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the umbrella body of the rivers trust movement

where there's water, there's life

SuDS for Groundwater Recharge

Southeast Rivers Trust Spring Conference
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kent.gov.uk

Topics

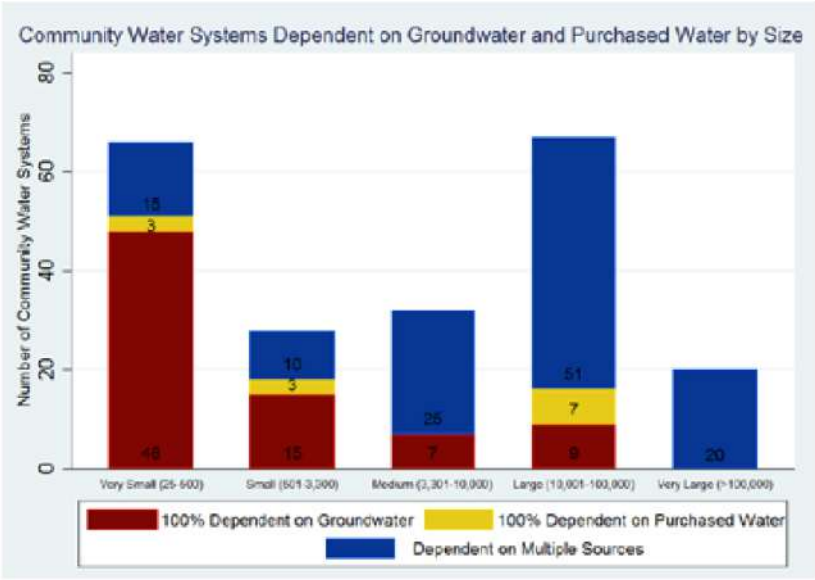
- Los Angeles Case Study
  - Stormwater Capture Master Plan
- Application to Kent
  - Strategically
  - On-small scale

Orientation to Los Angeles

- Population
  - 10.16 million within Los Angeles County
  - 4 million within City of Los Angeles
- County area includes 88 incorporated cities & many unincorporated areas

Water Supply in Los Angeles

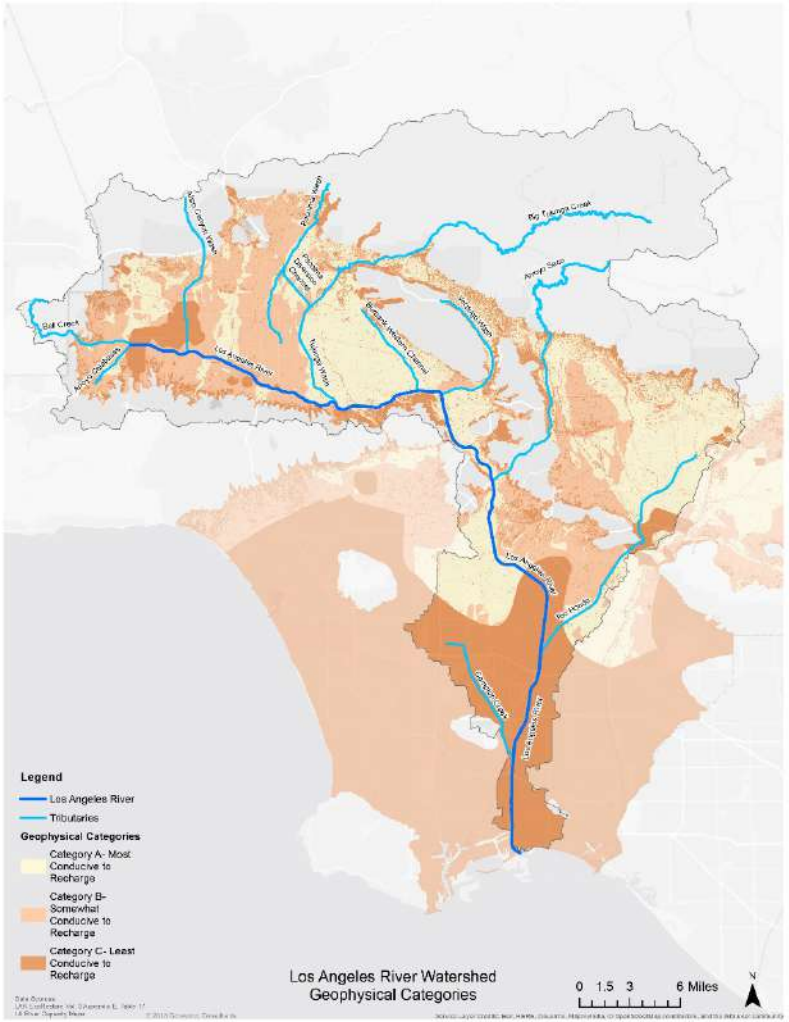
- Three sources of public water
  - imported water from State Water Project and Colorado River Aqueduct; and groundwater.
- Water is supplied by 288 community water systems
  - 70 are 100% dependent upon groundwater for drinking water
- Reliability very difficult to predict and can vary greatly year to year



- Groundwater supplies have been over-extracted
  - water levels declined, groundwater was lost from storage, and seawater intruded into the coastal aquifers.

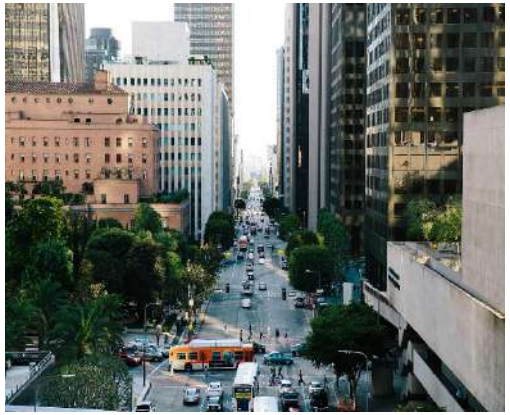
Regional Strategy

- Los Angeles Department of Water and Power's Stormwater Capture Master Plan
  - Decrease imported water by 50% by 2024
  - all areas within the Los Angeles River watershed were categorized by how well stormwater could infiltrate into underlying potable groundwater aquifers
  - Distributed & Centralised



Improving groundwater supply

- Groundwater supplies are augmented by:
  - Distributed recharge where private and public development projects construct “best management practices”
  - Centralized recharge usually through surface spreading or injection directly into the potable aquifers.



LA LID & green streets

Ballona Wetlands

Mill Creek Wetlands

Tujunga Spreading Grounds

Application to Kent strategically

- Change of thinking
- Constraint mapping
- Variety of solutions
  - Project based
  - Also programs, policies, incentives, and ordinances
- Recognition of multi-benefits
  - Groundwater recharge, increased water conservation, potential open space alternatives, improved downstream water quality, and peak flow attenuation
- Community Partnerships & diverse stakeholders

" … in large part due to urbanization, the majority of precipitation that falls onto the City flows into storm drains and out to the ocean. In light of these conditions, stormwater is an increasingly viable supply …"

Application to Kent on the small scale

"… LADWP is also contributing to the implementation of distributed capture projects. LADWP understands that the opportunities for centralized capture projects are limited due to their space requirements, and acknowledges the important benefits provided by distributed capture projects … "

"…modeling performed for the SCMP showed that 63,000 acre-feet per year of distributed infiltration is currently occurring incidentally via pervious surfaces throughout the City. However, only 35,000 acre-feet per year of this infiltrated water is being recharged into water supply aquifers…"

Green Street Programs	Commercial Streets	ROW Bulb-outs, Permeable Pavement with Tributary Area, Simple On-site Rain Garden, Dry Wells	Green streets program in commercial corridors
	Residential Streets		Parkway bioretention program
	Rio Vistas		Green streets retrofits along street ends adjacent to major streams and rivers

Green streets represent another substantial opportunity with 48,000 impervious acres potentially contributing to green street program areas

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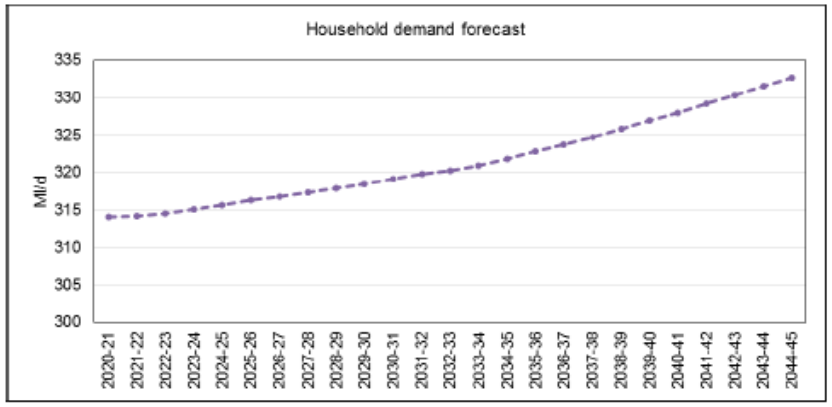
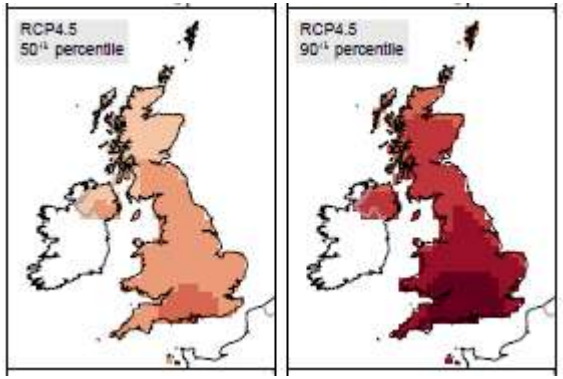
Final Thoughts ….

Kent faces similar pressures

- Growth
  - Increase in developed area of the order of 6,400 ha
  - 20% to 25% expansion of on existing urban areas
- Climate change rise 2º to 4º
- Water demand > exceed supply

Figure 24 Total household demand forecast at the company level





References

- Los Angeles Department of Water and Power, Stormwater Capture Master Plan, 2015
- Los Angeles County Community Water Systems, Water Atlas and Policy Guide, UCLA Luskin Centre for Innovation
- Green Infrastructure for Los Angeles: Addressing Urban Runoff and Water Supply Through Low Impact Development, City of Los Angeles, 2009
- Water Replenishment District of Southern California, Groundwater Basin Master Plan, 2016