This presentation premiered at WaterSmart Innovations

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Hahn Arroyo: A Model for Sustainable Watershed Improvement

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"True sustainability can only be achieved by linking water with the environment, engineering and land use"

...Famous American Landscape Architect

Hahn Arroyo's Past

- As Albuquerque grew, its arroyos were engineered to fit its subdivision street layouts
  - Meanders were straightened
  - Floodplains were narrowed
  - Channels were lined in concrete
  - Adjacent service roads were built

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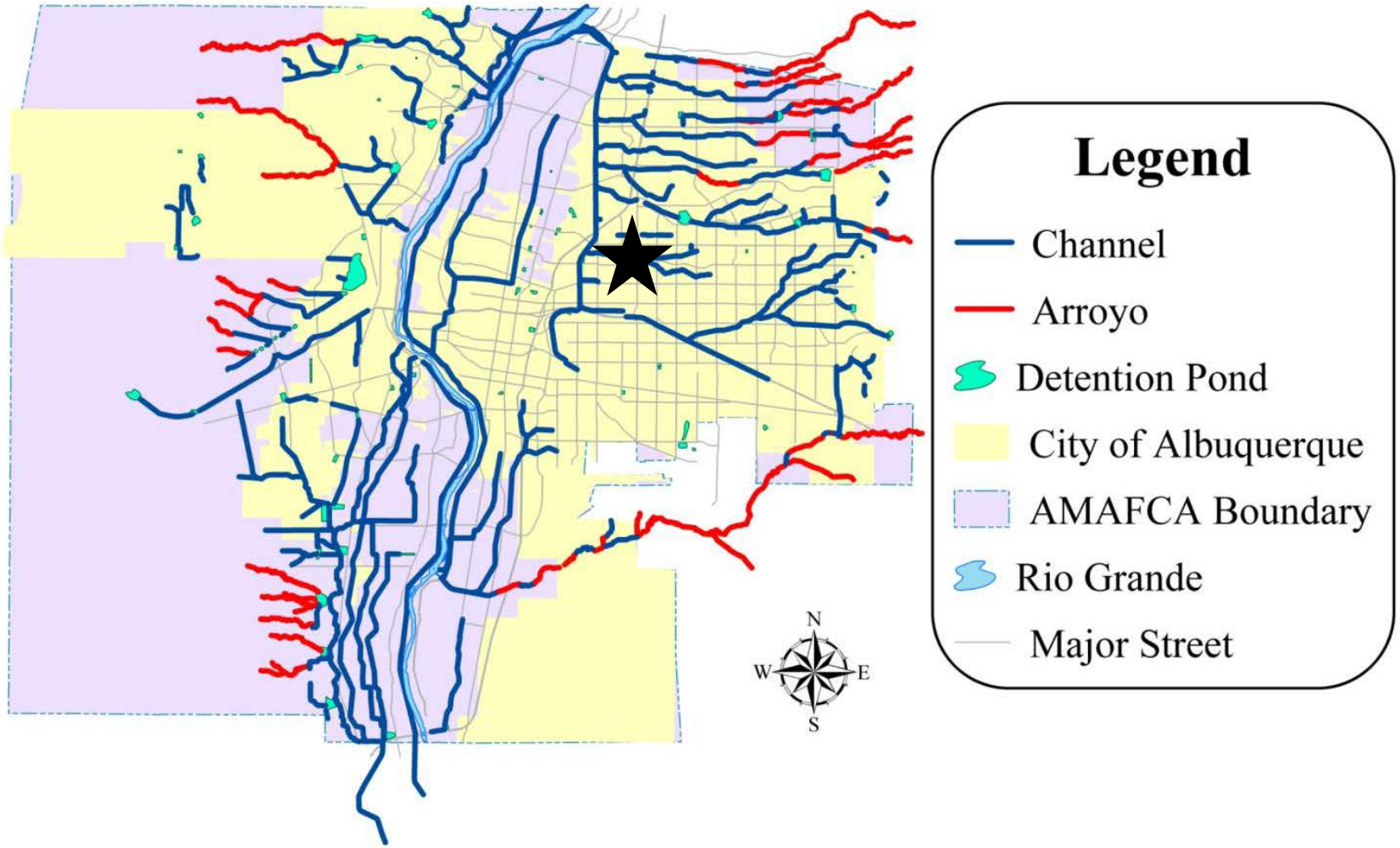
Hahn's Surrounding Land Uses

- Residential Neighborhoods
- Major Street Crossings
- Major City Park at Westside of Site
- Commercial Area Nearby
- Civic Buildings on Corridor
- Nearby Schools


Legend
Channel
Arroyo
Detention Pond
City of Albuquerque
AMAFCA Boundary
Rio Grande
Major Street
N
W
E
S


Downstream side of Hahn Arroyo crossing at Washington NE.
Wall extended entire length of this yard at Delamar & Washington.
(8-13-63)

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Enter…… a New Era

- Environmental Impacts Central to Planning
- Green Projects become more acceptable
- Water Conservation takes on Greater Importance, especially in Arid Lands
- EPA standards demand stormwater quality be addressed (MS4)

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The Whole Systems Approach

- Integration of the Site with Neighborhood Culture and Economy
- Safety
- Create more Multi-modal transportation linkages
- Dual use facilities (reduce costs)
- Education / Interpretation/Art
- Wildlife Connection
- Conserving water is important!

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Hahn Concepts

- Flood Control
- Utilize Stormwater / Water Harvesting (LID)
  - Cisterns, Localized Watersheds
- Stormwater Quality (LID)
- Recreation (linear park)
- Native Landscaping
- Trails, Linkages
- Permeable Pavement
- Use of Recycled Materials

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Hahn Arroyo Rehabilitation

& Integrated Drainage Corridor Enhancement Project

New Channel

A new, continuously reinforced, tinted concrete lined channel is proposed to prevent future channel failure on the existing deteriorated channel.

Tinted Concrete Channel

Walking Path

A split-surface trail meanders along the north edge of the Hahn Arroyo through a landscape irrigated with harvested storm water and through areas that recieve rainfall only. Exercise equipment is located along the path for use by pedestrians. A wildlife drinker and dog drinker are also located along this path.

Wildlife Drinker

Dog Bag Station

Dog Drinker

Walking Path

Storm Water Quality

First flush storm water and nuisance water from low frequency storm events are harvested along the Hahn Arroyo to be filtered of debris and sediment, stored in a subsurface cistern and reused for irrigating landscape nodes along the Hahn Arroyo.

Passive Water Harvesting with Check Dams

Contouring

The landscape adjacent to the channel is contoured into berms, swales and depressions, passively harvesting storm water from the site. Check dams are placed at the base of berms, ensuring that runoff is directed to desired plantings.

Pedestrian Refuge

Pedestrian Refuge

A 10' x 8' break in the median provides refuge for pedestrians and cyclists as they cross Comanche Road. Planted with an appropriate xeric landscape without trees in clear site lines, this median enhances the aesthetic quality of both roadway and arroyo.

Air Station

Multi-Use Path

A 10' wide scored and textured concrete bike path runs along the south edge of Hahn Arroyo. With a minimum distance of 5' maintained between the path and the arroyo's edge, no guardrail is required. Trees are spaced with a minimum of 3' from the path, to avoid vertical disruption along the path for cyclists. A drinking fountain, shaded benches, wayfinding signage and an air station are amongst the amenities a cyclist may have available along this stretch of the Hahn Arroyo.

Wayfinding Device

Meadow

Recycled Concrete & Asphalt Paving

Plaza & Meadow

The surface of a small plaza is constructed from concrete recycled from Hahn Arroyo reconstruction. Within this plaza, furniture adds to the comfort of pedestrians under a canopy of shade.

A meadow depression irrigated by the harvested water from the Hahn Arroyo creates habitat along this stretch. Favorable wildlife forage is located amongst the shaded plazas of recycled concrete. Native pasture grasses in this area allow it to be low water use and to require little maintenance.

1" = 50'

N

AMAFCA

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Flood Control

- Arroyo Carrying Capacity
  - 200 Year Storm Event: 1,600 cfs (upper) to 2000 cfs (lower)
- Use Curvilinear Channel Geometry
- Utilize Flows from Stormwater/Wells

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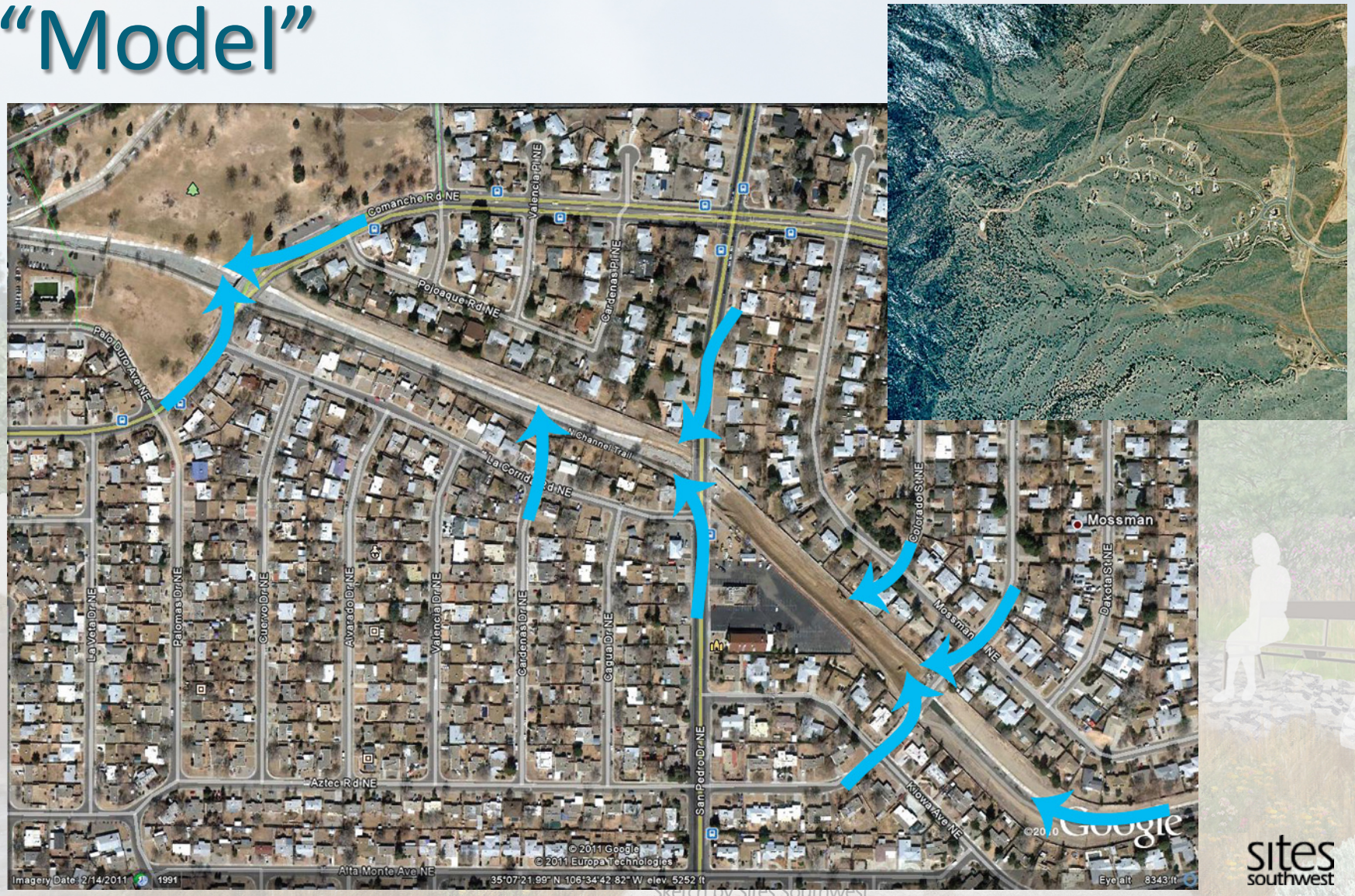
Natural Stormwater Systems as the "Model"



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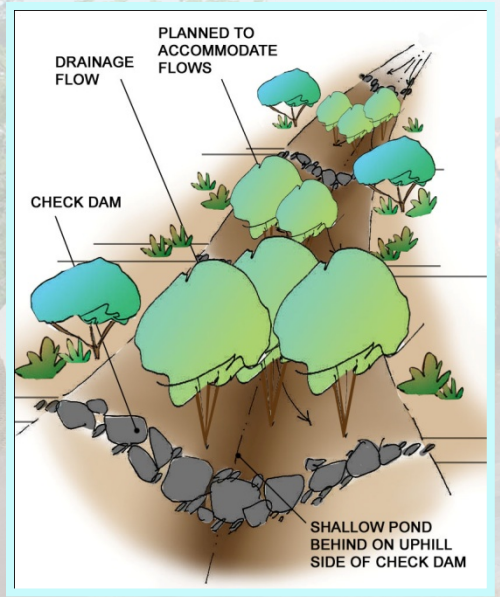
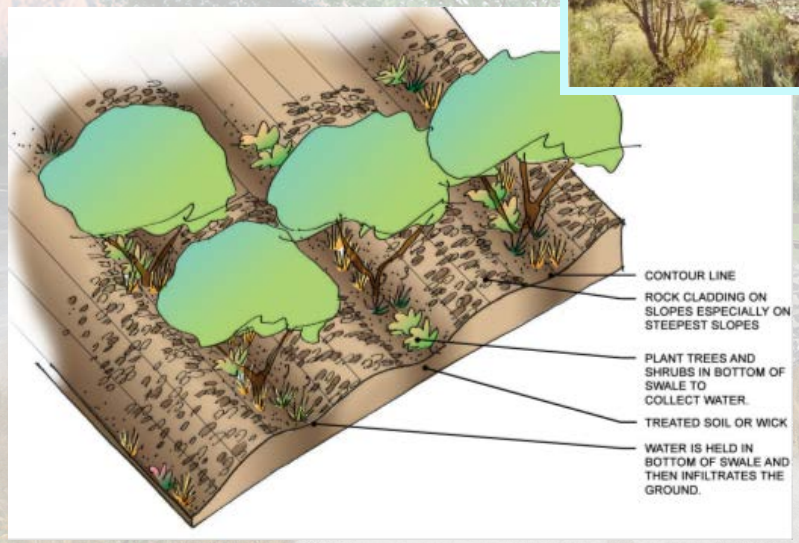
Water Harvesting (channel-sides)

- Micro-swales, Check Dams and Small Ponds
- Land Contouring





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Water Harvesting

- Collection Ponds not possible

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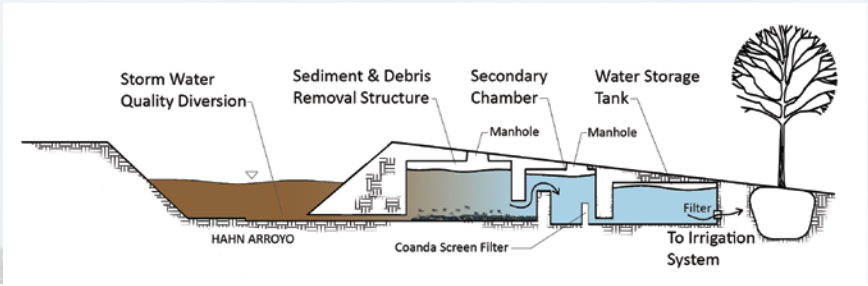
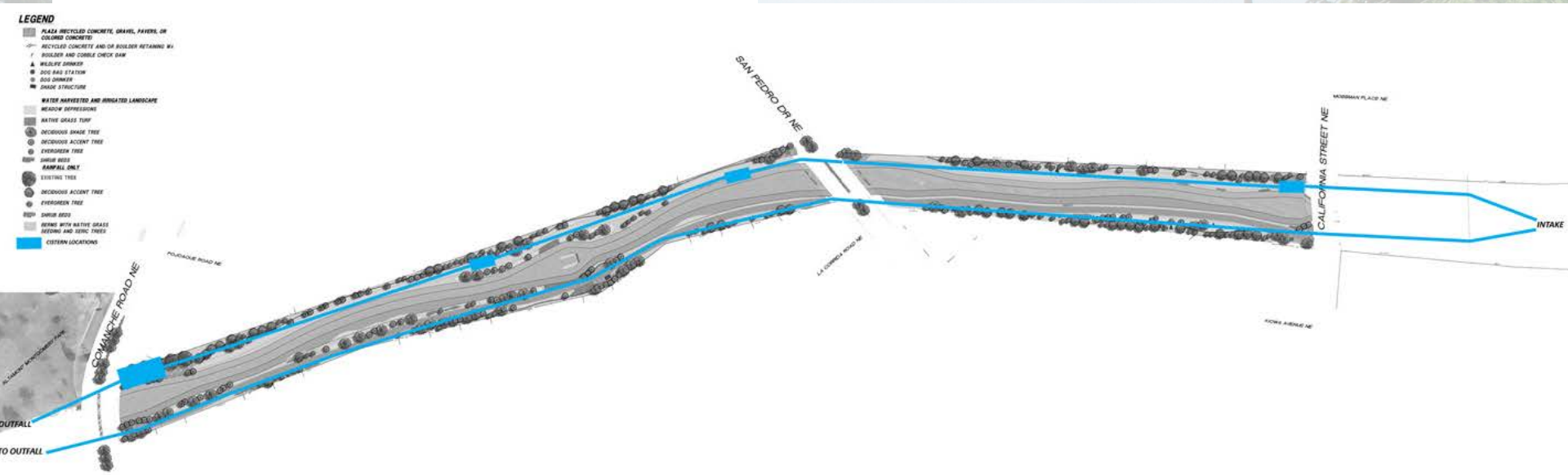
Use Cisterns (LID)





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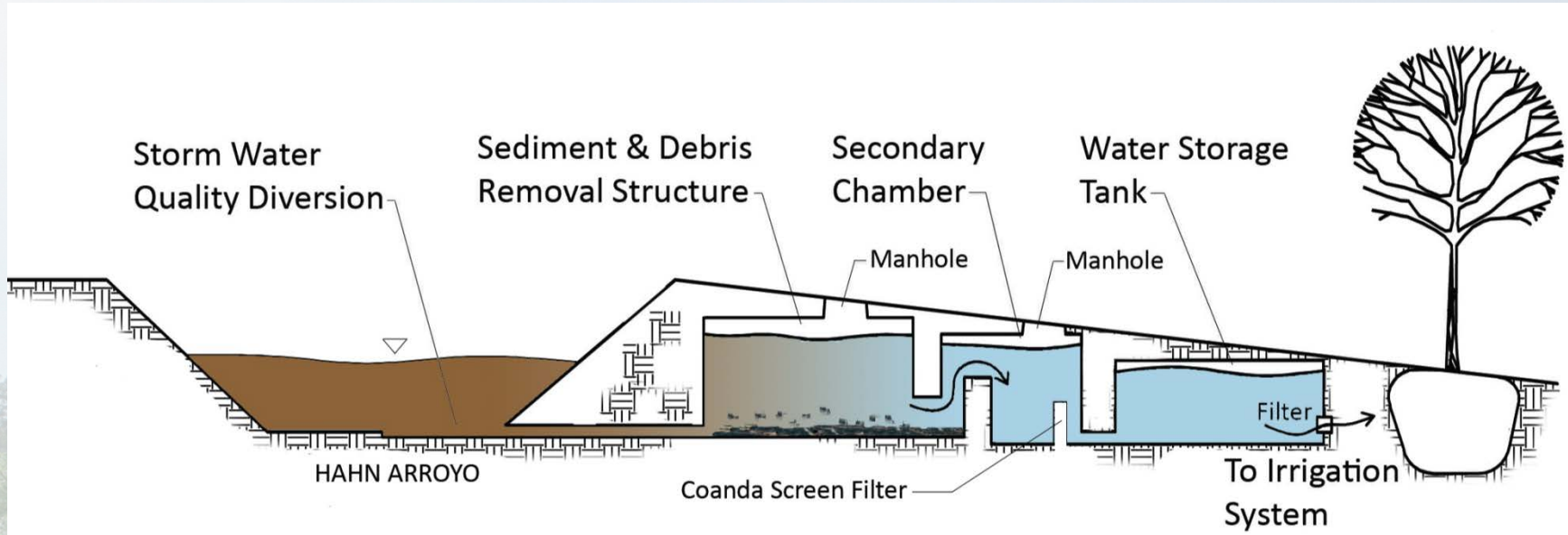
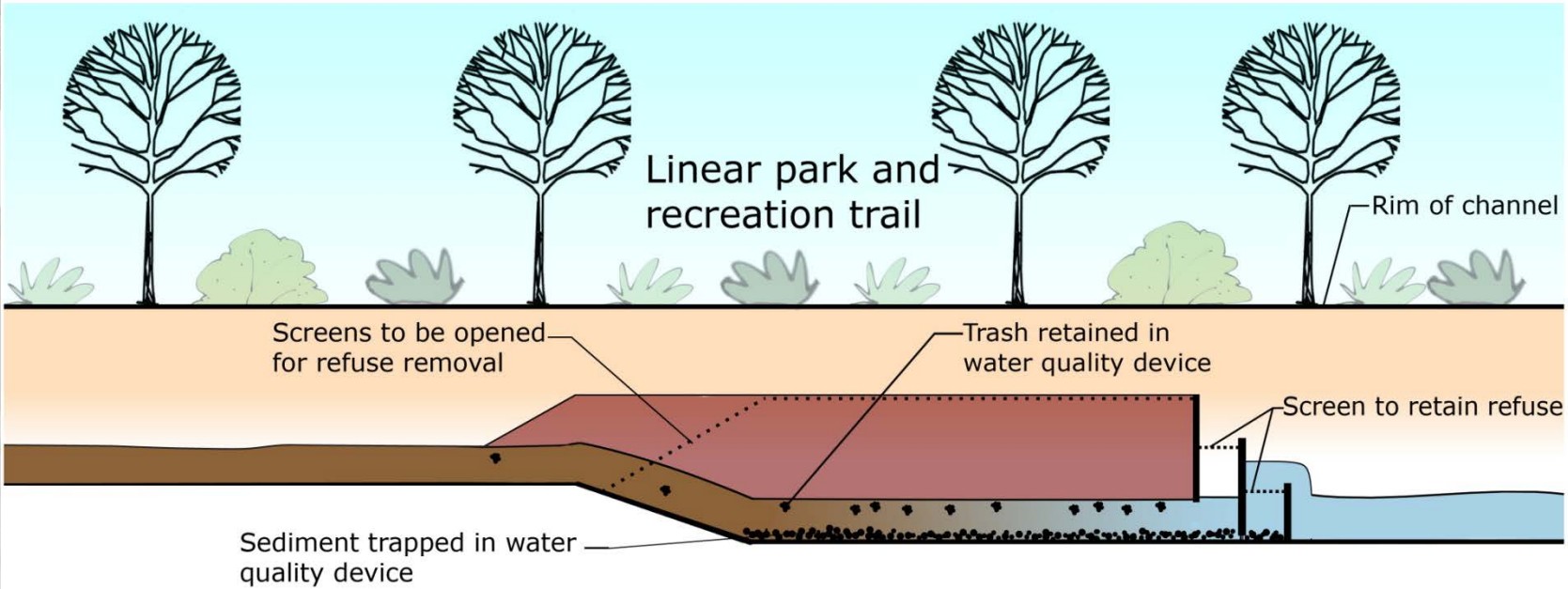
Water Quality

- In-Channel Water Quality Devices
- Off-Channel Stormwater Quality Devices with Secondary Treatment

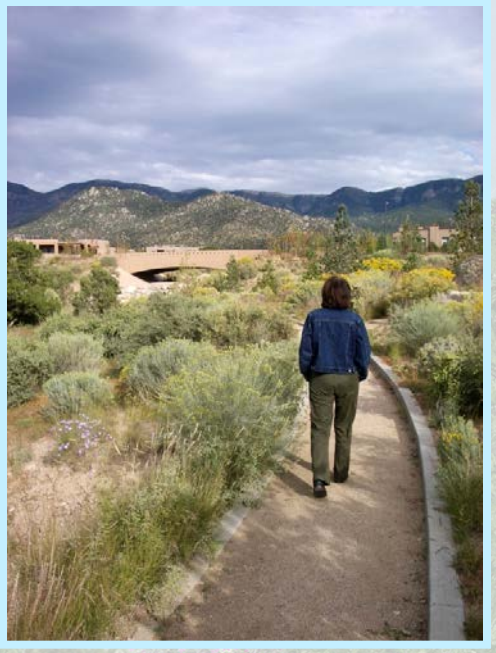
Figure 2. A prototype-size Coanda-effect screen structure tested in the hydraulic laboratory.

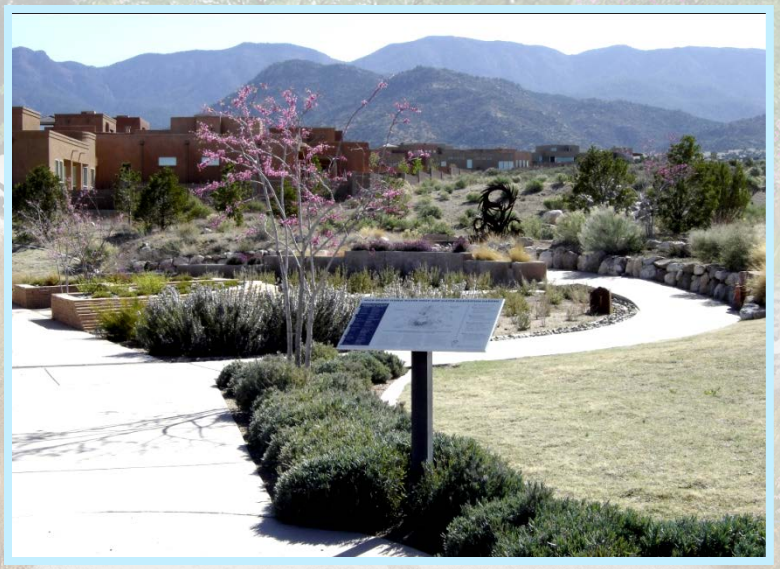

Storm Water
Quality Diversion
Sediment & Debris
Removal Structure
Secondary
Chamber
Water Storage
Tank
Manhole
Manhole
Filter
HAHN ARROYO
Coanda Screen Filter
To Irrigation
System


Linear park and
recreation trail
Rim of channel
Screens to be opened
for refuse removal
Trash retained in
water quality device
Screen to retain refuse
Sediment trapped in water
quality device

Recreation / Linear Parks

- Open Space / Landscaping
- Hiking / Biking / Exercise
- Sitting and Relaxation
- Observing Nature
- Education





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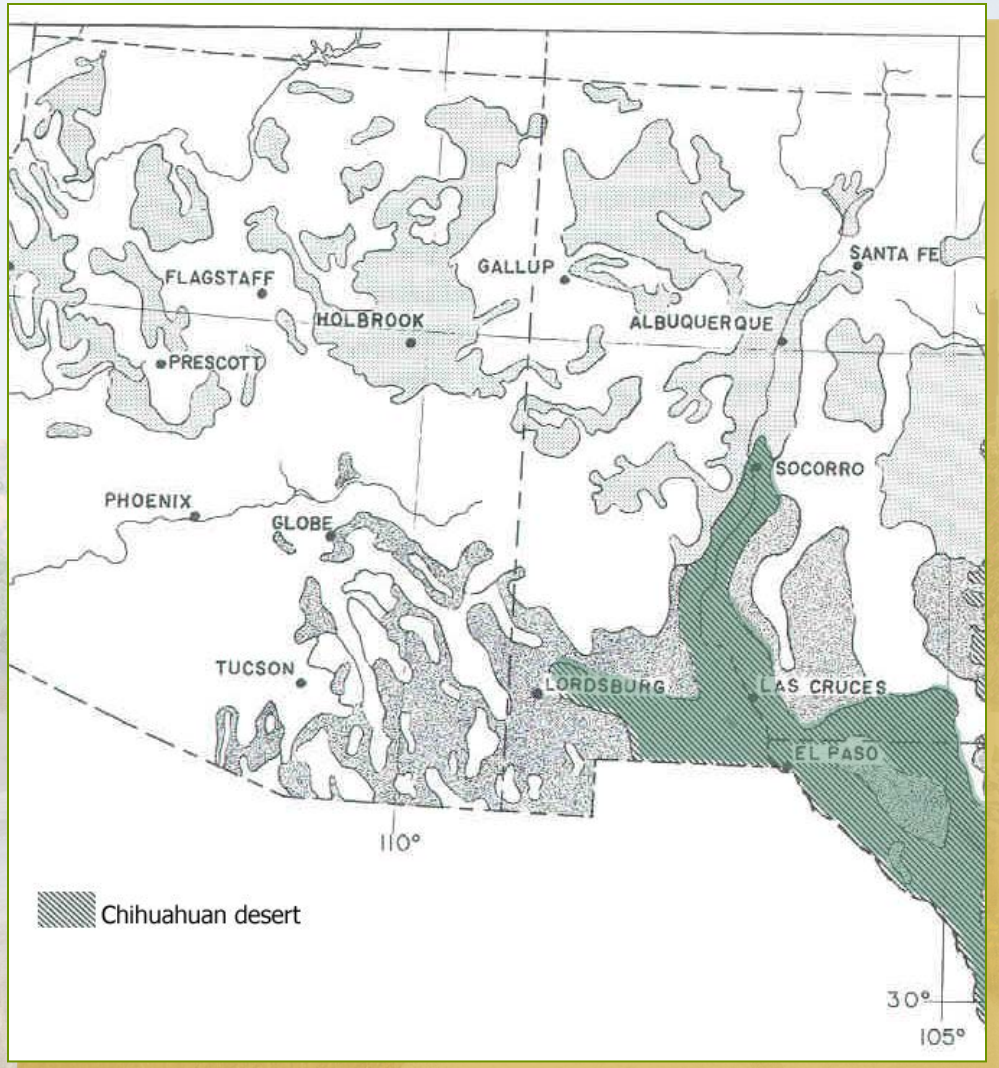
Native Landscaping



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Native Landscaping

- Plaza

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Native Landscaping

- Water Harvesting Swales and ponds

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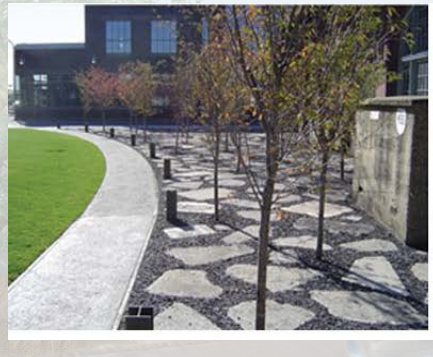
Native Landscaping

- Ambient Native Landscaping

Water / Material Conservation

- Recycled Concrete as walls and seating
- Permeable Pavement



Recreation, Aesthetics and Landscape

- Trails
- Median Refuges
- Interpretive & Directional Signage
- Artwork
- Native Landscaping
- Pigmented Channel
- Plazas

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Permeable Pavement and Recycled Materials

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Permeable Pavement and Recycled Materials

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Stormwater Quality Devices

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