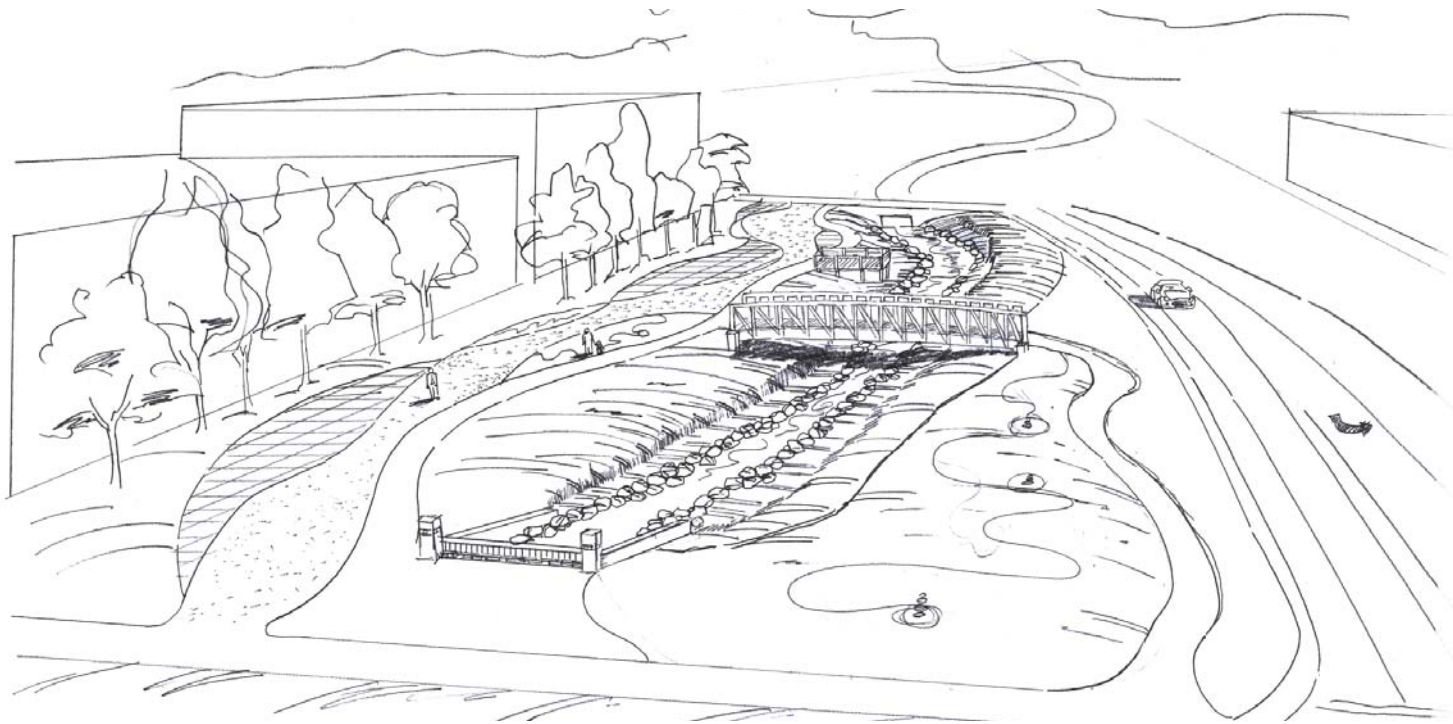


# Sandy City Dry Creek Concept Report



January 2018





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## Acknowledgments

The Dry Creek Concept Report has been prepared with the support from the following:

### SANDY CITY STAFF AND DEPARTMENTS

Sandy City Public Utilities

Sandy City Community Development Department

Sandy City Public Works Department

Sandy City Parks and Recreation

Sandy City Mayor's Office

### AGENCIES

Salt Lake County Flood Control

Salt Lake County Parks and Recreation

### CONSULTANTS

Bowen Collins & Associates

### IN COORDINATION WITH

The Shops at South Town

## The Purpose of the Project

The purpose of the Dry Creek Improvements project is to complete critical infrastructure improvements along the Dry Creek corridor to 1) eliminate flooding potential in the Sandy Cairns downtown area, 2) provide emergency and maintenance access for flood control, 3) restore the channel and convert it from an overgrown hazard to a central feature of the Sandy Cairns downtown area with recreational features including open space, trails, and an Art Walk, and 4) provide demonstration for public education along the corridor of Low Impact Development (LID), water conservation, and water quality Best Management Practices (BMP's).

In 2012, Sandy City developed a document titled “Sandy City Civil Center Area 30 Year Development Plan,” also known as the STEPS project. This document was revised in 2016 and is now called “The Cairns Master Plan” which was adopted by City Council in January 2017. The Cairns Master Plan has established goals and objectives for future design and development of Sandy City’s downtown area, which is generally bounded by 9000 South to 10600 South and I-15 to the Trail Rail line. The focus area of this concept report is located within what is referred to in the Cairns Master Plan as the “South Village” and is highlighted as a yellow on the adjacent figure.

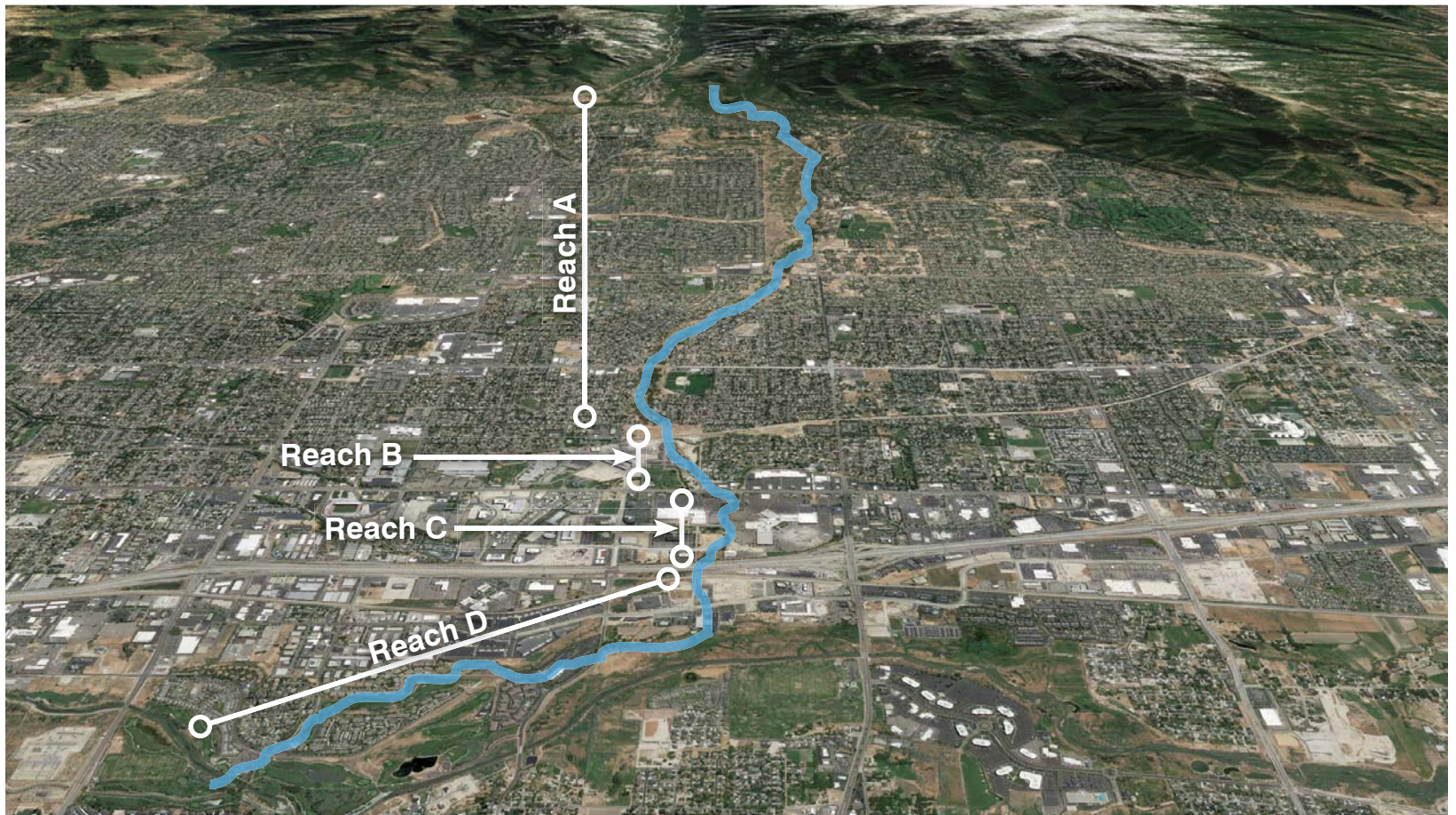
This Dry Creek Concept Report is intended to provide an overall concept for the various phases of Dry Creek improvements within the highlighted area, coordination and integration with the Cairns Master Plan, and coordination with city departments such as Community Development, Public Works, Parks and Recreation, Public Utilities, the Sandy City Mayor’s Office (Administration), as well as Salt Lake County Parks & Recreation, Salt Lake County Flood Control and The Shops at South Town.

In order to better understand the channel dynamics of Dry Creek, the entire reach from the top of Dimple Dell to the Jordan River was evaluated in the following section. Additionally, a Dry Creek Hydrology Study was developed by Bowen Collins & Associates (BC&A) in 2014 and was used as a reference for this report.



## Site Analysis

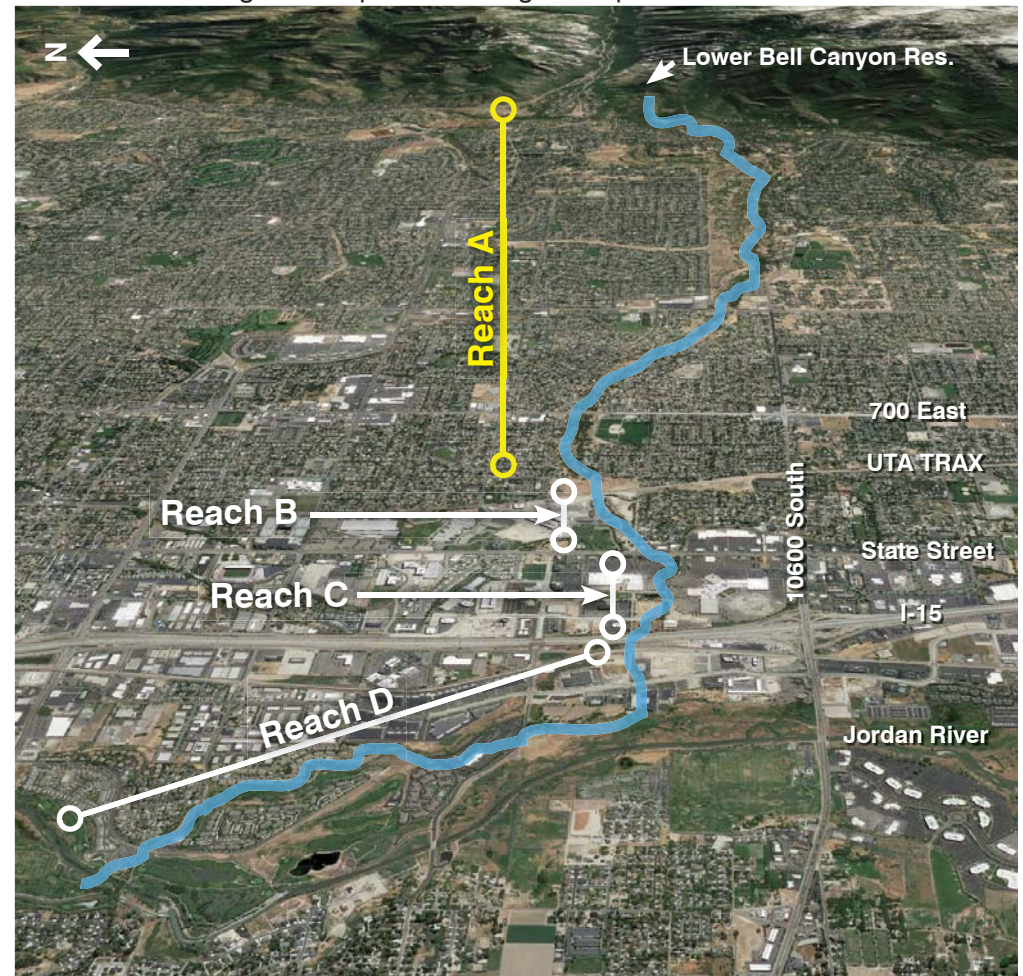
Dry Creek begins at the outlet of Lower Bell Canyon Reservoir located above Wasatch Boulevard at approximately 3000 East in Sandy, Utah. The length of the channel overall is approximately 9 miles between Lower Bell Canyon Reservoir to the Jordan River. BC&A along with Sandy City staff conducted site visits throughout these reaches to further understand the condition of the channel and transitions between mountain to urban development. The brief analysis and photo documentation of these reaches follow. Below is a photo that identifies four reaches of Dry Creek: Reach A: Lower Bell Canyon (Dimple Dell) to UTA TRAX, Reach B: UTA TRAX to State Street, Reach C: State Street to I-15, Reach D: I-15 to the Jordan River. Recommended cross-sections for Reach C (the study area) are located on page 15 after the Design Charrette Concepts.





## Site Analysis - Reach A: Dimple Dell

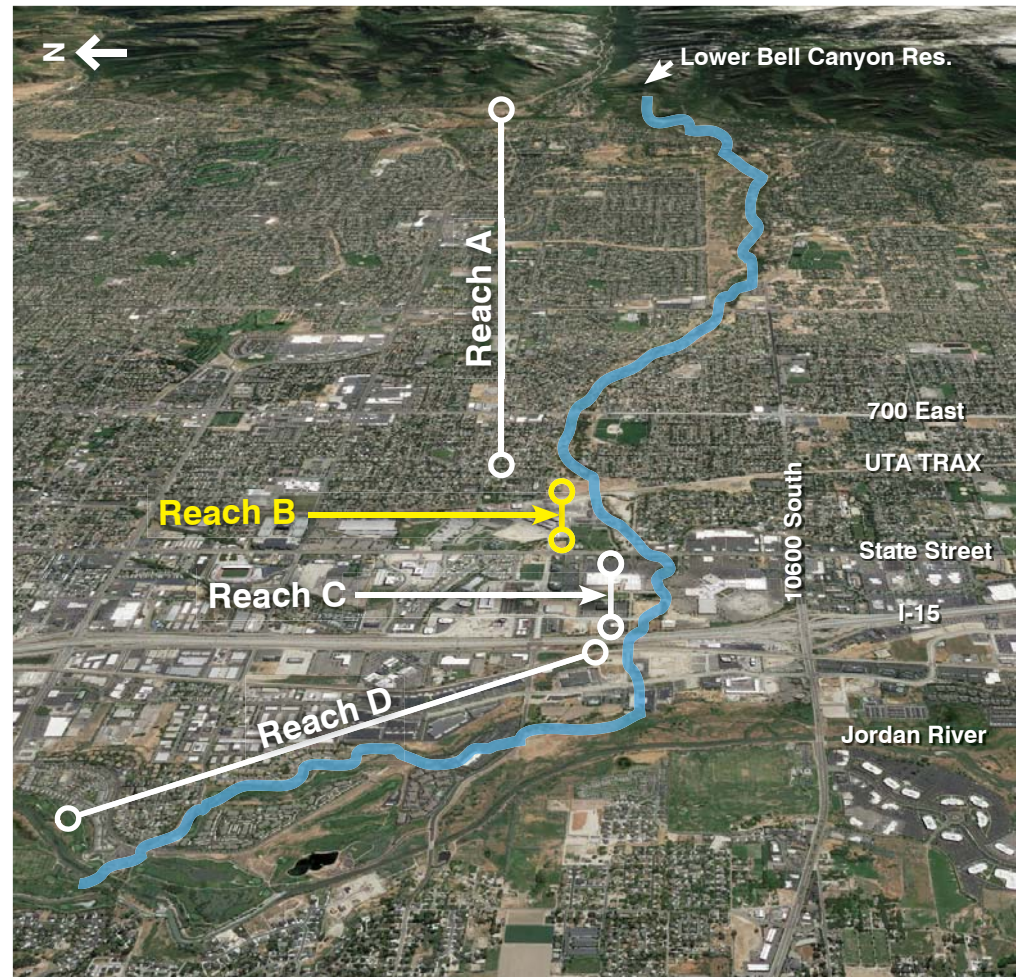
The Dimple Dell reach contains a dynamic channel that begins with a steep, narrow, confined channel. As the channel traverses westward, the gradient decreases and the floodplain becomes wider. In the middle segment, specifically between 2000 East and 700 East, the channel is very active, moving laterally with areas of significant erosion and deposition. There are no specific recommendations other than possibly stabilizing the toe of the active eroding areas to protect existing development and infrastructure.





## Site Analysis - Reach B: UTA TRAX to State Street

The segment between UTA TRAX and State Street is quite isolated and barren. The channel disappears under the landfill at 300 East and comes to surface just west of UTA TRAX. As future development is planned for the corridor west of UTA TRAX, it is recommended to clear invasive trees and provide more trails and public access to the channel.



## Site Analysis - Reach C: State Street to I-15

This segment is the study area for this report. The top photo to the left is of Neff's Grove. Neff's Grove must remain as preserved open space due to mitigation requirements set forth by the US Army Corps of Engineers. Further downstream the channel maintains a 6-12' channel width with some floodplain areas. It is recommended that enhancements be made in this segment that includes planting more cottonwood trees, removal of invasive trees, and trimming of the grasses to provide visual and physical access to the channel. The last photo is a segment between Monroe and I-15 that was realigned and restored in the fall of 2016.







Channel Undercutting



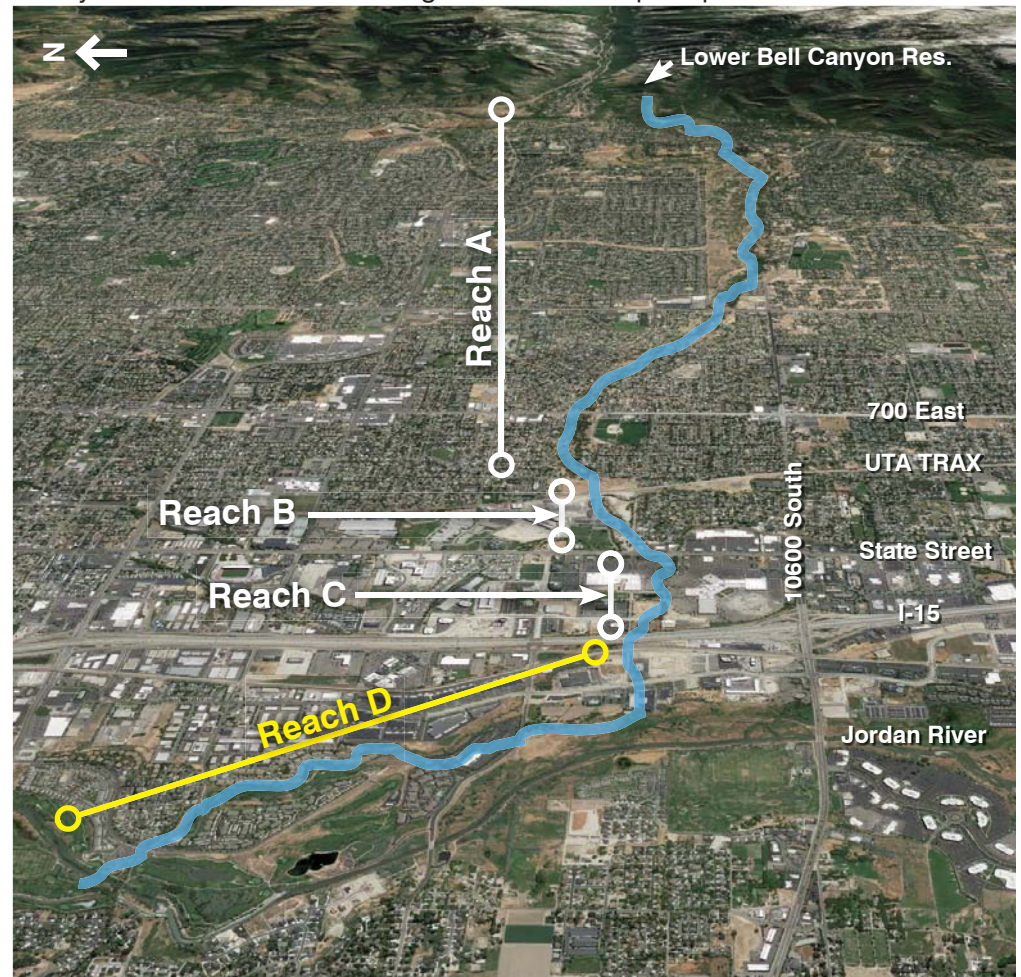
Middle Near Golf



Lower

## Site Analysis - Reach D: I-15 to the Jordan River

This reach runs primarily through developed areas and meanders through the River Oaks Golf Course. This reach has areas that are eroding. Due to the development near the channel, erosion and lateral channel migration are jeopardizing some properties. It is recommended that bank stabilization occur within this stretch, similar to the middle photo which was armored in the spring of 2016 to protect the golf course and nearby condominiums from eroding sidewalks and open space areas.



## The Planning Process

The City contracted with BC&A to develop a concept plan for the area between Monroe Street and State Street, with a primary focus on what is referred to in this document as Reach C of Dry Creek. Reach C is broken into six phases for the purposes of enhancing/restoring Dry Creek. Phase 2, as outlined in red in the figure below, is between Monroe Street and Centennial Parkway. This area is approximately 400 feet in length and is adjacent to open land owned by Sandy City. During the initial planning stages of the project, the City provided the following list of items that they wanted to be considered as part of the planning process:

- **Meandering channel and floodway transition zones for Dry Creek that include:**

- Low flow channel
- 100-year flood corridor
- Riparian areas
- Water quality
- Transportation needs

- **Recreational components that include:**

- Art walk (vision from Cairns and Sandy City Mayor's office - Administration)

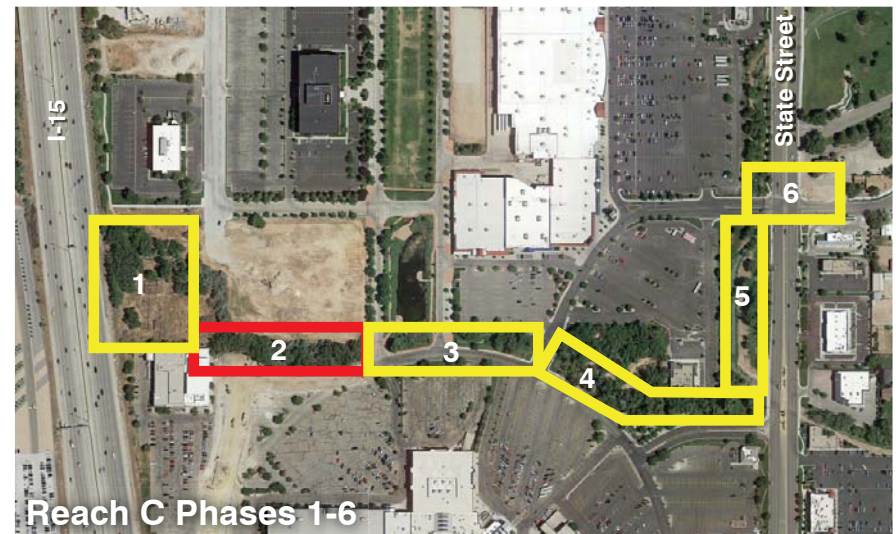
- Open Space/Trails

- **Demonstration/educational areas for the following:**

- Water conservation

Although this project is primarily a stormwater and channel restoration project, the concept of providing other uses and planning for the future allowed the design team to explore ways to be creative by developing design concepts that not only fit within future development patterns, including future streets, but also accommodate the need for public spaces. These public spaces can be used as an art walk, outdoor classrooms, or general public congregation areas.

In order to better understand the desirable transportation routes and development alternatives, BC&A participated with the City in a design charrette process which allowed for several brainstorming alternatives to help guide the overall look and feel of Reach C, as well as the development and transportation patterns for South Village.



## The Design Charrette

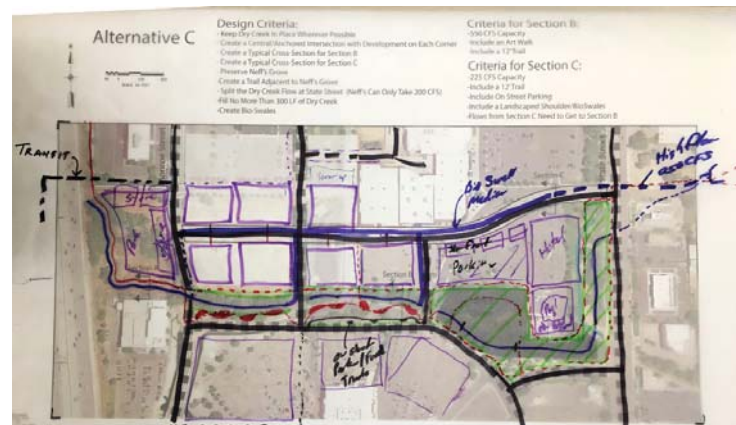
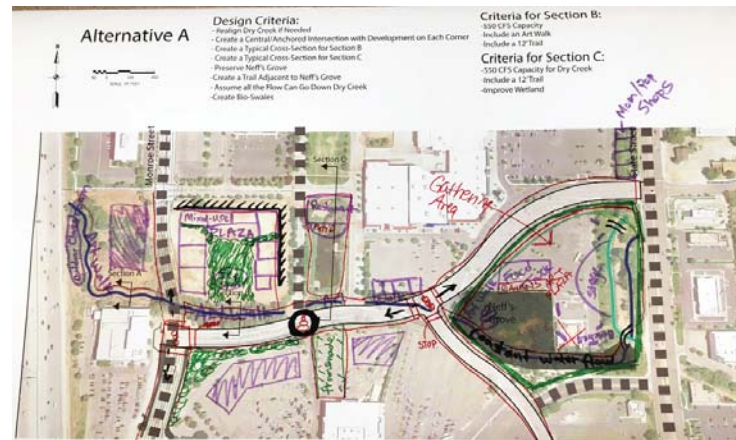
A design charrette was held on April 14, 2017, and included representatives from the City's Community Develop, Public Works, Parks and Recreation, Public Utilities and the Sandy City's Mayor's Office. Additional participants included representatives from Salt Lake County Parks and Recreation and Salt Lake County Flood Control.

Participants were organized into four groups. Each of the groups were given a different layout with different design criteria along with a representative from each department or agency.



## Design Charrette Concepts

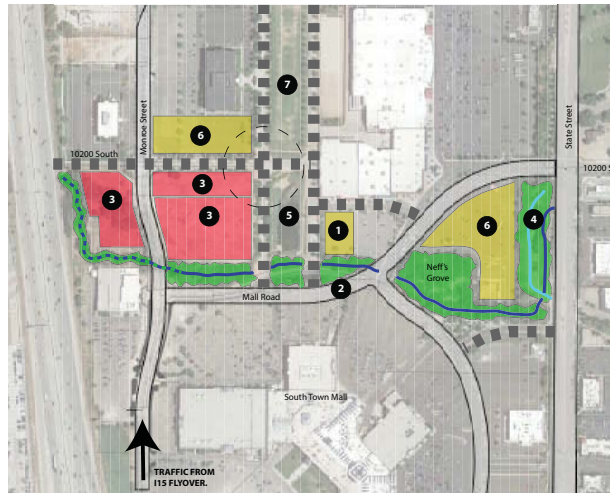
The design criteria for the alternatives included elements like keeping Reach C of Dry Creek in place, relocating Dry Creek, splitting the flows for Dry Creek, develop public spaces, relocating or keeping the Centennial/Promenade Wetlands, providing retail and commercial development, developing more trails and walking paths, and considering high traffic transportation routes.



## Design Charrette Concepts

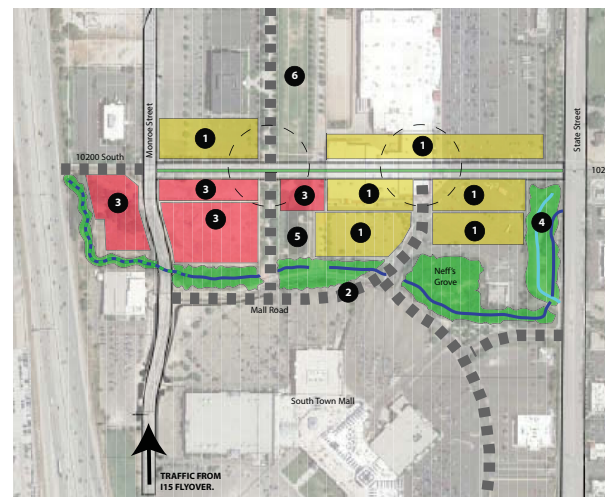
The four concepts were evaluated to develop three viable options. The first two, Alternative A and B shown below, utilize property that is not owned by Sandy City (shown in yellow). The preferred alternative is Alternative C, which utilizes Sandy City owned property (shown in red).

Alternative C includes maintaining the existing alignment of Dry Creek and adds a channel or open water feature within a new road alignment that connects 10200 South to Monroe Street. This open water feature would eventually connect to Dry Creek between developments, thus providing a looped green space and open water element to the development. This alternative also provides an intersection for higher density and green space/open gathering areas on most sides of the developments. The following page provides a larger image and includes a legend for the preferred alternative.



**Alternative A**

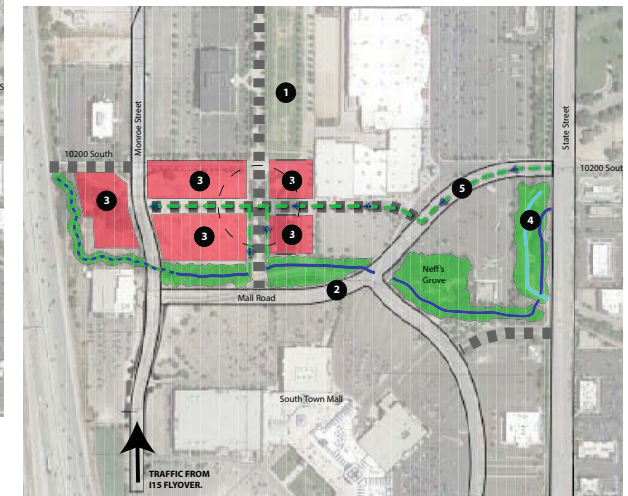
- 1 Future Development on property NOT owned by Sandy City.
  - 2 Mall Road realignment to allow for 10200 South to connect to Monroe Street. Two lanes in each direction.
  - 3 Future Development on property owned by Sandy City.
  - 4 Bury existing canal and enhance green space and Dry Creek.
  - 5 Existing wetland to remain in place. Improvements would be needed to the boardwalk for pedestrian safety.
  - 6 Future development, art plaza and gathering areas NOT owned by Sandy City.
  - 7 Promenade open space area to remain for large city events.
- Existing/Future Roads  
 Existing realigned Dry Creek  
 Intersection Area



**Alternative B**

- 1 Future Development on property NOT owned by Sandy City.
  - 2 Mall Road realignment to allow for 10200 South to connect to Monroe Street. Two lanes in each direction.
  - 3 Future Development on property owned by Sandy City.
  - 4 Bury existing canal and enhance green space and Dry Creek.
  - 5 A portion of the existing wetland to remain in place. A re-design of the boardwalk and stormwater into the wetland would need to be redesigned.
  - 6 Promenade open space area to remain for large city events.
- Existing/Future Roads  
 Existing realigned Dry Creek  
 Intersection Area

- Property owned by Sandy City
- Property not owned by Sandy City



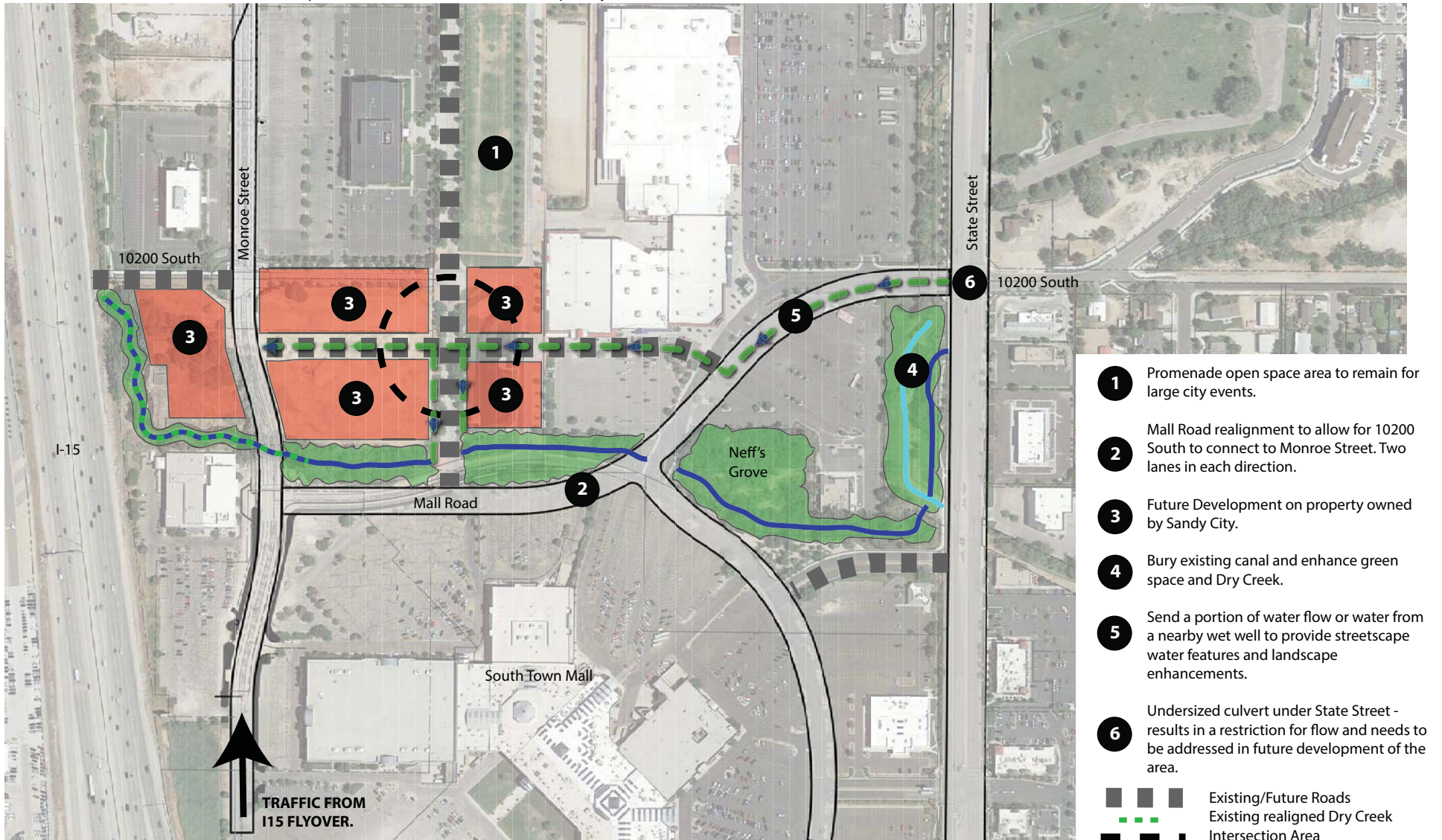
**Alternative C - Preferred**

- 1 Promenade open space area to remain for large city events.
  - 2 Mall Road realignment to allow for 10200 South to connect to Monroe Street. Two lanes in each direction.
  - 3 Future Development on property owned by Sandy City.
  - 4 Bury existing canal and enhance green space and Dry Creek.
  - 5 Send a portion of water flow or water from a nearby wet well to provide streetscape water features and landscape enhancements.
- Existing/Future Roads  
 Existing realigned Dry Creek  
 Intersection Area

## Alternative C

**Purpose and Need:** To develop a downtown project that includes an intersection that anchors the site by providing shopping, eating establishments and enhance the riparian corridor.

**Alternative C - Preferred Alternative (Wetland Removal)** realigns the Mall Road to connect to 10200 South. The main thoroughfare will be 10200 South from east to west connecting to Mall Road. An alternate alignment will branch off of 10200 South and connect to a 4-corner anchored development that is all on Sandy City owned property. Monroe Street will provide traffic north and south from the I-15 flyover to Sandy City Hall. Both 10600 South and 10200 South-Mall Road are two lane of traffic in each direction with an expected count of thousands of vehicles per day.



## Reach C: Typical Cross-Sections

The photographs below have been superimposed with linework to show typical recommended channel cross-sections within segments of the study area. Phase 1 is complete and was designed and constructed in 2016. Photo "a" shows the current conditions. This phase was designed with a 10' bottom channel width and 2.5H:1V side slopes with no bench. The remaining segments all have an average 10' bottom width, but we are recommending that Phases 2 - 5 be restored to include a bench for periodic flooding and soil saturation for riparian plantings.



Photo a

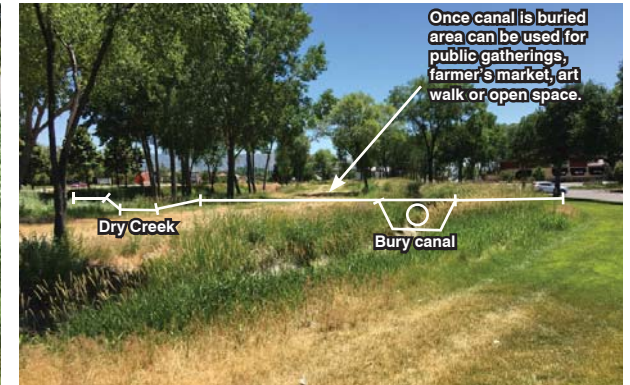
Phase 1



Phase 2 and 3



Phase 4 - Neff's Grove (Preserve)  
Maintain existing conditions/cross-section



Phase 5

**REACH A: N/A**

**REACH B: \$700,000**

- 2,000 Feet of Trail along Dry Creek \$200,000
- 2,000 Feet of Sidewalk and Road Improvements along 10200 South \$500,000

**REACH C: \$7 M**

- Phase 1 - Complete
- Phase 2 \$400,000
  - Channel: \$160,000
  - Trail: \$40,000
  - Art Walk: \$200,000
- Phase 3 \$400,000
  - Channel: \$160,000
  - Trail: \$40,000
  - Art Walk: \$200,000
- Phase 4 \$200,000
  - Channel/Bank Cleanup \$70,000
  - 700 Feet of Trail \$70,000
  - Neff's Grove Clean-up \$60,000
- Phase 5 \$1.5 M
  - 650 Feet of Canal Enclosure (\$1.3 M)
  - 650 Feet of Trail (\$65,000)
  - Channel Improvements \$135,000
- Phase 6 \$2.7 - \$5.7 M
  - State Street Pedestrian Underpass \$1.5 M
  - State Street Flood Control Culvert \$1.5 M
  - State Street Overpass (Ped Bridge) \$4 M
  - State Street Property Fairbanks Acquisition \$1 M

**REACH D: \$1.5 M**

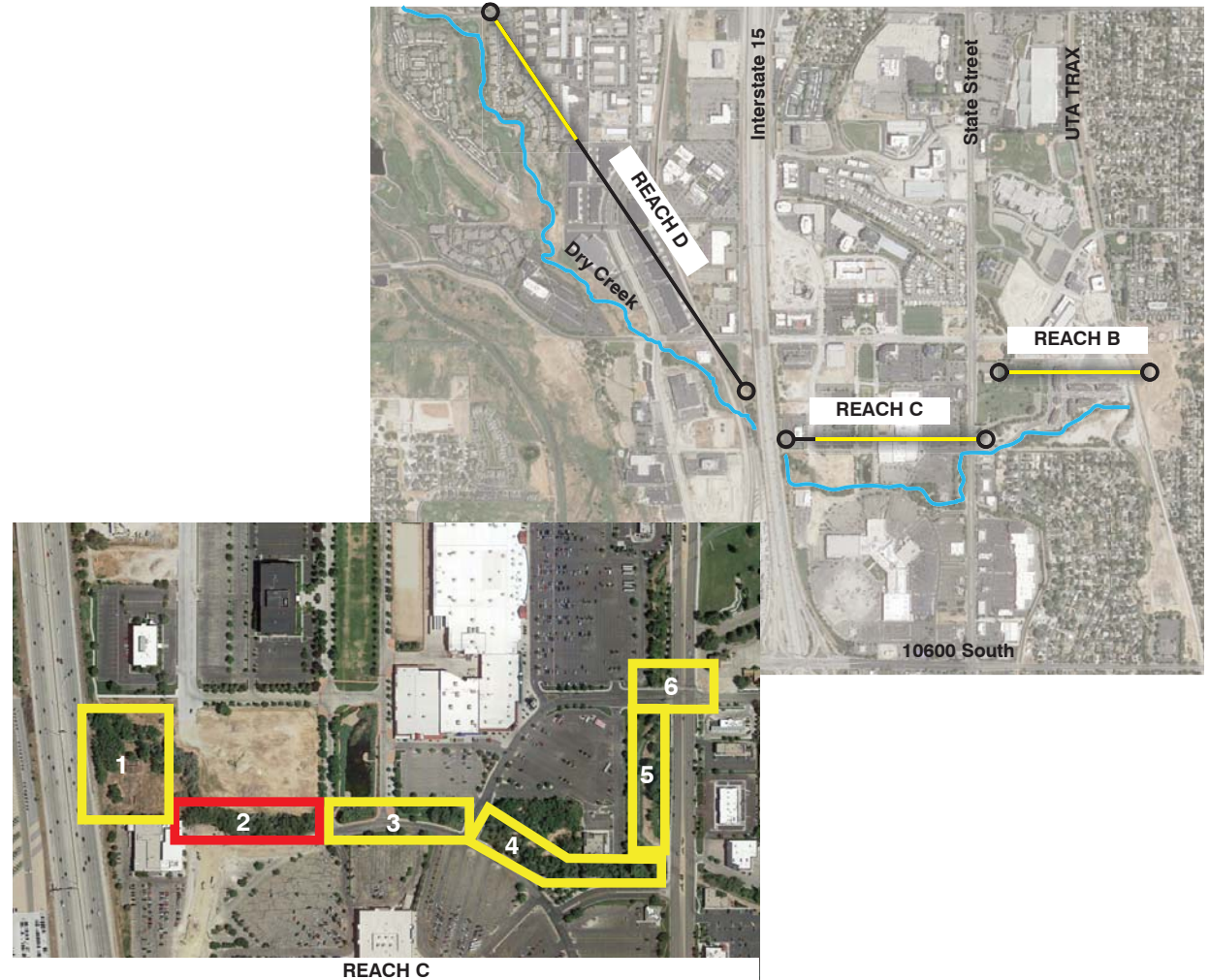
- 3,000 Feet of Trail (\$300,000)
- 3,000 Feet of Channel Restoration (\$1.2 M)

**ALTERNATIVES**

- Box Culvert at Centennial Parkway \$500,000
- Box Culvert West of Neff's Grove \$500,000

## Cost Estimates per Reach

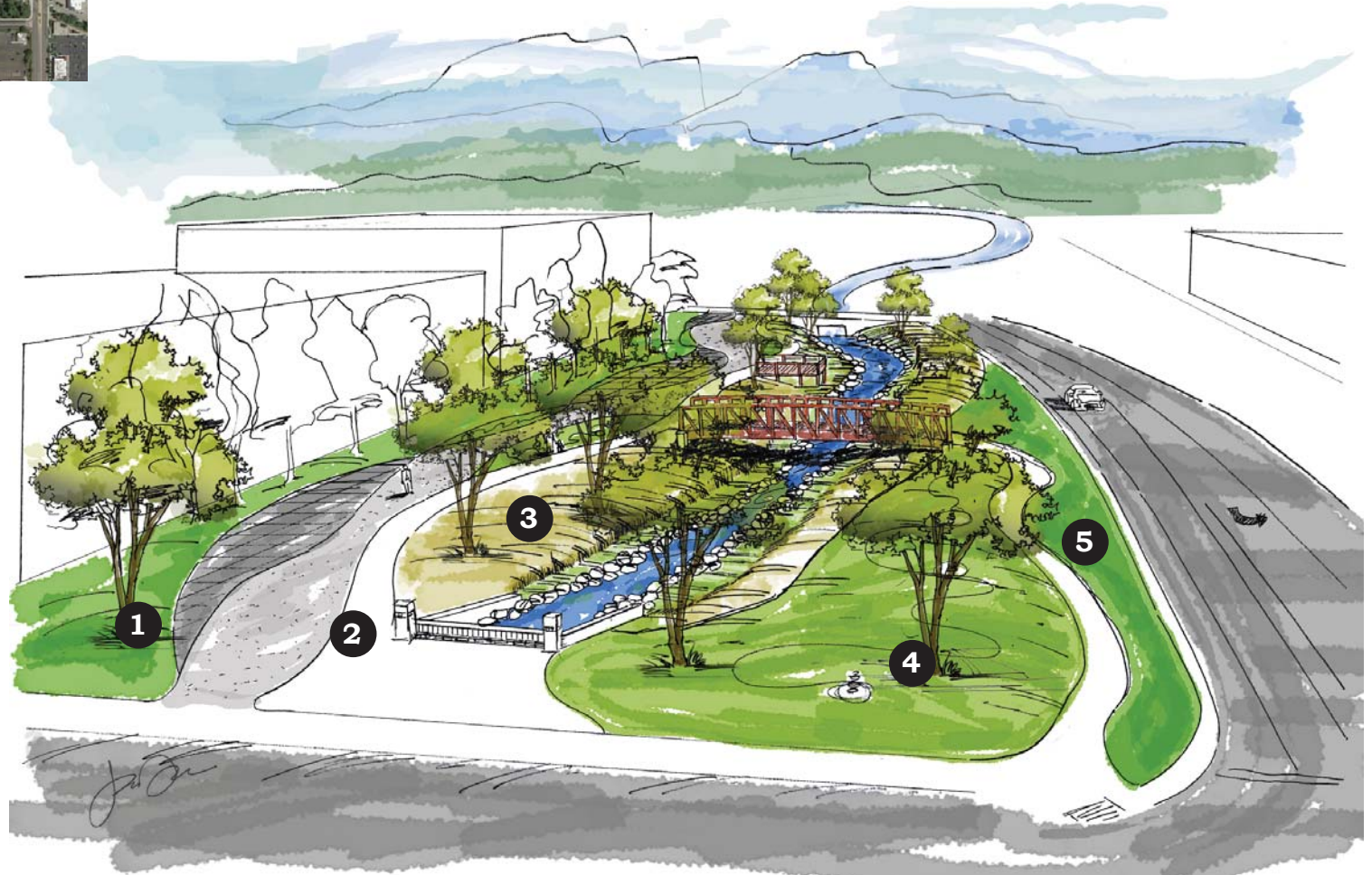
The following is a breakdown of estimated costs associated with each phase of Reach C. Additional costs are also provided for two additional Reaches, they are Reach C: which includes a Dry Creek channel restoration and trail located which is highlighted and Reach B: trail and Dry Creek channel improvements between State Street and UTA TRAX.







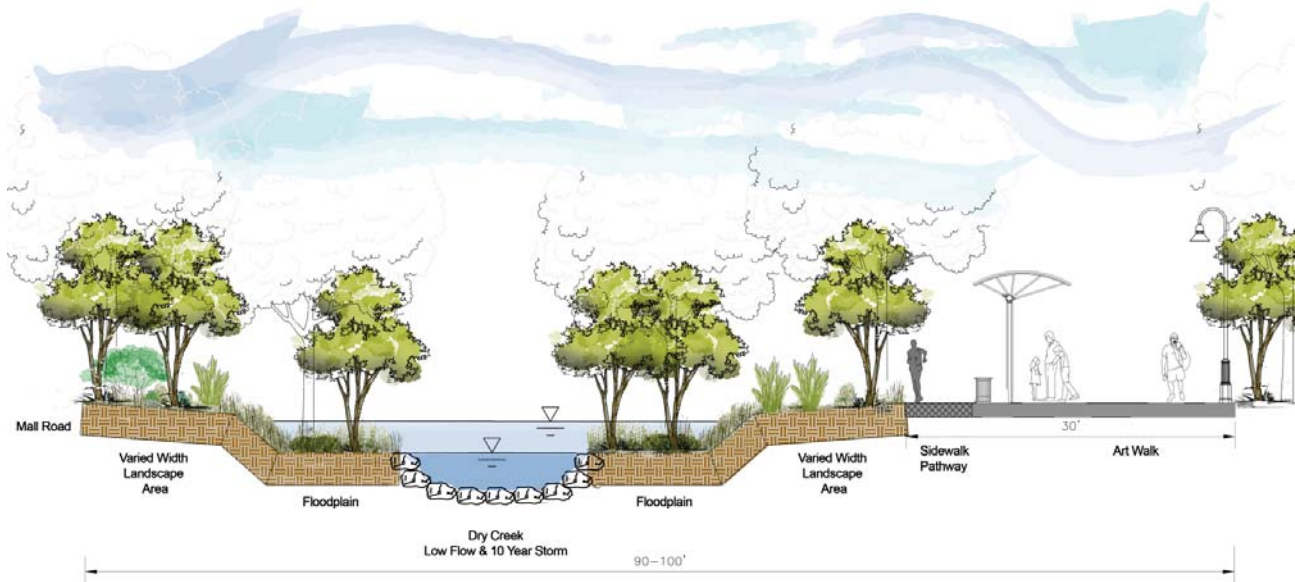
## Dry Creek Phase 2 (Reach C) Concept



### Section A

1. Landscape buffer - manicured landscape
2. Hardscape art walk - ranges in width from 10-30'
3. Alternate recreation use - turf grass or additional hardscape
4. Demonstration area - Cairns Art
5. Manicured landscape - buffer from road

## Dry Creek Phase 2 (Reach C) Cross-Sections

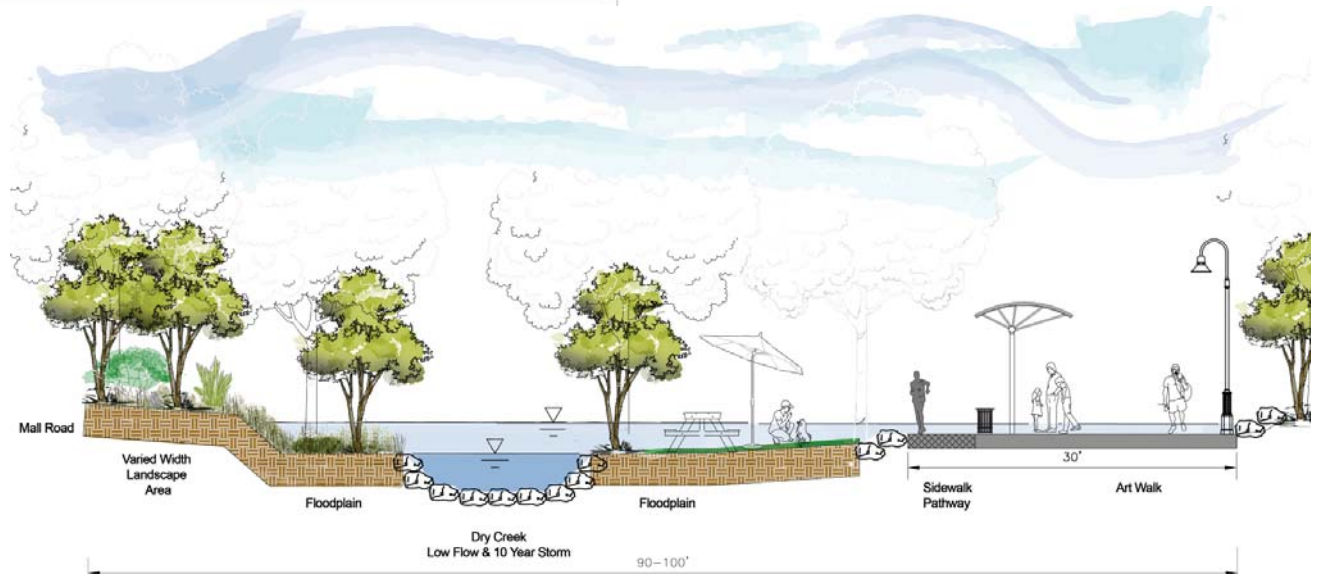


### Section A

- Keeps flood zone separate from public space
- Provides 30' of art walk space
- Maintains existing low flow channel
- Benched to allow for the 100-year flood

### Section B

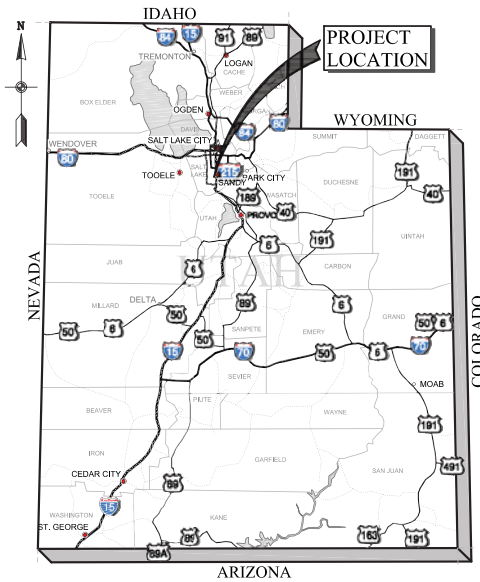
- Opens up flood zone for public use
- Provides 55' of art walk space/passive recreation
- Maintains existing low flow channel
- Benched on one south side for the 100-year flood





**APPENDIX A  
30% DRAWINGS**

## 30% DRAWINGS FOR CONSTRUCTION OF THE DRY CREEK CHANNEL DESIGN SANDY, UTAH



PROJECT LOCATION MAP

INDEX OF DRAWINGS		
SHT NO.	DWG NO.	DESCRIPTION
GENERAL		
1	G-1	INDEX OF DRAWINGS, PROJECT LOCATION, AND VICINITY MAPS
2	G-2	GENERAL NOTES, ABBREVIATIONS & SYMBOLS
CIVIL & LANDSCAPE		
3	C-1	SITE PLAN, GRADING PLAN, LANDSCAPE PLAN
4	C-2	DETAILS



PROJECT VICINITY MAP

Bowen Collins  
& Associates, Inc.  
CONSULTING ENGINEERS

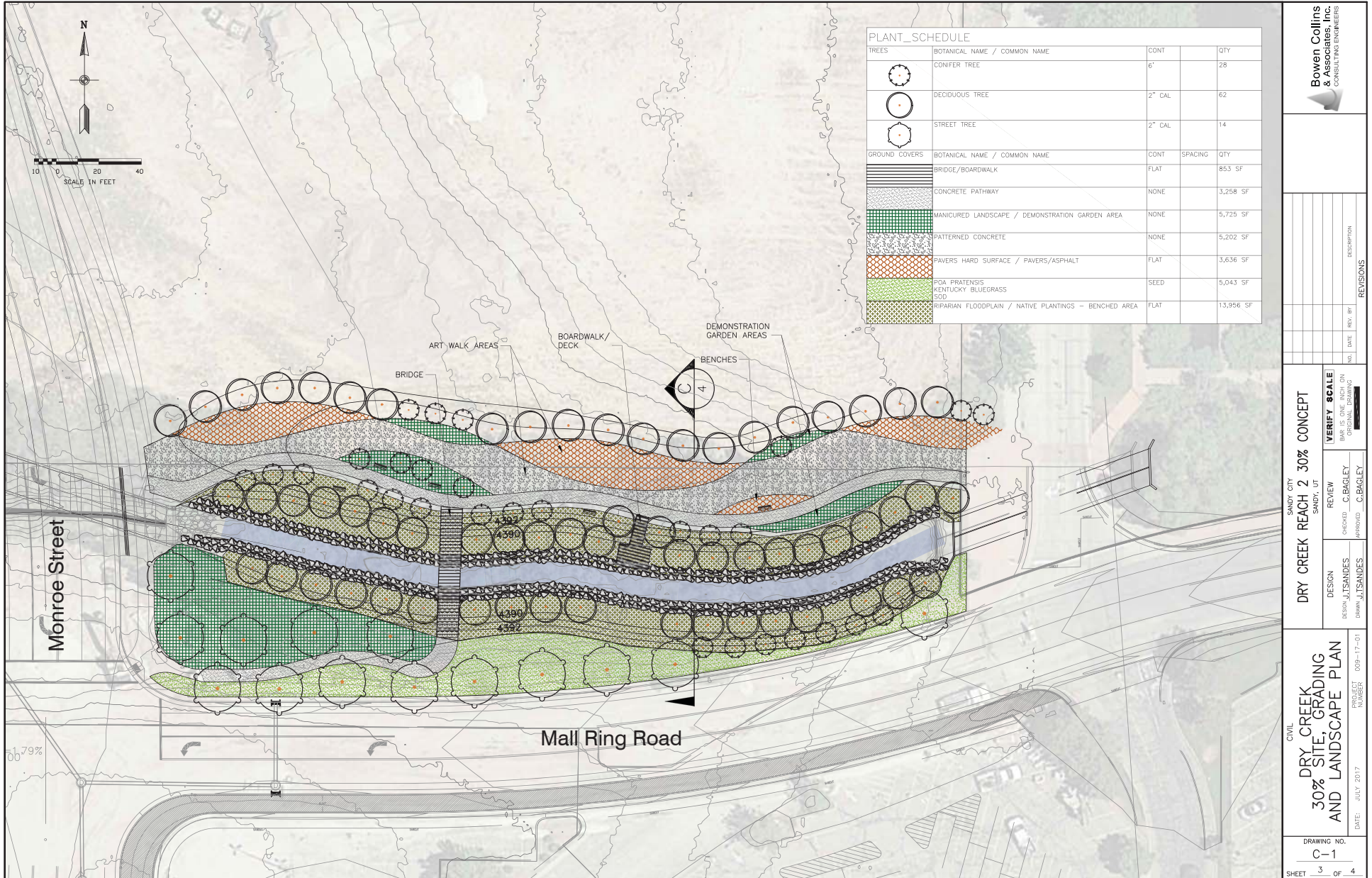
NO.	DATE	REV. BY	DESCRIPTION

SANDY CITY DRY CREEK REACH 2 30% CONCEPT SANDY, UT		VERIFY SCALE BASE IS ONE INCH ON ORIGINAL DRAWING
DESIGN DESIGN: J.T.SANDES DRAWN: J.T.SANDES	REVIEW REVIEW: C.BAGLEY APPROVED: C. BAGLEY	

GENERAL  
INDEX OF DRAWINGS,  
PROJECT LOCATION, AND  
VICINITY MAPS  
DATE: JULY 2017  
PROJECT NUMBER: 009-17-01

DRAWING NO.  
G-1  
SHEET 1 OF 4





**Bowen Collins & Associates, Inc.**  
CONSULTING ENGINEERS

SANDY CITY  
DRY CREEK REACH 2 30% CONCEPT

CIVIL  
DRY CREEK  
30% SITE, GRADING  
AND LANDSCAPE PLAN

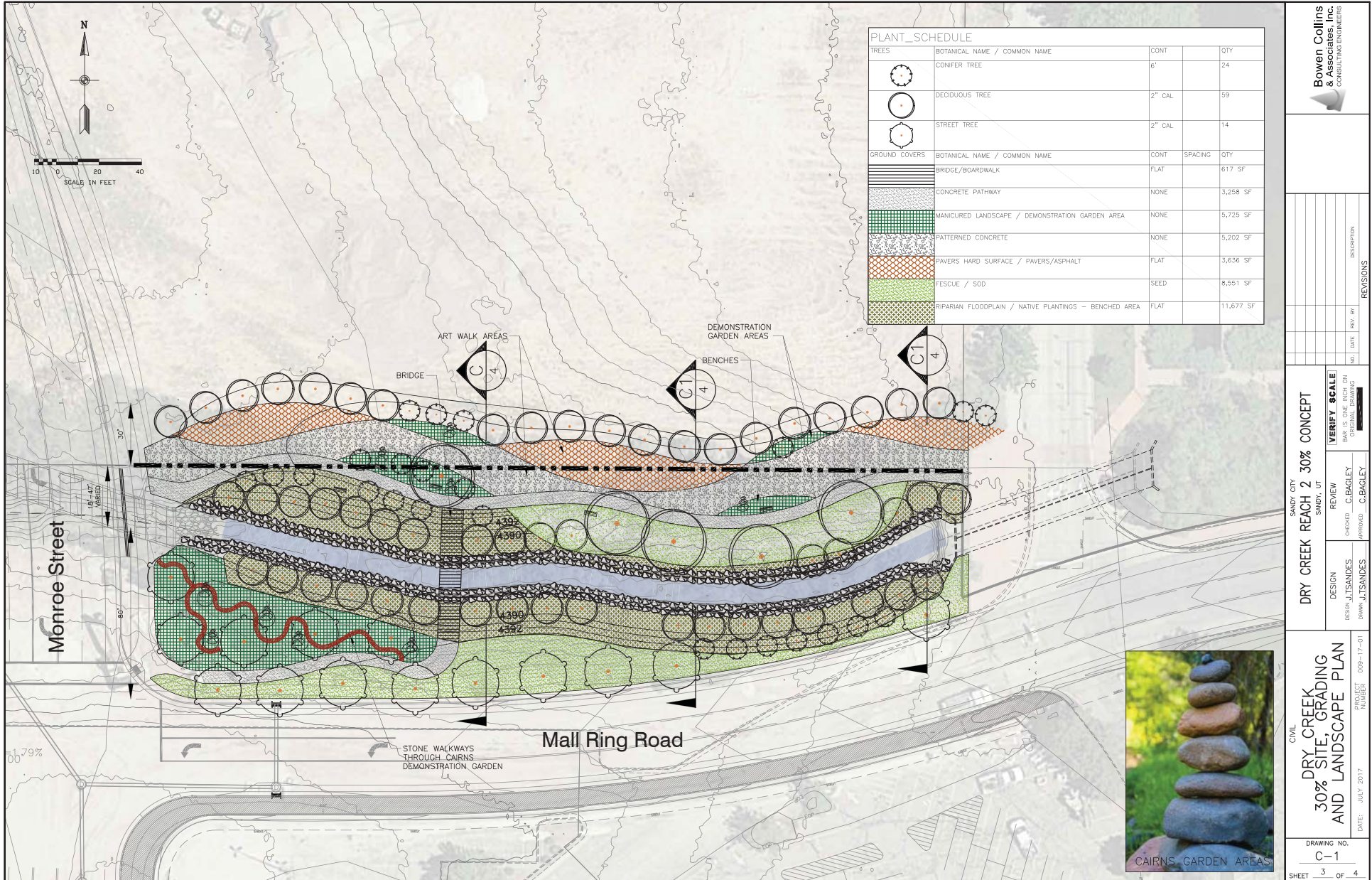
DRAWING NO.  
C-1  
SHEET 3 OF 4

NO.	DATE	REV. BY	DESCRIPTION

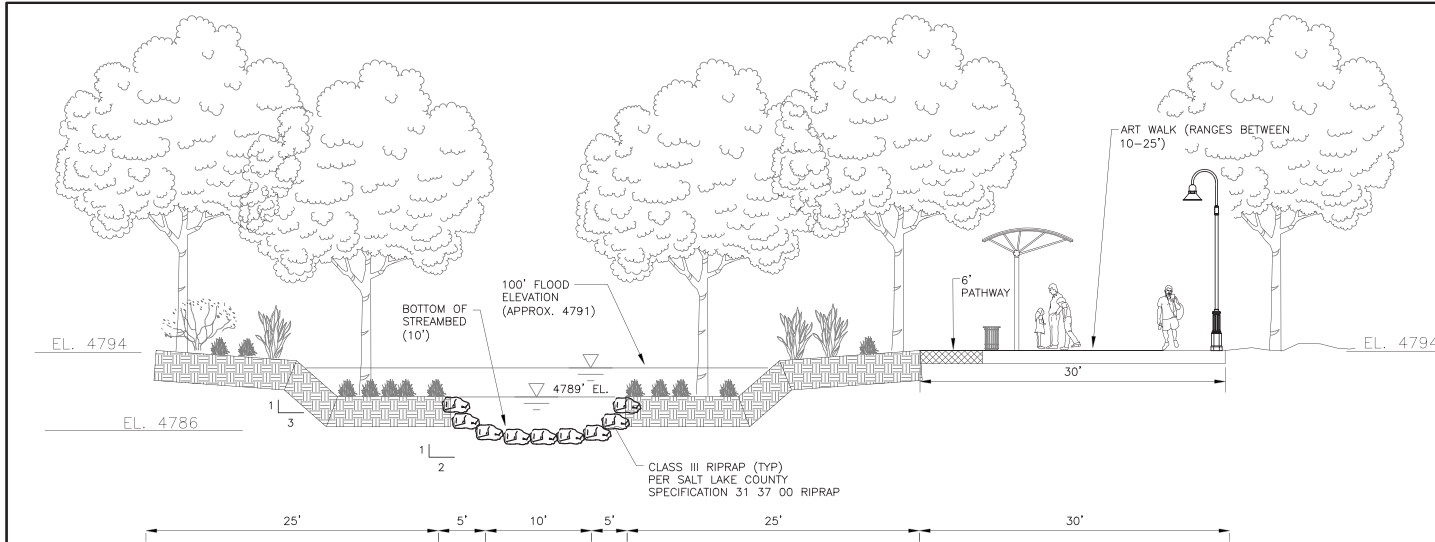
DESIGN	REVIEW	VERIFY SCALE
DESIGN: J. SANDOZ	REVIEW: C. BAGLEY	VERIFY SCALE: 1/8" = 1'-0" ON ORIGINAL DRAWING
DRAWN: J. SANDOZ	APPROVED: C. BAGLEY	

DATE: JULY 2017  
PROJECT NUMBER: 009-17-01

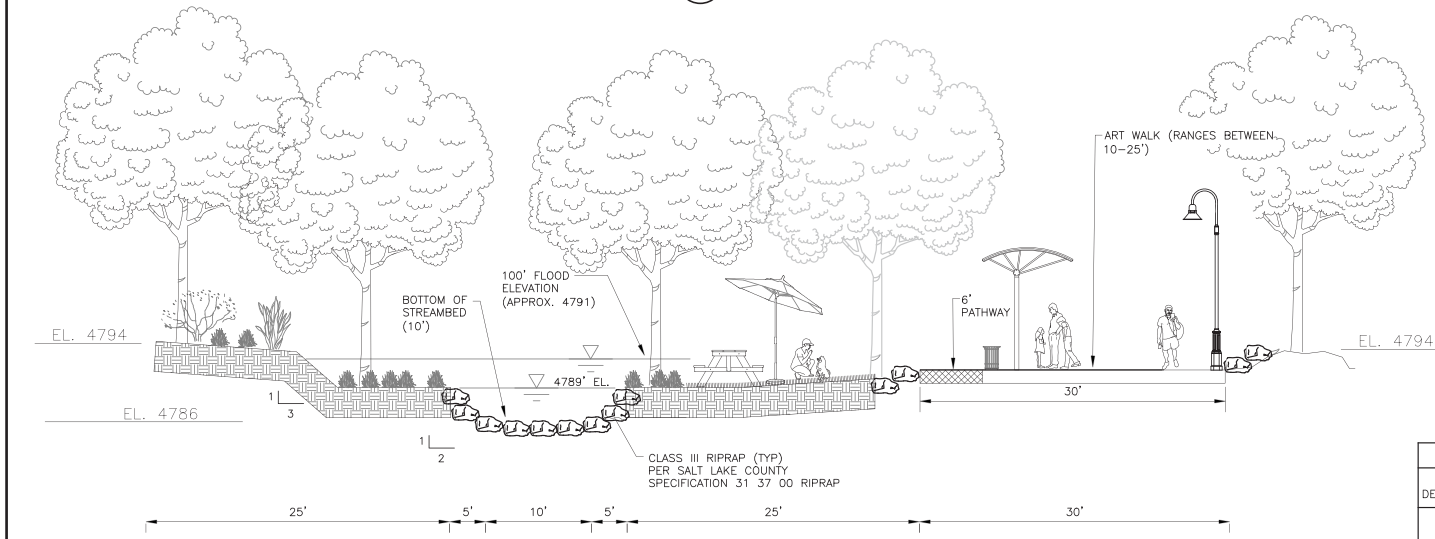
P:\Sandy City\2017 Dry Creek Concept\2.0 Design Phase\2.7 Drawings\sh\009-17-01\_C-01 - Site Plan.dwg Plotted: 7/21/2017 10:01 AM By: Jamie Sandos



**Bowen Collins & Associates, Inc.**  
 CONSULTING ENGINEERS



TYPICAL SECTION C-4  
NTS



TYPICAL SECTION C-1  
NTS

- CONTRACTOR SHALL BE SOLELY RESPONSIBLE TO PROVIDE ALL TEMPORARY EROSION CONTROL AND MAINTENANCE AND SHALL PROVIDE EROSION AND SEDIMENT CONTROL PLANS TO SANDY CITY FOR REVIEW.
- NO CHANGE IN DESIGN LOCATION OR GRADE SHALL BE MADE BY THE CONTRACTOR WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER OR THEIR AUTHORIZED REPRESENTATIVE.
- CONTRACTOR SHALL CONSTRUCT BERMS AND/OR DRAINAGE DITCHES AS NEEDED TO KEEP STORM RUNOFF AND IRRIGATION FLOWS FROM ENTERING CONSTRUCTION EXCAVATIONS OR INTERFERING WITH CONSTRUCTION EFFORTS.
- EXISTING LARGE LIVING TREES SHALL BE PRESERVED ALONG THE PROJECT CORRIDOR WHERE FEASIBLE. NO LIVING TREE WITH A CALIPER GREATER THAN 8 INCHES SHALL BE REMOVED WITHOUT APPROVAL OF THE ENGINEER.
- CONTRACTOR SHALL COORDINATE FINAL EXTENTS OF BANK STABILIZATION WITH ENGINEER PRIOR TO CONSTRUCTION.
- THE APPROXIMATE HORIZONTAL LIMITS OF BANK RESTORATION WORK ARE SHOWN ON THE DRAWINGS. VERTICAL EXTENT OF RIPRAP IS SHOWN ON DRAWING CC-1. THE INTENT OF THE DESIGN IS TO BALANCE CUTS AND FILLS, PRESERVE PROPERTY, PRESERVE CHANNEL HYDRAULIC CAPACITY, AND MAINTAIN SMOOTH CHANNEL FLOW LINES AS MUCH AS REASONABLY POSSIBLE.
- BANK STABILIZATION WORK MAY BE PERFORMED WHEN WATER IS IN THE CREEK. WATER DEPTH AND VELOCITY MAY VARY DURING THE CONTRACT PERIOD.
- DESIGN OF THIS CHANNEL IS BASED ON A 550 CFS.

TABLE 1

RIPRAP GRADATION			
RIPRAP DESIGNATION	% SMALLER THAN GIVEN SIZE BY WEIGHT	DIAMETER (INCHES)	D50** (INCHES)
CLASS III	70 - 100	20	12
	50 - 70	16	
	35 - 50	12	
	2 - 10	4	

**Bowen Collins & Associates, Inc.**  
CONSULTING ENGINEERS

REVISIONS			
NO.	DATE	REV. BY	DESCRIPTION

SANDY CITY DRY CREEK REACH 2 30% CONCEPT		DESIGN DESIGN: J. TSANDES	REVIEW CHECKED: C. BAGLEY APPROVED: C. BAGLEY	VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING
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CIVIL DRY CREEK DETAILS		PROJECT NUMBER 008-17-01	DATE JULY 2017
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DRAWING NO. C-4	SHEET 4 OF 4
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P:\Sandy\_City\2017 Dry Creek Concept\2.0 Design Phase\2.7 Drawings\SH\008-17-01\_C-02 - Details.dwg Plotted: 7/20/2017 6:51 PM By: Jamie Tsandes





**APPENDIX B  
OPEN HOUSE**

## Sandy City's Open House

On November 15, 2017, Sandy City invited the public to an open house. The purpose of the open house was to provide the public an opportunity to view illustrations from this report and explain the intent to improve and enhance Dry Creek between I-15 and State Street (Phases 1-6). Other Sandy City projects were also on display and included transportation and trail connectivity at 10200 South and the UTA TRAX line. Approximately 20-30 people attended the open house.

