

# This presentation premiered at WaterSmart Innovations

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# DEVELOPING WATER CONSERVATION COMMUNITIES THROUGH HOLISTIC LAND USE PLANNING

## *STERLING RANCH CASE STUDY*

**Beorn Courtney, P.E.**  
**Director of Water Resources Engineering**  
**Headwaters Corporation**



**Water Smart Innovations**

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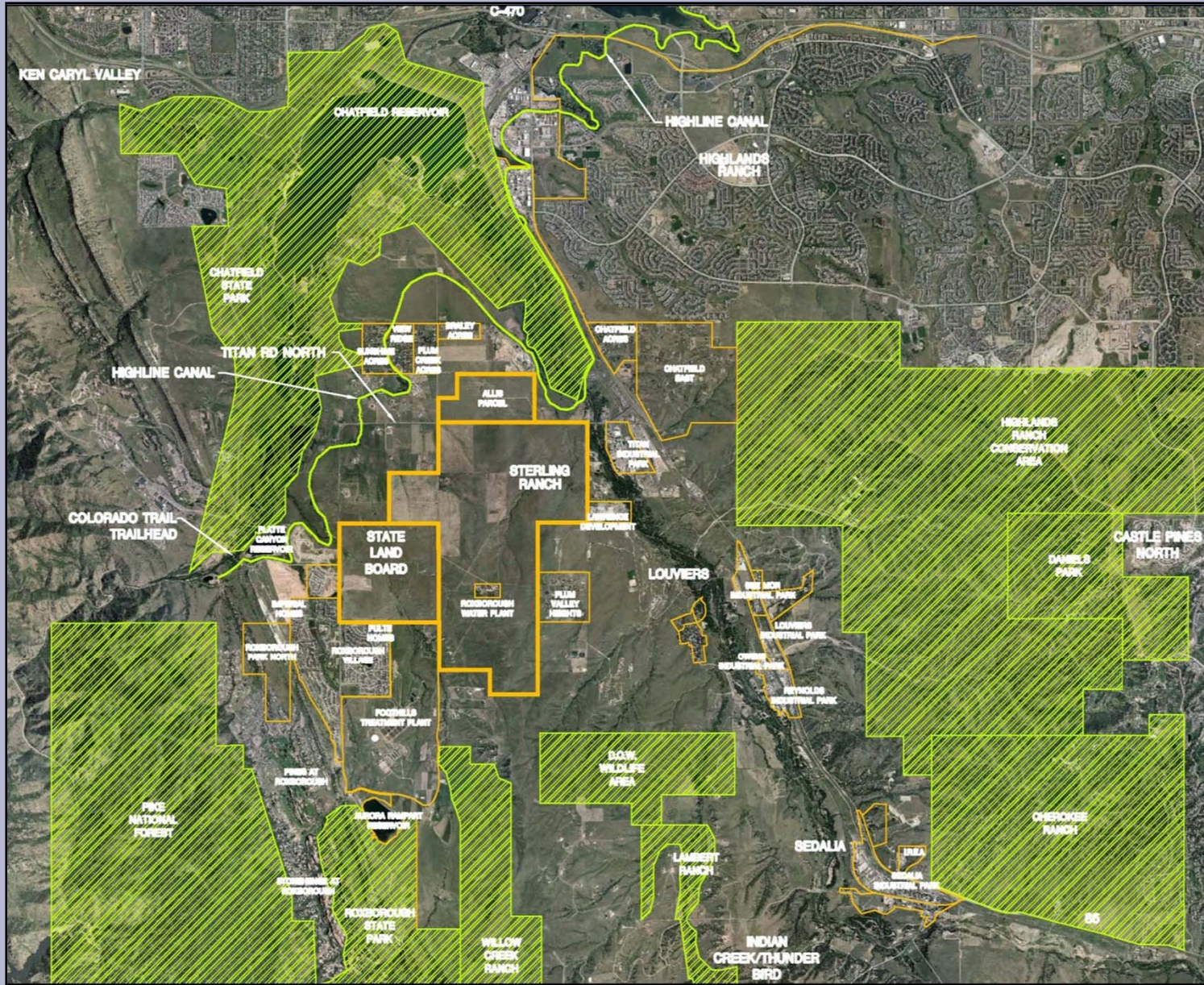
# Growth in a New Economic Reality

- ❑ *Colorado*: statewide future water shortage projections
- ❑ *Douglas County*: historical reliance on inexpensive non-renewable groundwater
- ❑ Common land use planning does not include demand management
- ❑ Opportunities with new development – to conserve and build incentives into a system

# Douglas County Leads by Example

**“The State should investigate and discuss how to assist local governments to revise their land use regulations to encourage and provide incentives so that new development will be designed to use less water and to conserve water.”**

*– Interbasin Compact Committee 2010 Report to Governor*



## Sterling Ranch and Local Communities

# Land Use and Water Conservation

- ❑ Traffic planning,
- ❑ Recreation & open spaces,
- ❑ Storm water mgmt & low impact development,
- ❑ Clustering of homes with orientation on common areas,
- ❑ Anticipated leisure activities.



# Sterling Ranch Water Strategy

*Water supplies: extremely limited.*

*Demand management: a viable method.*

- ❑ **Holistic approach:**
  - Reduce in-home demand,
  - Manage landscape irrigation use,
  - Use naturally occurring water effectively.
  
- ❑ **CWCB Study provided data and public understanding:**
  - *Holistic Approach to Sustainable Water Management in Northwest Douglas County*
  - Download [www.lrewater.com](http://www.lrewater.com)

# Outdoor Water Conservation

## *Influencing Factors*

- Amount of Irrigated Area
- Landscape Materials
- Irrigation System Design & Maintenance
- Water Mgmt

## One Single Family Residential Equivalent (SFE)

Landscaping Alternative	Irrigation Demand		Savings from Traditional
	(acre-feet)	(gallons/sq-ft)	(%)
Traditional	0.35	32.3	---
Moderate Conservation	0.16	15.3	53%
<b>Water Wise</b>	<b>0.08</b>	<b>7.6</b>	<b>76%</b>





# Rainwater Harvesting

*Colorado's  
FIRST  
Approved  
Pilot Project*



- **Rainwater:**
  - Reliable supply of water,
  - Possible without injury,
  - Water quality benefits,
  - Used in Colorado for a thousand years,
  - Became illegal through series of cases.
  
- **New law (HB09-1129):**
  - Passed without opposition,
  - Allows for 10 test projects across Colorado,
  - Historic return flows “owed” to the river.

# Rainwater Harvesting Potential

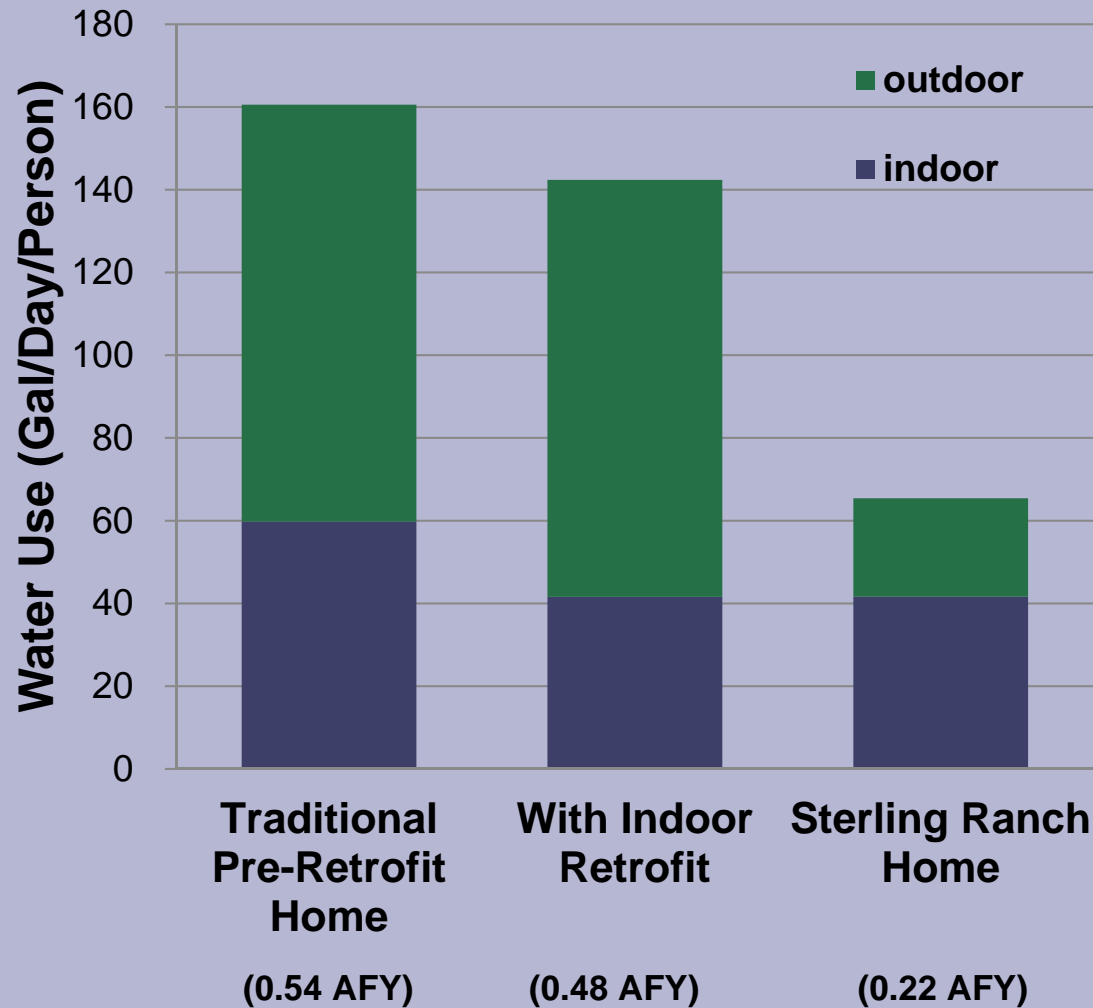
One Single Family Residential Equivalent (SFE)		
Landscaping Alternative	Supply from RWH	Savings From Traditional
Traditional	0%	---
Traditional w/ Cisterns	12%	12%
Moderate Conservation w/ Cisterns	26%	65%
<b>Water Wise w/ Cisterns</b>	<b>49%</b>	<b>88%</b>

# Waterwise New Homes – Land Use Commitments

- ❑ Indoor Fixtures & Appliances
- ❑ Water Budgets & Inclining Block Rates
- ❑ Irrigation System Regulations
- ❑ Landscape Plan Approvals
  - Sample Plans for Water Budgets
  - Denver Botanic Gardens teaming
- ❑ Inspections
  - Pre-purchase
  - Pre-sale
- ❑ Dual Metering



# Residential Water Use



# Douglas County Water Appeal

**May 2011:  
Approved  
by BOCC**

*1<sup>st</sup> DC  
planned  
development  
to include  
conservation  
& conjunctive  
management  
from inception*

## ❑ **Water Conservation**

- WCP supports reduced standards,
- Extra security in initial standards,
- Methodology for future adjustments (“look-back”),
- Plan and covenants with zoning.

## ❑ **Renewable Water Supply**

- Conjunctive mgmt framework with zoning,
- Details provided during platting process.

## ❑ **Sharing Water with Neighbors**

- 10% of supply available to neighbors at cost

# Future Demand Standard Adjustments

- ❑ Min 5 years data per project sector
  - Min 100 homes for residential sectors
- ❑ At County's request (w/ development applications) or at Retail Water District's request
- ❑ Scientific, objective analysis of water use, hydrological, and climatic data
- ❑ New standards include:
  - Expected water use + system inefficiency + additional security
- ❑ Retroactively applied:
  - Excess water made available for other purposes
  - No additional improvements until sufficient water proven

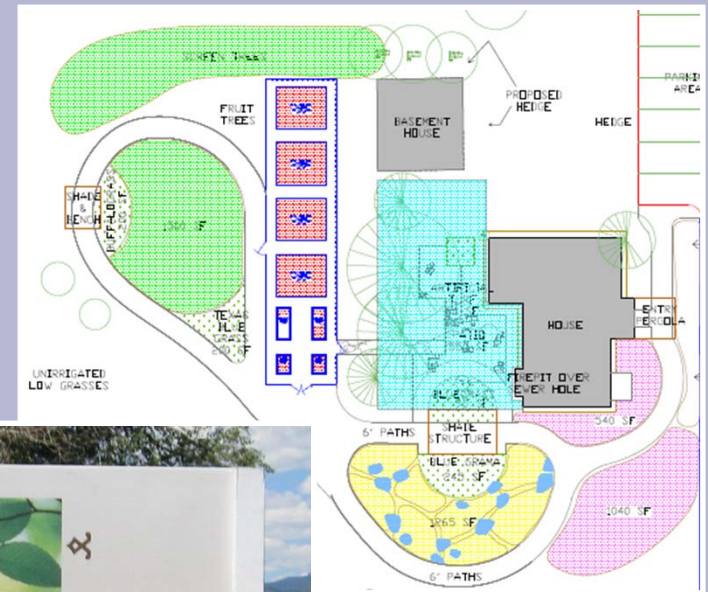
# Example of Customer Benefits

<b>Demand Standard (ac-ft per residence):</b>	<b>0.75</b>	<b>0.4</b>	<b>0.286</b>
Take-or-Pay Contract (gallons/year/home)	244,000	130,000	93,000
Annual Cost per Home (at \$10 per 1,000 gallons/year)	\$2,440	\$1,300	\$932
Monthly Cost per Home	\$203	\$108	\$78

# Experimental Demo Site

Demand Management:  
plantings & irrigation systems

Rainwater Capture allowed under SB-80





# Integrating Water Conservation & Land Use Planning

- ❑ Douglas County approval of Sterling Ranch:
  - Encourages wise water use,
  - Incentivizes water conservation and renewable supplies,
  - Considers economically viable alternatives to common historical practices.



**BEORN COURTNEY, DIRECTOR OF WATER RESOURCES**  
**HEADWATERS CORPORATION**  
[courtneyb@headwaterscorp.com](mailto:courtneyb@headwaterscorp.com)  
720.524.6115



**Discussion & Observations**