Parkway Landscape Conversion Action Plan

Presented to the
Centennial Water & Sanitation District Board and
Highlands Ranch Metro District Board

October 29, 2018
Background Information

- Parkway Action Plan 2015
- Challenging landscape to maintain
- Rising maintenance costs
- Commitment from both organizations to conserve resources and water
- Meet PBB results by conserving natural resources while providing attractive parkways
Approach to Planning

• Jointly funded plan
• DHM Design
• Project Team: Dirk Ambrose, Bob Claiborne, Thomas Riggle, Brittany White, Carrie Ward
• Inventory of perennial problem areas, maintenance issues and water usage
• Studied concepts for converting some parkway landscape
Goals & Objectives

1. Reduce overall water and maintenance needs by providing a more sustainable landscape and irrigation system.
2. Maintain and enhance the existing aesthetics and experience of the streetscape.
3. Educate the community in the value of landscape conversions.
4. Create a realistic phasing plan which prioritizes areas for conversion.
Landscape Analysis

285 Acres Consisting of 8 Typical Landscapes:

- Community entries
- Neighborhood areas
- Commercial areas
- Medians
- Parkways that intersect with open space
- Narrow, medium and wide areas
Landscape Strategies

- Identified eight typical landscapes
- Simple designs visible from vehicles
- Unified design, consistent plans and materials
- Areas to convert: narrow, steep, south facing
- Areas adjacent to open space, parks and recreation center frontages
3 Types of Conversion Scenarios

- **Shrub Bed** – consists of cobble stone, wood mulch, shrubs and ornamental grasses (typically for narrow area applications)
- **Alternative Grass** – a variety of lower water use grasses intended to look more like long turf (typically used in large areas that are adjacent to bluegrass)
- **Native Grass** – a variety of low water use grasses that thrive in our dry climate (typically used in large areas that are adjacent to open space)
Typical Landscape Concepts - Before
Typical Landscape Concepts — After
Typical Landscape Concepts — Before
Typical Landscape Concepts — After
Typical Landscape Concepts — Before
Typical Landscape Concepts – After

CONVERSION CONCEPT
CONVERT BLUEGRASS TO SHRUB PLANTINGS AND COBBLE IN NARROW SHADE STREETSCAPE AREAS. REPEAT PATTERNS FOR UNIFIED STREETSCAPES.
Typical Landscape Concepts — Before
Typical Landscape Concepts – After
Typical Landscape Concepts — Before
Typical Landscape Concepts — After
Typical Landscape Concepts — Before
Typical Landscape Concepts – After
Typical Landscape Concepts — Before
Typical Landscape Concepts — After

CONNECT EXISTING SHRUB BEDS

CONVERTED TO NATIVE GRASS

CONVERSION CONCEPT
EXTEND THE CHARACTER OF THE NATIVE GRASS & PLANTINGS OF THE OPEN SPACE OUT INTO THE STREETSCAPE.
Typical Landscape Concepts — Before
Typical Landscape Concepts — After

CONVERSION CONCEPT
CONVERT BLUEGRASS IN NARROW AREAS TO NATIVE GRASS, SHRUB PLANTINGS, OR COBBLE BEDS. REPEAT PATTERN FOR UNIFIED STREETSCAPE
Typical Landscape Concepts — Before
Typical Landscape Concepts — After
Typical Landscape Concepts — Before
Typical Landscape Concepts — After
## Water and Maintenance Costs

<table>
<thead>
<tr>
<th>Landscape Options</th>
<th>Water Use</th>
<th>Water Cost</th>
<th>Maintenance</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bluegrass</td>
<td>27”</td>
<td>$2,683</td>
<td>$2,580</td>
<td>$5,263</td>
</tr>
<tr>
<td>Shrub Bed</td>
<td>15”</td>
<td>$1,491</td>
<td>$2,580</td>
<td>$4,071</td>
</tr>
<tr>
<td>Alternative Grass</td>
<td>15”</td>
<td>$1,491</td>
<td>$291</td>
<td>$1,782</td>
</tr>
<tr>
<td>Native Grass</td>
<td>10”</td>
<td>$994</td>
<td>$291</td>
<td>$1,285</td>
</tr>
</tbody>
</table>
Conversion Costs

• Conversion Cost/turf: $ .60/SF or $26,136/acre
• Conversion Cost/shrub beds: $4.00/SF or $174,240/acre*
  (*Shrub beds are normally smaller)

Costs may vary depending on significant sprinkler system adjustments, increased initial watering and additional seeding efforts.
Cost Benefit Analysis Example
South Broadway, Dad Clark Dr. to Northridge Rd.

<table>
<thead>
<tr>
<th>Convert bluegrass to alternate turf - assume 15” of irrigation</th>
<th>96,574 SF</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2.21/Ac.</td>
</tr>
<tr>
<td>Conversion Cost (estimated $.60/SF)</td>
<td>$57,944</td>
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<tr>
<td>Average Annual Water Cost Savings</td>
<td>$2,634</td>
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<tr>
<td>Average Annual Maintenance Cost Savings</td>
<td>$5,024</td>
</tr>
<tr>
<td>10-Year Water Savings (gallons)</td>
<td>7,201,241</td>
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<tr>
<td>Project Payback in Years</td>
<td>7.5</td>
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</table>
Cost Benefit Analysis Example
Highlands Ranch Pkwy, White Oak to Deer Creek St.

<table>
<thead>
<tr>
<th>Convert bluegrass to shrubs and mulch - assume 15” of irrigation</th>
<th>10,000 SF .23/Ac.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conversion Costs (estimated $4.00/ SF)</td>
<td>$40,000</td>
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<tr>
<td>Average Annual Water Cost Savings</td>
<td>$274</td>
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<tr>
<td>Average Annual Maintenance Cost Savings</td>
<td>$478</td>
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<tr>
<td>10-Year Water Savings (gallons)</td>
<td>749,450</td>
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<tr>
<td>Project Payback in Years</td>
<td>53</td>
</tr>
</tbody>
</table>
Cost Benefit Analysis Example
Highlands Ranch Pkwy, Open Space, both sides, east of Montclair St.

<table>
<thead>
<tr>
<th>Convert bluegrass to native seed - assume 10” of irrigation</th>
<th>14,000 SF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conversion Costs (estimated $.60/ SF)</td>
<td>$8,400</td>
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<tr>
<td>Average Annual Water Cost Savings</td>
<td>$540</td>
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<tr>
<td>Annual Maintenance Cost Savings</td>
<td>$732</td>
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<tr>
<td>10-Year Water Savings (gallons)</td>
<td>1,477,177</td>
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<tr>
<td>Project Payback in Years</td>
<td>6.6</td>
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</tbody>
</table>
## Long Range Conversion Scenario

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Convert 1/3 of Parkway Landscape</td>
<td>95 Acres</td>
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<tr>
<td>Acres Per Year</td>
<td>5 Acres</td>
</tr>
<tr>
<td>Total Years</td>
<td>19 Years</td>
</tr>
<tr>
<td>Cost Per Year</td>
<td>$300-$400K</td>
</tr>
<tr>
<td>Total cost / 19 Years</td>
<td>$5,700,000 - $7,600,000</td>
</tr>
</tbody>
</table>
Demonstration Project
University Avenue – Highlands Ranch High School
Next Steps

- 2019 – demonstration project
- Public information
- Gather public input
- Modify plan if needed
- Boards adopt plan
Questions & Comments