County of Los Angeles
Department of Public Works

Stormwater Capture and Recharge Efforts

Presented by
Martin Araiza, PE

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Los Angeles County Flood Control Act

- Adopted by the State Legislature in 1915
- Established the Los Angeles County Flood Control District
- Provide flood protection, water conservation, recreation and aesthetic enhancement within its boundaries
- Governed, as a separate entity, by the County of Los Angeles Board of Supervisors
- Operational agreement with the Los Angeles County Department of Public Works in 1984
- Transferred planning and operational activities to the Department of Public Works
- Watershed Management Division is the planning and policy arm of the Flood Control District
- Public Works Flood Maintenance and Water Resources Divisions oversee its maintenance and operational efforts
Owns and operates complex flood protection and water conservation system that includes:

- 14 major dams
- 162 debris basins
- 500 miles of open channels
- 2,800 miles of underground storm drains
- 27 spreading ground facilities
- 3 seawater barriers
Stormwater Capture and Recharge Efforts

- Policy is to conserve as much of the storm and other waters as practicable
- Improve water supply sustainability and reliability for County
- Spreading grounds located adjacent to river channels and in soft-bottom channels
- Underlying soils are composed of permeable formations and in hydraulic connection with the underlying aquifer
- Permits water to percolate into groundwater basins for later pumping
- About one-third of the water used in the County is pumped from groundwater supplies
- Growth of the County, combined with periodic droughts, has seriously depleted these supplies
310,000 acre-feet

Annual Groundwater Recharge

Annual Rainfall Total

15.46 inches
Seasonal Groundwater Recharge thru July 2015 in Acre-Feet

128,307 acre-feet

- Imported: 44,562 acre-feet
- Recycled: 37,133 acre-feet
- Storm: 46,612 acre-feet
Spreading Grounds
General Information

- Spreading grounds first used 1917
- Current storage capacity of the 26 spreading grounds is 23,182 acre-feet
- Storage volume varies 12 acre-feet to 8,170 acre-feet
- Max intake 5 cfs to 30,100 cfs
- Percolation rates 1 cfs to 400 cfs
- Sources of water
  - Storm runoff
  - Imported water (delivered from northern CA and Colorado River)
  - Recycled water (WWTP discharges)
- Since 2007, $37M spent to increase spreading grounds capacity by 2,190 acre-feet
- Increase the average annual water conserved by 19,770 acre-feet
- Many of these projects were jointly funded by LADWP, WRDSC, TVMWD, and SGVMWD
Rio Hondo Coastal Spreading Grounds

- 20 total basins
- 3,694 ac-ft of storage
- Max intake of 1,950 cfs
- Flows diverted from Rio Hondo Channel
- Source: storm, imported, recycled water
• 3 total basins
• Max intake of 75 cfs
• Flows diverted from San Gabriel River
• 7 rubber dams along San Gabriel River
• In stream recharge along San Gabriel River
• Max intake of 20,000 cfs
• 1,463 ac-ft of storage
• Source: storm, imported, recycled water
Hansen Spreading Grounds

- Recently enhanced
- 6 total basins
- 1,409 ac-ft of storage
- Max intake of 600 cfs
- Flows diverted from Tujunga Wash
- Source: storm water
Infrastructure Improvements and Enhancements

- **Dams and Reservoirs**
  - Sediment removal for increased storage
  - Improvement to lift seismic restrictions
  - Replace/upgrade electrical, mechanical, and control systems
  - Modify operational plan of the dams (LACFCD and USACE)
  - Next 5-years: 4 sediment removal projects ($250M)

- **Spreading Grounds**
  - Increase storage by consolidating and enlarging basins
  - Enlarge intake capacities
  - Clean out basins to increase percolation rates
  - Replace/upgrade electrical, mechanical, and control systems
  - Next 5-years: 15 spreading ground projects ($123M)

- **Seawater Barriers**
  - Redevelopment of existing wells for increase injection capability
  - Expand the number of injection wells to prevent seawater intrusion

- **Outreach/Cooperation with Agencies**
  - $89M state grants and reimbursement (Spreading Grounds)
  - $48.4M state grants and reimbursement (Dams and Reservoirs)
Infrastructure Improvements and Enhancements
Reservoir Sediment Removal Projects

- Pacoima Reservoir
- Big Tujunga Reservoir
- Devils Gate Reservoir
- Cogswell Reservoir

- Restore 9,000 AF/YR of reservoir storage capacity
- $20M in cost sharing from LADWP
- $28.4M in Prop 1E grant funding
• Dam, Headworks, Debris Dam, and Spreading Grounds work together to recharge the region’s groundwater supply
• East Raymond Groundwater Basin
• Current Issues
  – Dam does not meet seismic requirements and cannot safely pass PMF
  – Reduced storage due to sedimentation
  – Debris Dam does not meet seismic requirements
  – Frequent washout of Headworks structure
  – Undersized culvert crossing to Arcadia Wilderness Park
  – Insufficient storage capacity at spreading grounds
Santa Anita Stormwater Flood Management and Seismic Strengthening Project

• Santa Anita Dam Proposed Improvements
  – Construct new spillway and outlet tower
  – Sediment removal
  – Seismic retrofit
  – Armor downstream canyon walls and toe of Dam
  – Installation of new valves, electrical, monitoring and control systems

• Benefits
  – Safely pass PMF
  – Withstand a maximum credible earthquake
  – Increase storage behind dam
  – Ability to control flows with new valves
Santa Anita Stormwater Flood Management and Seismic Strengthening Project

• Santa Anita Headworks Proposed Improvements
  – Widen bypass channel
  – Armor and increase levee height
  – Installation of rubber diversion structure
  – Installation of new gates and control systems

• Benefits
  – Reliably divert stormwater runoff to spreading grounds
  – Increase max intake to 1000 cfs
  – Ability of levee to withstand larger flows
  – Reduced maintenance/repair of levee
Santa Anita Stormwater Flood Management and Seismic Strengthening Project

• Santa Anita Culvert Crossing Proposed Improvements
  – Widening of road crossing
  – Replacement of existing CMP culverts with pre-cast concrete open span culvert

• Benefits
  – Increase capacity to allow for higher flows
  – Allow access for emergency vehicles
Santa Anita Stormwater Flood Management and Seismic Strengthening Project

- Santa Anita Debris Dam Proposed Improvements
  - Replacement of existing outlet tower
  - Installation of new gates and rehab of outlet pipe
  - Buttressing of spillway walls and westerly embankment
  - Installation of new control system

- Benefits
  - Withstand a maximum credible earthquake
  - Allow storage increase behind debris dam
Santa Anita Stormwater Flood Management and Seismic Strengthening Project

- Santa Anita Spreading Grounds
  - Proposed Improvements
    - Construction of three new basins
    - Line eastside canal
    - New inter-basin structures
    - Enlargement of existing basins
    - Installation of automated rubber dam and control systems

- Benefits
  - Increase storage capacity by 15.1 acre-feet
  - Overall annual increase of 518 acre-feet
Santa Anita Stormwater Flood Management and Seismic Strengthening Project

- Total Project Cost: $55M
- Proposition 1E grant: $20M
- LACFCD: $33M
- City of Arcadia: $864,126
- City of Sierra Madre: $900,938
- Raymond Basin Management Board: $234,936
Pacoima Spreading Grounds Improvement Project

- **Current Issues**
  - Insufficient storage capacity
  - Low infiltration rates
  - Layer of clay soils below the basins
  - Potential for flooding of local streets and neighborhoods
Pacoima Spreading Grounds Improvement Project

- **Proposed Improvements**
  - Reconfigure basins to increase capacity by combining and deepening
  - Remove low permeability clay layers and backfill with higher permeability soil
  - Replace intake canal with buried pipes to eliminate local flooding risk

- **Benefits**
  - Increase percolation rate from 65 cfs to 140 cfs
  - Increase storage capacity from 530 acre-feet to 1,200 acre-feet
  - Annual water conservation increase of 10,500 acre-feet

- **Funding**
  - Estimated construction cost of $28M
  - Funding by LACFCD, LADWP, and Proposition 84 ($4M state grant)
Tujunga Spreading Grounds Enhancement Project

- Owned by LADWP
- Facility operated in conjunction with Public Works
- Current Issues
  - Insufficient storage capacity
  - Low intake capacity
Tujunga Spreading Grounds Enhancement Project

• Proposed Improvements
  – Expanding and combining basins
  – Deepen basins to increase storage
  – Installation of new intake structures
  – Low flow treatment basins

• Benefits
  – Increase intake capacity from 250 cfs to 450 cfs
  – Double the recharge capacity and deliver 16,000 acre-feet of recharge
  – Improvement to water quality by diverting low flows from Tujunga Wash Channel
  – Aesthetic enhancements and landscaping

• Funding
  – Estimated construction cost of $27M
  – Funding by LADWP and Proposition 84 ($3M state grant)
Hanson Spreading Grounds Enhancement Project

• Current Issues
  – Insufficient storage capacity
  – Low intake capacity
Hanson Spreading Grounds Enhancement Project

• Enhancements
  – Expanded and combined basins
  – Deepened basins to increase storage
  – Installed new intake structure
  – Obermeyer rubber dam
  – Replaced inter-basin structures
  – Concrete-lined the intake channel

• Benefits
  – Increase intake capacity from 400 cfs to 600 cfs
  – Double the recharge capacity and deliver 16,000 acre-feet of recharge

• Funding
  – Total cost of $7.5M
  – Funding by LACFCD (50%) and LADWP (50%)
Enhanced Watershed Management Programs (EWMPs)

- MS4 Permit Compliance for Water Quality
- Stormwater as a resource
- Stormwater and non-stormwater runoff benefit water supply
- 19 EWMP/WMP Groups
- Regional Solutions
Sun Valley Park

- Groundwater recharge
- Flood Protection
- Controls Water Pollution
- Outdoor Recreation
Rory M. Shaw Wetlands

- Flood protection
- Water quality improvements
- Habitat restoration
- Recreation opportunities
- Water conservation
Challenges

• Permitting
• Climate Change
• Drought
• Water Rights
• Funding
• Public