CONFLUENCE PARK
A Plan for the Future of Denver’s Gathering Place
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Confluence Park is the heart and soul of Denver. At the location where the city was founded more than 150 years ago, the confluence is now a destination where the people of Denver can experience the great outdoors right downtown. At the confluence of regional trails, visitors will find a unique combination of people, nature and history.

Many years of river restoration and cleanup, planning and hard work, have set the stage for this transformation of the riverfront. At the heart of a growing and changing community, the park must serve the recreational needs of neighborhood and the city, and continue to be a must-see for out of town visitors. This plan, driven by the vision of the community, is the key for Confluence Park to become Denver's original gathering place, a destination for both activity and stewardship.

Sincerely,

Lauri Dannemiller,  
Parks and Recreation Manager

The Confluence of the South Platte River and the Cherry Creek has been a central hub, meeting place, and landmark for as long as people have inhabited the land that is now Denver. For the Arapahoe and Cheyenne, the confluence was a meeting place, a source of food, and a shady spot to rest. For the pioneers that came later, the confluence was a source of hope for riches and an ideal place to found a city. The river was so important to these early settlers that to this day the streets in Downtown Denver align with the river and run upstream and downstream instead of north and south.

As Denver began to grow, however, the city turned its back to the river and forgot its significance. Never was it worse than in the decade following the 1965 flood. Forty years ago Confluence Park was a dump, literally. Debris from the flood was left in the river, raw sewage was being pumped, untreated, into the river, and landfill, factories, and junk yards dominated the riverfront. The river was toxic to touch and ecologically dead.

In 1974, The Greenway Foundation was founded, and, in partnership with the City and County of Denver, Urban Drainage and Flood Control District, and others, the fight to reclaim, restore, and revitalize the South Platte River began. Under the leadership of Joe Shoemaker, the confluence was transformed into a park and the central hub for an ever-expanding urban greenway. Shoemaker Plaza and the Confluence whitewater boat chute became a nationally recognized example of what an urban riverfront could be and spurred investment in the surrounding neighborhoods.

The South Platte River is Denver's waterfront. Traversing downtown through Confluence and Commons Park it is a place where residents and visitors can experience nature in the city. Confluence Park has expanded and now provides better access to the river. It is now in the center of a rapidly changing and vibrant urban community. People come to the river from throughout the region. The original improvements, however, are showing signs of age. They are under built and over utilized by the multitude of different users who traverse to and through the park each day.

The Greenway Foundation was thrilled to be part of the development of a plan for the future of Denver's gathering place at Confluence Park. It was inspiring to see so many people come out to give us their ideas and to see how deeply they all care about the health and vibrancy of the river and the city. Led by Denver Parks and Recreation, the project team developed creative solutions that will transform the park for future generations.

This plan provides a blueprint for implementation of the South Platte River Master Plans and for the next evolution of Confluence Park. It identifies ways to protect and restore the river, provide places for recreation, connect regional trails, and provide opportunities for neighborhoods and businesses to participate in the stewardship of this great resource at the historic birthplace of Denver.

Jolon Clark  
Associate Director  
The Greenway Foundation
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WINTER, 1900

THREE MEN POSE AT THE RIVER BANK OF THE PLATTE RIVER, WHERE GOLD WAS FIRST PANNED IN 1869.

Historic Imagery Courtesy of Western History Collection, Denver Public Library
INTRODUCTION
the next generation of confluence park
INTRODUCTION PLAN SUMMARY

Why A Master Plan?
Confluence Park has grown and evolved over the past 40 years to become one of Denver’s most widely known and heavily used parks. The Park has become a symbol for revitalization and restoration of the Platte River, and has become a wildly popular destination for water oriented recreation, especially in summer months. Heavy use has exceeded the capacity of existing improvements, aging and outdated infrastructure no longer serves the needs of park visitors, and the transformation of surrounding areas into urban neighborhoods has brought a broader specter of park users to the River. Development of this master plan has been prompted by funding secured by the city to replace the most deteriorated of existing improvements. This plan describes a vision for the park that better accommodates existing uses, describes a broader vision that improves the environmental qualities of the river itself, and anticipates recreational and leisure activities of the future.

Public Engagement
Six months, public meetings, stakeholder workshops, and field intercept surveys yielded clear consensus on the master plan’s approach. Reference Appendix A for more information.

What We Heard From the Public:
- Improve the water for boating and swimming
- Provide better access to the river
- Reduce bicycle and pedestrian conflicts
- Provide more activities for all age groups
- Address real and perceived safety concerns
- Provide better facilities and amenities.

Guiding Principles adapted from the River Vision Implementation Plan
- Create a river-focused urban environment that is healthy, habitable, and connected.
- Promote ecosystem restoration through sustainable design. Improve water quality, habitat and river stability.
- Augment existing parks and venues by creating new, diverse activity centers along the Greenway.
- Create a park for urban living that reflects the history and culture of Denver.
- Enhance the safety of the river corridor and the surrounding areas.
- Create a sense of place and a community focal point that increases economic vitality.
- Create a regional gateway to downtown Denver.
- Establish a destination for entertainment, recreation, commercial, and residential amenities.
- Connect neighborhoods and public facilities to local businesses and entertainment venues by expanding green links and regional trails.
- Encourage mobility options including transit, bicycle, and pedestrian thoroughfares.
- Make the River’s edge more accessible to people with different abilities.
- Provide a nationally recognized destination for boaters that accommodates a variety of skill levels.
- Ensure that park improvements improve flood control capacity and stability.

Today’s park is the legacy of many eras of development.
The vision for Confluence Park will unify the three parts of the park, invite people to touch the water, and create a destination for recreation and leisure along the river.
INTRODUCTION OVERALL PLAN

Confluence Park will be a regional destination and a local hangout. Park improvements balance river restoration and recreational use to demonstrate the city's highest aspirations. Creating a more flexible framework protects and enhances the river, provides an attractive gathering place in the city, and contributes to the vitality of the neighborhoods. Confluence Park represents the next generation of Denver's parks.

A Unified Whole
The Central Platte Valley has changed dramatically over the last 30 years, including the land uses along the edges of Confluence Park. Confluence Park has grown in size incrementally over the years and has been a major regional attraction on the river. This master plan makes large and small changes to unify the park to take better advantage of its unique location and resources.

A Place to Touch the Water
Located at the confluence of Denver's two watercourses, Confluence Park has become increasingly popular for boating, wading, and water play. The plan provides expanded opportunities for people to sit along the river's edge and touch the water. It also demonstrates ways to improve water quality and raise public awareness of the river's value as a resource.

A "Third Place"
Contemporary social theory defines the "Third Place" as a gathering place that is neither home nor work. It is a place to relax, meet friends, and socialize; increasingly important parts of contemporary life. Confluence Park has the potential to become one of Denver's best "Third Places" by activating its edges and linking park activities with adjacent private development. Confluence Park can become integral to the daily life of downtown residents and visitors with better connections to neighboring restaurants and businesses as well as providing more places for special activities.

A Regional Destination
As one of Denver's Festival Parks, Confluence Park is poised to become a venue for competitive whitewater competitions as well as expanded outdoor entertainment, natural resource and fitness oriented programs, and other civic events. With the support of Denver Parks and Recreation, the Greenway Foundation, REI, and others, the proposed improvements will allow robust programming to be balanced with areas for individual and small group use on a daily basis.
INTRODUCTION

OVERALL PLAN

KEY:

A UNIFIED WHOLE:
1. Pedestrian Bridges
2. Pedestrian Promenade
3. The Ramp

TOUCH THE WATER:
4. Stepped Terraces
5. Expanded River Course
6. Water Quality Treatment

A "THIRD PLACE":
7. Upper Plaza
8. Overlook Cafe
9. Shoemaker Plaza

A REGIONAL DESTINATION:
10. Adventure Play Area
11. River Amphitheater
12. River Lawn
CONFLUENCE PARK
1876-1976

CENTENNIAL BIRTHPLACE OF DENVER

Colorado USA

NOV. 20, 2012

COMMEMORATIVE MANHOLE COVER
Wenk Associates
PLAN FRAMEWORK
context + guiding principles
PLAN FRAMEWORK CONTEXT

History
The confluence of Cherry Creek and the South Platte River is considered to be the historic birthplace of Denver. Layers of history and many eras of development have shaped Confluence Park. It has changed considerably over time as adjacent land uses evolved from mining settlements to industrial dump sites. The river itself was controlled and walled off to prevent flooding and to keep people away from the polluted and dangerous waterways.

Now a regional destination for outdoor enthusiasts, the REI flagship store was formerly the historic power plant for the Denver Tramway Company. Trolley car no. 25 is the last remaining railway car in service, using the Platte Valley rail tracks that once delivered coal to the power plant. Now unused, the Farmers and Gardener's Diversion and Ditch originally served the farming communities of north Denver before being re-purposed for power plant cooling.

A 1970's transformation of the River as a recreational greenway was driven by the damming of the river upstream at Chatfield Reservoir, new flood control measures in the river, and a growing public consciousness of the ecological value of the river. In 1974, the City and County of Denver and The Greenway Foundation formed a public-private partnership to reclaim the South Platte River as a recreational and environmental amenity. These improvements have resulted in Confluence Park becoming one of the first nationally recognized urban riverfront destinations.

Urban Context
Confluence Park is located in what is now a vibrant urban neighborhood. Confluence Park can be considered the center of a larger river "district" that includes cultural institutions, entertainment venues, major transportation systems, and higher density residential and retail neighborhoods. It is surrounded by regional attractions including the REI flagship store, Elitch Gardens Amusement Park, Union Station, the Downtown Aquarium, the Children's Museum, the Pepsi Center, and Sports Authority Field at Mile High.

The park is at the junction of two regional trail networks that extend throughout the Denver metropolitan area, providing both recreational and commuter bicycle access between downtown Denver and surrounding neighborhoods.

Improvements to Confluence Park and the larger Greenway have already encouraged significant reinvestment in surrounding neighborhoods. Just as the Cheyenne and Arapaho tribes gathered at the confluence of the South Platte River and Cherry Creek for hundreds of years, Confluence Park continues the tradition of bringing people from all walks of life together on their banks today.
Recreation
The River Vision Implementation Plan (RVIP) envisions Confluence Park as the center of transformational change along the South Platte River in Denver. The Park is identified as a gateway between downtown and the river greenway. It will be connected by walkable and bicycle friendly streets and serve as a hub of outdoor adventure-type recreation for the surrounding neighborhoods and the larger community.

As one of Denver’s designated Festival Parks, Confluence Park will be a venue for local and regional cultural events such as whitewater festivals, summer films, concerts, and river-oriented adventure and environmental activities. As an active urban park, it will be a place to meet and hang out, a destination for bicyclists and trail users from throughout the region, and host to less-formal group activities such as family picnics and fitness boot camps.

Environment
The South Platte River and Cherry Creek face environmental challenges that are a result of prior uses and urbanization. Channelization in the early 20th Century, along with engineering requirements for flood and erosion control, have resulted in a hardening of the channel. Stormwater runoff from impervious areas and upstream wastewater discharges carry contaminants and sediment into the river.

Water quality issues that must be addressed at a regional level include elevated bacteria, suspended metals, nitrogen, phosphorous, and trash accumulating in and along the streams. The RVIP has established the goals of providing a swimmable and fishable river with improved habitat connections and public access. Confluence Park will be a highly visible place where improvements demonstrate many of the best practices available to achieve those goals. See Appendix C for more information.

Existing Conditions
Confluence Park is showing signs of age and exposure. The ramps at Shoemaker Plaza, built prior to the Americans with Disabilities Act, are deteriorating and do not meet current code requirements. Trail connections are disjointed and confusing, and the bridges are aging and undersized, creating areas of conflict for the growing number of park users.

The walls and hard edges of the river create barriers and diminish the potential for floodplain habitat. The silted-in main river channel no longer exhibits the character and ecological value of one of the city’s most important waterways. The whitewater course is no longer adequate for desired levels of boating use and competition. The City and the Urban Drainage and Flood Control District also need better access to the river for maintenance and emergency access.
Existing Park Conditions
PLAN FRAMEWORK GUIDING PRINCIPLES

Four key ideas form the basis of the plan:
- A place for gathering and leisure.
- A place that supports active outdoor lifestyles.
- A place to experience nature in the city.
- An opportunity to improve the river.

The following principles, goals and objectives outline the process for plan implementation:

Principle: Improve Safety and Convenience for All Modes of Park Access

Goal: Improve Real and Perceived Safety within the Park

Objectives:
- Improve the flood control functions of the river and adjacent areas.
- Reduce pedestrian and bicycle conflicts.
- Reduce the number of isolated areas, and maintain visibility to all areas of the park.
- Provide adequate nighttime light levels.
- Improve emergency and maintenance access for equipment and personnel.

Principle: Embrace Active Lifestyles and Opportunities for Leisure on the River

Goal: Position Confluence Park as an Urban Gathering Place for Downtown Denver

Objectives:
- Encourage informal gathering by providing a variety of seating options, an outdoor cafe, and public restrooms.
- Work with the Downtown Denver Partnership to extend and complement Downtown Area programming and wayfinding at Confluence Park.
- Collaborate with nearby businesses to support park programming and activities.
- Encourage outdoor health and wellness by supporting group fitness activities and programs.
- Coordinate programming with other downtown and riverfront parks.
- Encourage/allow evening park uses to accommodate urban lifestyles.

Goal: Promote River Oriented Leisure Activities

Objectives:
- Focus improvements on enhancing and drawing attention to the river and its history as the first settlement of Denver.
- Provide outdoor cafe and seating areas with views of the river.
- Provide gathering and event areas that encourage enjoyment of the river environment.
- Add more family-friendly amenities such as picnicking and play areas.
- Provide facilities and programs that promote historic interpretation, environmental education, and stewardship.
- Support technology in the park for communication, wayfinding, and interpretation.

Goal: Improve Park Access and Mobility

Objectives:
- Improve the trail network in the park to accommodate the traffic volumes for all modes of transportation.
- Improve pedestrian and bicycle access from local streets and neighborhoods and expand capacity for bicycle parking on site.
- Expand vehicle parking capacity in neighboring areas through the creation of cooperative parking agreements.
- Enhance views from the park to the river and the downtown skyline.
- Integrate trolley improvements as a recreational asset and transportation mode.
- Support Bikeshare programs by accommodating bicycle share station expansion at the park.
- Improve signage and wayfinding within and around the park.
**Plan Framework: Guiding Principles**

**Principle: Improve the River as a Recreational and Natural Resource**

**Goal: Improve the River’s Natural Qualities**

**Objectives:**
- Improve the water quality in the river.
- Improve aquatic and terrestrial habitat in the park.
- Provide opportunities for people to learn about river ecology.
- Increase the shade canopy for both people and wildlife.

**Goal: Expand Recreation Opportunities on the River**

**Objectives:**
- Promote active lifestyles through expanded recreational activities for all ages and skill levels.
- Expand recreational boating opportunities to include all ability levels.
- Improve the whitewater course to expand competitive and recreational boating use.
- Expand opportunities for people of all ages and abilities to get to the river’s edge.
- Provide safe alternatives to swimming in the river.
- Expand active uses to include appropriate adventure activities such as bouldering, fishing, etc.

**Principle: Celebrate Confluence Park as a Local and Regional Destination**

**Goal: Position Confluence as the Heart of a Larger Downtown Riverfront Park**

**Objectives:**
- Establish a distinct urban identity for Confluence Park that complements other riverfront parks.
- Incorporate common elements that unify all parks along the river and in the Downtown area.
- Develop stronger physical links between Confluence Park and adjacent parks and institutions.
- Incorporate high quality design and materials to signify the importance of the Park to the City.

**Goal: Enhance the Park’s Potential as a Local and Regional Destination for Events**

**Objectives:**
- Identify and promote Confluence Park as the Birthplace of Denver.
- Encourage river-oriented special events of regional and national significance.
- Provide a variety of river-oriented activities and events that appeal to a broad range of visitors.

**Goal: Develop Public/Private Partnerships to Activate the Park and to Support its Long-Term Success**

**Objectives:**
- Partner with adjacent and area businesses and institutions to provide amenities and services.
- Plan for the long-term costs of maintaining the park given higher levels of use.
- Consider the feasibility of establishing a special river district or conservancy that supports ongoing programming and management of park facilities.
- Review the feasibility of district-scale parking strategies.
- Continue to review park policies as they apply to vendors, permitted activities, and events.
EARLY 1970’S VIEW OF SHOEMAKER PLAZA UNDER CONSTRUCTION, SPEER BOULEVARD (PRIOR TO REPLACEMENT) IS IN THE BACKGROUND.  

Image Courtesy of Wright Water Engineers.
The plan for Confluence Park is formed by two foundational elements - The River and The Loop. The River and The Loop link three use areas that each have a distinct character and use to accommodate a diverse user population.

Organization and Form
The master plan will transform the park into a cohesive whole organized around the river, the loop, and three major use areas: the outdoor living room, the oasis, and the river lawn. The sweeping bridge provides both a connection and a destination. The plan takes three disconnected parts, under-utilized spaces, and deteriorating structures and molds them into a cohesive and sustainable urban park that provides access to outdoors and adventure in the heart of Denver. When various alternatives were considered, the consensus was to “go big or go home”.

This plan represents a vision that has broad support from both the people who use it and the civic leaders that recognize its value to Denver's urban environment and quality of life.

Recreational Use
Confluence Park will accommodate small and large events that focus on the river. It improves access to the park, the river, and to the regional trail system, while reducing conflicts between trail users. It recognizes that the park is both a destination and a starting point for those exploring the river and the city. The park provides flexibility for public gathering and daily leisure use in a shady riverside location, enhancing views of the river and the downtown skyline. By reducing barriers and walls, orienting the landscape towards the river, and providing consistent high quality design and materials the park will balance the importance of history and prospect, flood control and recreation, resources and access.
PLAN COMPONENTS ORGANIZATION + USE AREAS
PLAN COMPONENTS FORM + MATERIALS

Primary Forms
A singular unifying form that connects park subareas identifies Confluence Park as a regional destination, symbolizing the river’s importance to the city and its future. The natural attributes of water, historic elements juxtaposed with contemporary design, and the subtle integration of trail connections with public gathering places are the primary inspiration for the physical form of Confluence Park.

Historic River and Creek Walls: The board-formed concrete walls of historic Cherry Creek and South Platte River flood control inspire the design of new walls and vertical surfaces in the park.

Shoemaker Plaza and the Whitewater Course: The diagonal geometry of Shoemaker Plaza is extended into the river to better integrate natural and man-made forms. Clusters of cleaved granite boulders are connected by simple concrete steps that eliminate barriers to access.

Special Features: Forms and materials for signature park features, such as the bridges, the oval stage, and the children’s playground are exceptions to the basic park geometries. At the same time they integrate complementary materials of historic industrial character from the flood walls, plaza and river.

Materials and Their Use
As one of Denver’s most visible parks, its design, materials, detailing and implementation must demonstrate high standards of quality. Materials are selected to recognize the river’s premier role, the original design of the park and its industrial history, and the significance of river recreation.

The evolution of a new Confluence Park must include sustainable and durable materials. Implemented in phases over several years, materials will need to be available in large quantities locally and be capable of meeting engineering design standards for floodplain construction.

Industrial Past: Concrete, brick, cast-iron, corrugated and industrial grade metals, simple lines, and functional details inspire the design of buildings and other architectural park elements.

River Elements: The river is formed by large granite boulders, formed and sculpted concrete, and riparian vegetation. At the street level, board-formed concrete, high quality cast unit pavers, permanent steel elements and contemporary flexible use furnishings are used to anchor the park. The arcing bridge appears to float above the river, allowing the surrounding built edges to define the park.
River Environment and Water Resources

Flows in the South Platte River have changed significantly since the dam was constructed at Chatfield Reservoir in 1970. Annual peak flows have been reduced from 4,000 cubic feet per second (cfs) in the 1960’s to an average of 650 cfs today.

Denver Parks, the Greenway Foundation and UDFCD are committed to improving water quality in the South Platte River and see Confluence Park as a place where it can implement high visibility programs to that end. The form, alignment, and profile of the channel will be modified to support aquatic and wildlife habitat.

Extended low flows from summer through winter, along with reduced frequency and size of cleansing floods, and channel widths driven by flood control have resulted in poor river conditions, stagnant water, and a silted-in channel.

The proposed river modifications include new types of bank stabilization, including riffle pool sequences that create shallow, fast moving water, deeper, slower moving pools that provide refuge for fish, and benches that support a variety of riparian and upland vegetation.

Water Quality Strategies:

- **Monitoring**: Denver Environmental Health (DEH) will build a water quality monitoring station that includes public interpretation of seasonal and daily variations in river flows and water quality factors and trends. Denver Water will install a measuring device to measure flows associated with the Farmers and Gardeners Ditch.

- **Treatment**: Three water quality improvement approaches are included in the plan:
  - The first diverts and treats river water through constructed wetlands and biofiltration materials. The water wall along the west side is used to highlight this passive biological treatment technique.
  - The low flow section of the whitewater course utilizes a re-circulating system and active filtration to improve river water to meet state in-river recreation standards.
  - The interactive water feature at the children’s play area will be treated to meet state health department requirements for water quality.

- **Swimmable and Fishable**: One of the stated goals of the RVIP is to make the river swimmable and fishable. Confluence Park is a very small contributor to the larger water quality issues in the river.

- The goal of regional treatment programs must be to reduce bacterial load in the river, as indicated by the amount of e-coli. The City’s Department of Environmental Health (DEH) indicates that the most important control is source control; preventing bacteria from entering the river by utilizing Best Management Practices (BMPs) in upstream watersheds.
PROPOSED RIVER EDGE LOOKING TOWARD 15TH STREET BRIDGE: Pedestrians stroll along the River Walk. Kayakers test their skill on the whitewater course in the South Platte River (right). Other visitors enjoy the sights and sounds of a water feature (left), which is supplied by water that is taken out of the river upstream, biologically treated and filtered on site, and released back into the river through artful cascades and runnels. In the distance, people chat and have lunch in the shade at a renovated Shoemaker Plaza.
PLAN COMPONENTS
THE RIVER

Touch the Water
The master plan restores riverine forms and river vegetation while providing various levels of access for park users. It also balances the needs of recreational boating and water play with urban and natural features to improve access for public enjoyment of the river.

Urban Whitewater
The whitewater course will be expanded and lengthened to include two chutes that provide a variety of challenges for different ages and skill levels. By moving the main chute to the west side of the river and extending it from above Speer Boulevard to below 15th street, a longer slalom run - nearly 1,000 feet long - can be achieved. A continuous accessible river’s edge path, designed to minimize conflicts between whitewater users and park visitors, will extend from Fishback Landing Park to downriver of the 15th street bridge to provide universal access for recreational boaters.

Due to limited flows in the South Platte River, a year round slalom course is not currently feasible. With the removal of the Farmer’s and Gardener’s Ditch diversion, the main chute will provide challenges for more advanced boaters. The existing chute on the east side of the river will be modified to provide a low flow channel for a year round training and skills development course. A recirculation system could be added to this channel to treat river water to meet water quality standards for in-river recreation.

A “park and play” freestyle standing wave feature is added at the confluence of the two courses below Cherry Creek, where the flow is highest and with direct access from adjacent lawn areas. Facilities that support regional and national whitewater events are provided including ample spectator viewing areas on the Loop Bridge, stepped terraces, and adjacent park areas. Areas of flat water are planned for paddleboarding and other more passive boating activities.

Growing number of disabled users:
Confluence Park was one of the first Americans with Disabilities Act (ADA) accessible whitewater courses in the country. To aid the physically challenged, ramped entry and egress points and jetties for refuge will be created, as will options for less difficult boating routes. Needs for the visually and cognitively impaired - such as gaps between features for broader recovery - will be provided, as will clearly marked entry/exit points and course wayfinding. The plan includes adding accessible routes along the west side of the river to allow expansion of programs and opportunities for disabled recreational users.

Form and Materials
Forms and materials used to stabilize the River and to create recreational boating and River edge access will comply with design criteria established by the Urban Drainage and Flood Control District (UDFCD). Poured in-place concrete, sculpted concrete, quarried boulders, and riprap, similar to materials and forms currently used to stabilize the channel, will be the primary means of constructing the proposed flood control and recreational boating improvements in the river. Geometric forms of the existing River edges will be expanded in a manner that incorporates the geometries of Shoemaker Plaza into boulder and concrete drop structures. The geometries of Shoemaker Plaza will be complemented by more sinuous riverine forms as the river transitions into a more naturalized state up and downstream of the park. Use of grout to stabilize riprap should be kept to a minimum, and installed so as to be minimally visible. Pinning and other means of stabilization should be used when possible to minimize grouting.

Riparian plant species, including native willows and deeply rooted riparian grasses and forbes, will create a riparian link between upstream and downstream riparian areas on the reconstructed island. The treated river water infiltration area will serve to passively treat river water through biological uptake. Cattails, bulrushes, and other hearty forbes that are effective at pollutant removal will reduce pollutant levels prior to returning the water to the river through the water feature.
KEY:
1. Extend Course Upstream
2. Seasonal ‘Big Wave’ Course
3. Re-Configured Slalom Skills & Training Course with High Level of Access for the Disabled
4. Real-Time Adjustable Signature Freestyle Feature
5. Venice on the Creek (Existing)
6. Splash Play with Treated River Water
7. River Access
8. Wetland Treatment Area
9. Water Feature With Filtered River Water
10. Extend Course Downstream

PLAN COMPONENTS

THE RIVER

River: Improvement Area  Creek (No Significant Changes)  Treated Water Features/Splash Play  Biological Treatment Area  Riparian Edge

Confluence Park Master Plan - PLAN COMPONENTS
PLAN COMPONENTS  THE LOOP

Unifying Arc
Pedestrian bridges proposed to replace existing bridges over the South Platte River and Cherry Creek form a singular unifying arc linking the three areas of the park. The arc extends into the pavement of the Plaza at the Outdoor Living room, forms a continuous arced edge as a trail passing through the Oasis, and gives form to the bridge across Cherry Creek. All forms in The Oasis are influenced and derived from the unifying arc.

Existing regional and local trails are linked to adjacent neighborhoods, adjacent destinations, and other connection points. In some cases, it is necessary for those linkages to deviate from the unifying arc geometry, Shoemaker Plaza diagonals, and the riverine organizing elements.

Trails/Circulation
Trail connections will accommodate bicyclists but also encourage very slow speeds within the park. A speed limit of 5 mph is proposed in the park and detours will be provided during events and festivals. Trail connections will meet AASHTO design requirements for bicycle trails and Denver trail design guidelines.

The South Platte River Regional trail will be realigned to connect through on the east side of the river. This allows the west side to remain more pedestrian friendly. While trail access is maintained on both sides of the river, the east-side regional trail improves connections to the Cherry Creek trail as well as to points north and south.

The Park entry at 15th Street on the west side of the river will be enhanced and identified as a park entry point of a similar scale to Nuesteter Plaza on the east side. Better access to the river from the street level is provided at 15th street, Little Raven Street, and at various points along the loop trail.

Improved connections below the bridges including design features and lighting will make these area safer at all times of the year.

A comprehensive wayfinding system will be developed to identify major destinations in the park, along the river, and in Downtown Denver.
PLAN COMPONENTS THE LOOP
PLAN COMPONENTS THE LOOP

Form and Material
The looped connections shown in the plan will improve access and circulation and reduce user conflicts in the park. As a major destination park at the nexus of two regional trail systems, the circulation system will need to accommodate people walking, jogging and riding bicycles.

Bridges: The bridge designs indicated are conceptual in nature, however, sufficient structural design has been performed to validate the basic concepts and geometry, and to make preliminary cost estimates. For the purpose of these analyses, the bridges were analyzed under self-weight, superimposed dead loads, live loads, and snow loads, both balanced (uniform) and unbalanced. A basic live load of 100 psf was assumed for analysis. No analysis for vehicular loads (other than bicycles) was performed.

Bridge Concepts- separated biked and ped traffic, integrated seating, and structural trusses.

Bridge Precedents- A light, ribbonlike structure with separated traffic lanes, integrated seating, arcing forms, and an inviting guardrail for leaning/looking.
PLAN COMPONENTS

Pedestrian Bridge, as viewed from the River Walk on the east side of the river.

Pedestrian Bridge, as viewed from the River Walk on the west side of the river.

Pedestrian Bridge, from the trolley cafe looking south.

The structural trusses form the divider between bicycle and pedestrian traffic, and create a space for seating overlooking the river.

Renderings, Models, and Sketches by AMD Architects.
The South Platte Bridge near Speer Boulevard is curved in plan, and has three spans totaling approximately 190 feet in length. The width varies over the length, from approximately 16 feet at the east end to about 50 feet at the west end. The curved geometry is accommodated by using a segmented, orthotropic steel deck. The hollow bridge section occupies the approximate area of a trapezoid. The cross sections indicate the desired hollow plate shape contained within the architectural surface finishes. Ultimately, the final bridge section may vary from segment to segment as required to meet both architectural and structural constraints.

The "wings" that form the walking and biking surfaces are formed with steel ribs that radiate from the spine of the orthotropic plates, and which are connected at the segment joints. There are interior support piers in addition to the concrete abutments. The piers are envisioned as built-up, curved steel sections which will support both the wings and the spine of the bridge. Alternate forms for the bridge structure (e.g. cable stay, suspension, or arch) were considered and rejected in favor of a lower profile that would not compete with adjacent structures such as the Speer Boulevard Bridge. Alternate materials and systems within the general proposed geometry are possible, and can be considered during the detailed design phase. They include trussed steel or post-tensioned concrete systems.

The Cherry Creek Bridge has three spans totaling approximately 150 ft., and is a combination of straight and curved sections. It is anticipated to be the same type of cross section and construction type as the Platte Bridge, although its width is constant over its length.

Along 15th Street, single span parallel bridges approximately 190 feet long area are an alternative to replacing or retrofitting the existing bridge to provide better pedestrian and bicycle access. These bridges would be conventional steel arch structures, with interconnected shallow arched trusses constructed of curved hollow pipe sections, framing the pedestrian walks adjacent to the vehicle bridge. Decks would be trussed steel beams supporting a concrete walking surface.
The Outdoor Living Room offers a variety of seating, a cafe for informal gathering, and a pedestrian promenade that also accommodates festivals or markets. A seating terrace replaces the existing wall to allow access to the river, encouraging picnicking, performances, or simply enjoying views of the river and the downtown skyline.
An Outdoor Living Room for the Central Platte Valley
The outdoor living room is a place that supports a variety of leisure and recreational activities along the river. Public restrooms, covered storage and a new terminal area for the Platte Valley Historic Trolley anchor the south end of the plaza. Removal of the Farmers and Gardeners Ditch diversion will allow expansion of the Upper Terrace to provide additional area for circulation and activities such as farmers markets and fairs, and a café with sweeping views of the river. A pedestrian promenade connects to the expanded park entry at 15th Street with an overlook and stepped access to the river. The new ramp connects the street level to Shoemaker Plaza and also provides places for shaded seating at the river level.

The Outdoor Living Room is a place to see and be seen, a place to hang out with family and friends, and to enjoy the public life of the city. It is a destination and an urban counterpoint to the more relaxed environments of the Oasis and the River Lawn.

The Upper Terrace
The café builds upon the success of the existing outdoor seating area to provide a shady place to have a light meal or to enjoy a beverage as you overlook the activities on the river. Terraces stepping down to the river are a great place to rest, work, or view impromptu or scheduled entertainment at Shoemaker Plaza. The historic trolley adds activity to the richness and diversity of experiences. A variety of seating encourages individuals and small groups to spend the afternoon or to stop for a break from riding the trail.

Shoemaker Plaza
The historic forms of the riverside plaza are preserved, while being reshaped to better accommodate a variety of activities and events. Better access from the Upper Terrace to all levels will be created.
PLAN COMPONENTS THE OUTDOOR LIVING ROOM-SOUTH

KEY:
1. Park & Trolley Storage
2. Ticket Office & Public Restrooms
3. Covered Trolley Bay
4. Bicycle Parking
5. Upper Terrace
6. Trail Connection
7. Feature Bridge
8. Cafe & River Overlook
9. Biofiltration Area
10. Water Wall Feature
11. River Access

AREA PLAN
PLAN COMPONENTS  THE OUTDOOR LIVING ROOM

Form and Materials
As the central gathering place in the park, the outdoor living room is intended to accommodate high levels of use and activity. Forms and materials reflect the area’s industrial past and incorporate the forms and materials of Shoemaker Plaza. Cleaved granite boulders are a visual connection between the Upper Terrace and the River.

Pavements: Concrete pavements are used primarily where trail connections pass through the terraced steps leading to Shoemaker Plaza. Pavements include scoring patterns and textures that encourage slower speeds on the regional trails. A variety of pavement types support urban uses at both upper and lower levels. Consider the use of porous pavements and soft surface pavements that reduce surface storm runoff within the park.

Walls, Water Feature, and Stepped Terrace:
Cast in place concrete walls have board formed vertical faces to reflect the character of the site’s historic flood walls. Horizontal surfaces are lightly textured to accommodate pedestrian use and seating. A river diversion passes through bio-filtration to improve water quality before flowing through the water feature wall.

Buildings: Park buildings consist of contextual industrial materials developed into contemporary forms. Buildings should be simple yet bold, and oriented toward the river. Use board formed concrete, brick, weathered steel, and generous amounts of glass to connect indoor and outdoor spaces.

Site structures, screen walls, and railings:
Galvanized and corrugated metals, steel cables, wire mesh, exposed fittings, industrial materials, and simple construction techniques reflect the need for durability and low maintenance, and recall the area’s industrial past.

Plantings and landscaping: A dense canopy of deciduous shade trees provide shelter for primary gathering areas along the Upper Terrace and Shoemaker Plaza edges. The ground plane includes turfgrass, low maintenance groundcovers, and wetland and upland riparian plants as appropriate. Shade tolerant climbing vines separate the Upper Terrace edge from adjacent parking.

Amenities: This area includes new types of outdoor furnishings and amenities. The outdoor cafe includes a bar height rail overlooking the river. Numerous overlook opportunities provide flexible areas for seating and leaning. Portable tables, chairs, and umbrellas can be secured when not in use. Green screens separate the Promenade from adjacent parking. Bicycle parking and covered storage will meet City bicycle parking design standards.

SECTION B: The Upper Promenade steps down to the renovated Shoemaker Plaza.
PLAN COMPONENTS

THE OUTDOOR LIVING ROOM - NORTH

KEY:
1. Overlook Cafe
2. Upper Terrace
3. Access Ramp
4. River Terraces
5. 15th St. Entry Plaza
6. Biofiltration Area
7. Water Feature
8. Shoemaker Plaza
9. Shaded Lawn
10. Expanded REI Terrace
11. River Overlook
12. Green Screen

AREA PLAN

DRAFT - May 01, 2013 5:42 PM  Confluence Park Master Plan - PLAN COMPONENTS
PLAN COMPONENTS THE OASIS

An Oasis on the River
The area formed by the confluence of the South Platte River and Cherry Creek will be a verdant refuge in the city. The sloping lawn of the Oasis amphitheater provides a quiet contrast to more active uses at the Outdoor Living Room and River Lawn areas. The removal of the large flood walls along the South Platte River and Cherry Creek allow much greater public access to the river’s edge. The sloping lawn and associated planted terraces expand the capacity of the amphitheater for events and expand options for informal seating and picnicking.

Relocation of the regional trail through the site and away from the river significantly reduces user conflicts and provides a strong organizing element that ties the park together. Shady groves recall the groves of trees that once lined the river while buffering the park from adjacent traffic, providing ample shade, and defining the edges of the space.

Form and Materials
The central oval and other forms in the Oasis integrate the geometry of the unifying arc created by the Loop with the triangular point created by the confluence of the creek and the river. The sloping oval is the primary form-giver. Plantings and lawn constitute the primary palette of materials, supporting more passive uses in addition to concerts and scheduled events.

Pavements: Trails, steps, and walkways are poured in place concrete, with scoring patterns that encourage slower speeds on the regional trail. Trail widths accommodate anticipated uses and provide rest areas for pedestrians to pause or gather. Intersections at merging trails are infilled with brick pavers to help direct the flow of traffic, moderate speeds, and reinforce the arced forms. They reduce the expanse of concrete required and create a place for trail users to stop out of traffic flows.

Walls and stepped terraces: Cast in place concrete walls and stepped seat walls are board formed to reflect the character of the historic flood walls. Horizontal surfaces are lightly textured to accommodate pedestrian use and seating. Landing areas between terrace and seat walls consist of crusher fines in high use areas or drought tolerant grasses and low shrubs. Lower walls transition into a stepped concrete edge connected to the river by large cleaved granite boulders.

Planting and landscaping: The amphitheater of irrigated turfgrass lawn forms the centerpiece of the area framed by lower maintenance plantings. Native drought tolerant grasses and tree clusters frame the lawn on the steeper slopes transitioning to Speer Boulevard. Tree plantings must be selected to maintain adequate clearances to not conflict with the overhead power lines. The city’s perennial planting program is accommodated along the top of the bowl near Speer Boulevard.

Amenities: Seating areas are integral to the graded terrace and lawn areas. The stage supports access and equipment for amphitheater programming including power, lighting, and storage. Equipment for support of pumps and water treatment for the whitewater course is accommodated in this area.
PLAN COMPONENTS
THE OASIS

AREA PLAN

KEY:
1. Grove
2. Beach
3. River Access
4. Flexible Open Lawn
5. Stage
6. Overflow Seating/ Slope Retaining Terraces
7. Rest Areas
8. Pedestrian Bridge
9. Connection to Regional Trail
10. Landscape Terrace
PLAN COMPONENTS

THE RIVER LAWN

A Family Gathering Place on the River
The River lawn enhances the existing Nuesteter Plaza as the major park entry from 15th Street and expands opportunities for family activities near the river’s edge. A large, shaded terrace between the plaza and the sloping lawn provides flexible spaces for seating and picnicking. Terraced seat walls provide informal seating and a place to relax and enjoy the river setting.

The south facing lawn is expanded to accommodate higher levels of uses such as informal play and sunning. A children’s adventure and splash play area serves as a vertical transition between the upper level and the lawn. The play area includes climbing walls, a boulder maze, slides, and tunnels that celebrate the outdoor experience of the river and its natural environment. It will be a neighborhood and regional destination. The splash play pool adjacent to the play area is a safe opportunity for children to experience the river environment.

Form and Materials
The River Lawn is the transition between the City and the River. As such, design elements mesh naturalistic forms and processes with geometries and materials of the city.

Pavements and Walls: The slope connecting existing Nuesteter plaza and the lawn will be terraced to provide shaded picnicking near the adventure play area. The Platte River regional trail is routed to connect to Commons Park. Concrete seating terraces transition between the lawn and the plaza. Crusher fines in picnic areas minimize water use and maintenance, and allow maximum flexibility for picnic areas. The location, size, and character of a proposed outdoor street-level cafe and seating area at the adjacent redevelopment site would be subject to approval by Denver Parks for joint use of public property.

Adventure Playground: Play opportunities include real and faux rock and other materials for climbing, sliding, crawling, balancing, and nature-based play as part of a river-themed environment. Specific goals for age group, play, fitness, educational value, and play element types will be determined in the design process.

Lawn and beach area: The existing beach area will be maintained, and the lawn expanded to accommodate higher levels of use. The whitewater wave feature will be integrated into the shoreline and riparian willow plantings will frame the lawn area, providing habitat enhancements.

Planting and landscaping: A deciduous tree canopy provides shade at the lawn edges. A view corridor is left open to enhance views from Nuesteter Plaza to the river, and to maintain open lawns for sunning and informal games.

Amenities: This area supports flexible uses and minimizes fixed amenities beyond what are already located at the upper entry plaza.
PLAN COMPONENTS

THE RIVER LAWN

KEY:
1. River Terraces
2. Beach
3. Flexible Open Lawn
4. Adventure Play
5. Splash Play
6. Connection to Commons Park
7. Picnic Terrace
8. Nuesteter Plaza

Adventure Play at Teardrop Park, NYC.
Splash Play at the Pittsburgh Riverfront.
Adventure and Splash Play at Confluence Park.
PLAN COMPONENTS ARCHITECTURAL MATERIALS

Architectural elements, including the trolley shed, cafe/concession buildings, and related site elements such as handrails and screen fencing, have significant potential to further define the image and character of Confluence Park.

Architecture in the Park
Given the visual significance of the arced bridge over the Platte River as the primary identifying element of the park, these structures should be simple and straightforward forms that reflect the area’s industrial past. They should be durable and low maintenance structures that are strongly rooted to the ground, and exhibit substantial indoor/outdoor visual and physical connections.

Structural systems of heavy timber and steel, exposed surfaces of rusted steel, and unfinished, board formed, and smooth finish concrete, should be used in simple, visible structural connections to give form to architecture and site elements. Galvanized steel, woven and welded wire mesh, steel decking, and related materials will be the basis for guardrails, screens, and related site elements.

Guardrails can serve multiple uses. (Image courtesy of Landscapeforms, Inc.)

Heavy, exposed wood or steel structures recall structural systems of nearby industrial buildings.

Durable, galvanized railings with a transparent character preserve views to the river.

Rusted steel and simple architectural massing characterize the Trolley and Cafe Buildings.

Industrial railings and related site elements minimize maintenance and recall the area’s industrial past.
Interpretive Themes
Recognizing and celebrating the significance of Confluence Park to the history and growth of Denver will be integral to its design. Working with City and State historic preservation specialists, the following interpretive themes were identified:

**Historic Periods of Significance**
- Birthplace of Denver (1850s-60s)
- City Beautiful (turn of 19th century)
- River Renewal (1970s)

**Cultural Significance**
- Discovery of Gold
- Urban and Industrial Development
- Environmental Awareness
- Outdoor Recreation and Leisure

**Possible Approaches**
- Use design as metaphor
- Use of historic materials and construction techniques
- Provide interpretive signage
- Engage artists as interpreters

**Specific story lines**
- The role that water has played in the West: Colorado, Denver and on the Confluence site
  - Source and destination
  - Resource and riparian environment
  - Quality and treatment
- Water usage
  - Agricultural and power
  - Industry
  - Flood control
- Settlement and gathering place
  - Community shared resource
  - Sight and sound of water
  - Recreation and interaction
  - Urban environment relief

**Signage and Wayfinding**

Providing the right amount of interpretive, wayfinding, and regulatory signage is an important issue for park users. Design and placement must be carefully determined to enhance user experience and safety, while supporting educational objectives.

**Identification and Wayfinding**: Park signage should balance the need to identify the park as part of the larger Denver Parks system while also celebrating the unique aspects of this downtown riverfront amenity. A simple hierarchy of well placed signs direct people to downtown area landmarks and help orient users within the park.

**Interpretive Elements**: The historic and water resource significance of Confluence Park should be celebrated through interpretive elements, not necessarily signs. Public art should be utilized to create an integral approach to interpretation.

**Regulatory Signs**: Speed limit and warning signs should be employed in highly visible locations were they do not interfere with views or park design elements.

**Story Trek and Technology**: Assure that resources that guide people to Confluence Park, and those that help interpret its significance, are incorporated into all future improvements. Support technology updates and look for new opportunities to connect to the internet and social media within the park.

**Public Art**
As part of Denver’s Percent for Public Art program, ensure that artists are an integral part of all future park design programs from their earliest stages.
PLAN COMPONENTS  LIGHTING

Lighting and Power
A quality lighting system will support visitors’ enjoyment of the nighttime environment while enhancing safety and security. The various areas of the Park have unique illumination and visibility needs and lighting must respond to those accordingly. Putting light only where and when it is needed will reduce lighting energy consumption and improve visual quality. The lighting system must provide the correct lighting levels, minimize glare, balance surface brightness and enhance landscape features. The lighting design will use layers of ambient, task and accent lighting and combine those layers at varied levels as the program requires. While lighting levels are important, good color rendering sources and glare control are also important for successful lighting.

Create Layers of Light:
Varying brightness and the use of contrast of light and dark can complement the landscape design, create focus on feature elements, and define the circulation paths to create a secure public space.

- **Ambient.** Pedestrian-scale luminaires can provide light for the primary circulation paths by illuminating people as well as the path.
- **Task.** Identify the entry points and other important nodes that visitors will need for guidance and wayfinding. Provide sufficient illumination for safe travel where cyclists and pedestrians will share the bikeways and pathways.

- **Accent.** Rendering special landscape elements with light makes the park more inviting at night. Different levels of brightness will create a visual hierarchy, supporting the focal points of the landscape design. Lighting vertical surfaces or landscape also improves sense of security by enhancing visibility.

- **Events.** Supplemental lighting will be needed for special events which utilize the stage area and accommodate audience access and egress. Electrical infrastructure will be provided to accommodate additional lighting and sound support.

Integrate Lighting with Landscape and Structures:
Low level path lighting and landscape accent lighting should be concealed within landscape and structural elements so that the lighting effect is seen while the lighting fixture is minimally visible. By concealing the source from direct view, glare is reduced and more pleasant visual environment is created.

Interactive and Seasonal Effects:
An interactive lighting feature, possibly integrated within the water feature or splash pool, can change color and intensity to interact with visitors’ movement, by time of day or the change of seasons.

Provide Sustainable Lighting:
**Illuminate what is needed:** Lighting pathways, gathering areas and structures is necessary for safety and security. Large open areas may be left without light, minimizing energy use, maintenance costs, and impact on neighbors.

**Minimize Light Trespass:** Light trespass onto neighboring residences, adjacent properties, and river-edge habitat will be minimized with careful equipment selection, proper location, and proper aiming and shielding.

**Minimize Light Pollution:** Light pollution is uncontrolled light that wastes energy and creates “sky glow” that reduces visibility of stars in the night sky. Un-shielded luminaires and excessively high lighting levels cause light pollution. The lighting within Confluence Park will be well shielded and designed to limit light levels to help maintain dark skies.

Form and materials:
**Utilize Long Life Light Sources,** such as LED and induction (electrode-less fluorescent) lamps, that are rated for 50,000 hours to 100,000 hours of operational life. These sources may have a higher initial cost, but greatly reduce maintenance and replacement costs.

**Use Lighting Controls to Reduce Operation Time.** Lighting controls increase the life of the lighting system, save energy and minimize impact on neighbors.

**Install Products that are durable and easy to maintain.** Lighting equipment and mounting methods should be carefully selected and detailed to withstand a high-abuse environment, especially those within areas that are regularly flooded, yet still be accessible and easily maintainable by parks personnel.
PLANN COMPONENTS LIGHTING

Ambient Bridge Lighting

Accent Wall Lighting

Overall Park Lighting Concept

Rendering by Clanton Associates
IMPLEMENTATION
funding + phasing
IMPLEMENTATION  FUNDING + PROGRAMMING

Not all parks are created equal. A great park system is the sum of many disparate but interconnected parks. **Forward-looking cities know that the general fund will never be enough to meet their goals.**

Funding, Management, and Phasing
As part of the planning process a two day workshop was held with HR&A Advisors to assess and evaluate the management and funding opportunities related to implementation of the Confluence Park plan. Following are the primary recommendations generated in the workshop:

**Establish an expansive Riverfront district**
Consider the Confluence Park Master Plan the starting point and catalytic project for establishing an expansive Riverfront District that will facilitate the branding of a major new frontier of downtown development. Creating a branded "District" will also permit access to new funding sources that can ensure that the public realm and its infrastructure receive the level of operating funding that will be required for long-term vibrancy and value creation. The new district should include parks that extend along the Platte River from Mile High Stadium to Cuernavaca Park.

**Reassess the role and funding sources of heavily used urban parks**
Reassess permissible sources and uses of funds for parks by virtue of establishment of park "zoning" that would specify what activities, events, and developments are acceptable in different parks throughout the city. Envision a public process by which park typologies in Denver are debated and specific parks sorted into typologies. The same process could be used to begin to develop new private sources of funding and new partnerships for parks as interested non-profits and citizens advocate for specific parks.

**Identify new sources of revenue for programming and maintenance**
Develop sizable new sources of revenue to ensure that once rebuilt, Confluence Park has sufficient dedicated funding to ensure it is both programmed and maintained to the standard desired. Potential revenue sources for programming and maintenance include:

- Dedicate retail sales taxes from nearby businesses to the park;
- Develop destinations within the park with partial revenues dedicated to the park. An example is Sea Salt restaurant in Minnehaha Falls Park in Minneapolis;
- Establish a Park improvement district to generate ongoing revenue.

Confluence Today, Confluence Tomorrow: Denver Parks estimates current spending for maintenance for Confluence Park to be $15,000-50,000 per year. With master plan improvements, increased use, and heightened visibility, the maintenance budget for the park could be $250,000 annually.

The 'Sea Salt' restaurant at Minnehaha Falls Park, Minneapolis, MN, generated $2 million in 2011, $240,000 (12%) of which was paid to the Park. (Image by HR&A Advisors)
IMPLEMENTATION FUNDING + PROGRAMMING

SOUTH PLATTE TODAY

Diagrams by HR&A Advisors

SOUTH PLATTE TOMORROW?

CONFLUENCE PARK DISTRICT
Destinations that:
- Are linked and branded as a system
- Maintain their own identity
- Encourage new infill development
- Create programmatic synergies

Waterfront Toronto: Signature design along the waterfront brands the district and creates a sense of community and ownership in the parks while attracting 12 million visitors annually. A phased funding strategy uses a Park Improvement District to fund the vast majority of operating costs. (Photographs, text, & Diagram by HR&A Advisors)
# IMPLEMENTATION PHASING

## OPINION OF PROBABLE COSTS:

*For Discussion Only*

See Appendix E for more detail

<table>
<thead>
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<th>Total Cost</th>
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| Phase 2 - Outdoor Living Room South        |             |
| Demolition and Removals                    | $100,000    |
| River Improvements                         | $6,480,000  |
| Grading and Grade Control                  | $68,000     |
| Utilities                                  | $95,000     |
| Buildings and Structures                   | $6,970,000  |
| Pavements                                  | $161,000    |
| Walls and Steps                            | $182,000    |
| Landscape                                  | $31,000     |
| Site Amenities                             | $465,000    |
| Mobilization and Contingency               | $5,094,000  |
| Design & Engineering                       | $2,946,900  |
| **Subtotal**                               | **$22,593,000** |

| Phase 3 - Oasis                            |             |
| Demolition and Removals                    | $104,000    |
| River Improvements                         | $3,270,000  |
| Grading and Grade Control                  | $1,720,000  |
| Utilities                                  | $135,000    |
| Buildings and Structures                   | $2,540,000  |
| Pavements                                  | $236,000    |
| Walls and Steps                            | $270,000    |
| Landscape                                  | $115,000    |
| Site Amenities                             | $365,000    |
| Mobilization and Contingency               | $3,065,000  |
| Design & Engineering                       | $1,773,000  |
| **Subtotal**                               | **$13,593,000** |

| Phase 4 - River Lawn                       |             |
| Demolition and Removals                    | $51,000     |
| River Improvements                         | $364,500    |
| Grading and Grade Control                  | $105,000    |
| Utilities                                  | $89,000     |
| Buildings and Structures                   | $15,000     |
| Pavements                                  | $125,000    |
| Walls and Steps                            | $183,500    |
| Landscape                                  | $34,000     |
| Site Amenities                             | $575,000    |
| Mobilization and Contingency               | $541,000    |
| Design & Engineering                       | $313,000    |
| **Subtotal**                               | **$2,397,000** |

**Total All Phases**                       | $42,758,000  |
PHASING DIAGRAM:

**IMPLEMENTATION PHASING**

**KEY:**

- **PHASE 1**
  - ① Ramp
  - ② Renovated Plaza
  - ③ River Terraces
  - ④ Freestyle Feature

- **PHASE 2**
  - Big Wave
  - Whitewater Course
  - S. Platte Bridge
  - Cafe Building
  - Trolley Building

- **PHASE 3**
  - Terraces
  - Amphitheater including wall removal
  - Cherry Creek Bridge

- **PHASE 4**
  - Adventure Play Area & Splash Pad
  - Lawn
  - Picnic Terrace

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<td>Historic American Landscapes Survey for Confluence Park, written and prepared by Emily Lynam, University of Colorado Denver, January 25, 2013</td>
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APPENDIX A PUBLIC INVOLVEMENT

Public Involvement Process for Confluence Park Master Plan

Introduction: The goal of the public involvement process for the Confluence Park Master Plan was to communicate and solicit input from the many constituencies of the park, including local residents, businesses and outdoor enthusiasts. It is recognized that the park has a significant local as well as regional appeal, and that different constituencies use the park at different times of the day on different days of the week. Public involvement activities need to reflect diversity and use patterns in order to capture a broad range of public input. Craig Coronato of Wenk Associates and Lisa Zoeller of Zoeller Consulting are the primary team members working on public involvement.

Preparation for Public Involvement: created a distribution list of 125 key leaders, identify local media contacts, develop web site, create online survey for web site, and develop written materials and flyers.

General Notification Process for all three public meetings:
- Electronic invitation and short project description emailed 30 days in advance to over 7,000 people: Parks & Rec list: 4,500; Parks RNO list: 140; distribution list of 125; emails to 2,400 local tenants
- Flyers printed and distribution begins for mail rooms in 14 tenant building mail rooms; flyers posted on community boards at REI and Starbuck’s, as well as posting in various businesses on both sides of the Platte River, including Little Raven Winery, Paris on the Platte, Corks, and McCloughlin’s Restaurant
- General publicity in North Denver Tribune, Your Hub; web sites for District 9, Greenway Foundation, REI and various advocacy groups; Parks and Recreation Facebook, River Vision web site and Twitter
- Second round of emails and flyers beginning approximately 10 days prior to the public activity; two to three additional Tweets, Facebook posts and other communication via Parks and Recreation site

Public Involvement Activities:
- Walked Platte Street businesses, Riverfront businesses and surrounding area in early June to identify key contacts for project and to tell them about the June 30 Open House
- Public Open House on Saturday, June 30 in REI Community Room from 10-noon; reached many people who live in the area or representative various biking, walking, kayaking groups
- Tent outside REI on Saturday, June 30 10-noon to hand out information on west side of Platte and ask park users to fill out park survey; reached many bikers including many from outside of Denver. Approx. attendance?
- Intercept interviews of park users midday on Tuesday, July 10 on east side of park to reach parents and kids swimming in the river and people who live or work in the Riverfront area.
- Publicity of online survey and web site, resulting in over 300 survey responses regarding Confluence Park area.
- Stakeholder meeting on Wednesday, August 8 with about 20 key leaders and representatives to look at concept options and give opinions
• Second public meeting at REI Community room on Tuesday, August 21 to present three concept alternatives for the master plan, hear opinions and develop concept preferences. Approx attendance?
• Second stakeholder meeting on Wednesday, September 12 with about 20 key leaders to look at selected concept in more detail.
• LUTI and Parks Advisory board meetings 10/9 and 10/11?
• Third stakeholder meeting planned for October 10 to vet final plan prior to public presentation on the 15th.
• Third and final public meeting planned for Monday, October 15 to present the proposed master plan concept and to get additional feedback that would be incorporated into the final plan.
• Determine the level of public involvement required for phase 2 implementation

Stakeholders Committee:

Denver Parks & Rec
Greenway Foundation
City Council District 9 aide
REI
Riverfront
Highland United Neighbors, Inc.
Businesses on the Platte
Downtown Denver Partnership
Bike Denver
Walk Denver
Trout Unlimited
Denver Bicycle Touring Club
Rocky Mtn Cycling Club
Denver Rail Heritage Society
Rocky Mtn Canoe Club

Mark Bernstein
Jeff Shoemaker
Nathan Batchelder
Pete Citrano
Siri Sellers
Kristin Morley
Glenn Ehrlich
John Desmond
Piep van Heuven
Gosia Kung
Cory Stansbury
John Campbell
Tom Foss
Darrell Arndt
Bill Ashworth

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piep@bikedenver.org
gkung@kungarch.com
cory@thecory.com
president@dbtc.org
foss.tom@gmail.com
trainpix@aol.com
washwort@comcast.net
APPENDIX A  PUBLIC INVOLVEMENT

Confluence Park
Denver, Colorado
A Community's Outlook

the river
Improve water quality and enhance the river as an amenity for recreation

recreation + leisure
Provide a better variety of recreation opportunities for all age groups and better distribute them in the park

access + connections
Reduce congestion and conflicts by improving bridges, trails and walkways to provide better access and safer conditions

regional destination
Activate the park and better integrate it within its changing urban context

safety
Reduce real and perceived threats in the park

Community Outreach Meeting #1 . June 30, 2012 . Summary of Public Comments

Confluence Park Master Plan
Denver, Colorado . Stakeholder's Committee Meeting #1 . Aug. 8, 2012

Denver Parks & Recreation || Wenk Associates, Inc. DRAFT - May 01, 2013 5:54 PM
APPENDIX A  PUBLIC INVOLVEMENT

**summary of comments on concept plans - public meeting #2**

- **the ramp terrace**
  - replace failing infrastructure, improve river access, and add key amenities.

- **the spine bridge**
  - park elements organized along a central spine.

- **the park loop**
  - park amenities connected by a signature element.

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*preferred concept according to public input*

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**Confluence Park Master Plan**

DENVER, CO. PUBLIC INPUT - COMMUNITY OUTREACH MEETING #2 ... AUG. 21, 2012

**DRAFT** - May 01, 2013  5:54 PM

Confluence Park Master Plan - APPENDICES
APPENDIX B  HISTORIC RESOURCES SUMMARY

Confluence Park: An Historical Review

**Early Settlement of Denver:** In 1849 William Greeneberry Russell heard about a discovery of gold along the South Platte River. He organized a party and left his mining venture in California to explore the rivers in Colorado in 1858. The site of their initial exploration is where Confluence Park is located today. The park is embedded in the lower downtown (LoDo) area of Denver, the oldest and original settlement of the City of Denver. During the exploration for gold, General William Larimer founded Denver by putting down cottonwood logs in the center of a square mile plot that would become the current LoDo neighborhood. In 1870, residents passed bonds that brought a railroad from Cheyenne. The thriving business area became a skid row in the mid twentieth century. In the 1960’s and 1970’s urban renewal plans were realized, including storefront redevelopment near the park in the late 1980’s.

**Speer Boulevard:**
- Speer Boulevard and Cherry Creek are both in a Denver Landmark District upstream of Auraria Parkway. Downstream only the road remains in the district.
- On Cherry Creek the walls parallel concrete walls 10 feet tall and 80 feet apart were constructed between 1906 and 1911 from Downing Street to Blake Street to contain Cherry Creek. In 1912 there was a massive flood, which hastened the need to finish the walls along Cherry Creek up to the South Platte River. The dimensions of these walls were increased to 12 feet high and 88 feet wide. This final section was completed in 1914. The walls are still in use and provide a continuous walled channel for Cherry Creek for the 3.2 miles from Downing Street to the South Platte River.
- It was added in 1986 to the National Register of Historic Places for the area of the Boulevard that stretches from W. Colfax to Downing Street, Denver. The historic significance is the architecture/engineering and events. The area of significance is the community planning and development, and landscape architecture.

**Laminated Beam Wood Bridge across Cherry Creek:**
- Located just downstream of Little Raven St in confluence Park, this is the last of its kind on Cherry Creek. Its age and significance are unknown.
- 1970’s era design of Shoemaker Plaza and ramps:
- Because the point wall reconstruction and diversion structure were likely built during the 70s when the park was first developed, they don’t meet the 50 year mark for potentially historic structures (from the Federal perspective, not sure about Denver).

**Denver Tramway Power Company Plant Building:**
- The Denver Tramway Company was developed in 1886 by John and William Evans and the Power Company Plant building was established in 1901. The Tramway installed a city-wide network of overhead electric trolleys for lines that reached numerous neighborhoods in Denver and the Power Company Plant served as the power source for these electric trolleys. The power plant closed in the 1950’s and was used by the International Harvester
APPENDIX B  HISTORIC RESOURCES SUMMARY

Company and then became the Forney Historic Transportation Museum in 1969, which later moved to a different location. The building was designated a Denver Landmark Building in 1971. In 1998 REI looked to this historic building location as a new sustainable retail development opportunity. The REI Denver project and its measures of sustainable development lead to the Denver Tramway Building being added to the National Register of Historic Places in September 2001.

Platte Valley Trolley:
- The Trolley car, No. 25, is the last remaining, completely intact, electric railway car. It was built in 1911 and operated until 1950. It is listed on the State Register of Historic Properties and was sold to the West Corridor Rail Historical Cooperative. It is now run by the Denver Tramway Heritage Society and its north terminus is located in Confluence Park.

Shoemaker Plaza and the whitewater course:
- One of the first urban riverfront parks in the US, including the development of river access points, a whitewater course and other park improvements, Historic information available from the Greenway Foundation.
- The Farmers and Gardener’s Ditch:
- Served the North Denver Power plant, abandoned, now belongs to Denver Water.
- History available from Denver Water and History of Denver Water System: George M. Bull, at DPL.

Partial list of Sources:
- http://www.ucdenver.edu/academics/colleges/SPA/BuechnerInstitute/Centers/WirthChair/Publications/Documents/Sustainable%20Retail%20Development%20at%20REI%20Denver.pdf
- http://coloradopreservation.org/
- http://www.denverstreetcars.net/history.htm
- http://landscapeonline.com/research/article/8521
- http://landscapeonline.com/research/article/8521
- http://nepis.epa.gov
APPENDIX C  ENVIRONMENTAL

Opportunities and Challenges:
Riparian Corridor, Cultural Resources and Hazardous Materials

Opportunities
1. Potential to narrow South Platte River channel to create riparian overbanks
2. Opportunity to limit access and enhance plantings

Hazardous Materials
3. Potential hazardous materials at former landfill site
4. Potential hazardous materials at former power substation

National Register of Historic Places (NR)
5. Denver Tramway Powerhouse – Listed on National Register of Historic Places
6. Cherry Creek Floodwall – Will be evaluated for NR Listing, (Likely eligible)
7. Cherry Creek Floodwall – Will be evaluated for NR Listing, (Likely not eligible)
8. Riverpoint Building – Will be evaluated for NR Listing, (Likely not eligible)
9. Irrigation Canal Diversion – Will be evaluated for NR Listing, (Likely not eligible)

City and County of Denver
10. Speer Boulevard Historic District
APPENDIX C ENVIRONMENTAL

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Table 1. Federally threatened and endangered species potentially found in County County or potentially affected by projects in Denver County.

Summary
The City and County of Denver (City), in partnership with stakeholders that include Urban Drainage and Flood Control District, the Greenway Foundation, and Colorado Department of Transportation, is developing a master plan for Shoemaker Plaza at Confluence Park. Shoemaker Plaza was constructed in 1975 and is one of the earliest examples of an urban riverside park in the country. Additional improvements have been made to the area, including a whitewater kayak course and connections to the South Platte River and Cherry Creek regional trails.

The City retained the Wenk Associates team to develop a master plan for Confluence Park. Concepts developed during the master plan include the potential for impacts to various sensitive and regulated resources in the project area. Additionally, it is likely that federal funds, administered by Colorado Department of Transportation, will be used during the construction phase of the project. For these reasons, ERO Resources Corporation (ERO) is part of the Wenk team to inventory natural and cultural resources and potential hazardous materials and provide an assessment of potential effects and regulatory processes that may be triggered by those effects. Below is a summary of the resources found at the project area and recommendations or future actions necessary based on the current site conditions and federal, state, and local regulations.
APPENDIX C ENVIRONMENTAL

Wetlands and Other Waters of the U.S. - The South Platte River and Cherry Creek are present in the project area and are jurisdictional waters of the U.S., into which the discharge of dredged and fill material is regulated by Section 404 of the Clean Water Act. The master plan alternatives would all likely trigger the need for a Section 404 individual general permit from the U.S. Army Corps of Engineers (Corps). None of the alternatives contain any significant permitting obstacles and a permit would be issued up to six month from application submittal.

Threatened and Endangered Species - Suitable habitat for federally listed threatened or endangered species is not present in the project area and the project would have no indirect effects on listed species. The City should submit a habitat assessment letter to the U.S. Fish and Wildlife Service for its review and concurrence that the project would have no effect on threatened or endangered species.

Migratory Birds - Migratory birds may nest in trees or under bridges in the project area. If vegetation and structures cannot be removed during the non-nesting season, a survey for active nests should be done prior to construction. If active nests are found in the project area, any work that would destroy a nest or cause abandonment should not be conducted until the birds have completed nesting.

Historic Properties - The Denver Tramway Power Building is listed on the National Register of Historic Places and several other structures and landscape features, including the Cherry Creek floodwalls and River Pointe Building should be assessed for eligibility. The City has also designated a number of other features, including the Speer Boulevard corridor, as historic under City criteria. Consultation between either the Corps or Colorado Department of Transportation and the State Historic Preservation Office on eligibility and effects determinations will be required because of federal involvement in the project. In the unlikely event that a listed or eligible resource would be adversely affected by the project, mitigation would be required.

Hazardous Materials - Many areas along the South Platte River and Cherry Creek have been used as dump sites or have been used for industrial purposes. The resulting potential for the presence of hazardous materials is high. A dump is known to have been present on the south west arm of the confluence and an electrical transmission substation was present in the south east arm of the confluence. The Colorado Department of Transportation will require that a Phase I Environmental Site Assessment be prepared that assesses the likelihood of contamination in the project area. The findings of the Phase I Environmental Site Assessment may indicate the need for soil and/or groundwater testing to determine the presence or extent of contamination.

CDOT Categorical Exclusion Process - Because CDOT administered federal funds will be used for the construction phase of the project, the project must comply with the National Environmental Policy Act (NEPA). NEPA requires an analysis of environmental impacts that may result from federal actions, in this case, funding of the project. CDOT will use its Categorical Exclusion (CE) process to document NEPA compliance. Several CE clearance items are specific to CDOT CE projects, including Senate Bill 40 Certification, a wetland finding, and addressing paleontological resources.
APPENDIX C ENVIRONMENTAL

Introduction
The City and County of Denver (City), in partnership with stakeholders that include Urban Drainage and Flood Control District, the Greenway Foundation, and Colorado Department of Transportation (CDOT), is developing a master plan for Shoemaker Plaza at Confluence Park. Shoemaker Plaza was constructed in 1975 and is one of the earliest examples of an urban riverside park in the country. Additional improvements have been made to the area, including a whitewater kayak course and connections to the South Platte River and Cherry Creek regional trails. The City retained the Wenk Associates team to develop a master plan for Confluence Park. Concepts developed during the master plan include the potential for impacts to various sensitive and regulated resources in the project area. Additionally, it is likely that federal funds, administered by CDOT, will be used during the construction phase of the project. For these reasons, ERO Resources Corporation (ERO) is part of the Wenk team to inventory natural and historic resources and potential hazardous materials and provide an assessment of potential effects and regulatory processes that may be triggered by those effects. Below is a summary of the resources found at the project area and recommendations on future actions necessary based on the current site conditions and federal, state, and local regulations.

Site Description
Confluence Park is located at the Confluence of the South Platte River and Cherry Creek. Both streams have perennial flows that are highly regulated by releases from upstream dams and that convey larger volumes of urban stormwater runoff. Development has encroached upon the floodplains of both streams and both streams have been channelized to better convey flood flows. Cherry Creek is contained within vertical floodwalls and the South Platte River is contained within a constructed trapezoidal channel. Because of channelization and encroachment by development, there is virtually no riparian or wetland vegetation along the streams. Most of the vegetation in the project area is maintained turf grass associated with park areas. There are scattered patches of sandbar willow (Salix exigua), reed canarygrass (Phalaris arundinacea), Siberian elm (Ulmus pumila), and plains cottonwood (Populus deltoides) along the South Platte River. Development around the park includes a mix of 19th, 20th, and 21st century development. The most prominent existing building is the Denver Tramway Company Power Building, which became fully functional in 1902. The building now houses the REI Flagship store. The Platte Valley Trolley provides rides on restored Denver Trolley cars between REI and Sports Authority Field at Mile High during the summer.

Wetlands and Waters of the U.S.
Background: The Clean Water Act (CWA) was passed by the U.S. Congress in 1972 to protect the physical, biological, and chemical quality of waters of the U.S. The U.S. Army Corps of Engineers’ (Corps) Regulatory Program administers and enforces Section 404 of the CWA. Under Section 404, a Corps; permit is required for the discharge of dredged or fill material into wetlands and waters of the U.S. The Corps defines waters of the U.S. as all navigable waters and their tributaries, all interstate waters and their tributaries, all wetlands adjacent to these waters, and all impoundments of these waters.

Section 404 of the CWA includes provisions for three types of authorization to discharge dredged or fill material into waters of the U.S - nationwide permit authorization, regional general permits, and individual general permits. The nationwide permits are a series of activity-based permits with limits on impacts to waters of the U.S. and adjacent wetlands. Nationwide permits are used to authorize activities such as utility and transportation crossings, small bank stabilization projects, outfalls, and some types of maintenance activities. Regional and individual general permits are used to authorize activities that either exceed the impact thresholds of nationwide permits or that are not activities covered by nationwide permits. Examples of activities that are not covered by nationwide permits include stabilizing channels with drop structures, dams, stream diversions, and kayak courses. In most cases, CWA authorization requires compensatory mitigation for permanent loss of wetlands in the form of either constructed wetlands or purchase of wetland mitigation bank credits.
APPE N D IX C  E N V I R O N M E NTAL

Applications for individual general permits must include an analysis of alternatives considered for the project. The Corps is only able to issue an individual general permit for the least environmentally damaging practicable alternative that meets the project purpose and need.

Site Conditions and Clearance Process:  
As previously described, Confluence Park includes the South Platte River and Cherry Creek, both of which, and their adjacent wetlands, have previously been determined by the Corps to be jurisdictional waters of the U.S. If any work is planned within the South Platte River or Cherry Creek, a wetland delineation should be conducted and a report should be submitted to the Corps for its review. Activities planned that would require the placement of dredged or fill material within wetlands or below the ordinary high water mark would require authorization under Section 404 of the CWA. Current master plan concepts include a variety of activities that would require CWA authorization including reconfiguring the South Platte River channel and kayak course, improving access to the stream banks, and constructing new stream crossings.

The extent of likely disturbance to jurisdictional waters of the U.S. under current alternatives is great enough that CWA authorization would likely be in the form of an individual general permit. The permit would require compensatory wetland mitigation, which could likely be accomplished in the project area if incorporated into final design. It would take up to six months to receive authorization once a permit application has been submitted. None of the master plan alternatives includes any proposed activities for which it would be difficult to obtain authorization, but a thorough alternatives analysis for the selected alternative will be necessary. A preapplication meeting with the Corps and other review agencies should be held at the start of the design process for the selected alternative.

Threatened, Endangered, and Candidate Species  
Background: Federally threatened and endangered species are protected under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.). Significant adverse effects to a federally listed species or its habitat require consultation with the U.S. Fish and Wildlife Service (Service) under Section 7 or 10 of the ESA. Section 7 consultation occurs between the Service and another federal agency whose actions may affect listed species. Implementing the selected alternative from the Confluence Park master plan will likely trigger federal actions on the part of the Corps (issuing CWA authorization) and Federal Highway Administration (through federal funds administered by CDOT) that will require Section 7 consultation.

Site Conditions and Clearance Process:  
The project area was assessed for potential habitat for threatened, endangered, and candidate species under the ESA. The Service lists several threatened and endangered species with potential habitat in the City and County of Denver, or potentially affected by projects in the City and County of Denver (Table 1).

The proposed project would not directly affect the Preble's meadow jumping mouse or Ute ladies-tresses orchid because of the lack of suitable habitat in the project area. The project is also located within block clearance areas for Preble's meadow jumping mouse and Ute ladies-tresses orchid. The Colorado butterfly plant is a short-lived perennial herb found in moist areas of floodplains. It occurs on subirrigated, alluvial soils on level or slightly sloping floodplains and drainage bottoms at elevations 5,000 to 6,400 feet. The Service has not established official survey guidelines for the Colorado butterfly plant; however, no suitable habitat is present within the project area because a natural drainage characterized by wetlands and an active floodplain is not present within the project area. Because of the lack of suitable habitat, the project would have no effect on Colorado butterfly plant.

The interior least tern, piping plover, whooping crane, pallid sturgeon, and western prairie fringed orchid are species affected by water depletions from the South Platte River. Because the current alternatives do not include activities that would deplete water in the South Platte River, such as diverting water from a stream, these species would not be affected by the project.

To document compliance with the Endangered Species Act, the City should submit a habitat assessment to the Service that documents the lack of suitable habitat in the project area for federally listed species and the lack of indirect effects associated with depletions and that requests concurrence from the Service that the selected alternative would have no effect on federally listed species.
Table 1. Federally threatened and endangered species potentially found in County County or potentially affected by projects in Denver County

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Status</th>
<th>Habitat</th>
<th>Suitable Habitat Present or Potential to be Affected by Project?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whooping crane**</td>
<td>Grus americana</td>
<td>E</td>
<td>Mudflats around reservoirs and in agricultural areas</td>
<td>No suitable habitat, no depletions, no potential to affect</td>
</tr>
<tr>
<td>Pallid sturgeon**</td>
<td>Scaphirhynchus albus</td>
<td>E</td>
<td>Large, turbid, free-flowing rivers with a strong current and gravel or sandy substrate</td>
<td>No suitable habitat, no depletions, no potential to affect</td>
</tr>
<tr>
<td>Ute ladies'-tresses Orchid</td>
<td>Spiranthes diluvialis</td>
<td>T</td>
<td>Moist to wet alluvial meadows, floodplains of perennial streams, and around springs and lakes below 6,500 feet</td>
<td>In block clearance, no potential to affect</td>
</tr>
<tr>
<td>Western prairie-hinged Orchid</td>
<td>Platanthera praecllara</td>
<td>T</td>
<td>Moist to wet tallgrass prairies and sedge meadows, mostly in relatively undisturbed grasslands</td>
<td>No suitable habitat, no depletions, no potential to affect</td>
</tr>
</tbody>
</table>

* T = Federally Threatened Species, E = Federally Endangered Species.
** Water depletions in the South Platte River may affect the species and/or critical habitat in downstream reaches in other counties or states.


Raptors and Migratory Birds
Background: Migratory birds, as well as their eggs and nests, are protected under the Migratory Bird Treaty Act (MBTA). The MBTA does not contain any prohibition that applies to the destruction of a bird nest alone (without birds or eggs), provided that no possession occurs during the destruction. While destruction of a nest by itself is not prohibited under the MBTA, nest destruction that results in the unpermitted take of migratory birds or their eggs is illegal and fully prosecutable under the MBTA (Migratory Bird Permit Memorandum, U.S. Fish and Wildlife April 15, 2003). The regulatory definition of a take means to pursue, hunt, shoot, wound, kill, trap, capture, or collect; or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect.

Under the MBTA, the Service may issue nest depredation permits, which allow a permittee to remove an active nest. The Service, however, issues few permits and only under specific circumstances, usually related to human health and safety. Obtaining a nest depredation permit is unlikely and involves a process that takes from 4 to 8 weeks. The best way to avoid a violation of the MBTA is to remove vegetation outside of the active breeding season, which typically falls between March and August, depending on the species. Public awareness of the MBTA has grown in recent years, and most MBTA enforcement actions are the result of a concerned member of the community reporting a violation.
Site Conditions and Clearance Process:
No nests were observed within the project area during the YEAR site visit. It is recommended that all vegetation be removed from the site outside of the breeding season to avoid destroying any potential nests. If an active nest is identified within or near the project area, activities that would directly impact the nest, or that would encroach close enough to cause adult birds to abandon the nest during the breeding season, should be restricted.

Historic Properties
Background: The National Historic Preservation Act (NHPA) is federal legislation intended to preserve historical and archaeological sites. The act created the National Register of Historic Places, the list of National Historic Landmarks, and the State Historic Preservation Offices. In order for a structure or building to be listed in the national register, it must be associated with an important historic event or person or have distinctive characteristics or qualities of workmanship. Typically, historic properties are more than 50 years old and generally look the way they did during their period of significance. Section 106 of the NHPA sets forth the process that federal agencies must follow when their actions have the potential to affect historic properties. The federal agency with jurisdiction over the action is responsible for complying with Section 106. For this project, the Corps and Federal Highway Administration (represented by CDOT) will be involved. In cases such as these, CDOT typically leads the Section 106 process.

Site Conditions and Clearance Process:
Given that the Confluence Park area is generally considered the birthplace of Denver, structures and landscape elements date from the late 1800s to the present. The Denver Tramway Power Building is listed on the National Register of Historic Places and several other structures and landscape features, including the Cherry Creek floodwalls and River Pointe Building should be assessed for eligibility. The City has also designated a number of other features, including the Speer Boulevard corridor, as historic under City criteria. Consultation between either the Corps or Colorado Department of Transportation and the State Historic Preservation Office on eligibility and effects determinations will be required because of federal involvement in the project. In the unlikely event that a listed or eligible resource would be adversely affected by the project, mitigation would be required.

Hazardous Materials
Background: Following a number of judicial decisions, including some related to the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), property owners were assigned liability to effect site cleanup of hazardous materials, even if a prior owner caused the contamination. As part of the due diligence process of acquiring property, many potential property owners undertake a Phase I Environmental Site Assessment, which is a report prepared for a real estate holding that identifies potential or existing environmental contamination liabilities. Phase I Environmental Site Assessments are also prepared to identify potential liabilities associated with worker safety.

CDOT Categorical Exclusion Process
Because the project will be partially funded through CDOT, the project must comply with the National Environmental Policy Act (NEPA). NEPA compliance will be addressed through the Categorical Exclusion (CE) process, which assumes the project will have no significant environmental impacts. The CE will require several environmental clearances, including those for wetlands and waters, threatened and endangered species, wildlife, cultural and paleontological resources, and hazardous materials. Most of these clearances are also necessary as part of the Section 404 permitting process. The final clearances and anticipated levels of effort will be determined during a scoping meeting with CDOT environmental staff. Clearances specific to the CE process are described below.
Senate Bill 40 Certification
Because the project will include stream crossings and, possibly, work in stream channels, formal SB 40 Certification will be required from Colorado Parks and Wildlife. The certification is necessary when state agencies, in this case CDOT, undertake activities that affect streams in Colorado. The certification would be requested based on the selected alternative and is often obtained between FIR and FOR designs.

Wetland Finding
To comply with Presidential Executive Order 11990 Protection of Wetlands, CDOT must prepare a Wetland Finding according to Federal Highway Administration guidelines. The wetland finding addresses impacts to all wetlands, regardless of jurisdictional status under the Clean Water Act. The wetland finding describes project alternatives, why impacts are unavoidable under the selected alternative, and compensatory mitigation for wetland impacts. The wetland finding is usually prepared between FIR and FOR designs.

Paleontological Resources
The Historical, Prehistorical, and Archaeological Resources Act protects all fossils on state-owned lands and lands controlled by any subdivision of state government. While the requirement to locate and assess the scientific importance of fossils on state-owned lands is not stated explicitly in the law, CDOT undertakes assessment on many of its projects. If a fossiliferous geologic stratum may be affected by a project, CDOT may require a paleontologist be present during certain portions of construction. Because of the extensive disturbance in the project area, it is unlikely that CDOT will require a detailed assessment of paleontological resources. If a resource is encountered during construction, the CDOT paleontologist would be notified before work could proceed.
 Opportunities for... Recreation & Leisure

Confluence Park can become a better destination for recreation and leisure by improving its urban environment and amenities.

Improve Recreation Opportunities
- Expand areas for river-related activities such as picnicking, sunning, and fishing.
- Provide family friendly facilities and areas for children’s play.
- Evaluate ways to accommodate pets in recreational use areas.

Expand Events and Programming
- Provide expanded viewing areas for activities and events along the river’s edge.
- Expand the potential for large and small events, such as concerts, movies, boating competitions, etc.
- Accommodate small group activities such as fitness, fishing, and yoga classes.
- Partner with institutions to provide environmental education.

Provide Enhanced Leisure Opportunities
- Expand recreation amenities to accommodate park users, including seating, shade, lawn and picnic areas.
- Create gathering places that provide food, outdoor cafe seating, public restrooms, rentals, storage and related support facilities through public/private partnerships.
- Improve lighting to support evening leisure activities and increase safety.
- Provide wireless internet access throughout the park.

Key Issues:
- Large areas are underutilized and have limited amenities.
- Off leash pets contribute to conflicts and water quality concerns.
- Isolated areas of overuse and conflict during certain seasons and times of the day.
- Unauthorized activities that currently occur in the park can be dangerous.
- Not enough places for seating or shade.
- Park elements are aging, dated, and some need major repairs or replacement.
- Park amenities such as seating, trash, bicycle parking and wayfinding are limited.
- Increasing demand for fitness and adventure recreation in the park.
- No public restrooms or drinking fountains.
- Not enough activities for all ages, especially children.
Opportunities to... *Improve Access & Connections*

*Improving access to and within Confluence Park should make it safer and easier to get to the park by overcoming barriers.*

**Improve Access to the Park**
- Identify means to **expand visitor parking** by improving and/or sharing existing parking areas.
- Provide **universal access** through the park and to the river’s edge.
- Utilize the historic trolley to **link** to the Children’s Museum, Aquarium and other cultural institutions.
- Enhance **views** of the river and downtown skyline.
- Improve views into the park from the street and neighborhood.
- Improve pedestrian connections from adjacent neighborhoods.

**Increase User Safety Within the Park**
- **Reduce conflicts** by providing capacity for different types of trail users.
- Maintain and enhance emergency and maintenance access to all parts of the park.
- Improve **lighting and visibility** within the park.
- Minimize isolated areas, dense vegetation, and dead end paths.

**Create Continuous Connections Within the Park**
- Create a **hierarchy of trails** with flexibility to accommodate different types of recreational and commuter uses.
- Minimize conflicts by providing **adequate space** for pedestrians, bicyclists and other users of different ages and skill levels.
- Improve **trail connections** to the Cherry Creek and South Platte River Regional Trail systems.
- Replace the **aging bridges** and provide better opportunities to view the river from them.
- Connect the past to the present - **interpret the history** of the confluence.
- Improve connections to adjacent parks.
- Provide more opportunities to access the River and Cherry Creek.

**Key Issues:**
- Regional trails converge, and increasing use causes conflicts with recreational users.
- Visual connections from the street and surrounding neighborhood are limited and/or blocked.
- There are numerous places where bicycles and pedestrians interfere with each other’s use of the trails.
- Limited visibility contributes to the perception of the park as a dangerous place.
- Local connections from streets and parking areas are inadequate and not clearly marked.
- The Trolley is an under-utilized and historic resource.
- There is not enough parking for visitors traveling by car.
- There are limited places where visitors can learn about the history of the Confluence as the birthplace of Denver.
- Bridges and ramps are aging, do not meet current accessibility codes, and need replacement.
- Infrastructure for power and wireless Internet access are limited.
APPENDIX D GAP ANALYSIS

Opportunities to...Celebrate the Confluence

Denver can recognize the value of one of its most important historic, recreational, and open space resources by partnering to invest in its future.

Improve the Park to Become a Centerpiece of the Central Platte Valley Event District

- Establish the park as a downtown urban park that complements, but provides different experiences than Civic Center and Skyline Parks.
- Engage nearby business redevelopment areas and look for ways that park improvements can be mutually beneficial.
- Provide continuous riverfront access and public gathering places.
- Create river crossings that serve multiple purposes and become part of the river experience.

Integrate the Park as a Major River Gateway

- Create signature gateway elements such as a feature bridge, pedestrian promenade, and gathering places along the river.
- Improve park entrances to create identity, invite access, and increase visibility of the park.

Make the park a destination for regional and local events

- Partner with regional and other nearby cultural and entertainment destinations to provide environmental, entertainment, and educational programming.
- Create areas in the park that can accommodate large and small spectator events such as movies, concerts, fireworks, and recreation events.
- Create a world class whitewater facility capable of hosting local, regional and national competitions.
- Celebrate the Confluence as Denver’s birthplace by interpreting it through design, stories and art.

Key Issues:

- Confluence Park is recognized as a “major river gateway”, yet existing facilities currently do not support that status.
- There are not enough places along the riverfront that combine opportunities to recreate, people watch, eat, surf the web, and just hang out.
- Increased use of regional trails and infill development along the river will draw more people to the park.
- The Park is Denver’s waterfront, an attraction for people from all over the region at the confluence of the river and the creek.
- Park edges and adjacent uses have changed dramatically since the park was constructed
- The whitewater course has aged and does not meet current competitive standards.
- Areas for events and spectators are limited. Access and facilities in these areas are insufficient.
- There is a lack of awareness of the river and the park, as well as visual connections from surrounding downtown neighborhoods.
- The river provides significant value to the community but realizes little in return in terms of program and maintenance funding.
- As a signature park, Confluence is used much more heavily than typical neighborhood parks, but currently receives the same funding for maintenance.
Opportunities to... Enhance the River

Providing better access and a cleaner river will improve its value as a recreational resource.

Expand the Potential for People to Interact With Water
- Provide **safe alternatives** to swimming in the river.
- Improve opportunities to get to the river's edge.
- Provide more places for people to **relax and enjoy** the river.

Improve Recreational Boating in the River
- Improve the whitewater course to support seasonal and/or year round competitive and recreational boating.
- Renovate the whitewater course to make it **safer and more accessible** to recreational boaters and tubers.
- Expand and **improve river access** and portages to accommodate more recreational boating.

Improve the Water Quality in the River
- Treat on-site stormwater runoff to **remove pollutants** before entering the river.
- Create wetland edges or other biological treatments of in-stream river flows.
- Strike a **balance** between urban and natural river edge conditions.
- Improve **aquatic habitat** in the river.
- Increase awareness of regional water quality issues by providing public access to water quality monitoring information.
- Provide greater **diversity and interest** in the ways that water moves and flows in the river.

**Key Issues:**
- This part of the river has little riparian or aquatic habitat value.
- Although it is prohibited, swimming in the river is very popular.
- Highly variable seasonal and flood flows limit the ability to establish habitat.
- Emergency access to the river for rescues and flood control is difficult.
- The existing whitewater course doesn’t meet the standards of today’s competition whitewater courses.
- Access for security, maintenance, inspection, and debris removal is limited.
- There are few possibilities for safe interaction with water.
- Agencies need upgraded flow and water quality monitoring devices in this location.
- Existing walls limit opportunities to get to the River’s edge.
- Shoreline conditions require stabilization for flood control.
- People are concerned about the levels of pollution in the river.
## APPENDIX E COST OPINION

### PHASE 1-OUTDOOR LIVING ROOM NORTH

#### Outdoor Living Room North

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty.</th>
<th>Unit</th>
<th>Unit Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Demolition &amp; Removals</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Tree Removal - Clear &amp; Grub</td>
<td>18</td>
<td>EA</td>
<td>$750.00</td>
<td>$13,500</td>
</tr>
<tr>
<td>2 Remove Walls and structures</td>
<td>1,000</td>
<td>CY</td>
<td>$75.00</td>
<td>$75,000</td>
</tr>
<tr>
<td>3 Remove Pavements and curbs - Concrete and Brick</td>
<td>155</td>
<td>CY</td>
<td>$50.00</td>
<td>$7,750</td>
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<tr>
<td>4 Tree Protection</td>
<td>1,200</td>
<td>LF</td>
<td>$4.00</td>
<td>$4,800</td>
</tr>
<tr>
<td>5 Salvage &amp; Store materials - brick, steel, furnishings</td>
<td>1</td>
<td>LS</td>
<td>$30,000.00</td>
<td>$30,000</td>
</tr>
<tr>
<td>6 Shoring, Cofferdam, Temp. Sheeting, Dewatering</td>
<td>1</td>
<td>LS</td>
<td>$150,000.00</td>
<td>$150,000</td>
</tr>
<tr>
<td>Subtotal</td>
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<td></td>
<td></td>
<td><strong>$262,000</strong></td>
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**West Side of River at Shoemaker Plaza**

<table>
<thead>
<tr>
<th>Item</th>
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<th>Unit</th>
<th>Unit Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>River Improvements- Whitewater Feature @ Shoemaker Plaza</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Dewatering (East bank only)</td>
<td>1</td>
<td>LS</td>
<td>$50,000.00</td>
<td>$50,000</td>
</tr>
<tr>
<td>8 Erosion Sediment Control (East bank only)</td>
<td>1</td>
<td>LS</td>
<td>$5,000.00</td>
<td>$5,000</td>
</tr>
<tr>
<td>9 River Excavation (haul off site)</td>
<td>800</td>
<td>CY</td>
<td>$20.00</td>
<td>$16,000</td>
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<tr>
<td>10 Boulders to be Grouted</td>
<td>440</td>
<td>CY</td>
<td>$165.00</td>
<td>$72,600</td>
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<tr>
<td>11 Grout</td>
<td>150</td>
<td>CY</td>
<td>$220.00</td>
<td>$33,000</td>
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<tr>
<td>12 Sheet Pile Cutoff</td>
<td>1,800</td>
<td>SF</td>
<td>$60.00</td>
<td>$108,000</td>
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<tr>
<td>13 Sheet Pile Rein. Concrete Cap</td>
<td>80</td>
<td>LF</td>
<td>$200.00</td>
<td>$16,000</td>
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<tr>
<td>14 Type M Riprap</td>
<td>135</td>
<td>CY</td>
<td>$75.00</td>
<td>$10,125</td>
</tr>
<tr>
<td>15 Rein. Concrete Wave Shaper Foundation</td>
<td>15</td>
<td>CY</td>
<td>$900.00</td>
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<tr>
<td>16 Wave Shaper Gate and Controls</td>
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<td>LS</td>
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<table>
<thead>
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<th>Unit</th>
<th>Unit Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>River Improvements- Bank &amp; Toe Protection at Shoemaker Plaza</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17 Boulders to be Grouted - Terrace at Plaza Toe</td>
<td>100</td>
<td>CY</td>
<td>$165.00</td>
<td>$16,500</td>
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<tr>
<td>18 Grout</td>
<td>35</td>
<td>CY</td>
<td>$220.00</td>
<td>$7,700</td>
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<tr>
<td>19 Type VL Riprap Filter - Boulder Terrace</td>
<td>65</td>
<td>CY</td>
<td>$75.00</td>
<td>$4,875</td>
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<tr>
<td>20 Type M Riprap</td>
<td>100</td>
<td>CY</td>
<td>$75.00</td>
<td>$7,500</td>
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<tr>
<td>21 Excavation (haul off site)</td>
<td>250</td>
<td>CY</td>
<td>$20.00</td>
<td>$5,000</td>
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<td>Subtotal</td>
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<td></td>
<td></td>
<td><strong>$50,000</strong></td>
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<table>
<thead>
<tr>
<th>Item</th>
<th>Qty.</th>
<th>Unit</th>
<th>Unit Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>River Improvements- West Abutment Substructure @ Shoemaker Plaza</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22 Boulders to be Grouted</td>
<td>100</td>
<td>CY</td>
<td>$165.00</td>
<td>$16,500</td>
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<tr>
<td>23 Grout</td>
<td>40</td>
<td>CY</td>
<td>$220.00</td>
<td>$8,800</td>
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<tr>
<td>24 Sheet Pile Cutoff</td>
<td>900</td>
<td>SF</td>
<td>$60.00</td>
<td>$54,000</td>
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<tr>
<td>25 Sheet Pile Rein. Concrete Cap</td>
<td>60</td>
<td>LF</td>
<td>$200.00</td>
<td>$12,000</td>
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<tr>
<td>26 Excavation (haul off site)</td>
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<td>CY</td>
<td>$20.00</td>
<td>$3,000</td>
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<tr>
<td>Subtotal</td>
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<td></td>
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<table>
<thead>
<tr>
<th>Item</th>
<th>Qty.</th>
<th>Unit</th>
<th>Unit Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grading &amp; Grade Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27 Imported Structural Backfill</td>
<td>1,000</td>
<td>CY</td>
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<td>$30,000</td>
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<tr>
<td>28 Structural Soil</td>
<td>50</td>
<td>CY</td>
<td>$50.00</td>
<td>$2,500</td>
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<tr>
<td>27 Earthwork/Excavation</td>
<td>1,000</td>
<td>CY</td>
<td>$20.00</td>
<td>$20,000</td>
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<td>29 Topsoil</td>
<td>150</td>
<td>CY</td>
<td>$35.00</td>
<td>$5,250</td>
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<tr>
<td>30 Storm Drainage &amp; Erosion Control</td>
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<td>LS</td>
<td>$10,000.00</td>
<td>$10,000</td>
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<tr>
<td>Subtotal</td>
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<td></td>
<td></td>
<td><strong>$68,000</strong></td>
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---

Denver Parks & Recreation || Wenk Associates, Inc.  
DRAFT - May 01, 2013 5:54 PM
## APPENDIX E COST OPINION

### PHASE 1-OUTDOOR LIVING ROOM NORTH (CONTINUED)

#### Utilities

<table>
<thead>
<tr>
<th>Description</th>
<th>Units</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Service</td>
<td>1 LS</td>
<td>$25,000.00</td>
</tr>
<tr>
<td>Electric Service</td>
<td>1 LS</td>
<td>$15,000.00</td>
</tr>
<tr>
<td>Utilities (Protection, Removals, Connections)</td>
<td>1 LS</td>
<td>$50,000.00</td>
</tr>
</tbody>
</table>

Subtotal: $90,000

$5K added to lighting unit cost.

#### Buildings and Structures

<table>
<thead>
<tr>
<th>Description</th>
<th>Units</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bicycle Storage Cover</td>
<td>120 SF</td>
<td>$150.00</td>
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</table>

Subtotal: $18,000

#### Pavements

<table>
<thead>
<tr>
<th>Description</th>
<th>Units</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular Concrete for Trails</td>
<td>4,300 SF</td>
<td>$7.00</td>
</tr>
<tr>
<td>Color and Special Finish Concrete</td>
<td>8,600 SF</td>
<td>$12.00</td>
</tr>
<tr>
<td>Unit Pavers (Sand Set)</td>
<td>6,800 SF</td>
<td>$15.00</td>
</tr>
</tbody>
</table>

Subtotal: $236,000

#### Walls & Steps

<table>
<thead>
<tr>
<th>Description</th>
<th>Units</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Walls (Board-Formed) &lt;= 30’ Height (Non Structural)</td>
<td>1,500 FF</td>
<td>$40.00</td>
</tr>
<tr>
<td>Concrete Walls (Board-Formed) &gt; 30’ Height (Structural)</td>
<td>2,000 FF</td>
<td>$60.00</td>
</tr>
<tr>
<td>Concrete Seating Terrace/Steps (Board-Formed)</td>
<td>9,000 SF</td>
<td>$35.00</td>
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</table>

Subtotal: $495,000

#### Landscape

<table>
<thead>
<tr>
<th>Description</th>
<th>Units</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trees</td>
<td>25 EA</td>
<td>$600.00</td>
</tr>
<tr>
<td>Shrub &amp; Groundcover</td>
<td>800 SF</td>
<td>$5.00</td>
</tr>
<tr>
<td>Turfgrass Sod</td>
<td>6,000 SF</td>
<td>$1.00</td>
</tr>
<tr>
<td>Irrigation System</td>
<td>6,800 SF</td>
<td>$1.25</td>
</tr>
</tbody>
</table>

Subtotal: $34,000

Assume irrigation system will utilize existing tap & meter.

#### Amenity

<table>
<thead>
<tr>
<th>Description</th>
<th>Units</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railings</td>
<td>200 LF</td>
<td>$200.00</td>
</tr>
<tr>
<td>Site Furnishings (Furniture, trash receptacles, etc)</td>
<td>1 LS</td>
<td>$60,000.00</td>
</tr>
<tr>
<td>Bike Storage Racks (1/3 covered)</td>
<td>20 EA</td>
<td>$800.00</td>
</tr>
<tr>
<td>Site Lighting</td>
<td>1 LS</td>
<td>$60,000.00</td>
</tr>
<tr>
<td>Signage (Wayfinding and Directional)</td>
<td>1 LS</td>
<td>$35,000.00</td>
</tr>
<tr>
<td>Public Art</td>
<td>1 LS</td>
<td>$30,000.00</td>
</tr>
<tr>
<td>Specialty Boulders</td>
<td>150 CY</td>
<td>$900.00</td>
</tr>
</tbody>
</table>

Subtotal: $376,000

Assume 1% of $3 million

#### Mobilization, Contingency, & Design

<table>
<thead>
<tr>
<th>Description</th>
<th>Units</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobilization (10%)</td>
<td>LS</td>
<td>$219,900.00</td>
</tr>
<tr>
<td>Contingency (25%)</td>
<td>LS</td>
<td>$549,750.00</td>
</tr>
</tbody>
</table>

Subtotal: $769,650

#### Project Subtotal (Construction)

| Description                          | Units | Cost   |

Subtotal: $2,969,000

#### Design and Engineering

| Description                          | Units | Cost   |

| LS                                  | $542,245 |

Grand Total: $3,512,000

DRAFT - May 01, 2013  5:54 PM
## APPENDIX E  COST OPINION

### PHASE 1-OUTDOOR LIVING ROOM NORTH (CONTINUED)

**Add Alternates:**

<table>
<thead>
<tr>
<th>8. Boulder Terrace at 16th Street West Bank</th>
<th>CY</th>
<th>$165.00</th>
<th>$4,125</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Subtotal 1A</strong></td>
<td></td>
<td></td>
<td><strong>$100,000</strong></td>
</tr>
</tbody>
</table>

| 7. Grout | CY | $220.00 | $7,700 |
| 6. Boulders to be Grouted for Replaced 16th Street Drop | 200 | CY | $165.00 | $24,750 |
| 5. Remove Boat Chute @ 16th Street (center of drop) | 1 | LS | $10,000.00 | $10,000 |
| 4. Excavation (haul off site) | 200 | CY | $20.00 | $4,000 |
| 3. Access & Restoration | 1 | LS | $10,000.00 | $10,000 |
| 2. Erosion Sediment Control | 1 | LS | $7,000.00 | $7,000 |
| 1. Dewatering | LS | $25,000.00 | $25,000 |

### ADD ALT 1B: River Improvements Shoemaker Plaza to 16th Street

| 15. Grout | CY | $220.00 | $4,400 |
| 14. Boulder Terrace @ WW Feature | CY | $165.00 | $9,900 |
| 13. Riprap Outfall Protection (Type H w/ VL filter) | CY | $75.00 | $5,250 |
| 12. Channel Excavation (haul off site) | 1,600 | CY | $20.00 | $32,000 |
| 11. Type M Riprap | CY | $75.00 | $27,375 |
| 10. Access & Restoration | 365 | LS | $20,000.00 | $20,000 |
| 9. Dewatering | 1 | LS | $40,000.00 | $40,000 |

Add another row of boulders to existing terracing along bank. Riprap toe included in separate item. No grout.

3’ thick grouted boulders. Replace removed chute (lowered).

Work in low flow. Able to use excavated area for riprap placement for coffer.

3’ thick mat extend down 2’ for revised channel grade both sides of river. Riprap along shoemaker plaza subtracted from this item added to plaza costs.

30’w x 2’ deep excavation from WW feature to 16th street.

Three existing storm outfalls. Improve protection at end of pipe for channel degradation.

Terrace along east bank downstream of WW feature. Toe protection. (riprap) included in other item.

Filter layer behind/under boulder terracing.

Assumed 35% void ratio.

| **Subtotal 1B** | **$160,000** |
| **Subtotal, ADD ALT 1:** | **$260,000** |
| **Contingency (25%)** | **$65,000** |

| **GRAND TOTAL, ADD ALT 1:** | **$325,000** |
**APPENDIX E  COST OPINION**

**PHASE 1-OUTDOOR LIVING ROOM NORTH (CONTINUED)**

<table>
<thead>
<tr>
<th>ADD ALT 2: Gabion Terrace Replacement</th>
<th>Assumes work to be completed with other river improvements from 15th to 16th</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Demolition of Existing Gabions &amp; Earthwork</td>
</tr>
<tr>
<td></td>
<td>LS</td>
</tr>
<tr>
<td>2</td>
<td>Dewatering</td>
</tr>
<tr>
<td>3</td>
<td>Erosion &amp; Sediment Control</td>
</tr>
<tr>
<td></td>
<td>LS</td>
</tr>
<tr>
<td>4</td>
<td>Storm Crossing at Paths</td>
</tr>
<tr>
<td></td>
<td>LS</td>
</tr>
<tr>
<td>5</td>
<td>Boulder Terracing D/S of Plaza (West Bank)</td>
</tr>
<tr>
<td></td>
<td>CY</td>
</tr>
<tr>
<td>6</td>
<td>Grout for Boulder Terracing D/S of Plaza (West Bank)</td>
</tr>
<tr>
<td></td>
<td>CY</td>
</tr>
<tr>
<td>7</td>
<td>Riprap Type M at Toe of Terracing</td>
</tr>
<tr>
<td></td>
<td>CY</td>
</tr>
<tr>
<td></td>
<td>SUBTOTAL, ADD ALT 2:</td>
</tr>
<tr>
<td></td>
<td>Contingency (25%)</td>
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<tr>
<td></td>
<td>GRAND TOTAL, ADD ALT 2:</td>
</tr>
</tbody>
</table>

**Add Alternates Total (1 & 2):** $662,500

**GRAND TOTAL (Base Bid + Add Alts):** $4,174,500

**General Costing Assumptions:**

This cost opinion is preliminary and based on limited information from Master Plan design concepts. The information will be updated during final design as geotechnical and environmental reports are finalized, as in-river and up and downstream survey information is compiled, and as design drawings develop.

**River Work Costing Assumptions:**

Surface finishing (concrete steps & boulders) on the east bank shoulder NOT included in these costs. To be added during a future phase.

Sheet pile can be driven with a standard pile driver (shaker head)

24" Water line crossing the river south of 16th street will NOT need to be lowered with channel improvements

No river utility crossing needed to be lowered with channel improvements

Gabion terrace replacement only with UDFCD typical terraced boulder construction.

Gabion terracing replacement may need to be vertical or steeper for flood conveyance and river take out. May require retaining walls or MSE walls.

Gabion replacement work at same time as other downstream river improvements

Gabion terrace replacement does NOT include river access path

Cost for feature boulder shown in the river downstream of WW feature, not included.
APPENDIX E  COST OPINION

PHASE 2-OUTDOOR LIVING ROOM SOUTH

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty.</th>
<th>Unit</th>
<th>Unit Cost</th>
<th>Total Cost</th>
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<td><strong>Demolition &amp; Removals</strong></td>
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<td>CY</td>
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<tr>
<td>3</td>
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<td>4</td>
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APPENDIX E  COST OPINION

PHASE 2-OUTDOOR LIVING ROOM SOUTH (CONTINUED)

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<th>Cost</th>
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<td>SF</td>
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*Assume 1% of construction cost*
## APPENDIX E COST OPINION

### PHASE 2-OUTDOOR LIVING ROOM SOUTH (CONTINUED)

<table>
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<tr>
<th>Mobilization &amp; Contingency</th>
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<tbody>
<tr>
<td>40 Mobilization (10%)</td>
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<tr>
<td>41 Contingency (25%)</td>
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**Subtotal** $ 5,094,000

**Project Subtotal (Construction):** $ 19,646,000

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<th>Design &amp; Engineering</th>
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<tr>
<td>42 Design and Engineering (15%)</td>
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**Grand Total:** $ 22,593,000
### APPENDIX E COST OPINION

#### PHASE 3- OASIS

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<th>Unit Cost</th>
<th>Total Cost</th>
<th>Notes</th>
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<td><strong>Demolition &amp; Removals</strong></td>
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<tr>
<td>1</td>
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<td>$60,000</td>
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<td>5</td>
<td>Salvage &amp; Store materials - brick, steel, furnishings</td>
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## APPENDIX E  COST OPINION

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<th>Amenities</th>
<th>LF</th>
<th>$</th>
<th>$</th>
<th>$</th>
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<tr>
<td>35 Railings</td>
<td>300</td>
<td>100.00</td>
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<tr>
<td>36 Site Furnishings (Furniture, trash receptacles, etc)</td>
<td>1</td>
<td>50,000.00</td>
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<tr>
<td>37 Bicycle Parking</td>
<td>1</td>
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<td>10,000</td>
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<tr>
<td>38 Site Lighting</td>
<td>1</td>
<td>150,000.00</td>
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<tr>
<td>39 Signage (Wayfinding and Directional)</td>
<td>1</td>
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<tr>
<td>40 Public Art</td>
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<tr>
<td><strong>Subtotal</strong></td>
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<td>$ 365,000</td>
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<table>
<thead>
<tr>
<th>Mobilization &amp; Contingency</th>
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<tbody>
<tr>
<td>41 Mobilization (10%)</td>
<td>1</td>
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<tr>
<td>42 Contingency (25%)</td>
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**Project Subtotal (Construction):** $ 11,820,000

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<thead>
<tr>
<th>Design and Engineering</th>
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<tr>
<td>43 Design and Engineering (15%)</td>
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**Grand Total:** $ 13,593,000
APPENDIX E COST OPINION

PHASE 4- RIVER LAWN

For Discussion Only

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty</th>
<th>Unit</th>
<th>Unit Cost</th>
<th>Total Cost</th>
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<tbody>
<tr>
<td>Demolition &amp; Removals</td>
<td></td>
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</tr>
<tr>
<td>1 Tree Removal - Clear &amp; Grub</td>
<td>22</td>
<td>EA</td>
<td>$750.00</td>
<td>$16,500</td>
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<tr>
<td>2 Remove Walls and structures</td>
<td>50</td>
<td>CY</td>
<td>$150.00</td>
<td>$7,500</td>
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<tr>
<td>3 Remove Pavements and Curbs - Concrete and Brick</td>
<td>100</td>
<td>CY</td>
<td>$50.00</td>
<td>$5,000</td>
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<tr>
<td>4 Tree Protection</td>
<td>4</td>
<td>EA</td>
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<td>$2,000</td>
</tr>
<tr>
<td>5 Salvage &amp; Store materials - brick, steel, furnishings</td>
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<td>LS</td>
<td>$20,000.00</td>
<td>$20,000</td>
</tr>
<tr>
<td>Subtotal</td>
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<td></td>
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<td>$51,000</td>
</tr>
<tr>
<td>River Improvements</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>6 Shoring, Cofferdam, Temp. Sheet ing, Dewatering</td>
<td>1</td>
<td>LS</td>
<td>$75,000.00</td>
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<tr>
<td>7 River Excavation &amp; Earthwork</td>
<td>750</td>
<td>CY</td>
<td>$70.00</td>
<td>$52,500</td>
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<tr>
<td>8 New Sheet Piling &amp; Cap</td>
<td>-</td>
<td>LF</td>
<td>$2,000.00</td>
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<tr>
<td>9 Concrete Steps structural bank stabilization</td>
<td>-</td>
<td>CY</td>
<td>$400.00</td>
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<tr>
<td>10 Grouted Rip Rap bank stabilization</td>
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<td>CY</td>
<td>$200.00</td>
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<td>11 Boulders and Faux Rock</td>
<td>130</td>
<td>CY</td>
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<tr>
<td>Grading &amp; Grade Control</td>
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<tr>
<td>12 Earthwork/Excavation</td>
<td>3,000</td>
<td>CY</td>
<td>$20.00</td>
<td>$60,000</td>
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<tr>
<td>13 Storm Drainage &amp; Erosion Control</td>
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<tr>
<td>14 Imported Structural Backfill</td>
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<tr>
<td>15 Structural Soil</td>
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<td>16 Topsoil</td>
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<td>CY</td>
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<td>Subtotal</td>
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<td>$106,000</td>
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<tr>
<td>Utilities</td>
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<td>17 Water Service</td>
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<td>LS</td>
<td>$24,000.00</td>
<td>$24,000</td>
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<tr>
<td>18 Electric Service</td>
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<tr>
<td>19 Utilities (Protection, Removals, Connections)</td>
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<tr>
<td>Subtotal</td>
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APPENDICES A33
# APPENDIX E COST OPINION

## PHASE 4-RIVER LAWN (CONTINUED)

<table>
<thead>
<tr>
<th>Buildings and Structures</th>
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</thead>
<tbody>
<tr>
<td>20 Mechanical Equipment Vault</td>
<td>100 SF</td>
<td>$150.00</td>
<td>$15,000</td>
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<tr>
<td><strong>Subtotal</strong></td>
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<td></td>
<td><strong>$15,000</strong></td>
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</tr>
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</table>

<table>
<thead>
<tr>
<th>Pavements</th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>21 Regular Concrete for Trails</td>
<td>9,500 SF</td>
<td>$7.00</td>
<td>$66,500</td>
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<tr>
<td>22 Color and Special Finish Concrete</td>
<td>1,800 SF</td>
<td>$12.00</td>
<td>$21,600</td>
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<tr>
<td>23 Unit Pavers (Sand Set)</td>
<td>1,600 SF</td>
<td>$15.00</td>
<td>$24,000</td>
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<tr>
<td>24 Crusher Fine</td>
<td>4,000 SF</td>
<td>$3.00</td>
<td>$12,000</td>
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<tr>
<td><strong>Subtotal</strong></td>
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<td></td>
<td><strong>$125,000</strong></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Walls &amp; Steps</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>25 Concrete Walls (Board-Formed)&lt; 30&quot; Height (Non Structural)</td>
<td>1,500 FF</td>
<td>$35.00</td>
<td>$52,500</td>
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</tr>
<tr>
<td>26 Concrete Walls (Board-Formed) &gt; 30&quot; Height (Structural)</td>
<td>2,000 FF</td>
<td>$55.00</td>
<td>$110,000</td>
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</tr>
<tr>
<td>27 Concrete Steps</td>
<td>600 SF</td>
<td>$35.00</td>
<td>$21,000</td>
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<tr>
<td><strong>Subtotal</strong></td>
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<td></td>
<td><strong>$183,500</strong></td>
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</table>

<table>
<thead>
<tr>
<th>Landscape</th>
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</tr>
</thead>
<tbody>
<tr>
<td>28 Trees</td>
<td>25 EA</td>
<td>$600.00</td>
<td>$15,000</td>
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</tr>
<tr>
<td>29 Shrubs &amp; Groundcover</td>
<td>770 SF</td>
<td>$5.00</td>
<td>$3,850</td>
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</tr>
<tr>
<td>30 Turfgrass Sod</td>
<td>6,000 SF</td>
<td>$1.00</td>
<td>$6,000</td>
<td></td>
</tr>
<tr>
<td>31 Irrigation System</td>
<td>6,770 SF</td>
<td>$1.25</td>
<td>$8,463</td>
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<tr>
<td><strong>Subtotal</strong></td>
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<td></td>
<td><strong>$34,000</strong></td>
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</table>

<table>
<thead>
<tr>
<th>Amenities</th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>32 Playground</td>
<td>3,500 SF</td>
<td>$70.00</td>
<td>$245,000</td>
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<tr>
<td>33 Splash Pad</td>
<td>1,500 SF</td>
<td>$100.00</td>
<td>$150,000</td>
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</tr>
<tr>
<td>34 Site Furnishings (Furniture, trash receptacles, etc)</td>
<td>1 LS</td>
<td>$30,000.00</td>
<td>$30,000</td>
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<tr>
<td>35 Bicycle Parking</td>
<td>1 LS</td>
<td>$20,000.00</td>
<td>$20,000</td>
<td></td>
</tr>
<tr>
<td>36 Site Lighting</td>
<td>1 LS</td>
<td>$75,000.00</td>
<td>$75,000</td>
<td></td>
</tr>
<tr>
<td>37 Signage (Wayfinding and Directional)</td>
<td>1 LS</td>
<td>$35,000.00</td>
<td>$35,000</td>
<td></td>
</tr>
<tr>
<td>38 Public Art</td>
<td>1 LS</td>
<td>$30,000.00</td>
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<tr>
<td><strong>Subtotal</strong></td>
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<td></td>
<td><strong>$575,000</strong></td>
<td>Assumed 1% of constr cost</td>
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</table>
## APPENDIX E  COST OPINION

### PHASE 4- RIVER LAWN (CONTINUED)

<table>
<thead>
<tr>
<th>Mobilization &amp; Contingency</th>
<th>LS</th>
<th>Cost</th>
<th>Subtotal</th>
</tr>
</thead>
<tbody>
<tr>
<td>39 Mobilization (10%)</td>
<td>1</td>
<td>$</td>
<td>$154,300</td>
</tr>
<tr>
<td>40 Contingency (25%)</td>
<td>1</td>
<td>$</td>
<td>$385,750</td>
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**Project Subtotal (Construction):** $2,084,000

<table>
<thead>
<tr>
<th>Design and Engineering</th>
<th>LS</th>
<th>Cost</th>
<th>Subtotal</th>
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<tbody>
<tr>
<td>41 Design and Engineering (15%)</td>
<td>1</td>
<td>$600,000</td>
<td>$313,000</td>
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**Grand Total:** $2,397,000