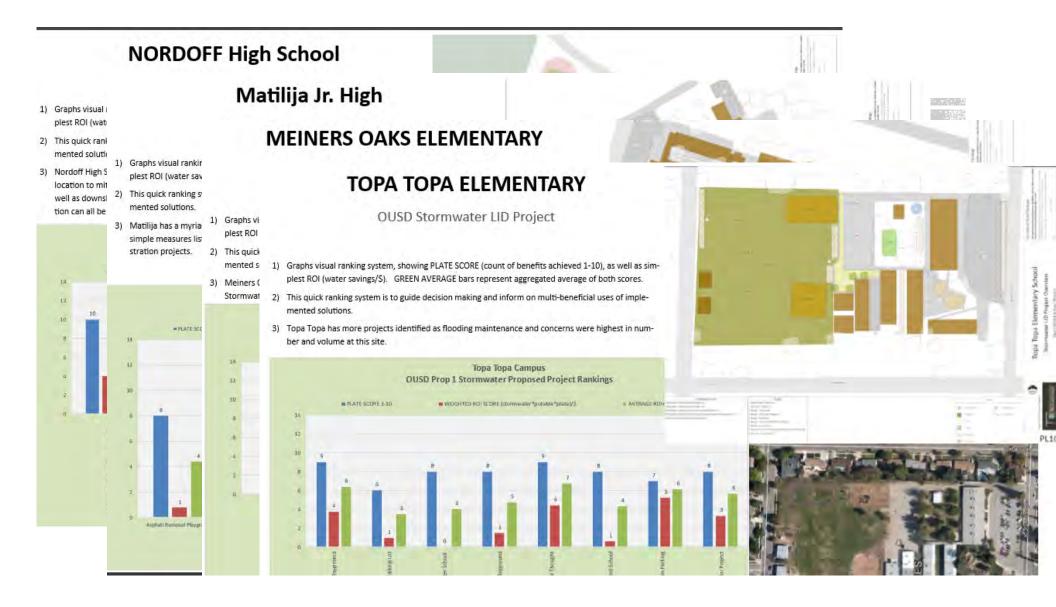
G/v to acre ft/vr

12,484,120

900,128

2.76

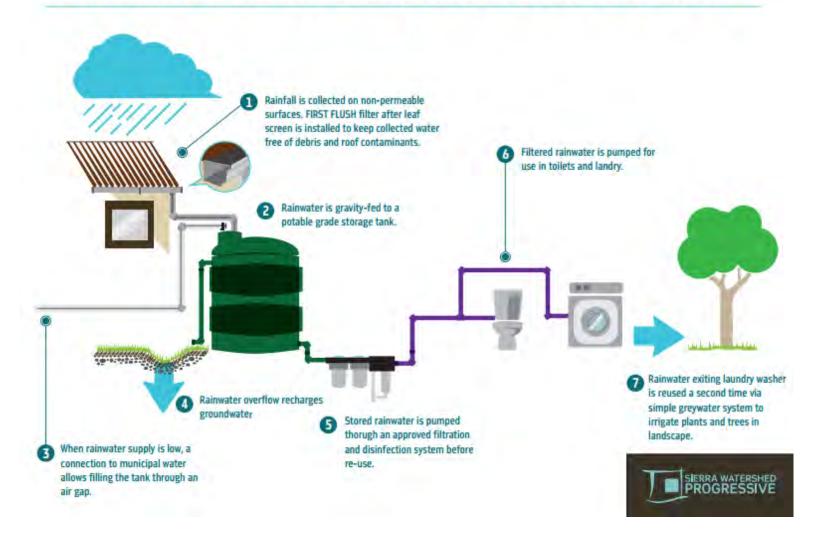
#### **NORDOFF High School** OUSD Stormwater LID Project 1) Graphs visual ranking system, showing PLATE SCORE (count of benefits achieved 1-10), as well as simplest ROI (water savings/\$). GREEN AVERAGE bars represent aggregated average of both scores. 2) This quick ranking system is to guide decision making and inform on multi-beneficial uses of implemented solutions. 3) Nordoff High School acting as a community center and adjacent to Ojai Meadow Preserve, is a prime location to mitigate and solve stormwater problems that contribute to the major flooding onsite as well as downslope in the Ojai community. Large asphalt parking lots, new library and pool construction can all be tied into stormwater solutions. Nordoff High School Campus OUSD Prop 1 Stormwater Proposed Project Rankings # PLATE SCORE 1-10 ■ WEIGHTED ROI SCORE (stormwater\*potable\*plate)/5



#### STEP 4: make a difference

# use ideas to scale people make changes not fish

#### **RAINWATER HARVESTING AND MULTIPLE RE-USE**





### PROJECT UPDATES



November 201

Water Management

#### **Project Overview**

The purpose of the Thather School Water Management Plan (WMP) is to analyze water resources, both existing and available to Thather School: The WMP prioritizes uses in confact of current and available Best Management Practices (BMP) to work most efficiently in line with the objectives, goals and management of the Thather campus and landscape.

In turn, all identified water management recommendations were formed with these objectives:

- Increase stewardship and leadership opportunities for Thacher School community
- Increase independence of water resources for Thacher School
   Reduce water consumption and expenditures from offsite sources
- Reduce water consumption from ecologically sensitive sources, such as Thacher Creek
- Decrease nutrient loading in San Antonio watershed
- Decreasing runoff velocity and volumes during storm events.
- · Recharging groundwater base flows for landscape availability and ecological benefits

#### Project Cost & Capital Ask

#### Q: What is the estimated WMP project cost?

A: The average price per gallon \$0.34/gallon, with a cost estimate of \$14.7 million for full implementation.

#### Q: What grants have been submitted, and what are associated timelines?

A: Multiple large grants asks for implementation and planning have been submitted, with awards from the California Conservation Corps currently underway.

#### **Project Timeline**

This project is expected to take 8-10 years in planning through implementation. Phase One and Two have already begun implementation and various planning phases.

#### **Project Partners**

To reach the project goals, we have partnered with a variety of organizations and consulting firms, as well as private foundations and funders. More information is available upon request.







#### WATER MA **PROJE**

**Project Overvi** 

The purpose of the Thacher School WMP prioritizes uses in context of management of the Thacher camp

In turn, all identified water manag Increase stewardship and lead

· Reduce water consumption a

 Reduce water consumption fr . Decrease nutrient loading in !

Decreasing runoff velocity an

Recharging groundwater base

Project Cost & Ca

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**Project Partners** 

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and funders. More information

OUTRE

STATU

DORMITORY

RAINWATER REUSE

TATUS: Planning, Grant

. . . . . . .

Asks Submitted

full implementation.

Increase independence of wa

#### DORMITORY G

#### **Project Overview**

The greywater project from dormitories on million gallons of greywater annually throug ries on campus. Of this, up to 93%, or 2.37 purposes for landscape plantings on campu table water consumption, groundwater recl will provide a model environment for The T tershed's critical nutrient and flow objective first, with shower greywater to be installed nance, monitoring as well as community ou

#### Project Cost & Capital As

Q: What is the estimated project cost? At \$424,676

#### Q: What grants have been submitted, and

A: Emergency Drought Response Program ongoing since July 2015 to July 2016 throug Over \$253,000 worth of labor has been awa community technical workshop was held wi 2015 that assisted in installing a dormitory (

#### Project Timeline

This project is expected to take 2 years in in content from only the last month. Laundry 1 with five dormitories saving over half a milli



#### **EQUESTRIAN**

#### **Project Overview**

storing degraded Steelhead habitat by it 100% of all water needs of the equestria the southern Steelhead recovery.

#### Project Cost & Capital

Q: What is the estimated project cost? A: \$1,278,528

#### Q: What grants have been submitted,

A: Fisheries Restoration Grant Program implementation assistance was submitte

#### Project Timeline

This project is expected to take 3.5 years



Project Summary: The Thacher Creek E

The Thacher Creek Equestrian Instream months, decreasing nutrient loading dur sediment and high scouring events with the Ventura River Watershed. The projediverted from the San Antonio Subwater ing approximately 580,600 to 837,055 g. ing on precipitation levels (drought to as infiltrating erosive and problematic storrestoration Low Impact Development ba This water conservation project will crea fore will be able to confidently leave the

Project Cost & Capital Ask

#### Q: What is the estimated project cost?

#### Q: What grants have been submitted, and what are associated timelines??

A: Wildlife Conservation Board grant for \$836,221 in planning and implementation assistance was submitted September 2015. Awards expected in Spring 2016.

#### **Project Timeline**

This project is expected to take 3.5 years in implementation from permitting to monitoring.



DORMITORY RAINWATER REUSE PROJECT



#### **Project Overview**

This project will improve instream flow to a critical southern steelhead habitat on Thacher Creek while removing barriers to water conservation in Ventura Watershed. This is made possible through development of an alternative onsite water supply of captured nuisance stormwater, which will be used for school orchard and landscape irrigation, as well as 100% of all dormitory toilet flushing. This project will capture 920,000 gallons of rainwater, enhancing water supply, reducing the erosive effects of storm events in the upper Ojai Basin, as well as reducing discharge of nutrient rich stormwater pulses to the San Antonio watershed. Additionally, to increase potential for supplementing summer base flows and increasing groundwater recharge, the storage tank overflows will be infiltrated into upland habitat restoration Low Impact Development (LID) based bioswales and vegetated infiltration basins. Overall, this project will create a lasting model at Thacher School, influencing our own student body to regional fisheries professionals, on how best to remove barriers and enhance Central Coast record low stream flows through uncertain climates and watershed management of the future.

#### Watershed & Regional Partners

- Central Coast Salmon Enhancement
- Ojai Valley Land Conservancy
- Emergency Drought Preparedness Program (eDRIP)
- Sierra Watershed Progressive
- Salmon Restoration Federation
- California Conservation Corps
- 1. Rainwater storage of 575,000 g/y with reuse of up 935,228 g/y of annually, while conserving additional 15% of water irrigation budget on stormwater based Irrigation/orchard practices.
- Miligates stormwater with 8MPs to lessen nutrient and sediment loading Lo Ventura watershed.
- Includes 100% of annual toilet reuse at dormatories and can provide additional



MARKET TOTAL

35

#### reusing RAINWATER



Conserving Water at The Thacher School: one drop at a time

### CATCHING the RAIN: HOW DOES IT HELP?

#### SUSTAINABLE USES:

Fire protection

Domestic non-potable

Livestock watering

Irrigation, water features

Long term storage

Emergency

Resilience

#### REDUCES:

Fire risk
Flooding problems
Soil loss, erosion issues
Local water supply demand
Emergency risk
Streambank erosion
Nutrient/Pathogen loading

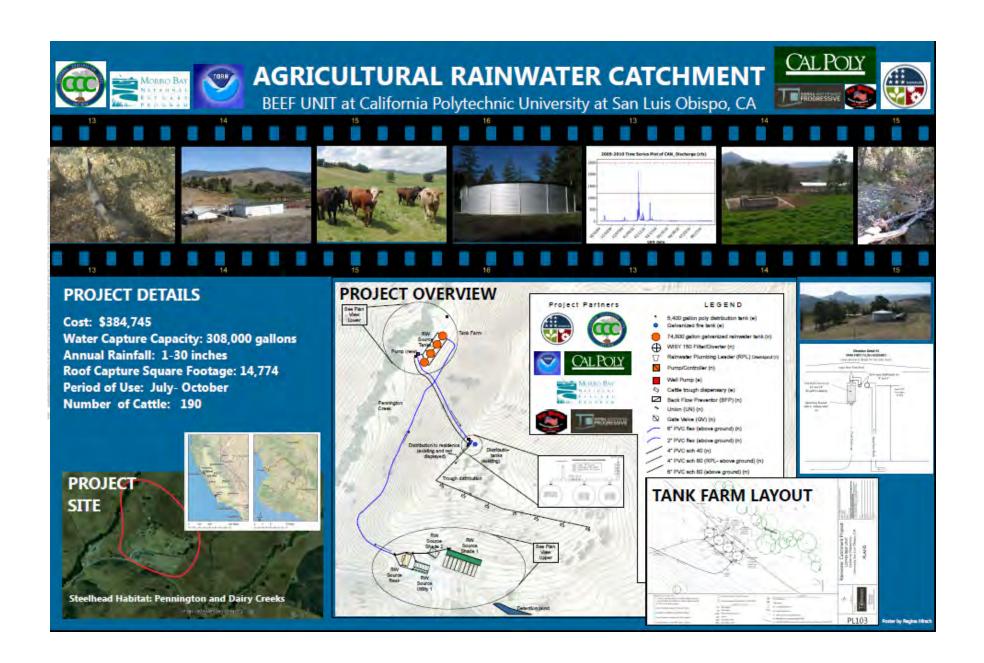
# YOU ARE HERE: Rainwater is sent to horse troughs via raintank. The water is collected from the adjacent roof surfaces indicated here.

#### RAINWATER HARVESTING AND MULTIPLE RE-USE



#### **DID YOU KNOW?**

This tank will save 10,000 to 24,000 gallons of water annually.



# STEP 5: create adaptive strategies

# discuss weak points

ensure success route with users



#### Table 1.a Summary of Maintenance Protocols - Rainwater Tanks

WISY Filter WISY Mulch 2" and

Maintenance Plan:

The Thacher School Rainwater Reuse Project March

2016

1534

se?

This document describes methods and protocols to best maintain and monitor The Thacher School's Rainwater Reuse Project. This project has been designed and implemented by:



Sierra Watershed Progressive
Lic. # 925678
Worling within the Watershed

1|Page

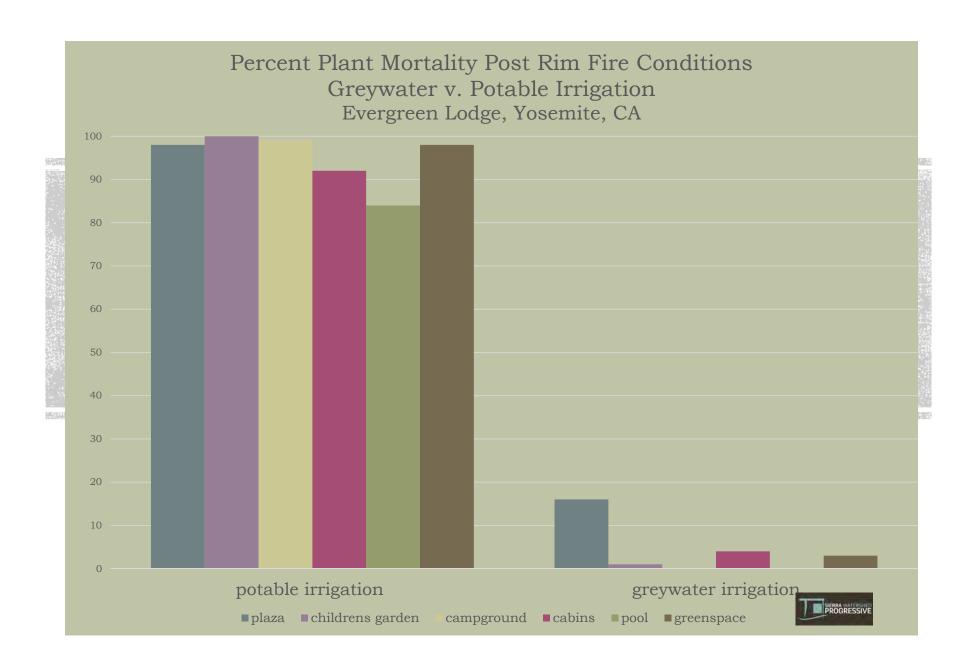
	Quarterly, first year, frequency as needed based on first year data	Overflow Inspection, Clean	6" Isolation Valve Inspection	Pump Oil Levels, Belt Inspection	Plumbing Inspection	Roof and gutter inspection September, As needed	Inspection and Clean out End of October when tanks are dry (Annually)
Hill - 58k gal tank	×	x	x	x	*	x	x
Hill - 89k gal tank (2)	×	x	x	x	x	x	x
Sespe - 5k tank gal	x	x	x	x	*	x	x
Los Padres - 15k tank (2)	x	x	х	x	x	x	x
Los Padres – 5k gal tank (2)	x	x	x	x	x	x	x
Upper School  – 15k tank gal	×	x	х	x	*	x	x
Upper School  – 5k gal tank  (3)	x	x	x	x	x	x	x
Middle School - 58k tank gal	x	x.	х	x	*	x	x
Middle School  – 7k tank gal	х	x	x	x	x	х	x
Middle School  – 5k gal tank  (3)	×	x	х	x	*	x	x
Lower School - 5k gal tank (2)	×	x	x	x	×	x	x

39

# STEP 6: test resilency strength







# STEP 7: pay attention to context

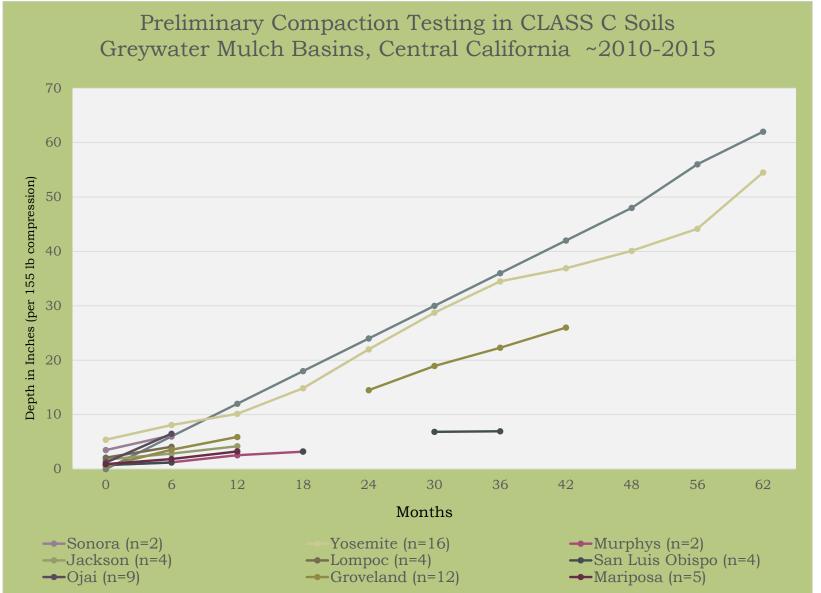
# evaluate effectiveness

share lessons, learned and refine.











## STEP 8: ensure understanding





















nov 1-4, 2016



californiawaterreuse.org

The Localizing California Waters Conference focuses on all aspects of integrated Water Reuse and LID techniques: Stormwater, Rainwater, Greywater, Blackwater, California Decentralized Water Reuse Policy, and Watershed Management.

- Reuse and Job Faire (FREE to PUBLIC) Exhibitors, Technical Hands-On Displays, Mobile Reuse Learning Labs, Grant Clinics, Job Faire, Water Assessments
- · Policy Roundtable/Workshops
- · Greywater Contractor Training Certification, Tours of Yosemite BMPs
- Poster Session
- . Continuing Education Credits: 20 CEUs are available for conference attendees
- · Registration: \$175 day/\$275 3 day, Nov. 4 Water Reuse Faire Free

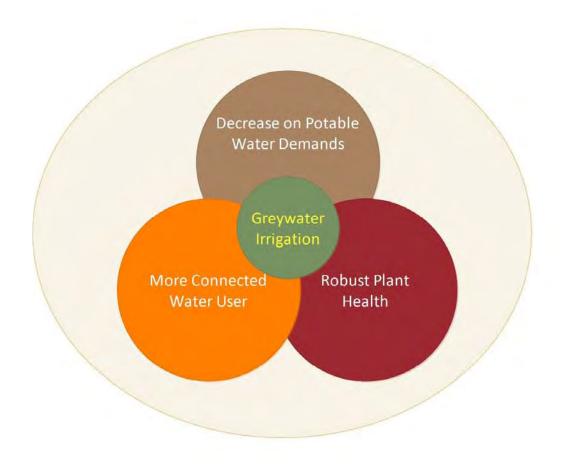
#### CALIFORNIAWATERREUSE.ORG



# STEP 9: capture added value benefits

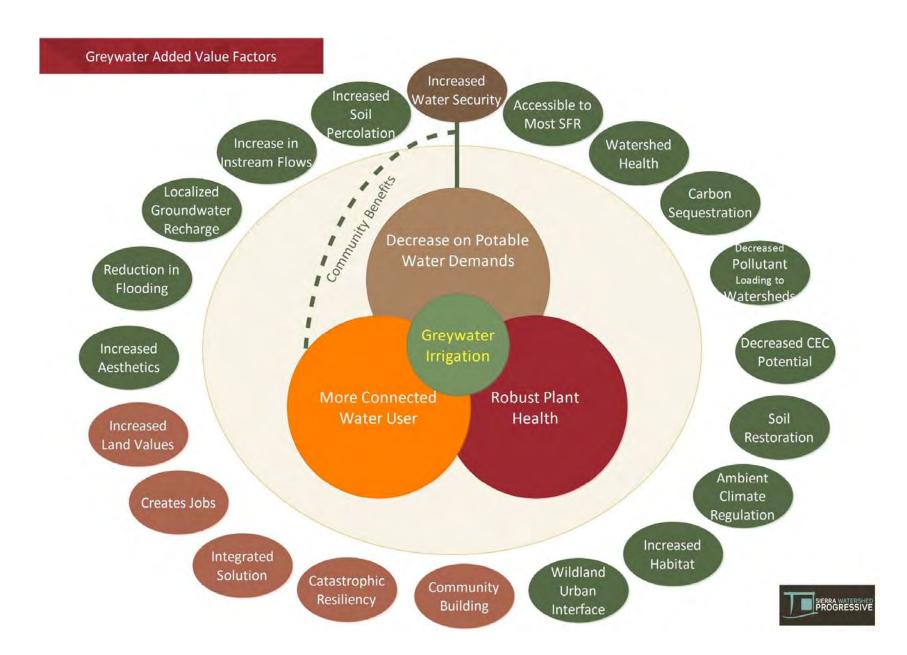


#### **Greywater Added Value Factors**





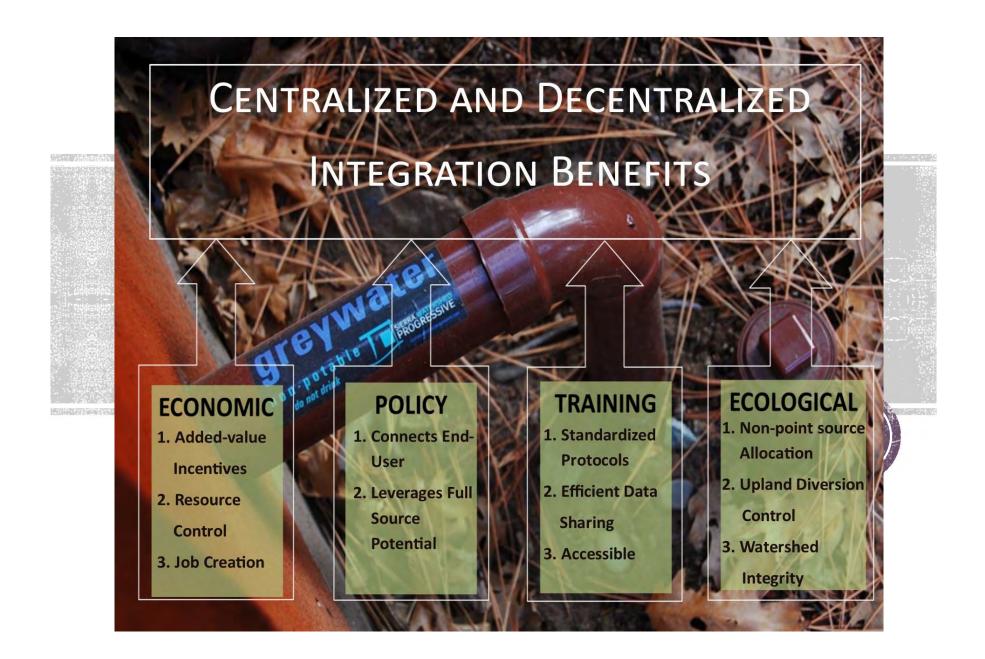






# STEP 10: sign-up for the long term view

# collaborate & integrate



### **STEP 11:**



