

Groundwater and Stormwater Meeting 2 of 2

IRP Member Agency Technical Workgroup
June 11, 2015

Presentation Overview

- Groundwater Workgroup Recap
- Issue Paper Input and Discussion
 - Groundwater
 - Sources of Recharge
 - Stormwater
 - Recycled Water
 - Imported Water
- Policy Considerations
- Next steps

IRP Member Agency Workgroup Process

- April 2015
 - IRP/RUWMP Kick-off 4/8
 - Water Use Efficiency Meeting 4/16
 - Uncertainty 4/22
- May 2015
 - Imported Supplies 5/18
 - Water Use Efficiency Meeting 5/20
 - Groundwater (1 of 2) 5/27

The Role of Groundwater in the IRP

- 2010 IRP Target
 - No explicit target set in the IRP
 - Implied level of production underlying the IRP forecast
- Identified as one of four key areas of uncertainty to monitor
 - Future Delta conditions
 - Demographic trends
 - Groundwater yields
 - Climate conditions

Groundwater Discussion Objectives

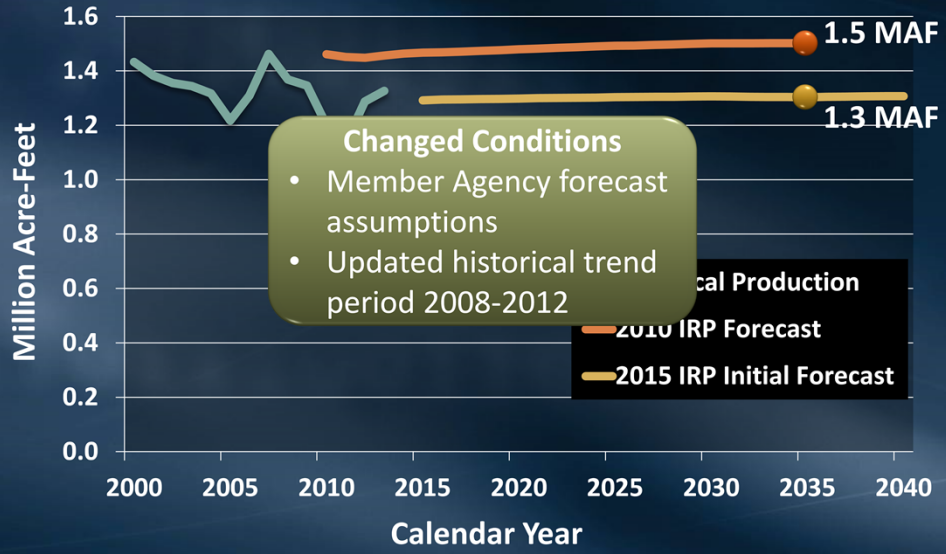
- Review and receive input on IRP technical approach
 - Identify additional technical refinements to be completed
- Provide an overview of groundwater and stormwater topics impacting the IRP
- Facilitate discussion of groundwater and stormwater issues
 - Identify and quantify future risk
 - Collect policy and implementation issues for consideration by the Board

IRP Sustainable GW Management

Meeting 1 of 2 – What is It?

- Update on current status of groundwater in the region
- Review of IRP groundwater projections
- Potential areas for refinement
 - Normal vs. multiple dry years
 - Stormwater recharge
 - Recycled water recharge
 - Imported water

Local Groundwater Production Historical and Projected



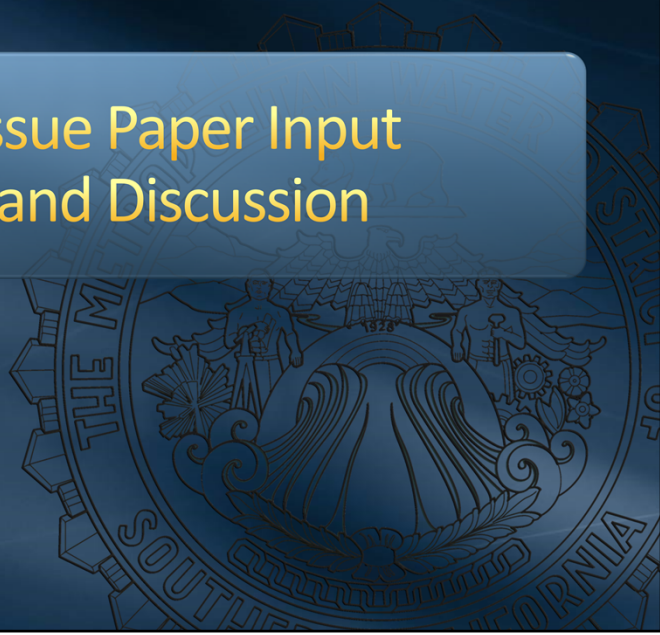
IRP Sustainable GW Management

Meeting 2 of 2 – How do We Achieve It?

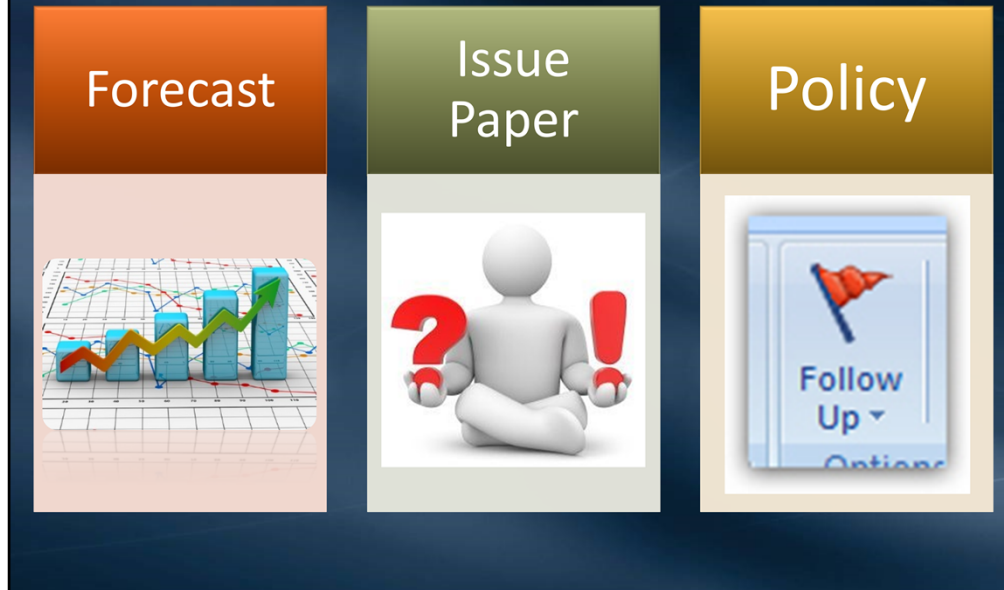
- Discuss Issue Paper input
- Discuss factors impacting groundwater sustainability
- Identify pathways for ensuring sustainable groundwater management
 - Potential policies or actions
 - Key recommendations (short and long term)

(understanding that the starting point for this IRP includes very low groundwater levels)

Issue Paper Input and Discussion



IRP Information Categories



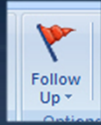
Information for the IRP can be placed into three categories (information that...):

- 1) Informs the forecast
- 2) Feeds the issue paper (discuss groundwater sustainability)
- 3) Will be flagged to add to a subsequent Board discussion on policies and implementation

All three feed the policy implementation discussion

We'll be having 2 workshops specifically for Groundwater/stormwater recharge

- Workshop #1 will focus more on the technical forecast
- In Workshop #2, we will dive into a deeper discussion on groundwater sustainability



Policy Considerations

Metropolitan Participation in Local Resources Development

Partnerships

Funding/
Incentives

Other

Imported water

Rates/Incentives

Deliveries

Storage and Transfer Strategy

Surface and groundwater storage

In-region, out-of-region

Wet year, dry year

Issue Paper Input Categories



Also have flagged (and will continue to flag) policy items, which we will go through at the end

Sustainable Groundwater Production



Groundwater Management

- Sustainable Production
- Water Quality
- Planning/Operations
- Partnerships



Sources of Recharge

Stormwater

Recycled
Water

Imported
Water

Check if the bullet items still make sense, or should be adjust them



Challenges/Barriers

Sustainable production

- Potential long-term imbalance between recharge and production
- Effects of urbanization
- Variable hydrology and potential impacts of climate change

Groundwater quality

- Funding for remediation of contamination
- Salt loading from imported & recycled water
- Balancing water quantity and water quality

Operations

- Endangered species
- Conveyance and operational restrictions

Filling and drawdown: subsidence and shallow groundwater related problems



Opportunities

Collaboration



- Regional facilities, planning, programs
- Multi-benefit approaches
- Explore effective utilization of groundwater basins with multiple entities

Technical



- New treatment and brine disposal technologies
- Availability of data

Storage



- Available groundwater storage space

Collaboration examples:

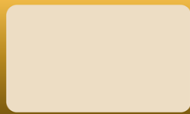
- Regional facilities (e.g., regional desalter (like Chino))
- Regional planning (e.g., recharge master plan)
- Explore effective utilization of groundwater basins with multiple entities
- Reimbursable services agreements, foundational actions funding program



Lessons Learned



Able to pull down groundwater storage lower than previously imagined



Imported water rates are significant drivers for implementation of local projects



Watershed-wide planning found to be effective



Pilot and demonstration studies provide valuable data

Stormwater and imported water recharge may not be available in multiple dry-years



Recommendations

Explore options to facilitate more effective utilization of groundwater basins

Evaluate regional programs

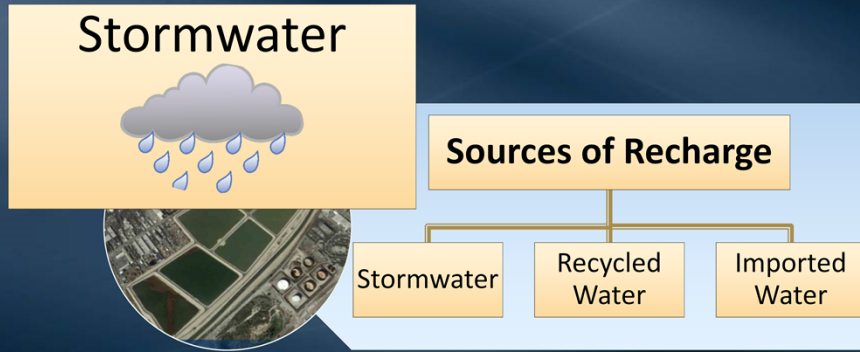
Review strategy of storage and transfers

Explore innovative participation in local resources development

Evaluate/explore includes performance measures, etc.

(took out) Land use planning agencies and watershed planning need to be more integrated into gw management

Sustainable Groundwater Production





Stormwater Background

Types of Stormwater Capture

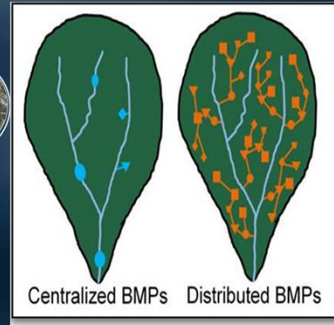
- Parcel-based projects (e.g., rain gardens)
- Green streets
- Site specific

Distributed



- Regional facilities (e.g., spreading basins)
- Subregional collections

Centralized



Active recharge (not talking about passive)
Talking about recharge (not direct use for now)



Current Conditions



**Long-Term Average
Active Stormwater
Recharge**

~470 TAFY



**Average Active
Stormwater Recharge
Since 2005**

~410 TAFY



Challenges/Barriers



Cost/Funding

- Unit costs and total costs may be relatively high
- May be dependent on grant funding
- Difficult to sustain O&M funding



Institutional

- Adjudications
- Insufficient staffing
- Agency mission



Technical

- Stormwater capture projects may not necessarily increase groundwater production
- Limited land availability for centralized projects
- Difficult to capture peak flows

****Statement about unit cost may contradict the next slide on the costs****

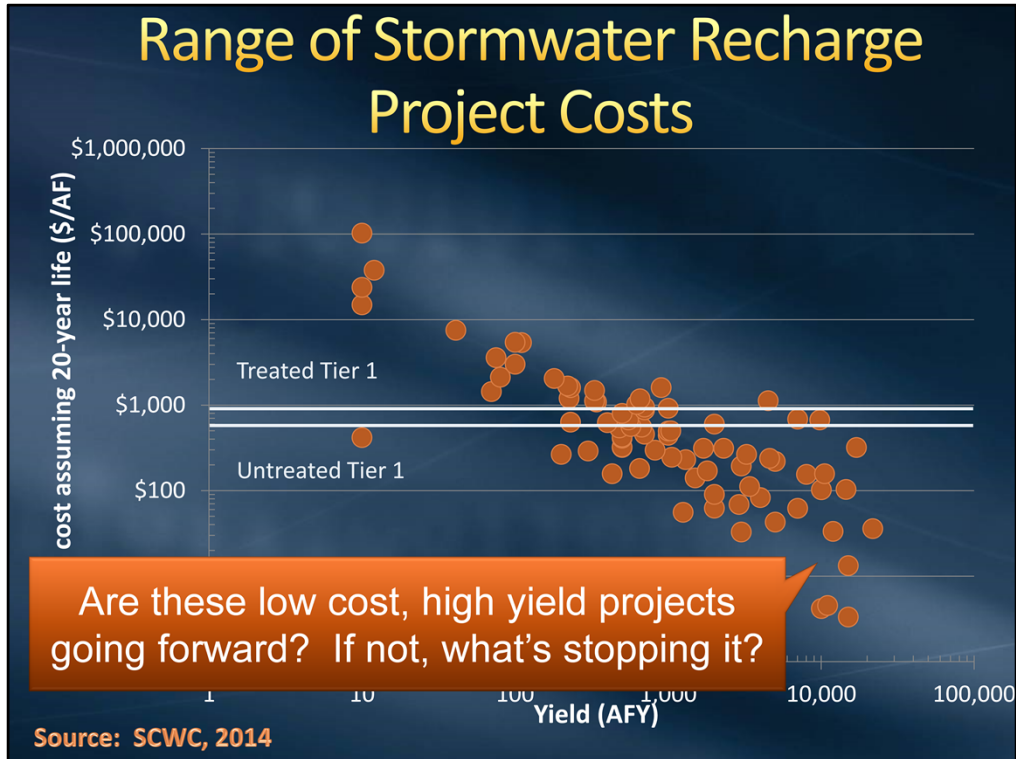
Variable hydrology and limited storage? Army Corps dams, etc. Peak flows attenuation

Sources of Stormwater Data (81 Projects Identified)

- Central Orange County
- N. Orange County IRWMP
- Ventura County
- Upper Santa Clara IRWMP
- SAWPA
- GLAC IRWMP
- San Diego IRWMP
- MWD IRP
- IEUA
- Riverside FCD



Source: SCWC, 2014



Understand the projects behind this graph. Unit costs look too good to be true. Contradicts the challenges of high costs

Why aren't we doing the low unit cost high yield projects now? What's stopping it? OR are these costs not real?

Add water supply costs

Pump, disinfect & distribute: \$100-250/AF

Contaminant removal

Metropolitan 2013/14 Tier 1 rates

Untreated Tier 1 is \$593 for both CY 2013 and 2014

Treated Tier 1 is \$847 for CY 2013 and \$890 for CY 2014.

Summary of Stormwater Recharge Project Cost: 81 Projects Identified

Total Cost (all projects)

- Total Capital Cost (\$800M-1.2B)
- O&M Cost (\$10-\$15M/yr)
- Median \$/AF ~\$450/AF

Yield (all projects)

- Average Annual 200-300 TAFY
- Median yield ~1,000 AFY per project

Note: Cost and yield calculation methodologies vary



Opportunities

Operational

- Storage space has increased ~ 1 MAF since 2005
- Additional space for stormwater projects

Programs & Funding

- Cooperation between agencies for grant funding

Planning & Partnerships

- Past projects has illustrated success of partnerships. More in future.
- LA Basin Study & LA Stormwater Master Plan
- Foundational Actions Funding Program

Reimbursable services agreements (adopted by MWD in 2014) **see previous note**

Elmer Avenue



Lessons Learned

Project Type

- Centralized projects tend to be more cost effective
- Land acquisition may be a large consideration in centralized projects

Public Relations

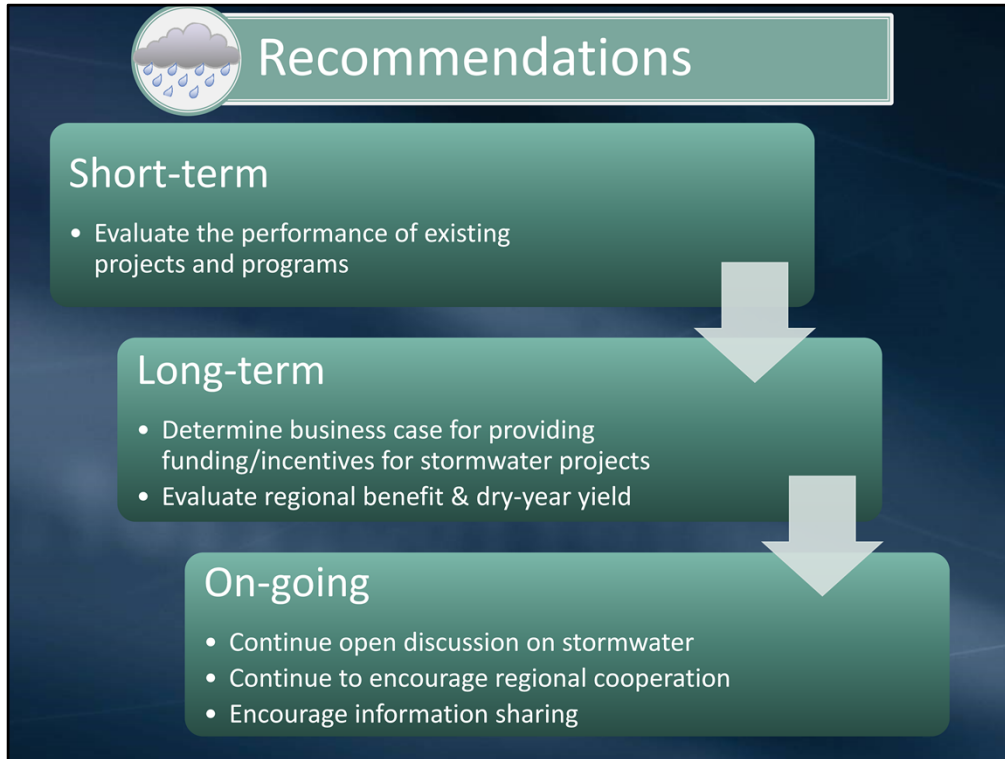
- Extensive outreach is important to the success of projects

Costs

- It is important to include long-term O&M in project cost
- Grants often pay for upfront capital but not O&M
- In distributed projects, ongoing O&M may fall to homeowners

Centralized more cost-effective than distributed

Capture and infiltrate more effective than direct-use (this comment seems more like an opinion)



Evaluate the potential to fund projects using MWD's reimbursable services program
check the criteria for this program and see if it matches. For example, reimbursable services were meant for drought response. Stormwater projects probably wouldn't fit that category. Plus, the link to production (quantity of supplies) are not yet determined

Sustainable Groundwater Production

Recycled Water



Sources of Recharge

Stormwater

Recycled Water

Imported Water



Current Conditions



Recycled Water
Recharge in 2006
~54 TAFY



Recycled Water
Recharge in 2014
~153 TAFY

In 2014 alone, xxx TAFY



Challenges/Barriers

Cost

- AWT projects are expensive
- Agencies must balance cost vs. treatment and blending requirements

Water Quality

- Salt removal
- Advanced treatment vs. SAT
- Relationship between brackish desalter & recycled water projects

Operational

- Maximizing recycled water spreading year-round

check with Ray and Kira to be consistent



Opportunities

Regulatory

- Recent changes to recharge regulations
- Upcoming regulations on surface water augmentation

Funding

- State funding for recycled water recharge projects through Prop 1
- Cooperation among agencies for grant funding
- Increased LRP incentive (2014)

Partnerships

- Partnering among wastewater and water supply agencies for groundwater recharge

check with Ray and Kira to be consistent

Sustainable Groundwater Production

Imported Water



Sources of Recharge

Stormwater

Recycled
Water

Imported
Water



Current Conditions



**Long-Term Average
Imported Recharge**

~240 TAFY



**Average Imported
Recharge Since 2005**

~170 TAFY



Challenges/Barriers

Water Quality

CRA Quagga control for spreading

Treated water vs. untreated water

Basin Plan Objectives

Operational

Scheduling of deliveries

Need for SWP supplies

Local vs. Regional storage



Opportunities

Adjudication Changes

- Storage and augmentation programs
- Pre-delivery of replenishment supplies

Operations

- Increased spreading capacity

Management

- Additional flexibility for Watermasters



Lessons Learned

GW basin
operations and
institutional
requirements
create complexities



Timing of imported
water spreading
deliveries
constrained by
flood control needs



Only being able to
take State Project
Water proved to be
an issue



Recommendations

Optimize
groundwater
storage in local
groundwater basins

Evaluate
performance of
existing storage
programs

Explore
opportunities to
maximize transfers
and storage



Policy Considerations

Metropolitan Participation in Local Resources Development

Partnerships

Funding/
Incentives

Other

Imported water

Rates/Incentives

Deliveries

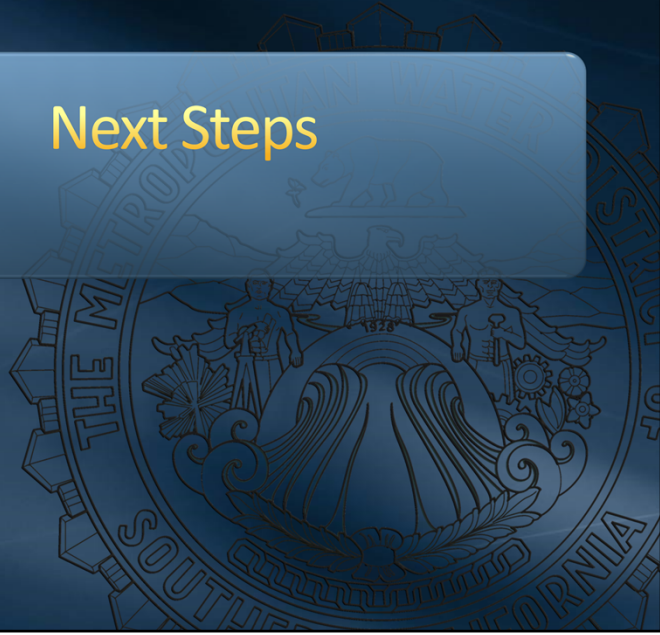
Storage and Transfer Strategy

Surface and groundwater storage

In-region, out-of-region

Wet year, dry year

Next Steps



IRP Technical Update Next Steps

- Incorporate feedback from this workgroup
- Continue working with basins and member agencies on technical refinements
- Return with preliminary results in early August
- Compile policy and implementation issues for Board policy process

Upcoming Technical Process Activities

June/July 2015

- Water Use Efficiency Meeting June 18th
- IRP Committee Meeting June 23rd
 - Tony Zampello, AGWA – groundwater issues
 - Mark Pestrella, LACDPW – stormwater issues
- Member Agency Workgroup June 24th
 - Local Resources (part 1 of 2)
- Member Agency Workgroup July 8th
 - Local Resources (part 2 of 2)

