Using regional stormwater facilities to promote quality, sustainable development

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City of Lenexa
Presentation Outline

*Introduction to Lenexa*

*Rain to Recreation*
  - Approach
  - Goals
  - Regional Projects

*Clear Creek Regional Facility*
  - Development Process

Project Partners:

VF Anderson Builders
WLK Urban Design
Introduction to Lenexa

- Kansas City Metro Area population 2 million
- 52,000 residents
- 34 sq. miles
rain to recreation
View Stormwater as an amenity not a liability
Rain to Recreation - Systems Approach

- Regulations and Site Development Standards
- Stream Setbacks
- Riparian Corridors
- Sections Studies, Planning, Joint Facilities
- Regional Detention

Lenexa, Kansas - Rain to Recreation
Introduction to Lenexa

Watersheds drain to the Kansas and Missouri Rivers
Regional Retention & Detention
Rain to Recreation - Goals

All projects include the following components
- Water quality
- Flood control
- Recreation
- Preserve open space and natural resources

City development goals
- A community full of places with beauty, social offerings and openness that draw people to them
- Vibrant neighborhoods that offer a variety of housing types, sizes and prices.
Rain to Recreation - Regional Projects

- City Center Central Green
- Lake Lenexa
- Clear Creek Wetlands
City Center

Lenexa City Center Neighborhood
Design Standards & Guidelines

Adopted
April, 2007
City Center Central Green
City Center Central Green
City Center
Lake Lenexa & Blackhoof Park
Black Hoof Park & Lake Lenexa
Black Hoof Park & Lake Lenexa
Clear Creek Project Process

Planning (Subshed Study)
- Goals
- Gather Information
- Stakeholder Involvement

Action
- Purchase Land
- Design
- Construction

Maximizing Potential
- Sustainability goals
- Concept design
- Financial Incentive
Clear Creek Project Process—Goals (Flood Control & Water Quality)

**Flood Control**
- Stormwater master plan report
  - Identify flood prone areas
  - Detention vs Corridor Management
- FEMA Floodplain

**Channel Protection and Water Quality**
- Stream forming flows (1,10 yr)
- Water quality drawdown (40 hour)
Clear Creek Project Process—Goals (Natural Resources & Recreation)

**Preservation/Enhancement**
- Riparian corridor
- Wetlands
- Native vegetation

**Recreation**
- Significant park land
- Trail connections
- Passive recreation
Clear Creek Project Process – Gather Information (Future Land Use)

- Comprehensive Plan
- Zoning
- Amendment to the Plan
Clear Creek Project Process – Gather Information (Other Studies)

- Lenexa Vision 2020
- Trails Alignment Study
- Lenexa Stormwater Masterplan
- Lenexa Aquatics Study
- Lenexa Stree Team Asset Inventory
- Lenexa Roadway Study
- Lenexa Buildout Study
- Western Lenexa Roadway Masterplan
Clear Creek Project Process – Stakeholder Involvement

- Property owners
- Adjacent residents
- Developers
- City staff
- Public officials
- Utilities
Clear Creek Project Process – Gather Information (Comprehensive Plan Update)

- More detailed land use
- Updated zoning
- Update comprehensive plan
Clear Creek Project Process – Purchase Land

Purchased approximately 100 acres in 2006:

- $918,336 – park bond proceeds (21% of total)
- $1,399,369 – transfer from General Fund (32% of total)
- $2,055,323 – stormwater bond proceeds (47% of total)

- Total of $4,373,028
Clear Creek Project Process – Design
Clear Creek Project Process – Change

• Recession
• Bankruptcy
• Reprioritize
• Decreased development
Clear Creek Project Process – Design Again
Clear Creek Project Process - Construction

• Completed in Spring 2017
• Included 1.5 acre recreational pond (capable of supporting fishing); regional in-stream wetland basins; stream corridor enhancement; over 6,000’ trail system.
• Total land disturbance: 17 acres +/-
• Cost: $2,060,188.90
  • $1,784,323.71 construction
  • $275,865.25 design
Clear Creek Project Process - Construction
Clear Creek Project Process - Construction
Clear Creek Project Process – Maximizing Potential

Request of proposals
• Goals
• Concept
• Finances
Clear Creek Project Process – Maximizing Potential (Goals)

Maximize the potential of the property through:

- smaller lots in layout denser than typical and complimentary to and coordinated with the amenities provided by the City.
- Narrow lots in a city block street system with both front and rear access garages.
- Include generous open space connections to trails and the Clear Creek amenities
- Density of four dwelling units per acre.
- Engage and enhance the land, water, wildlife, and other resources of the City owned property.
- The creation of a sense of community, enhancement of the natural areas for residents and wildlife, and conservation and protection of valuable local resources.
Clear Creek Project Process – Maximizing Potential (Concept)
Clear Creek Project Process – Maximizing Potential (Concept)

NOTE: 2 TYPES OF HOUSES ARE SHOWN FOR STUDY PURPOSES.

- 2 CAR FRONT GARAGE HOUSES ARE SHOWN WITH 20' SETBACK
  TO GARAGE AND FRONT PORCH EXTENDING CLOSER TO STREET
  (40' - 45' W X 50' - 55' D FOOTPRINT)
- 2 CAR REAR GARAGES ARE SHOWN W/ FRONT PORCHES
  AND REAR GARAGES
  (40' - 50' W X 60' - 70' D FOOTPRINTS)
Clear Creek Project Process – Maximizing Potential (Finances)

• Green Infrastructure requirement for all new development and redevelopment (BMP Manual)
  • Based on increase in runoff
  • Encourages preservation of open space
  • Encourages use of infiltration methods

• Full spectrum detention requirements
  • Channel forming flows
  • 40 hour drawdown
  • Flood control as needed
Table 4: Prairie Creek Crossing Data

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<thead>
<tr>
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<th>Baseline 5</th>
<th>Baseline 6</th>
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<tbody>
<tr>
<td>Tributary Area</td>
<td>23.5</td>
<td>11.0</td>
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<tr>
<td>Storage Vol. Required (ac-ft)</td>
<td>3.7</td>
<td>1.7</td>
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<tr>
<td>Earthwork Volume (yds³)</td>
<td>8,790</td>
<td>5,530</td>
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<tr>
<td>Estimated Construction Costs</td>
<td>$174,000</td>
<td>$125,000</td>
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<td>Costs per Tributary Acre</td>
<td>$10,785</td>
<td>$15,768</td>
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<td>Costs per Trib. Acre – Single Family Residential Rate</td>
<td>$6,778</td>
<td>$10,115</td>
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Clear Creek Project Process - Land Sale (Finances)

Costs
• Land cost
• Stormwater management fee in lieu

Benefits
• Savings on excise taxes
• Higher density
• Decreased construction and maintenance costs
• Increased value due to adjacent public open space
In Summary....... 

The keys to using Good watershed planning to promote quality development include:

• Be comprehensive
• Define your goals
• Involve all stakeholders
• Partner with developers
• Be patient/flexible
Build it and they will come!!!!!
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