

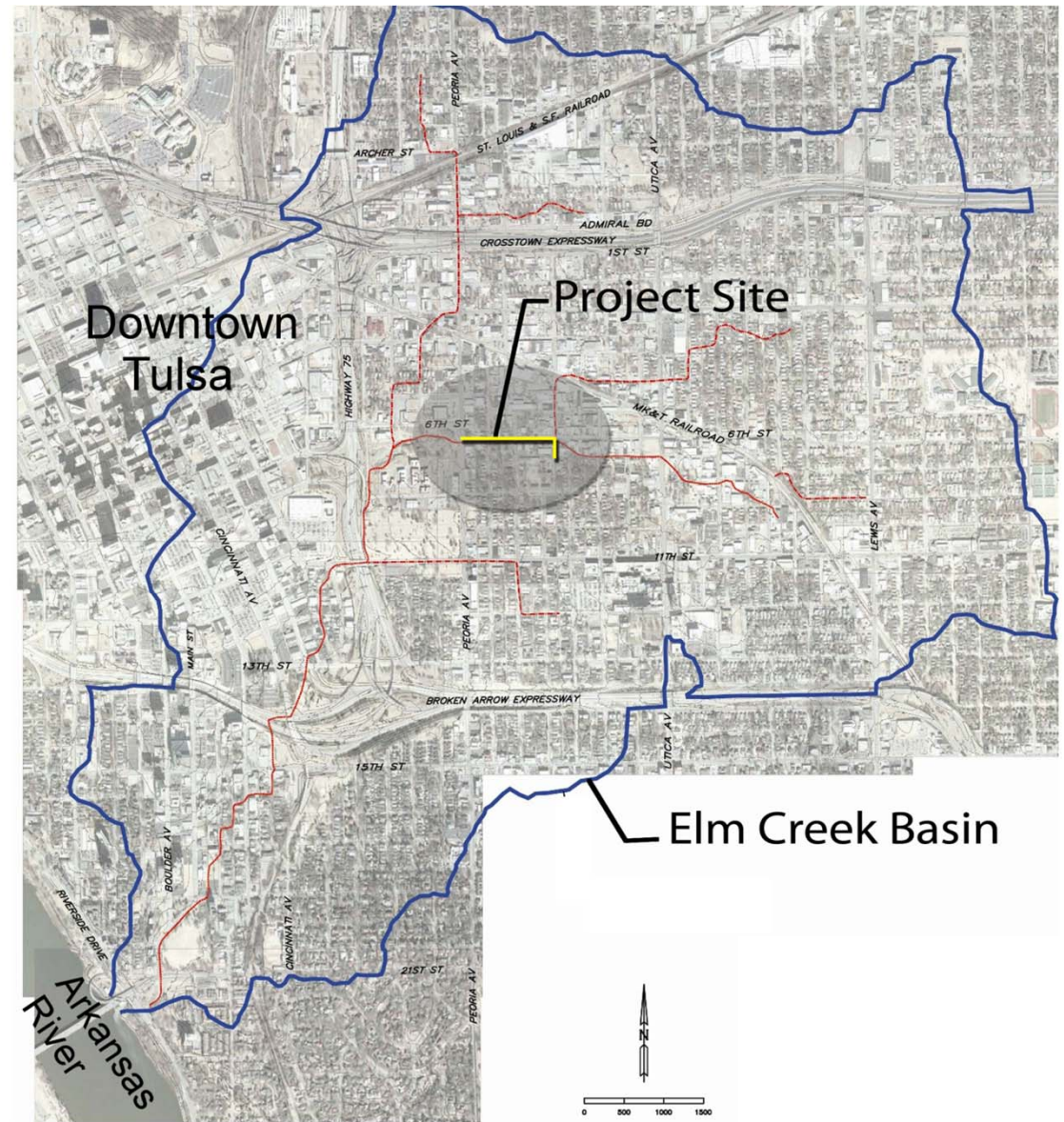
the green
pearl

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6TH STREET REVITALIZATION

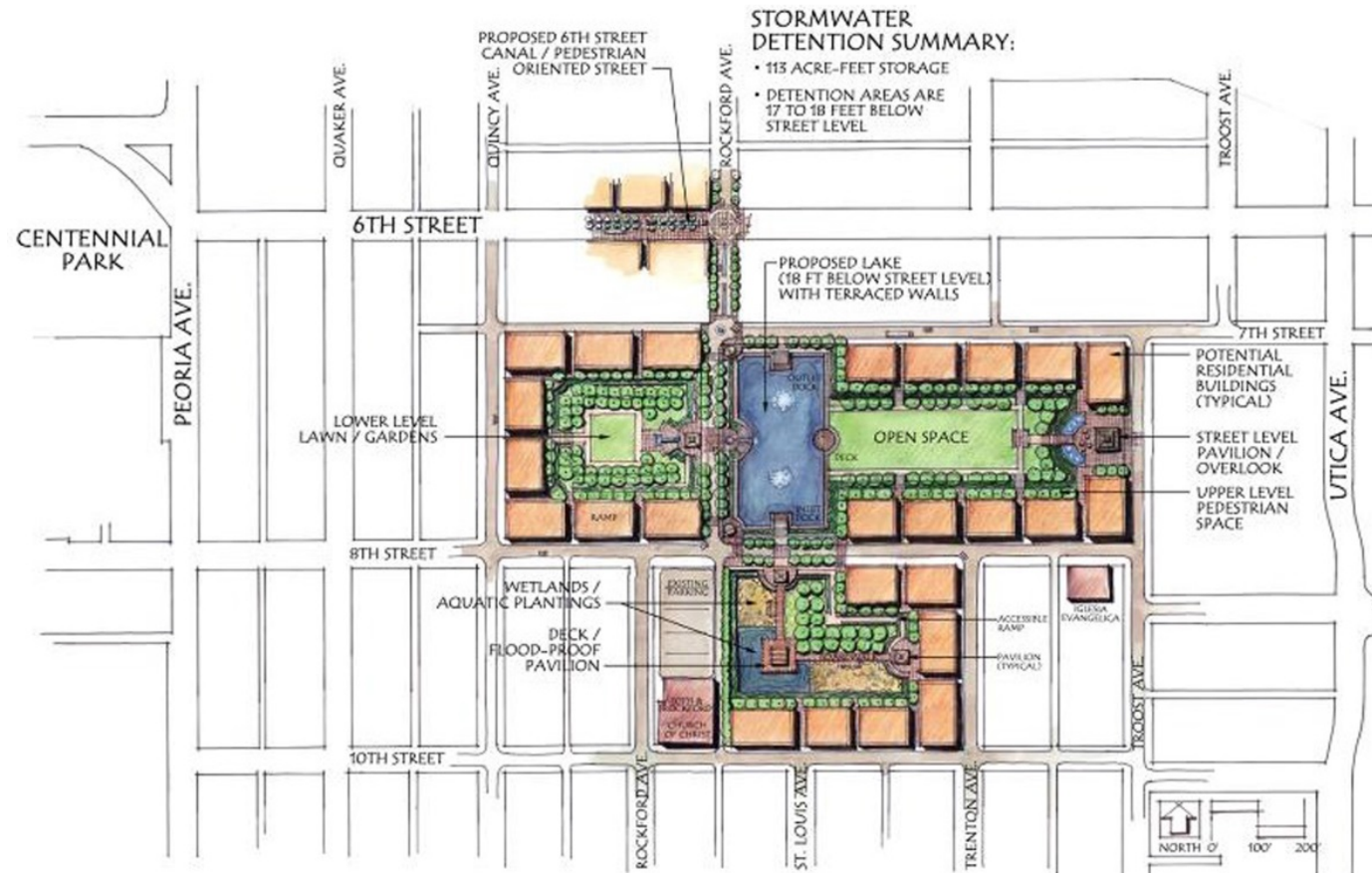
EXISTING CONDITIONS

Location Map



PROJECT CHALLENGE

- 6th Street Infill Plan adopted in 2006
- revitalization of their neighborhood
- experienced significant flooding



PROJECT CHALLENGE

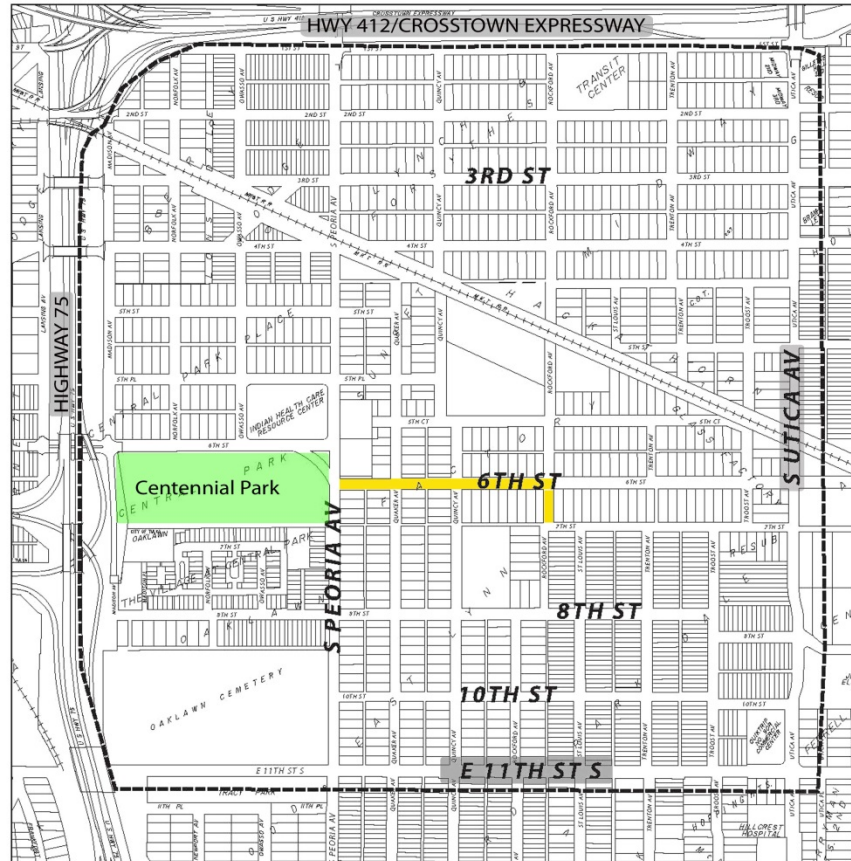
Our Objectives

- Model for future Tulsa streets
- Place for people – Not cars
- Costs less
- Reduce storm water run-off
- Improve quality of storm water run-off
- Eliminate traditional drainage infrastructure
- Minimize use of potable water
- Create a Destination!



EXISTING CONDITIONS

Pearl District Site



The project area is located within the historic Pearl District, extending along 6th Street between Peoria Avenue and Rockford Avenue (highlighted in yellow).

A hundred years after we are gone and forgotten, those who never heard of us will be living with the results of our actions. – Oliver Wendell Holmes

PROJECT VISION

The desire for community
is a constant of human
nature.
– Stephen Price

What we've got...

The **current plan** identified several preferences by the neighborhood including:

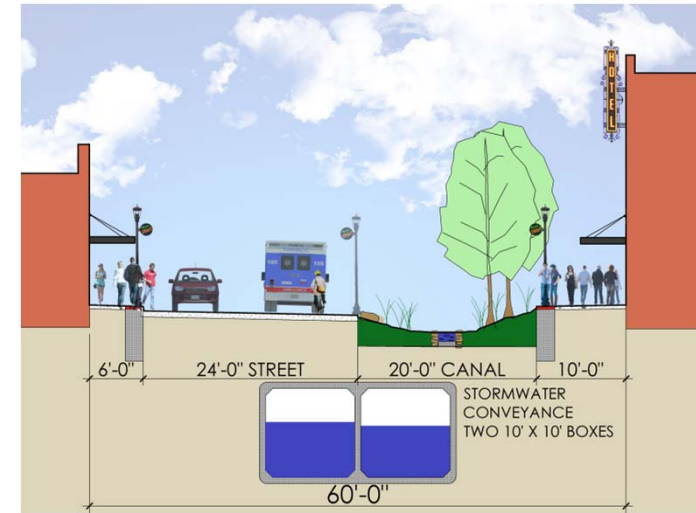
- People, not cars
- Acceptance of mixed-use development
- Urban water feature

ELM CREEK PLAN versus LOW IMPACT DEVELOPMENT



Elm Creek Plan - Street Section

- Pedestrian/vehicular conflicts
- Potable water for canal
- Not enough room for trees to grow
- No water quality improvement or quantity reduction



LID - Street Section

- Winding street = traffic calming
- Larger pedestrian areas
- Larger green space for tree growth
- Stone canal similar to Centennial Park
- Water supplied from storm water system with minimal pumping required

LOW IMPACT DEVELOPMENT STRATEGY

Simple changes
make a **BIG** difference!

OVERALL PLAN

Centennial
Park
Connection

Neighborhood
Gateway

Winding Street
to Slow Traffic

Water Feature

Parking Lots
Behind Buildings



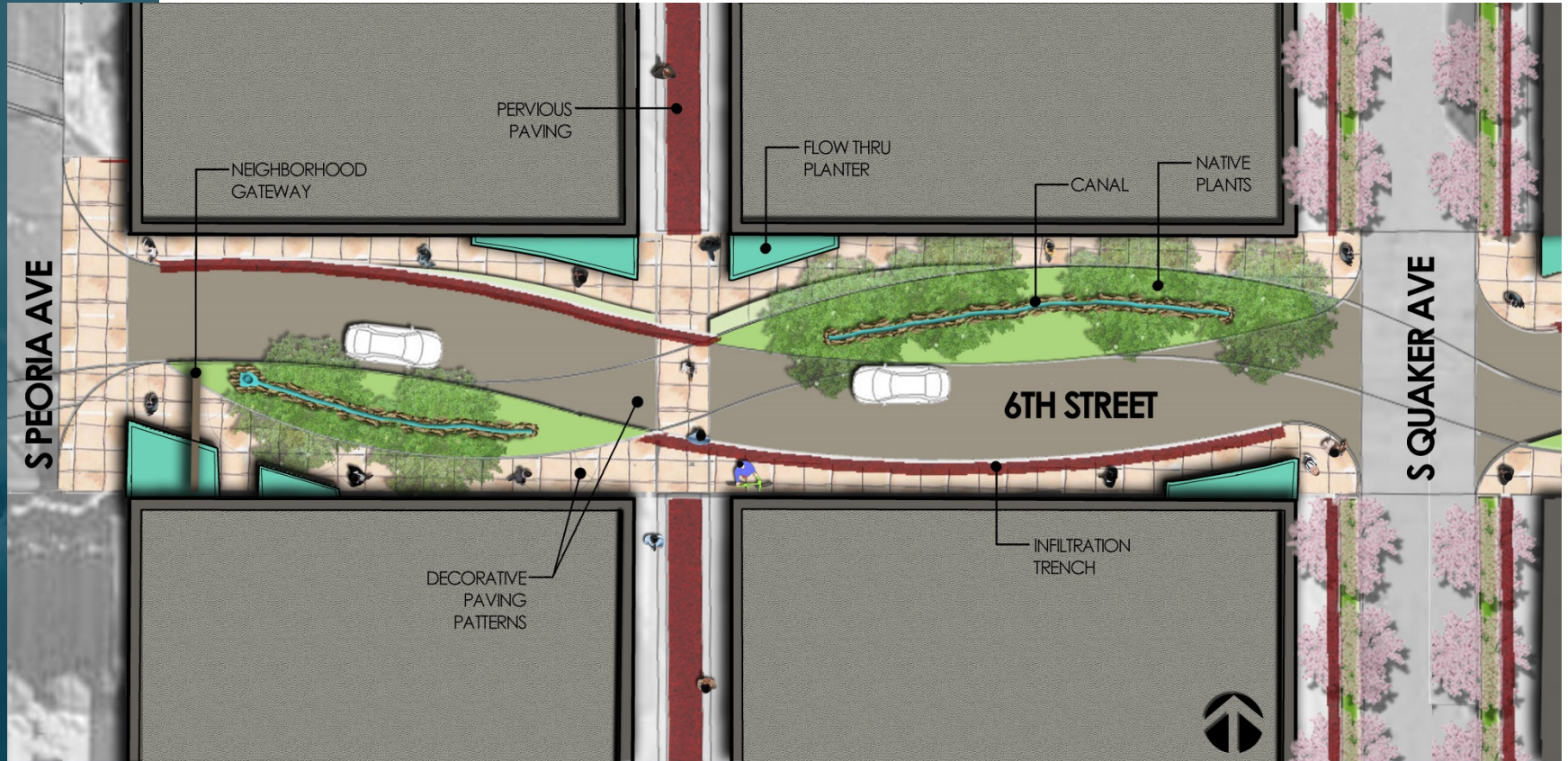
Neighborhood Gateway



6th Street Revitalization

THE GREEN PEARL

OVERALL PLAN



LID Toolbox:

- Flow Through Planters
- Infiltration Trench
- Bioretention Median
- Canal

LOW IMPACT DEVELOPMENT



Flow Thru Planters

- Reduce peak discharge rates
- Less potable water for site landscaping
- Improve water quality
- Provide seat walls along the street

We never know
the worth of water
till the well is dry. "
— Thomas Fuller

LOW IMPACT DEVELOPMENT

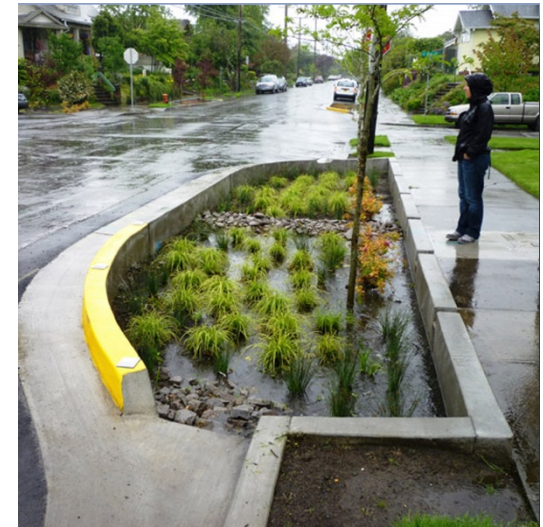


Infiltration Trench

- Improve water quality by receiving the “first flush”
- Pavers add color, texture, and interest along the street



LOW IMPACT DEVELOPMENT

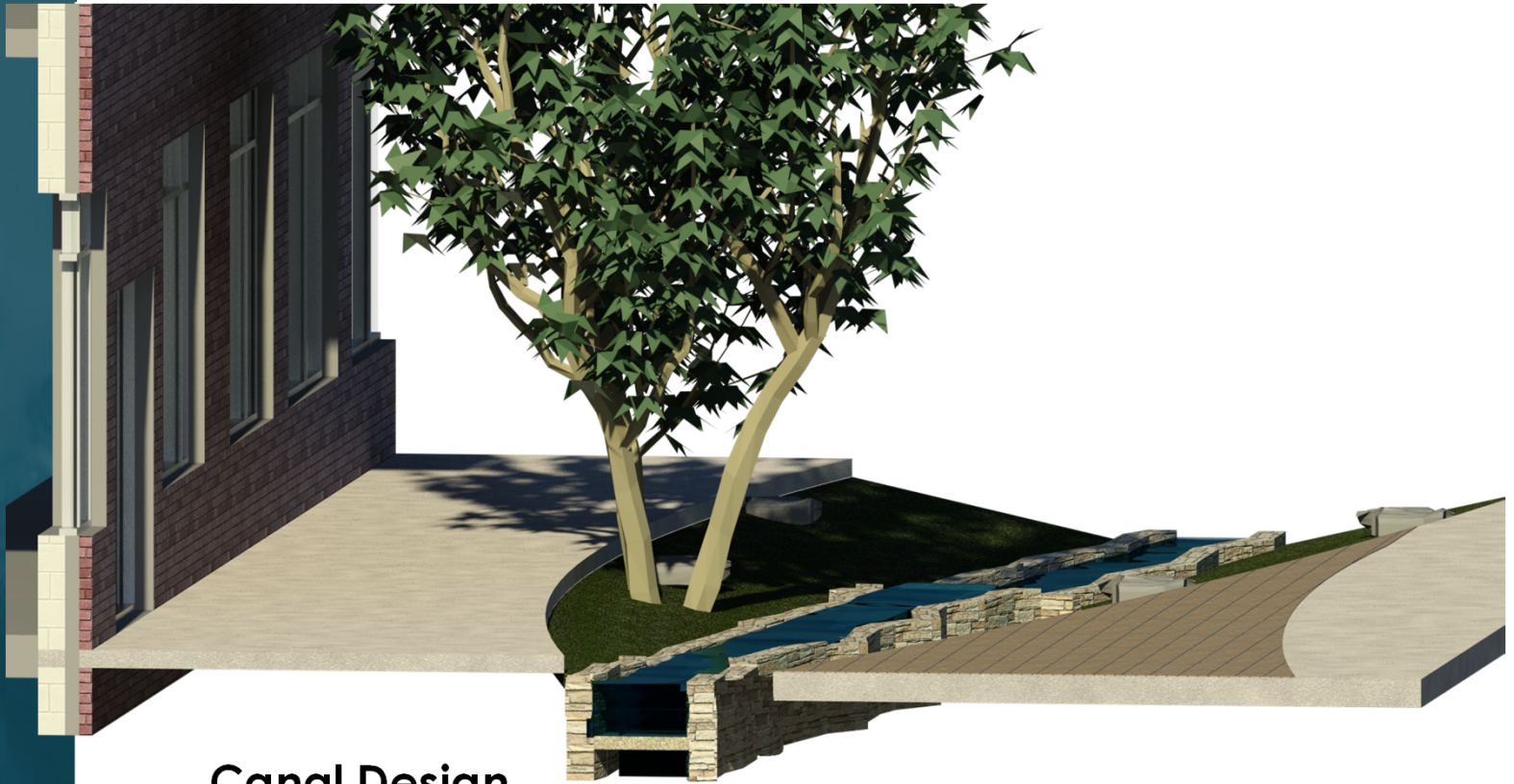


Bioretention Median

Located along Quaker Avenue, Quincy Avenue, and Rockford Avenue to intercept stormwater runoff before it reaches 6th Street.

- Reduce total runoff volume
- Reduce peak discharge rates
- Improve site landscaping
- Improve water quality

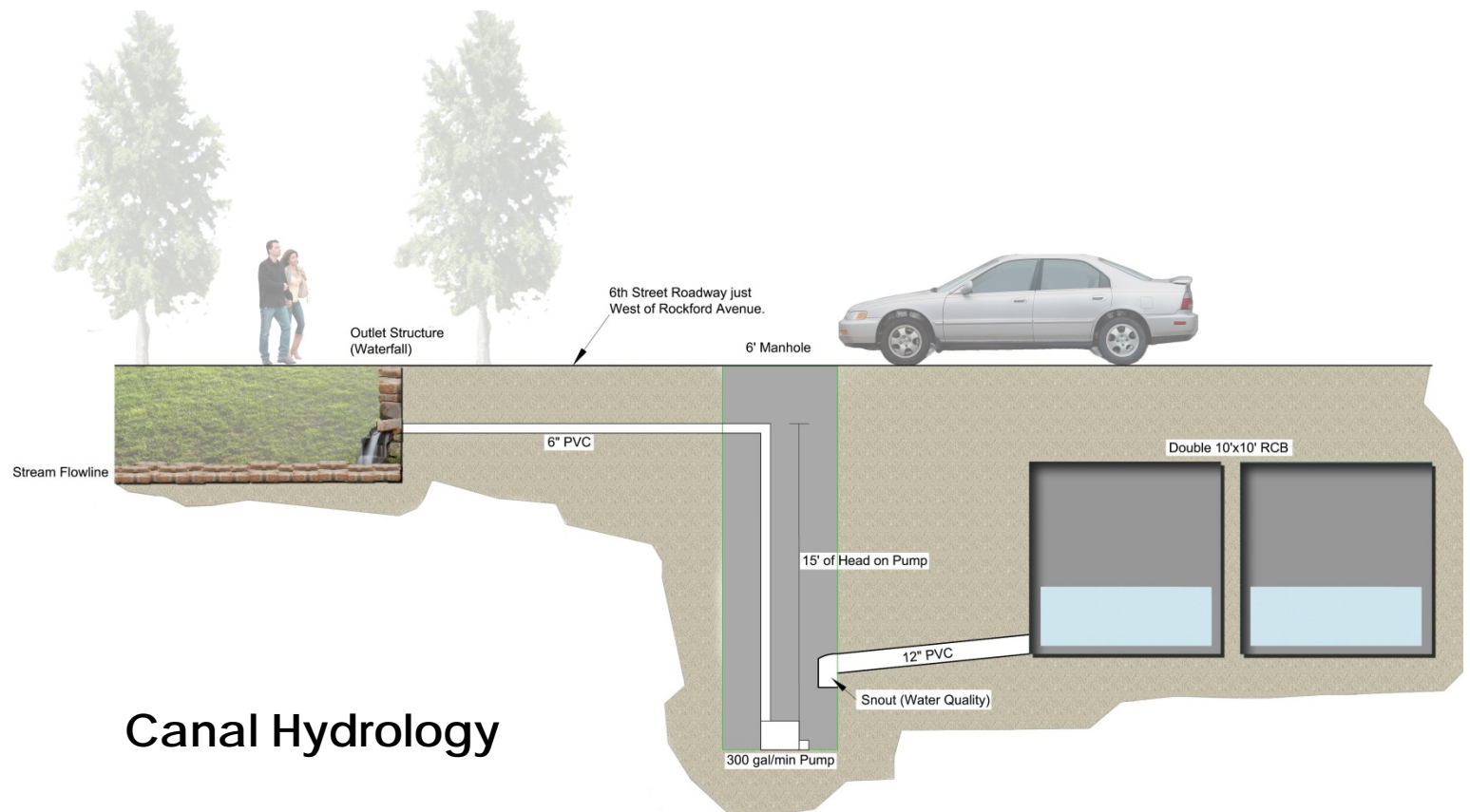
LOW IMPACT DEVELOPMENT



Canal Design

- Reduces peak flow/ provides storage
- Stone matches Centennial Park
- Large landscape areas = cooling effect/reduced heat island
- Run-off helps irrigate landscape
- Uses storm water, not potable water in canal

LOW IMPACT DEVELOPMENT



He plants trees to benefit
another generation.
- Caecilius Statius

LOW IMPACT DEVELOPMENT



Bioretention Median Plant Species

- Tolerant of varied moisture conditions (wet and dry).
- Tolerant of varied soil types and growing conditions.
- Available in Oklahoma plant nurseries.
- Low maintenance requirements.
- Not invasive weeds.
- Do not have aggressive/invasive root systems.
- Exhibit an attractive appearance.



[Link to detailed landscape recommendations](#)

Plant Species:

Juncus
St Johns Wort
Dwarf Inkberry
Dwarf Virginia
Sweetspire
Blackeyed Susans
Gray's Sedge
Red Switchgrass
Blazing Star
Bushy Bluestem
Butterfly Weed
Cardinal Flower
Carolina Buckthorn
Carolina Snailseed
False Indigo
Gaura
Goldenrod
Indian Blanket
Indian Paintbrush
Joe-Pye Weed
Cockspur Hawthorn



THE GREEN PEARL

LOW IMPACT DEVELOPMENT

Plant Species:

Beebalm
Blueflag Iris
Cardinal Flower
Great Blue Lobelia
Broomsedge
Switch Grass
Lyre-Leaf Sage
Spicebush
Virginia Sweetspire
Florida Leucothoe
Spicebush
American Hornbeam
Silky Dogwood
Cinnamon Fern
Royal Fern
Netted Chain Fern
Sensitive Fern
Foamflower
Green And Gold
Cardinal Flower
Jewelweed



Flow Through Planter Plant Species

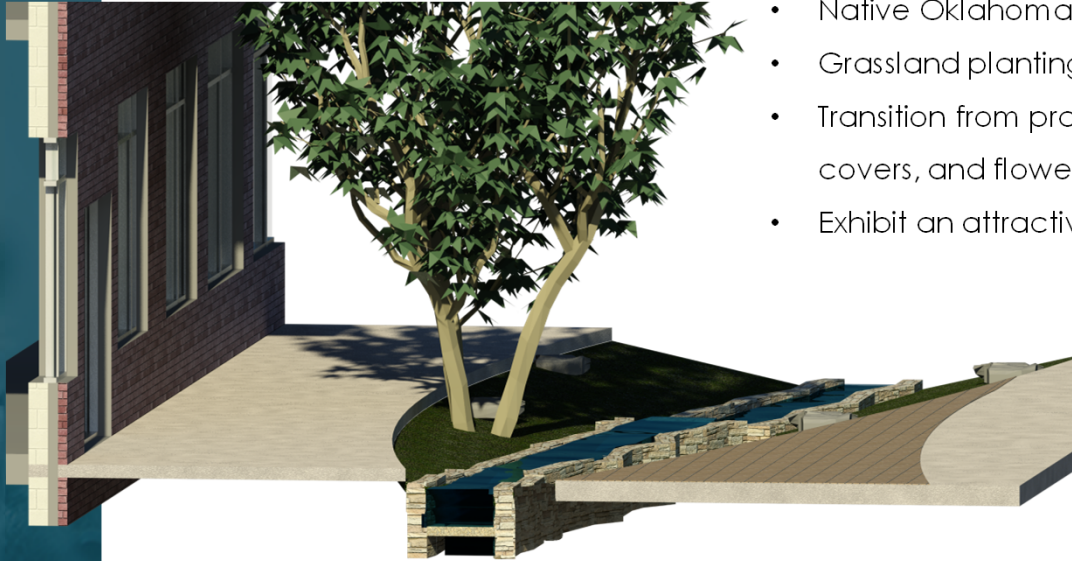
- Resilient to insects and disease, and are less likely to need pesticides.
- Best adapted to local conditions, e.g., no need to use chemical fertilizers.
- Conserving water once plants are established in the right place, no need for supplemental watering.
- High habitat value provides food, shelter, and nesting areas for birds and bees.
- Planters on north exposure of buildings require a different plant pallet.



LOW IMPACT DEVELOPMENT

Canal Plant Species

- Native Oklahoma species
- Grassland planting and native prairie seed mix
- Transition from prairie seed mix to native shrubs, ground covers, and flowering plant
- Exhibit an attractive appearance.



Plant Species:

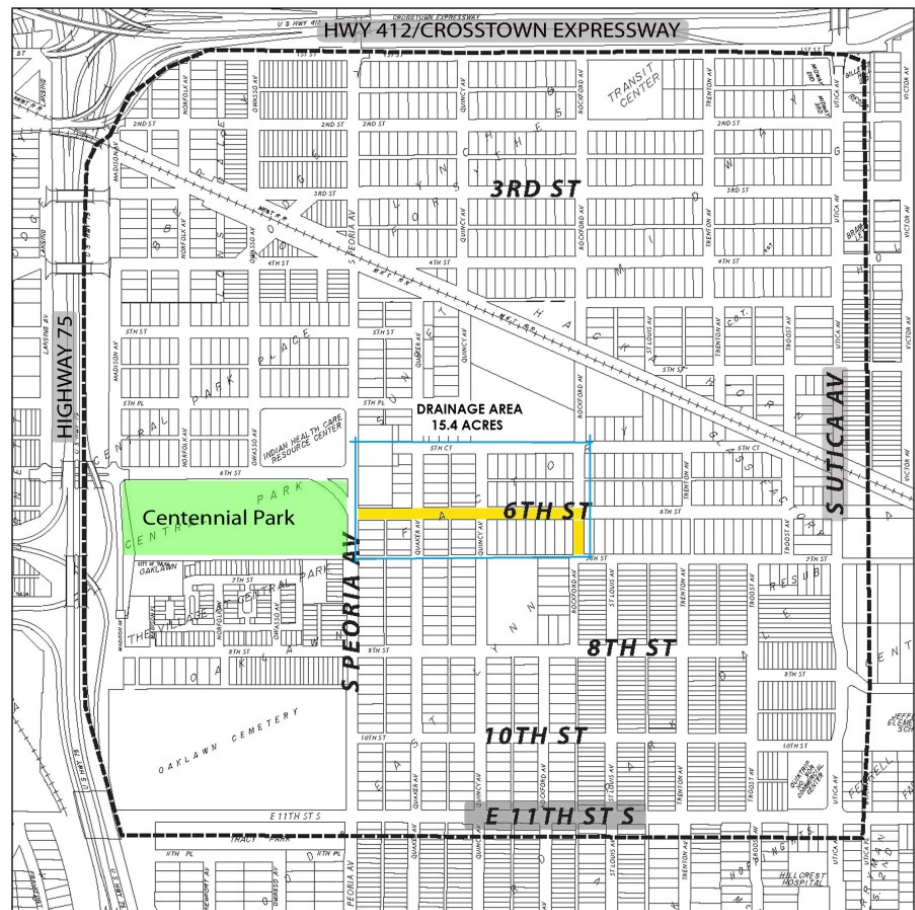
River Birch
Red Maple
Big Bluestem
Little Bluestem
Switchgrass
Foxglove Beardtongue
Fragrant Sumac
Red Beardtongue
Blue Wood Aster
Heartleaf Bergénias
Canna Lily



We won't have a
society if we destroy
the environment.
- Margaret Mead

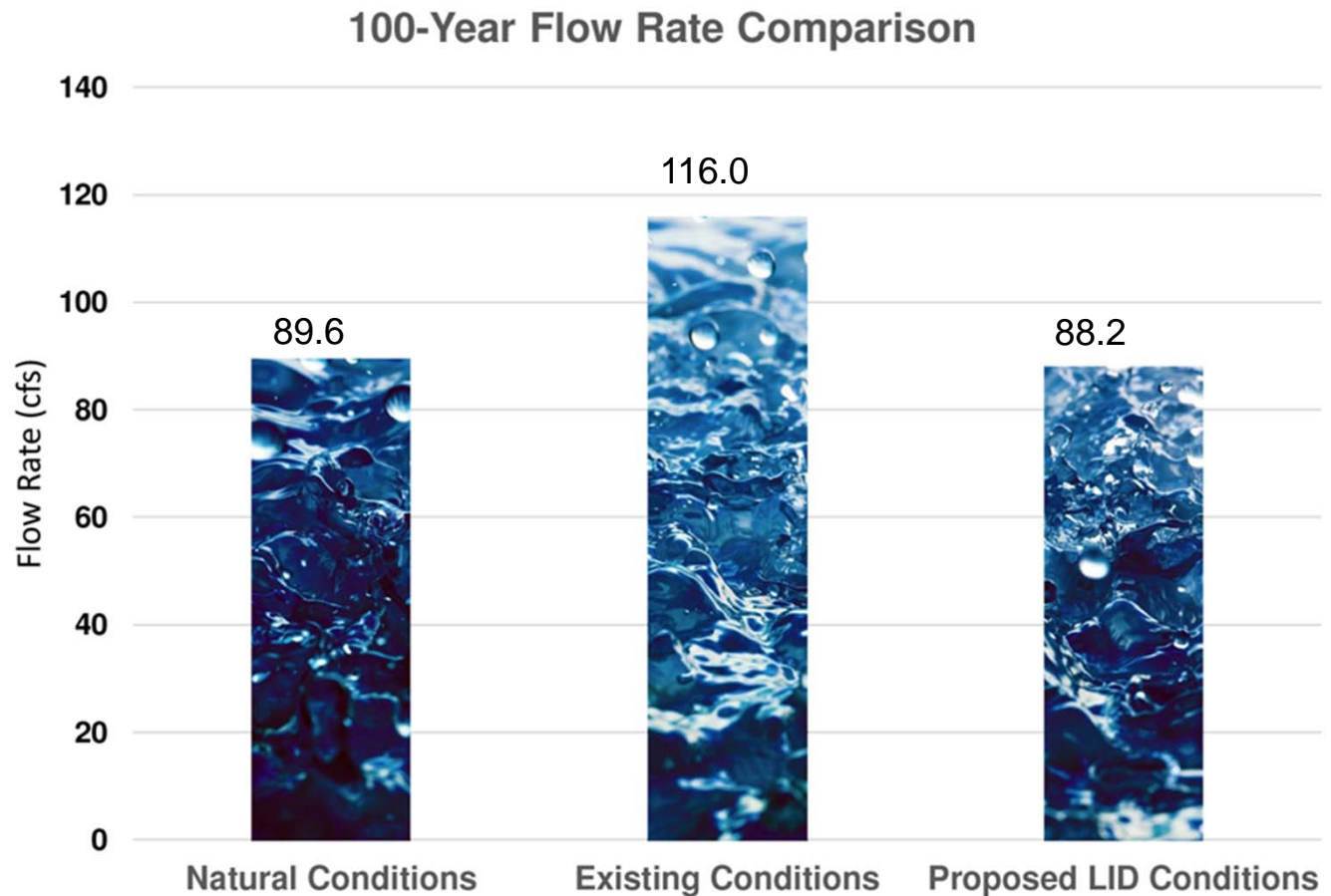
HYDROLOGIC DESIGN GOALS

- Increase infiltration by reducing impervious surfaces
- Mimic natural hydrologic function
- Disconnecting impervious surfaces = first flush filtered
- Mimic natural conditions



HYDROLOGIC RESULTS

- NRCS Method used to analyze impacts
- Proposed runoff rate less than Natural conditions
- Improves water quality and quantity



ECONOMIC EVALUATION

ELEMENT	LID	CONVENTIONAL
Storm Drainage	4,195,000	4,202,500
Hardscape	546,500	1,180,500
Softscape	282,500	207,600
Architectural	80,000	-
Site Furnishings	75,000	132,000
TOTAL	\$5,179,000	\$5,722,600

Savings of over \$500,000!

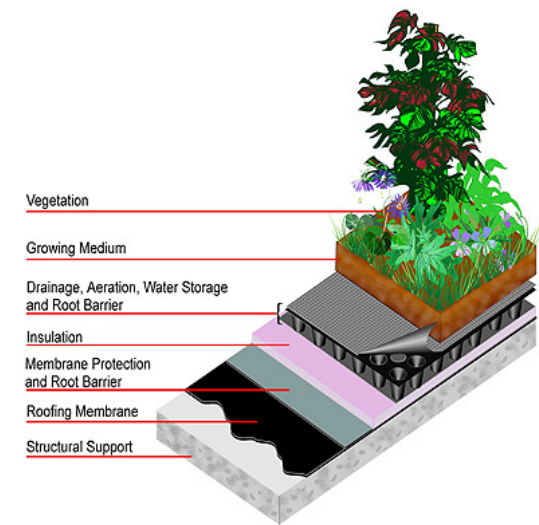
DESIGN GUIDELINES

We recommend developing *design guidelines* to use during revitalization efforts.

- building materials
- paving materials
- green roofs
- street lighting
- street furnishings
- signage

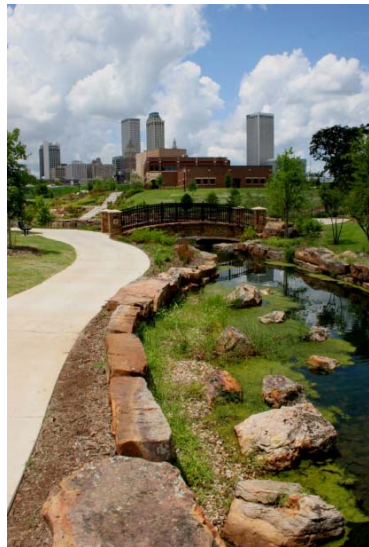


Green Roofs



LID Parking Lot and Alley Design

DESIGN GUIDELINES



WHAT NOW?

Get people there and then educate them!

- Farmers Markets
- Art Exhibits
- Outdoor concerts and performances
- Walking tours
- Community events with City Officials and Public Safety Departments



THE GREEN PEARL



A Place to Live

A Place to Grow

A Place to Learn

THE GREEN PEARL