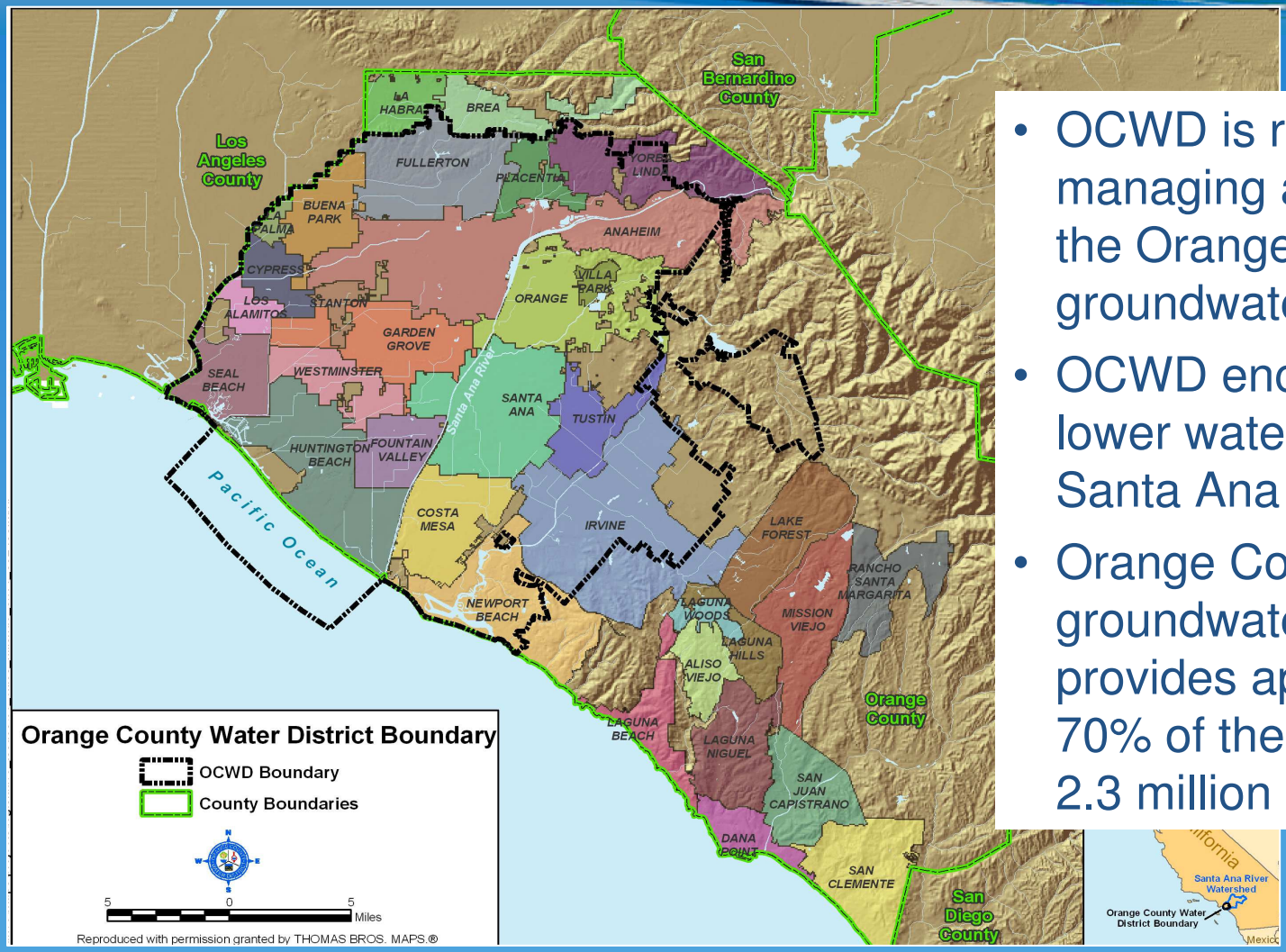
Groundwater Replenishment System

A Pure Solution to Orange County's Water Needs

A joint effort of the

Orange County Water District and Orange County Sanitation District

Orange County Water District



- OCWD is responsible for managing and protecting the Orange County groundwater basin
- OCWD encompasses the lower watershed of the Santa Ana River
- Orange County groundwater basin provides approximately 70% of the water for over 2.3 million people

What is the Groundwater Replenishment (GWR) System?

- New 70 million gallon per day advanced water purification facility
- Takes sewer water that otherwise would be wasted to the ocean, purifies it to near distilled quality and then recharges it into the groundwater basin
- Provides a new 72,000 acre feet per year source of water, which is enough water for 500,000 people

Why Do We Need the GWR System?

Dry Lake Mead

Delta Smelt

California Bay-Delta

Future imported water supply challenges:

- **Northern California**
  - **Environmental restrictions**
  - **Outdated infrastructure**
- **Colorado River limited by continued drought**
- **Need to expand OCWD seawater barrier**
- **Need for new water supplies to meet future growth**
- **Global warming impacts**

How Does the GWR System Work?

100% of water is treated through microfiltration, reverse osmosis and ultraviolet light

- **<u>Microfiltration:</u> Tiny, straw-like plastic membranes filter out bacteria, particles and protozoa**
- **<u>Reverse Osmosis:</u> Water is forced through the molecular structure of the RO membranes where dissolved minerals, pharmaceuticals and viruses are removed**
- **<u>Ultraviolet light with hydrogen peroxide:</u> As a safety barrier, water is exposed to UV and H202 that destroys potential harmful trace organics**

After treatment process, water is pumped to the groundwater basin where it filters through the ground just like rainwater

Where Does GWR System Water Go?

Water is returned to groundwater basin

- **Half of water is sent to seawater intrusion barrier**
- **Half of water is sent to recharge basins in Anaheim**

Benefits of GWR System

- Protects the basin from seawater intrusion
- Provides water to refill basin in times of drought and population growth
- Lessens dependency on imported water supplies
- Saves money (costs about the same as importing water)
- Uses about half the energy needed to import water from Northern California or desalinate seawater
- Improves water quality
- Reuses valuable resource and sends less water to ocean
- Model for the rest of the world (Australia, Singapore, etc.)

Strong Community Support

Proactive face-to-face outreach with more than 1,200 presentations, 700 tours and many news stories that resulted in:

No active opposition and support from:

- **100% support from cities in OCWD service area**
- **100% support from OC State and Federal elected officials**
- **100% support from Chambers of Commerce & OCBC**
- **Many business including Edison and Semper Energy**
- **All major environmental groups**
- **Several health experts, medical doctors, hospitals, pharmacists and scientists**
- **Several key minority leaders**
- **Educational, religious, police and fire leaders**
- **More than 200 community groups like Kiwanis, Rotary, etc.**
- **OC Tax, AARP, OC Farm Bureau and others**

Future Projects

- **GWR System Expansion**

  An additional 18 million gallons per day (mgd)

  $128 million project

  Ultimate expansion to 130 mgd

- **Mid-Basin Injection Pilot Facilities Project**

  $4 million to determine the feasibility, and the benefits and costs of constructing a full-scale project that would inject GWR System product water directly into the principal aquifer in an area of high volume groundwater pumping.

Can the GWR System be Duplicated?

- Similar projects already exist
  - Singapore, Australia
- Similar projects are being designed
  - Miami-Dade
- Similar projects are being studied
  - Los Angeles, San Diego, WRD/San Gabriel, San Bernardino, Helix Water District, Escondido, Santa Clara Valley
- Challenges
  - Brine Discharge
  - Public Perception
  - Cost

What Can the State Do to Help?

(Beyond fixing the Delta and providing additional funding)

- Help lift regulatory constraints for indirect potable reuse projects
- Legislators need to visit these effective projects and engage their local media and offer full support of these projects
- Establish bi-annual/quarterly water advisory committees in your districts
- Promote water conservation to their constituents
- Educate the Legislature about how water works – too many are making decisions without full knowledge
- Participate in water forums such as the OC Water Summit – May 14, 2010

Questions?

GWRS Aerial View