



San Diego Zoo
Safari Park

Safari Park Drought Response and Outreach

San Diego County Integrated Regional Water Management Program Regional Advisory Committee
Project : 84-4-10-80048
May 1, 2024

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Safari Park

Pat McTigue – Vice President & Deputy Director

Chris Brzezicki – Director, Facilities

Raj Brown – Director, Horticulture

Sasha Stallard – Associate Director, Education

Michael Fanelli – Associate Director, Capital Projects

Mike Tverberg – Lead Water System Specialist, Horticulture

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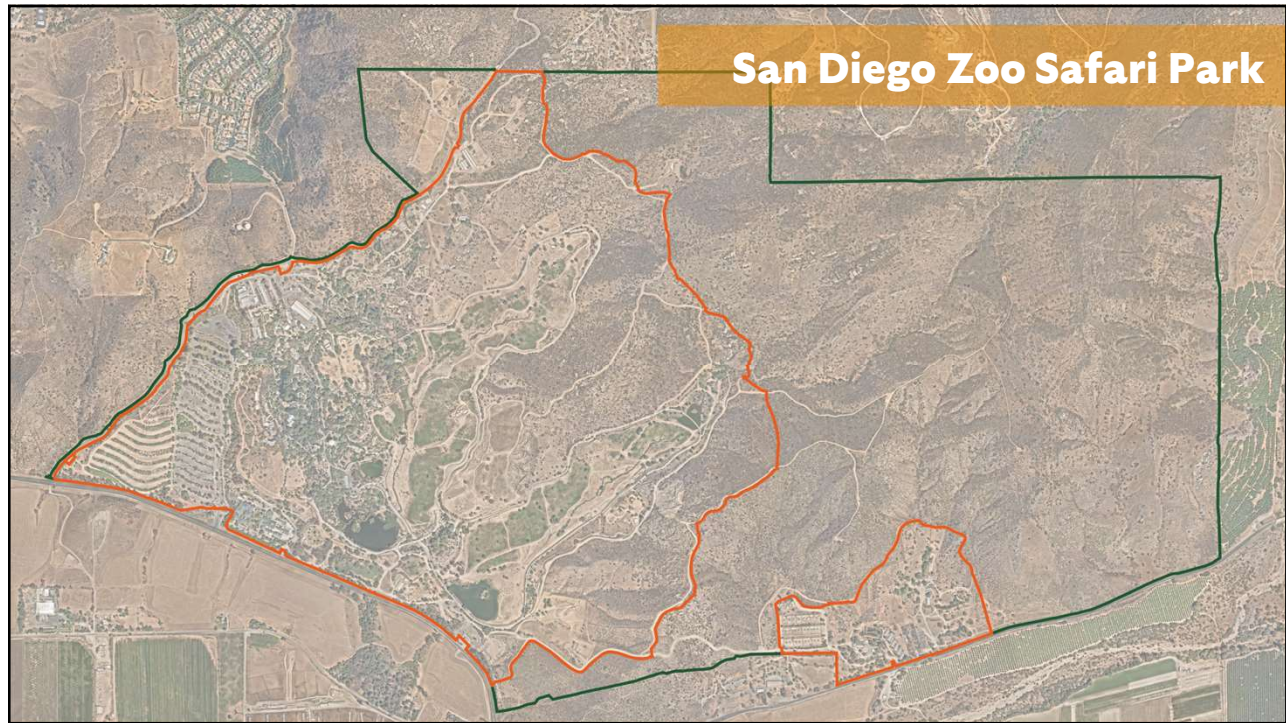
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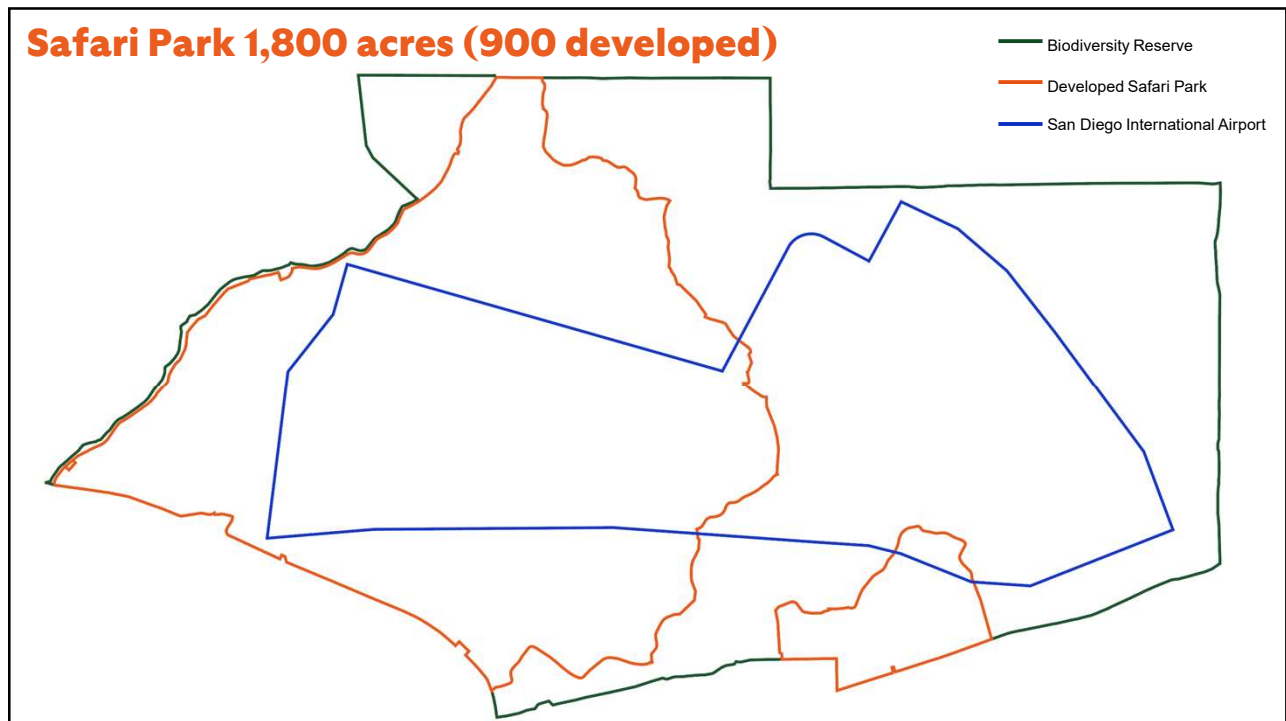
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Project Goals

- Reduce overall water use at the San Diego Zoo Safari Park
- Meaningfully improve recycled water quality
- Limit use of potable water for irrigation
- Build awareness and understanding of water stewardship, through outreach and education
- Save significant water now, and in the future



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What we delivered

- 1. Waste Water Treatment Plant (WWTP)**
 - ✓ Tertiary capable wastewater treatment plant (WWTP)
- 2. Turf & Irrigation Conversions**
 - ✓ Turf at the front entry converted to water-wise landscaping
 - ✓ Connection and expansion of effluent producing areas throughout the Safari Park campus
 - ✓ Increased storage and management of the newly tertiary treated water
 - ✓ Treatment of existing pond water for exhibit and irrigation use
- 3. Education & Outreach**
 - ✓ Provision of public outreach and water education programs



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Project Costs

Grant Share: \$ 2,900,000
 Matching: \$ 967,000
Grant Total: \$ 3,867,000

- Project costs (paid by SDZWA) for necessary work outside of the scope of the grant Work Plan: \$ 1,407,904
- Total final project cost: \$ 5,274,904



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Challenges & Lessons Learned

- Unique and evolving influent requirements (channel filters, pumps)
- Step-change in technical understanding required hard-to-procure skills (*new operators, NSU*)
- Compact site, with no ability to pause sewer processing
- COVID schedule impacts
- Impact of recycled water versus potable water within existing irrigation systems



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1. Waste Water Treatment Plant (WWTP)



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Waste Water Treatment Plant (WWTP)

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Tertiary Treatment System

- 100% recycling of all site wastewater as irrigation.
- Peak 150,000 gallons of 'drinking-quality' water produced per day.



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Waste Water Treatment Plant (WWTP)

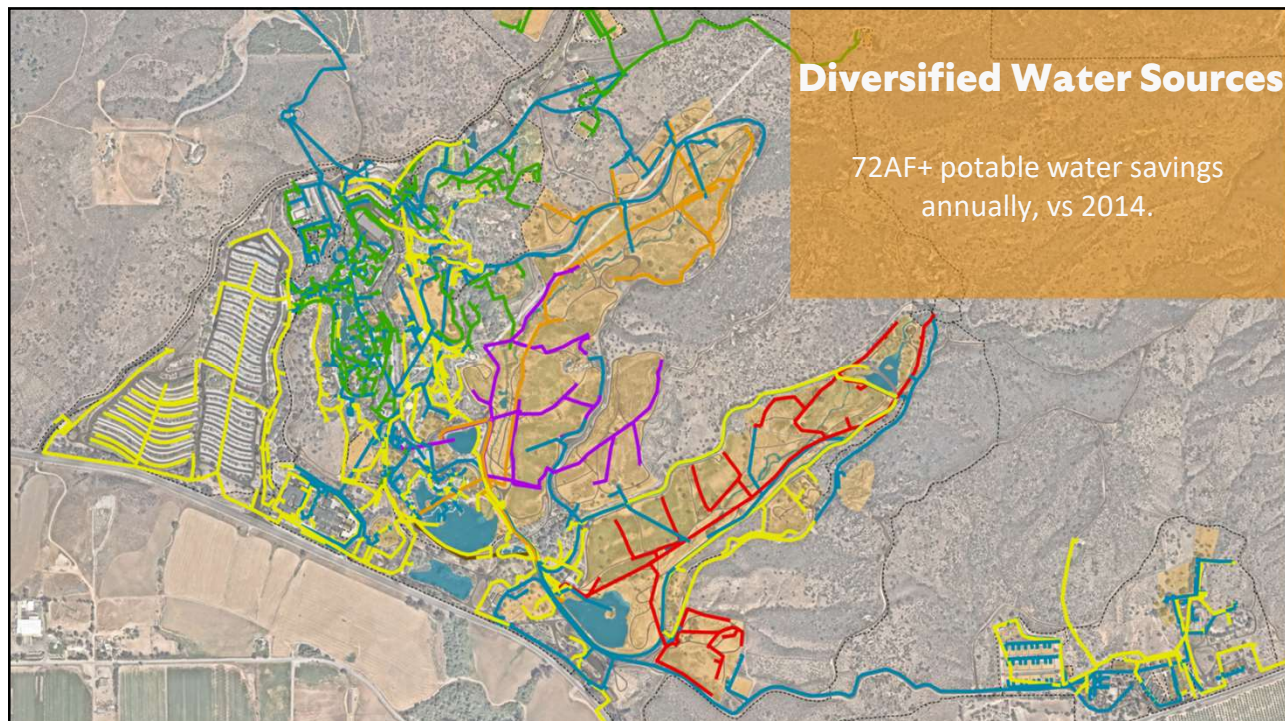
- The existing secondary plant was replaced with a modern, more efficient tertiary package plant (MEMPAC):
 - Previously secondary quality, with no connectivity
 - New system: stainless steel, remote monitoring and alerts, incorporates 'ultra-filtration' in the form of Suez filter membranes (filter down to 0.04 microns), and ultraviolet sanitization allowing tertiary quality water treatment to be achieved
 - Conversion of existing infrastructure to emergency storage —increasing resilience
- All sewers at the Safari Park campus are processed by the new treatment plant



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2. Turf Conversion & Irrigation



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Turf Conversion Project

- Removal of 2.9 acres of irrigation-intensive turf at the front entry of the Safari Park
 - Converted to water-wise landscaping
- Water savings:
 - 14.8 AFY at the end of the project (Dec 2022)
 - This exceeded our anticipated well-water savings of 13 AFY for this area



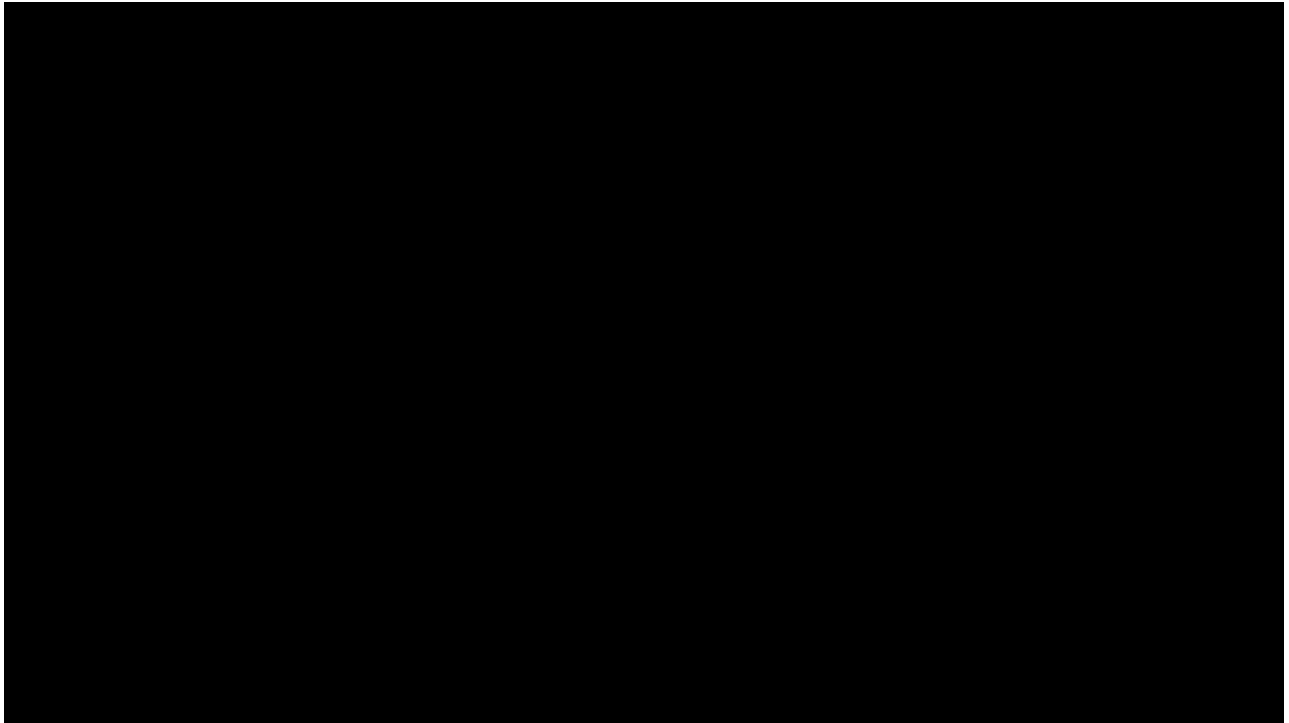
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**Before**

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**After**

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Irrigation Connections to New System

- Increased recycled water use on-site:
 - Expanded the use of recycled water in East Africa and Central Asia
 - Switched the Africa Tram Station area (ATS) from well water to Heart of Africa (HOA)
- Converted Tiger Trail and Bird Show from city (potable) water to well water



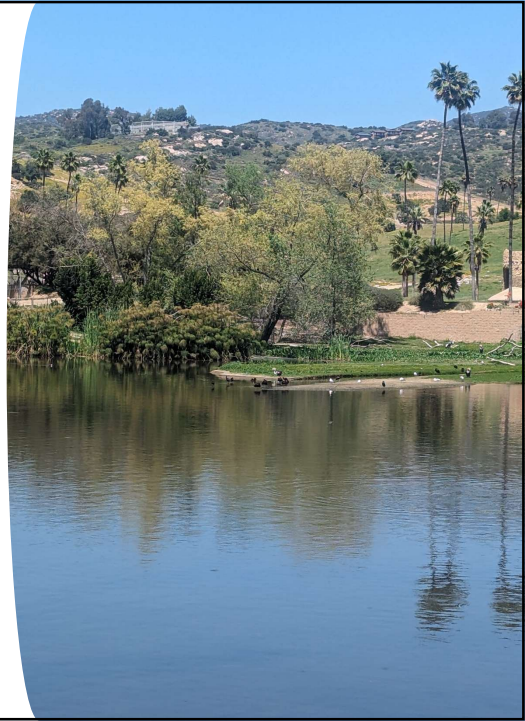
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Treating pond water for habitat and irrigation use

- A sand media filter was installed to improve water quality in the Heart of Africa pond, African Tram path, and Rhino Rescue Center.
- This has reduced the amount of organic matter in the pipeline reducing clogs and improving irrigation system efficiency.



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Education & Outreach



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Public Outreach and Water Education

- More than 13 million people received our water conservation messaging between Jan 2011 to Sep 2022
 - Save Our Aquatic Resources (SOAR) a hands-on educational program
 - 7,288,962 Safari Park visitors (2017 - 2022)
 - 6 million visitors during our When in Drought Outreach campaign (2011 - 2017)
- We have and continue to integrate water conservation messaging in our outreach communications and educational programs



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Outreach Communications & Materials



SAN DIEGO ZOO SAFARI PARK

SAVE WATER RESOURCES

Name: _____

Date: _____



FOR WATER CONSERVATION
THIS HABITAT IS IRRIGATED WITH RECLAIMED WATER

PLEASE DO NOT DRINK



ZOOVIEW
SAN DIEGO ZOO GLOBAL EMPLOYEE NEWSLETTER

September 2014

The Worth of Water:
A Sultry Summer of Saving Species

by Karyl Camarguez, Publications



SAN DIEGO ZOO SAFARI PARK

EMPLOYEE FACT SHEET
December 2016

PARK OPERATING HOURS
9:00 a.m. to 5:00 p.m.

Brainstorming and Observations

LOCATION: SAFARI PARK

Think about all of the different ways people and animals use water. Write down some of the ways you use water. Remember, you use water at home, at school, or anytime you go out to eat. Don't forget your pets, if you have them: they use water too!

We use water for _____

WELCOME TO THE
SAN DIEGO ZOO SAFARI PARK

Today's Schedule
Park Hours: 9:00 a.m. - 5:00 p.m.
February 18-20: 9:00 a.m. - 6:00 p.m.

MEMBERSHIP
Upgrade your ticket today to a Zoo Membership and receive 365 DAYS OF FREE ADMISSION to both the San Diego Zoo and San Diego Zoo Safari Park and more! Go to any Safari Ticket Booth outside the main entrance to apply today's admission. (Some restrictions apply)

SHARE YOUR EXPERIENCE
Use #sdzsaferipark for a chance to be featured on our website.

TOURS & ATTRACTIONS	HOURS	ENTERTAINMENT	LENGTH	TIMES	DINING	LOCATION	WATER CONSERVATION
AFRICA TRAM (African Outpost) This tram tour ride takes you to the wilds of Africa to observe animals in expansive, naturalistic enclosures.	10 am to 4:15 pm	TRAINING TALK Burbough Amphitheater (Gorilla Forest) Get an up-close look at free-flight bird training	15 mins	10:30 am	SAFARI COFFEE OUTPOST Espresso drinks, mini doughnuts, cold drinks, and snacks.	Safari Base Camp	The Safari Park recycles and reclaims the water used in restrooms, streams, fountains, play elements, and animal habitat pools.
BALLOON SAFARI (Lion Camp) Fly high above the Park. Subject to weather conditions. Fee Required.	9 am to 5 pm	ROBERT THE ZEBRA Harambee Station (Harambee Village) Talk with our interactive digital zebra.	20 mins	11:00 am 12:00 pm 1:00 pm 2:00 pm	THORN TREE TERRACE Bruschetta, rice bowls, salads, wraps, burgers, French fries, etc. and craft beer.	Safari Base Camp	You can conserve water at home by doing the following: 1) Plant drought-resistant plants and shrubs; 2) Make sure your home is leak free; 3) Install high-efficiency plumbing fixtures and appliances.
					BARKING DEER PIZZA & BEER Napoleonic-style gourmet pizzas, salads, and draft/craft beer.	Safari Base Camp	For more suggestions, visit this website: sdzoo.org/waterindrought

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You Can Help Save Water Too!

Turning off the faucet while you brush your teeth or lather your hands can save water that might have been wasted!

By keeping showers to 5 minutes or less, you can save 1,000 gallons of water a month!

Wash full loads in the washing machine or dishwasher. If washing dishes by hand, fill the sink with water and soak dishes, rather than letting the water run.

At a restaurant, ask for water only if you plan on drinking it with your meal.

Encourage your friends and family to do their part and be water-wise too. Together, we can make a difference.



SAN DIEGO ZOO SAFARI PARK

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

San Diego County Water Authority

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Dear Ms. Sarah and Ms. Sarah,

Thank you for hosting us on the eighth of May. Learning about water was super interesting. Thank you for letting us do the activity with the inflow, tap, and outflow water. I really enjoyed when the class met the Frog. He was so big! The frog was super calm. It almost looked like a statue! I'm going to start saving by taking shorter showers, turn off running water and turn the sprinklers off on a rainy day. Thank you again for the fun we had!

-Jade Kennedy

"I'm going to start saving by taking shorter showers, turn off running water and turn the sprinklers off on a rainy day."

-- Jade, elementary student

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**With this partnership,
we are making an
impact on water
resources today and
into our future.**

Thank you!



**San Diego Zoo
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