



Administration Building
West Hearing Room
5334 S. Prince St.
Littleton, CO 80120
303-795-4630
303-738-7915 TTY
303-795-4630 Audio Agenda Line

Nancy A. Doty, Chair, District 1
Nancy Sharpe, District 2
Rod Bockenfeld, District 3
Nancy Jackson, Chair Pro-Tem, District 4
Bill Holen, District 5

Study Session April 5, 2016

The Arapahoe County Board of County Commissioners typically holds weekly Study Sessions on Monday and Tuesday. Study Sessions (except for Executive Sessions) are open to the public and items for discussion are included on this agenda. Agendas (except for Executive Sessions agendas) are available through the Commissioners' Office or through the County's web site at www.arapahoegov.com. Please note that the Board may discuss any topic relevant to County business, whether or not the topic has been specifically noticed on this agenda. In particular, the Board typically schedules time each Monday under "Committee Updates" to discuss a wide range of topics. In addition, the Board may alter the times of the meetings throughout the day, or cancel or reschedule noticed meetings. Questions about this agenda? Contact the Commissioners' Office at 303-795-4630 or by e-mail at commissioners@arapahoegov.com

Study Session Topics

10:00 A.M. *Joint Project Proposal – SSPRD, City Of Littleton, And Urban Drainage – South Platte Park Low-Flow Channel Repair (WHR)

Discussion of a proposal from the South Suburban Parks and Recreation District (SSPRD), City of Littleton, and Urban Drainage Flood Control District to request funding up to \$480,000 in Open Space Acquisition and Trails Funds to repair a newly complete South Platte River enhancement project that was damaged in the unprecedented 2015 floods

Request: Information/Direction

Josh Tenneson, Grants and Acquisitions Administrator

Shannon Carter, Open Spaces Department Director

Janet Kennedy, Director, Finance

Tiffanie Bleau, Senior Assistant County Attorney

Documents: [BSR_SS_SPP REPAIRS_040516.PDF](#), [OSTAB REC TO BOCC SPP_040516.PDF](#), [ACOUNTY JOINT RIVER REPAIR 2-2-2016 FINAL.PDF](#)

10:30 A.M. * Executive Session (WHR)

Executive Study Session and County Attorney Administrative Meeting [Section 24-6-402 (4)(b)C.R.S.](As required by law, specific agenda topics will be announced in open

meeting prior to the commencement of the closed and confidential portion of this session)
(WHR)

Ron Carl, County Attorney

*** To Be Recorded As Required By Law**

WHR - West Hearing Room

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Assisted listening devices are available. Ask any staff member and we will provide one for you.

If you need special accommodations, contact the Commissioners' Office at 303-795-4630 or 303-738-7915 TTY.

Please contact our office at least 3 days in advance to make arrangements.



Board Summary Report

Date: March 22, 2016
To: Board of County Commissioners
Through: Shannon Carter, Open Spaces Department Director
From: Josh Tenneson, Grants and Acquisitions Manager
Subject: Joint Project Proposal – South Suburban Parks and Recreation District, City of Littleton, and Urban Drainage Flood Control District – South Platte Park Low-Flow Channel Repair

Direction/Information: To provide information and seek direction on a proposal from the South Suburban Parks and Recreation District (SSPRD), City of Littleton, and Urban Drainage Flood Control District requesting funding to repair a newly completed South Platte River enhancement project that was damaged in the unprecedented 2015 floods.

Request and Recommendation:

The recommendation from Open Spaces staff and the Open Space Trails Advisory Board (“OSTAB”) to the Board of County Commissioners is to approve the expenditure of up to \$480,000 in Joint Project funds for the project.

Background:

A newly-completed South Platte River enhancement project at South Platte Park, funded in part by Arapahoe County Open Spaces, sustained severe damage from unprecedented high flows in the spring and summer floods of 2015. The enhancement project was one of the top four priority projects identified by the South Platte Working Group. The flooding drowned newly planted vegetation, stripped away soil and river aggregates, and reduced low-flow channel capacity.

To date the project partners have spent approximately \$4 million on the project; the County has contributed \$1,979,000. This Joint Project request will match significant partner funding and restore the river to its initial design, which is intended to return the function and aesthetics of a natural river system and its recreational uses.

Links to Align Arapahoe:

- Increase Intergovernmental Cooperation
- Increase Community and Regional Partnerships
- Improve Park, Trail and Open Space Opportunities
- Improve Customer Experience
- Optimize Use of Resources
- Enhance Quality of Life

Discussion:

This proposed project in South Platte Park would start near C-470 and work downstream along the South Platte River for 2.4 miles with four primary goals:

- 1) redistribute sediments in key locations from where they have been deposited in the flow channel back onto scoured point-bars to create a base for restoration and restore recreational usability;
- 2) install topsoil, erosion control blanket, and native seed on large exposed banks to create a diverse and stable riverside vegetation zone within a one- to two-year grow-in period;
- 3) stabilize eroded banks through willow stake establishment and small design changes with riprap installation; and
- 4) establish trees and shrubs to provide structurally diverse habitat, restore the aesthetics of the riparian area, and reduce velocity for future flow events.

The benefit to the public will be to regain walkable banks to the river for boating, tubing, fishing, and nature exploration on what is now loose and displaced riprap. Repairs will improve fishing opportunities by restoring channel and pool depth. The number of recreation days for boats and tubers will increase by regaining the low-flow channel capacity. Wildlife habitat will improve by bringing shrub and grass cover back in proximity to the water. Restoring the vegetation will also provide stability against further damage in future high-flow events as the vegetation reduces water velocity and roots help hold soil in place.

Construction (rock and soil work) is anticipated to last approximately two months from mobilization. Vegetation planting will occur approximately one month after that time. The establishment period may be up to a year with additional planting and plant care possible, and work is anticipated to start after high flows recede in summer of 2016 (work will begin after the high flow just in case we see a large runoff this spring and summer, which will mitigate against any potential damage to the repairs).

Regarding long-term sustainability of this project, the project partners believe the design was effective, but that the damage was caused by highly unusual flows that occurred during the initial establishment period of the restoration vegetation. Given a proper grow-in period, this project is designed to withstand the impacts of a 100-year flood through existing grade-control structures and rock. In Phase I, for example, where plantings had been established for two years, there was very little alteration or damage from the floods.

Partner Contributions:

SOURCE OF FUNDING	FUNDS
South Suburban Parks and Recreation District	\$50,000
City of Littleton	\$500,000
Urban Drainage and Flood Control District	\$425,000
Arapahoe County Open Spaces	\$480,000
Total	\$1,455,000

Alternatives:

Delay, modify or deny funding.

Fiscal Impact:

The Open Space Resolution authorizes the County to contribute funds from the Open Space Sales and Use Tax for eligible joint projects between the County and municipalities or other governmental entities in the County. County support for this project in the amount of \$480,000 will come from the Open Space Acquisition and Trails fund. The fund balance exceeds this amount. The County will not incur annual maintenance cost for this project.

Concurrence:

Please see attached recommendation from OSTAB.

Attorney Comments:

None

Reviewed By:

Josh Tenneson
Grants and Acquisitions Manager

Shannon Carter, Director
Intergovernmental Relations and Open Spaces

Tiffanie Bleau
Assistant County Attorney

Janet Kennedy, Director
Finance

Attachments:

1. OSTAB Recommendation – February 22, 2016
2. South Platte Park Low-Flood Channel Repair Joint Project Proposal – dated February 2016



OSTAB Recommendation

Date: February 22, 2016
To: Board of County Commissioners
From: Open Space Trails and Advisory Board (OSTAB)
Subject: Joint Project Proposal – South Suburban Parks and Recreation District, City of Littleton, and Urban Drainage Flood Control District – South Platte Park Low-Flow Channel Repair

OSTAB Recommendation – After considering the request from South Suburban Parks and Recreation District, City of Littleton, and Urban Drainage Flood Control District as an action item on this date, OSTAB recommends to the BOCC expenditure of up to \$480,000 of Arapahoe County Open Space Acquisition and Development funds for the South Platte Low-Flow Channel Repair Project, subject to full funding from all other sources and execution of an IGA.

Motion by: Grider Lee

Seconded by: Ron Weidmann

Vote: 5 Yes
 0 No
 0 Abstain
 2 Absent and Excused

South Suburban Park and Recreation District

South Platte Park Low-Flood Channel Repair Project

Joint Project Proposal to Arapahoe County Open Spaces



February 2016



South Suburban
PARKS AND RECREATION



**South Suburban
PARKS AND RECREATION**

November 23, 2015

Arapahoe County Open Space and Trails Advisory Board
6934 S Lima St, Unit A
Centennial, CO 80112

RE: South Platte River Low-Flow Channel Repair Request

Ladies and Gentlemen:

Please accept this application from the South Suburban Park and Recreation District, City of Littleton, and Urban Drainage and Flood Control District to the Arapahoe County Open Spaces Joint Project Proposal Fund for the South Platte River Low-Flow Channel Repair. An initial River Enhancement Project was funded with significant support from Arapahoe County and our named partners, and unfortunately received significant damage during the unprecedented, sustained high river flows in summer 2015. The County applied for FEMA funding to enact repairs, but was not deemed eligible, leaving the river channel scoured and the project short of its potential.

This project, once repaired, will complete a significant improvement on a section of river that suffers dramatically from appropriations of water from upstream reservoirs and ditches. This request will repair a channel design that concentrates this drastically reduced flow to improve recreation access for anglers and wildlife observers, increases the number of days the river is floatable, improves aquatic habitat and water quality, and restores connection between the river and its surrounding riparian vegetation.

Without Arapahoe County's support and financial backing, the partners will fall short of funds to properly repair the river channel in a single effort. Less than full funding would potentially reduce river and riparian habitat function and introduce future stability issues and loss of sediment. Additionally, working each section as funding becomes available would be an inefficient use of funds with multiple mobilizations and restoration of access points and staging areas. We strongly urge Arapahoe County help repair the South Platte River in South Platte Park with the funding available today.

I certify that I am authorized to sign on behalf of the applicant and that if awarded Joint Project funding for this project, the applicant will comply with Arapahoe County's requirements for the Joint Project administration, including matching, due diligence, and reporting requirements.

Sincerely,

Rob Hanna
Executive Director

RH SL/ds

Administrative Office
6631 S. University Blvd.
Centennial, CO 80121-2913

phone 303.798.5131

fax 303.798.3030

www.sspr.org

Board of Directors

John K. Ostermiller, Chair

Susan M. Rosser

Pamela M. Eller

Michael T. Anderson

Scott A. LaBrash

Executive Director

Rob Hanna

Part 3: Project Summary

- **Abstract**

A newly completed South Platte River enhancement project, funded in part by Arapahoe County Open Spaces, received severe damage from historically-high flows in the summer of 2015 during the restoration establishment period drowning vegetation and stripping away soil. The grant would help match funding to restore the river to its initial design to return the function and aesthetics of the natural river system and its recreational uses.

- **Scope of Project**

The river enhancement project was nearly complete, with all that remained being the establishment and grow-in period of restoration plantings to stabilize the design. However, flows exceeded the previous 30-year maximum, drowned that vegetation and prevented access to the river channel for three months, eventually causing damage to the river design. This proposed project would start near C470 and work downstream for 2.4 miles to repair sections of erosion and bank instability, return the low-flow channel design, dredge and return sands and gravels to the scoured upland banks, and install native vegetation throughout the reach to stabilize soils.

- **Location**

South Platte Park, a natural floodplain park, is located in the City of Littleton in western Arapahoe County, Colorado. The 878-acre park spans from C-470 north to Reynolds Landing Park with the South Platte River and the Mary Carter Greenway Trail running through it. The main entrance is near the northwest corner of S. Santa Fe Drive and W. Mineral Ave, behind the Aspen Grove Lifestyle Center.

- **Expected Results**

This project will have several results. The first is to restore the function of the low-flow channel which is to concentrate year-round minimum flow levels. It will also restore functionality of the riffle-pool-run sequence that provides for fish passage survival in low-flow or high-temperature conditions. Recreational usability will be returned to several miles of river bank that have become impassable to visitors due to loose rock and missing gravel materials. Finally, the establishment of vegetation will create long term stability of the overall design, as well as restore riparian habitat for insects, birds, and small mammals on what is currently barren, scoured rock banks.

- **Public Benefits**

The public will benefit by regaining walkable banks along 2.4 miles of the South Platte River, for access for boating, tubing, angling, and nature exploration that are now very difficult with loose and displaced riprap. This effort will significantly improve the aesthetics of the natural area park by restoring soil and vegetation on the riparian edges to cover scoured river banks. Angling opportunities would improve as channel depth is restored to the low-flow channel and pools by removing sediment moved by flooding. The number of river recreation days would increase as shallowed areas are restored to their pre-flood depth, allowing the passage of boats and tubes again at moderate to low flow levels. Public investment in the previous project would be brought finally realized, as that investment is currently a detriment that was responsible for destabilizing the channel banks immediately before unprecedented river flows.

- **Partner Contributions**

South Suburban Park and Recreation District	\$50,000
City of Littleton	\$500,000
Urban Drainage and Flood Control District	\$425,000
Arapahoe County Open Space	\$480,000
Total	\$1, 455,000

None of the funds shown above come from South Platte Working Group pledged funds. All funding provided by partners are from operation, contingency or postponed projects for this priority repair.

- **Expected Time of Completion**

Construction (rock and soil work) is anticipated to last approximately two months from mobilization, with restoration planting completed approximately one month after that time. The establishment period may be up to a year with additional planting and plant care possible, or to stagger timing of various plant installations to occur at the prime time of year for each technique. We are anticipating a mobilization period in late summer of 2016 to maximize timing for work before the next high water period.

Part 4: Relevance to Existing Plans

- **County Comprehensive Plan**

The proposed project meets the intent of the Comprehensive Plan through the conservation of wildlife habitat, creation of wildlife observation opportunities, and creation of passive and active recreation activities. As related to Strategy OS 1.1(e), the project maintains open space areas and improves park facilities; and Strategy OS 1.4 (a) allows resource-based recreation such as fishing.

- **County Open Space Resolution**

Specifically relating to the resolution, the project protects lands that preserve water quality in rivers, lakes and streams; maintains and improves open space; and protects wildlife habitat and the critical river corridors.

- **County Open Space Master Plan**

The project meets the goal for incorporated Arapahoe County of creating cooperative partnerships to conserve, design and improve opens space, parks, and trails for the that return maximum benefit to county residents. It also meets the goal of leveraging funds for open space, parks, and trails.

- **County Joint Project Criteria**

The project is a high priority, it is regional in nature, and it is timely and non-controversial. The project costs and timing exceed the limit for an open space grant. Adequate pre-planning, public input and support have been demonstrated by support for the initial construction of the project, strong public support and a lack of complaints during the construction of the initial funding, and public requests to repair the river banks following the flooding. The proposing agencies have committed a significant level of matching funds covering over 70% of the total cost. The entire project is within the borders of Arapahoe County and services a large number of Arapahoe County residents.

- **Agency Plans and/or other Strategic Plans**

In December 2011, the South Suburban Park and Recreation District Board of Directors and the Littleton City Council approved the *South Platte Park, South Platte River Enhancement Plan*. Urban Drainage and Flood Control District adopted the plan. This plan outlined the need for the project and the concepts for enhancement of the river. This is also addressed in the future project

work section of the 2009 South Platte Park Management Plan indicating aquatic health and river function are the most threatened natural systems in the Park.

Part 5: Detailed Discussion

Need and urgency:

This request is for repair to a previously completed project designed to resize 2.4 miles of the South Platte River for new flow conditions created by upstream reservoirs. An analysis of the river showed the river was a fraction of the size appropriate for the existing channel width. The intent was to concentrate extremely low flows into a functional stream system usable by wildlife and recreationists, without affecting overall capacity of the flood channel.

Project construction was complete and the intended impact were observed to be successfully functioning according to design through April of 2015. Water managers in the state are calling May of 2015 “the Miracle May” where snowpack rose from below-average levels to double the average in a very short time, while rain storms inundated the lowlands of the Front Range with storms daily. Flows in South Platte Park increased to 3,000 cubic feet per second, more than six times the 30-year average, and were sustained at that level for nearly three months. This level of flow was unprecedented since the installation of Chatfield Reservoir. The disturbance caused by construction was in the process of being stabilized through standard restoration practices with erosion blanket, seed, and plantings. Those items held up for a short time, but were unable to withstand the length of inundation or the strength of the currents at such high flows.



Photo example on the left shows installation of erosion blanket over topsoil and seed prior to high water events; on the right shows the loss of material and drowned willow stakes following flooding.

As a result, most of the restoration cover (topsoil and seed) was stripped from the project. Without this cover layer, the finer river sediments of sand and gravel were scoured from the river banks and carried into the newly-deepened channel, filling sections of it in. This left upland bars consisting of difficult-to-cross cobbles and loose riprap without finer fill materials to lock them in place. The pools and low-flow channel that had been functioning as designed are now clogged and filled in places. Some areas of hardened channel improvements received minor scour and short-cutting, however, overall the design of the low-flow channel survived flooding as designed.



Photo example on the left shows the narrowed channel and desired bank materials prior to the flood, and some of the scour and loss of sediment this project request will repair.

The need for this request comes from the fact that the upland banks now consist of loose and scoured rock without soil, fine aggregates, or vegetation. This creates hazardous situations for park users trying to walk across the unstable surface, it is unsightly in what is intended to be a natural aesthetic river system, and it is lacking the river-side habitats and cover needed by many wildlife species. The lack of vegetation leaves this channel unstable and susceptible to future scour and sediment removal during even moderate flows, and new vegetation will be unable to establish itself naturally on the rock banks without minimal topsoil or sand materials to germinate in. Loose sediments and filled pools limit survivability for fish at this popular angling destination, and the reduced channel depth makes recreational boating passage possible only at higher flow levels. The overall purpose of river channel efforts initially were to make the best use of extremely low water levels for much of the year. Since flooding stopped and the Front Range experienced the hottest September on record, the river has now been at 1% of its 30 year average, and seeing 0.3 cfs concentrated into what remains of that low-flow channel shows the value of the initial project in maintaining a functional river given the future of water availability in this river system.



Photo example on the left shows restoration materials in place before high flows, on the right shows successful restoration above the high-water mark, and the scoured bank and planting pockets in areas that had been inundated.

The urgency for this request is primarily based on continued instability of the river channel small sediments, as well as timing of the funding from partner agencies. Without soils and finer river sediments, vegetation will be very slow in establishing on the scoured rocky shores, which means

future higher-water events will continue to move and remove sediments until they are secured by plant roots or completely washed away from the site. As this Park is downstream from a reservoir, there is no opportunity for sediments to wash in from upstream to fill in displaced sediments. Willow stakes to establish willow groves, and sand-bar shrub plantings are necessary to reduce the velocity and energy of water in future flood events as it flows over constructed bars and stabilized banks. Urban Drainage, the City of Littleton, and South Suburban Parks and Recreation have been able to direct some remaining 2015, and some contingency 2016 funds towards more immediate repairs. Delays in finding our full funding match could mean a loss of existing funding sources, and mobilization costs for this type of work make the most economic efficiency to conduct at one time, rather than piecemealing it as funding becomes available.

Goals:

The goal of the project is restore the South Platte River channel in South Platte Park back to its pre-flood river enhancement design and condition. This will be accomplished as follows: 1) redistribute sediments in key locations from where they have been deposited in the flow channel back onto scoured point-bars to create a base for restoration and restore recreational usability 2) install topsoil, erosion control blanket, and native seed on large exposed banks to create a diverse and stable riverside vegetation zone within a one- to two-year grow-in period 3) stabilize eroded banks through willow stake establishment and small design changes with riprap installation, and 4) establish trees and shrubs to provide structurally diverse habitat, restore the aesthetics of the riparian area, and to reduce velocity for future flow events.

A listing of project repairs was created by inspection and agreement between site managers, project managers, and the construction firms. The budget in Part 10 shows the repairs organized in order from upstream to downstream location along with the quantity of work needed and the priority of each repair looking at the value of the repair for project stability, recreational improvement, and accessibility. Managers have considered each repair and are balancing the value of each repair for functionality, versus the cost for each. Not every piece of the project damaged will get repaired as the value of the repair is not worth the damage to surrounding areas to access them.

Expected User Groups:

The Mary Carter Greenway Trail, which parallels the project area, has a current use estimate of 550,000 user visits per year, with hourly rates of non-organized users recorded as high as 500 people per hour during peak times. The Nature Center adjacent to the river has visitation of 14,000 people, and program participation around 5,000 people annually. These numbers do not include the high number of natural-surface trail users, river users, and anglers that do not currently have a formal count system in place. Visitors throughout the metro area come to the Park for a variety of reasons. Some come to walk, bike, or run the Mary Carter Greenway trail. Others come to kayak, canoe, or fish the South Platte River. Observing wildlife such as herons, ducks, beavers, snakes, raptors, and song birds is a popular outing in the Park. Individuals of all ages, school groups, and scouts attend nature programs held at the edge of the South Platte River. These education programs include classes such as Gold Panning, Wildlife Detectives, Ecosystem Adventures, Crazy About Crawdads, River Treasure Hunt, etc. Many come to simply enjoy the unique natural setting.

Process Used to Evaluate Project:

The *South Platte Park Final Master Plan*, 1983, revised 1988, originally identified a need for improved fishing habitat in the river, and the 2009 *South Platte Park Management Plan* identified the aquatic and riparian habitat the most threatened in the Park, in need of numerous management functions. South Suburban, Littleton, Trout Unlimited (Denver and Cutthroat Chapters) hired Ecological Resources Consulting Inc. (ERC) to perform and assessment of the river corridor. In July 2009, the *Stream Assessment & Conceptual Restoration* study was completed. The study

found that beyond basic fishing habitat improvement, the river had become degraded and was in need of more significant enhancements to improve the ecological health of the system. Based upon this study, ERC moved forward to through a year of study, stake holders' meetings, and a public hearing, to submit the *South Platte Park, South Platte River Enhancement Plan* in January 2012. This plan provided detail concepts to meet the project goal of enhancing the river to mimic a more natural condition. After work was completed and flood damage occurred, ERC returned to the site to inspect conditions with Naranjo Construction, Arrowhead Landscaping, and all the project partners to evaluate the design, functionality, and damage. From that, the repair plan that is attached in Parts 6 and 10 was developed.

Planning efforts to date:

With the extensive studies performed to date, construction and contract managers having inspected the project on site, and Urban Drainage and Littleton as project sponsors, the planning efforts are essentially complete and ready to implement. The plan included costs and engineering analysis.

Environmental Considerations:

The proposed project is consistent with the principles of the *South Platte Park Management Plan*, updated 2009. The Management Plan sets procedure for the management of the natural area with controlled public access. The goal of the plan is to manage the natural resources so that a balance is created that allows visitors use of the area while preserving the natural resources. The plan addresses policies on land management, land use, vegetation management, water resource management, fisheries management, wildlife management, visitor management, and education through interpretation. The proposed project is consistence with these established policies and protocols for water, wildlife, vegetation, fisheries, and land use will be followed. This repair project should have positive outcomes on water quality by stabilizing sediments, and by improving the rate of flow through the better defined channel, and will improve wildlife habitat up to the waters edge. Establishment of restoration grasses, shrubs, and willows will create competition for invasive pioneer weeds.

Inclusivity:

ADA access to the river was accomplished through the construction of 2 ADA fishing platforms with an accessible route located near the Carson Nature Center. Enhancement of the river in this location was completed with Phase I of the project. A riffle/pool was constructed at the platform to improve fishing opportunities.

Access points to the river were established in the initial river enhancement project have been scoured to inaccessible cobbles and riprap. This request for the repair project will re-establish walk-able fine sediment materials for the greatest extent of access possible. Because of the existing steep terrain and Army Corps limitations on construction in the floodway, compacted surfaces and accessible slopes will be provided to the greatest extent possible where full and complete accessibility may not be.



Photo example on left shows the potentially accessible slope and materials for typical access trails prior to flooding; on the right is what many of those access points currently look like – loose rock will be covered by soils and compacted to re-establish accessible trails during the restoration process where possible.

Connectivity:

The existing Mary Carter Greenway Trail, a regional trail, starts in South Platte Park at C-470 and continues 8.3 miles north to W. Dartmouth Ave., and then continues into Denver and eventually Adams County. The trail connects into other regional trails including: Centennial Trail (C-470 Trail), Lee Gulch Trail, Little’s Creek Trail, Big Dry Creek Trail and Bear Creek Trail. Parks and recreation facilities located along the trail include Chatfield State Park, South Platte Park, Reynolds Landing, Lee Gulch Overlook, Hudson Gardens, Watson Lake, Littleton Golf Course, Oxbow Point and Creekside Experience.

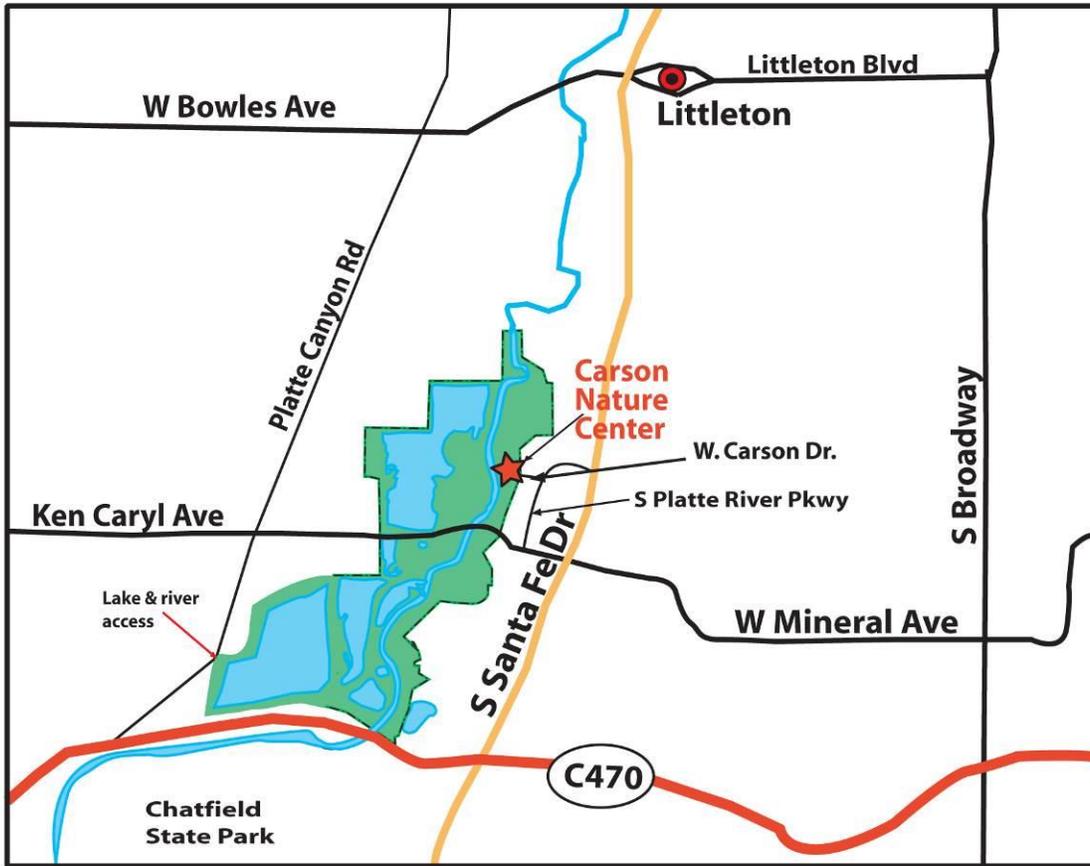
Within the park there are 3.5 miles of interpretive trails that provide access to specific experiences within the park. Further there are access trails from the Mary Carter Greenway Trail and interpretive trails to the South Platte River. Many of these access trails will be repaired as part of this project. Locations and quantities will be determined through the design process.

Long-term sustainability and maintenance:

The project is designed to withstand the impacts of a 100-year flood through the continued use of existing grade control structures (drop structures) and rock sizing that will be designed to be stable in a 100-year event. The key to the damage that occurred in this recent flood event is that the flows came up before restoration plantings could establish themselves on Phases II and III. Phase I, where plantings had been established for two years, showed very little alteration or damage, demonstrating the stability of this project in the long run, provided restoration can be successfully completed. Just as a natural river system evolves with variation in flows and sediment transport, the enhancement project has been designed to evolve. The intent of the project is not to “lock” the river in place, and some response to higher flow is both predicted and encouraged as the stream is intended to function as a natural system within the constraints of the sites. Urban Drainage, South Suburban and Littleton are committed to the long term sustainability of the project and will collaboratively work together should future maintenance needs arise, and this has been demonstrated by all three agencies find the bulk of funds for repairs after this initial event.

South Platte Park

3000 West Carson Drive
303-730-1022 www.sspr.org



South Suburban
PARKS AND RECREATION

Station	101+00	102+00	103+00	104+00	105+00	106+00	107+00
Channel							
BSA							
BSB							
CPB							
Riffle							
Pool							
Trail							

Date	10/11
Drawn	10/11
Checked	10/11
Reviewed	10/11
Project	11/08
Sheet	11/08
Scale	1" = 100'

PH I/II Site 9:
Chicken wire removal

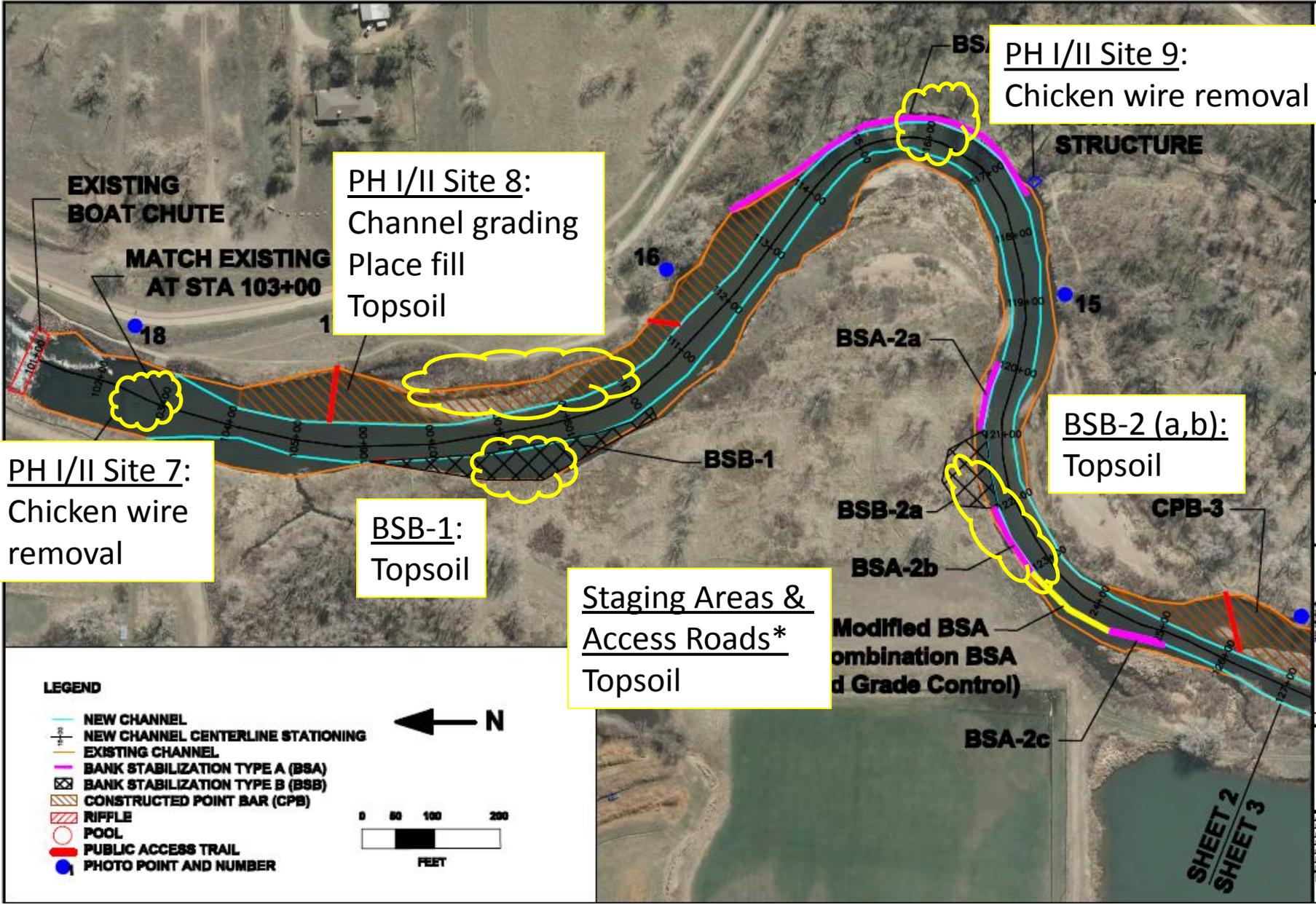
PH I/II Site 8:
Channel grading
Place fill
Topsoil

PH I/II Site 7:
Chicken wire removal

BSB-1:
Topsoil

BSB-2 (a,b):
Topsoil

**Staging Areas &
Access Roads*
Topsoil**



- LEGEND**
- NEW CHANNEL
 - NEW CHANNEL CENTERLINE STATIONING
 - EXISTING CHANNEL
 - BANK STABILIZATION TYPE A (BSA)
 - BANK STABILIZATION TYPE B (BSB)
 - CONSTRUCTED POINT BAR (CPB)
 - RIFLE
 - POOL
 - PUBLIC ACCESS TRAIL
 - PHOTO POINT AND NUMBER

ELEVATION	
120	125
130	135
140	145
150	155
160	165
170	175
180	185
190	195
200	205
210	215
220	225
230	235
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820	825
830	835
840	845
850	855
860	865
870	875
880	885
890	895
900	905
910	915
920	925
930	935
940	945
950	955
960	965
970	975
980	985
990	995
1000	1005

Scale:	1" = 100'
Date:	08/11
Drawn:	MB/ML
Checked:	ML
Approved:	ML
Project:	11108
File Path:	\\P:\Projects\11\11108\11108.dwg
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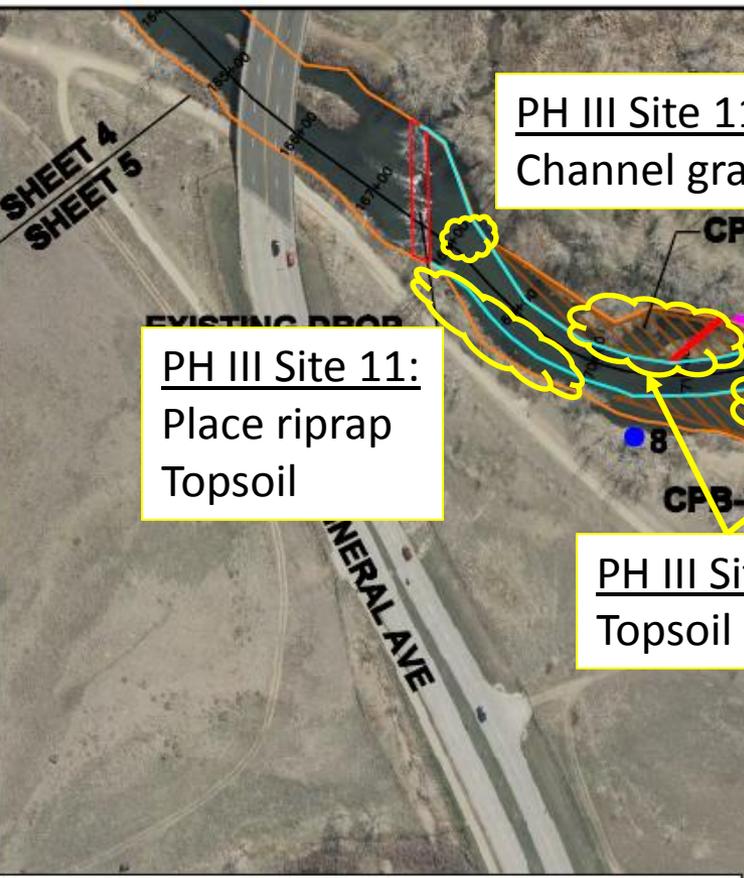
SHEET 5
 SHEET 6

PH III Site 11-A:
 Channel grading

PH III Site 11:
 Place riprap
 Topsoil

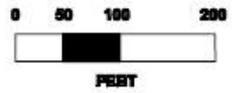
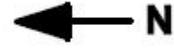
PH III Site 10:
 Topsoil

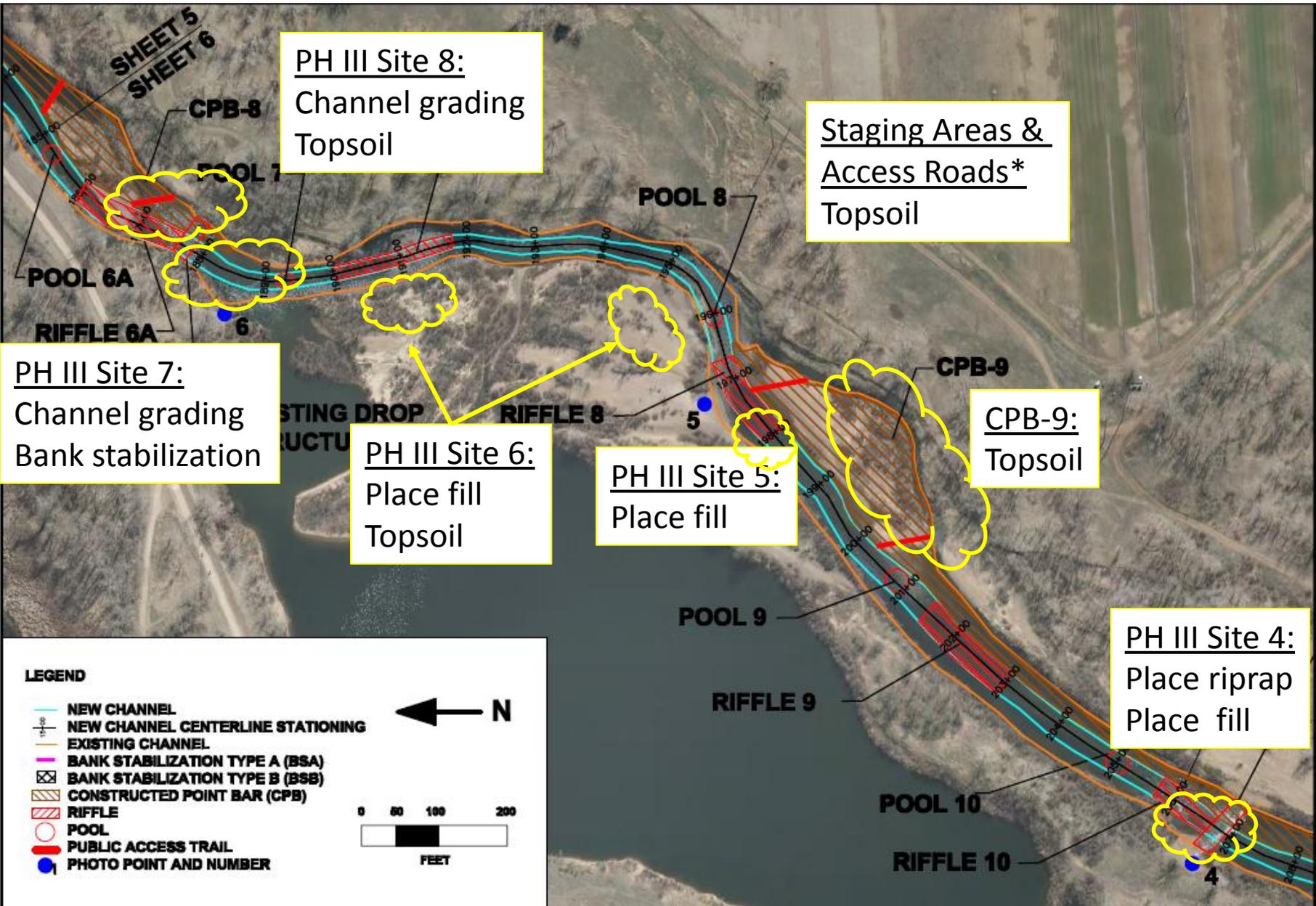
PH III Site 9:
 Topsoil



LEGEND

- NEW CHANNEL
- NEW CHANNEL CENTERLINE STATIONING
- EXISTING CHANNEL
- BANK STABILIZATION TYPE A (BSA)
- BANK STABILIZATION TYPE B (BSB)
- CONSTRUCTED POINT BAR (CPB)
- RIFFLE
- POOL
- PUBLIC ACCESS TRAIL
- PHOTO POINT AND NUMBER





PH III Site 8:
Channel grading
Topsoil

**Staging Areas &
Access Roads***
Topsoil

PH III Site 7:
Channel grading
Bank stabilization

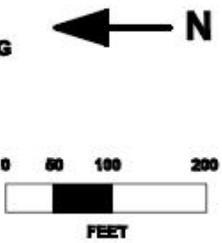
PH III Site 6:
Place fill
Topsoil

PH III Site 5:
Place fill

CPB-9:
Topsoil

PH III Site 4:
Place riprap
Place fill

- LEGEND**
- NEW CHANNEL
 - NEW CHANNEL CENTERLINE STATIONING
 - EXISTING CHANNEL
 - BANK STABILIZATION TYPE A (BSA)
 - BANK STABILIZATION TYPE B (BSB)
 - CONSTRUCTED POINT BAR (CPB)
 - RIFFLE
 - POOL
 - PUBLIC ACCESS TRAIL
 - PHOTO POINT AND NUMBER



South Platte Park
 South Platte River Proposed
 Enhancement Plan
 Phase II

Plan and Profile
 Max: 118'-1.00 to 288'-1.00

Ecological Resources Consultants, Inc.
 38715 US Hwy 40
 Coalinga, CA 93238
 www.ercos.com

REV	DATE	DESCRIPTION
1	08/11/2023	ISSUED FOR PERMITS
2	09/15/2023	REVISED FOR PERMITS
3	10/10/2023	REVISED FOR PERMITS
4	11/05/2023	REVISED FOR PERMITS
5	12/05/2023	REVISED FOR PERMITS
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Part 7: Photos





Part 8: Timeline

Timeline			
Task	Estimated Hours and/or Expected Date to Complete	Responsible Person/Group	Measurable Objective/Deliverable
Mobilization	Sept 15, 2016	Naranjo	Begin Project
Phase 1 repairs	3 days	Naranjo	Channel grading and sediment fill material, topsoil placement
Phase 1 restoration	3 days	Arrowhead	Replace willow stakes, blanket, seed, planting pockets
Phase 2 repairs	4 weeks	Naranjo	Riffle reconstruction, Channel restoration, terrace repairs, topsoil placement
Phase 2 restoration	4 weeks	Arrowhead	Seed and blanket, planting pockets, tree planting, willow staking
Phase 2 veg maintenance	6 months	Arrowhead, S Platte Pk	Watering, weed control, replacement plantings
Phase 3 repairs	8 weeks	Naranjo	Riffle reconstruction, Channel restoration, terrace repairs, topsoil placement
Phase 3 restoration	6 weeks	Arrowhead	Seed and blanket, planting pockets, tree planting, willow staking
Phase 3 veg maintenance	6 months	Arrowhead, S Platte Pk	Watering, weed control, replacement plantings
Estimated TOTAL Hours and/or Final Date of Completion	April 2017		

Part 9: Commitments and Official Support



City Manager

2255 West Berry Avenue
Littleton, Colorado 80120
303-795-3720

November 20, 2015

Arapahoe County Open Space and Trails Advisory Board
6934 S. Lima Street, Unit A
Centennial, Colorado 80112

Re: Letter of Support and Commitment of Matching Funds

Dear Advisory Board Members:

The City of Littleton is partnering with South Suburban Parks and Recreation District and the Urban Drainage and Flood Control District to repair the low-flow river channel damage to the South Platte River in South Platte Park caused by the unprecedented high-flows in the river in 2015.

The city is the owner of the park and fully supports the proposed repair project and has committed \$500,000 to address the repair work in 2016. This project is a high priority for the city and will restore river health and river access in the regionally-significant South Platte Park. Additionally, County support for this project at this time will allow the repairs to be conducted all-at-once, limiting the intrusion and disruption of the public's enjoyment of the natural area.

On the behalf of the Littleton City Council, I strongly urge Arapahoe County to again join in the restoration of the enhancements to the South Platte River in South Platte Park and respectfully request your support on this joint project application.

Sincerely,

DocuSigned by:

A handwritten signature in black ink that reads "Michael Penny".

Michael Penny
City Manager



URBAN DRAINAGE AND FLOOD CONTROL DISTRICT

Paul A. Hindman, Executive Director
2480 W. 26th Avenue, Suite 156B
Denver, CO 80211-5304

Telephone 303-455-6277
Fax 303-455-7880
www.udfcd.org

November 19, 2015

Arapahoe County Open Space and Trails Advisory Board
6934 S. Lima St., Unit A
Centennial, CO 80112

RE: South Platte Park Enhancement High Water Repairs
Letter of Support

To Whom It May Concern:

The Urban Drainage and Flood Control District (District) has partnered with South Suburban Park and Recreation and the City of Littleton to design and construct river corridor enhancements in South Platte Park. The project is broken into three construction phases. These phases consist of reshaping the low flow channel, reinstating a riffle, pool, and glide series, creating riparian benches, and bank stabilization.

Phase 1 was completed in the summer of 2013, Phase 2 was completed in January of 2015, and Phase 3 was almost complete when the high release started coming out of Chatfield Dam. The first layer of protection against high water in our stream and rivers is vegetation. Due to the fact the vegetation wasn't able to establish during Phase 2 and Phase 3, the project areas were very vulnerable to the sustained high water resulting in some damage to the sites.

The District builds numerous projects each year all within floodplains. High water conditions during or shortly after construction is always a risk. We are confident that the long term design and implementation of the South Platte Park improvements will be of benefit to the park and the community. The District is committed to and has budgeted an additional \$100,000 in 2016 towards completing Phases 2 and 3.

Sincerely,

Paul A. Hindman
Executive Director

SOUTH PLATTE WORKING GROUP

February 3, 2016

Arapahoe County Open Space and Trails Advisory Board
c/o Arapahoe County Open Spaces Program
6934 S Lima St. Unit A
Centennial, CO 80112

Dear Members of the Open Space and Trails Advisory Board:

We are writing in support of the application for funds by South Suburban Parks and Recreation District to affect repairs on the South Platte River in South Platte Park as a result of the historic floods of 2015.

When the repairs were completed in March 2015, the river and its banks were both beautiful and designed to be resilient to the periodic flooding that we normally experience on the South Platte River. Unfortunately, the vegetation that would have held much of the topsoil and finer embankment materials in place did not have the two-year period to establish and further protect the area.

Although the eight weeks of flooding did damage the river and the restoration efforts, we are impressed with the way that the design was able to effectively retain its form, and also with the degree to which the banks held. The design and implementation ended up being largely effective in the face of extreme flows.

The City of Littleton, Urban Drainage and Flood Control District, and South Suburban Parks & Recreation District are also contributing substantial funds. While the Arapahoe County funds are separate from those pledged to our working group projects, this project meets the important goal of the South Platte Working Group: *"To restore and revitalize the river and its habitat while maintaining its role as a flood conveyance."*

The repairs will be timed to avoid potential high flows this spring, giving the vegetation time to be established. We hope that you will support this effort to repair the damage of the rarely seen flooding of 2015.

Sincerely,

The Members of the South Platte Working Group
(Please see the next page for members.)

SOUTH PLATTE WORKING GROUP

Arapahoe County

Nancy Doty, Commissioner
Shannon Carter, Intergovernmental
Relations and Open Spaces Director

City of Englewood

Linda Olson, City Council
Eric Keck, City Manager

City of Sheridan

Sally Daigle, City Council
Devin Granbery, City Manager

Colorado Water Conservation Board

Joe Busto, South Platte River Coordinator

South Metro Land Conservancy

Bobbie Sheffield, Board Member

Arapahoe County Open Space & Trails Advisory Board

Bev Bradshaw, At Large Board Member

Town of Columbine Valley

Gale Christy, Mayor

City of Littleton

Debbie Brinkman, Mayor Pro Tem
Michael Penny, City Manager

South Suburban Parks & Recreation District

Sue Rosser, Board Member
Rob Hanna, Executive Director

Urban Drainage & Flood Control District

Paul Hindman, Executive Director

South Suburban Park Foundation

David Bolt, Board Member

Part 10: Budget

Budget						
Sources of Funds	South Suburban	Littleton	Urban Drainage		County	Total Project Funds
Cash Committed	\$ 50,000	\$500,000	\$300,000			\$850,000
Cash Pending					\$480,000	\$480,000
In Kind						
Subtotal Costs						\$1,330,000
Contingency (≈10% of total costs)			\$125,000		N / A	\$125,000
Totals – Revenue plus contingency	\$50,000	\$500,000	\$425,000		\$480,000	\$1,455,000
Uses of Funds – Expenditures	Lead Agency	Funding Partner	Funding Partner	Spending IGA	County	Total Project Costs
Design / Permitting	\$	\$	\$		\$	\$
Engineering				\$187,907		\$187,907
Consulting						
Construction				\$271,496		\$271,496
Materials				\$362,702		\$362,702
Labor / Services				\$507,801		\$507,895
Signage						
Other						
Subtotal Costs						
Contingency (≈10% of total costs)				\$125,000	N / A	\$125,000
Totals – Cost plus contingency	\$	\$	\$	\$	\$	\$1,455,000

Grand total fr. table far right lower corner (must equal column and line totals) \$1,455,000