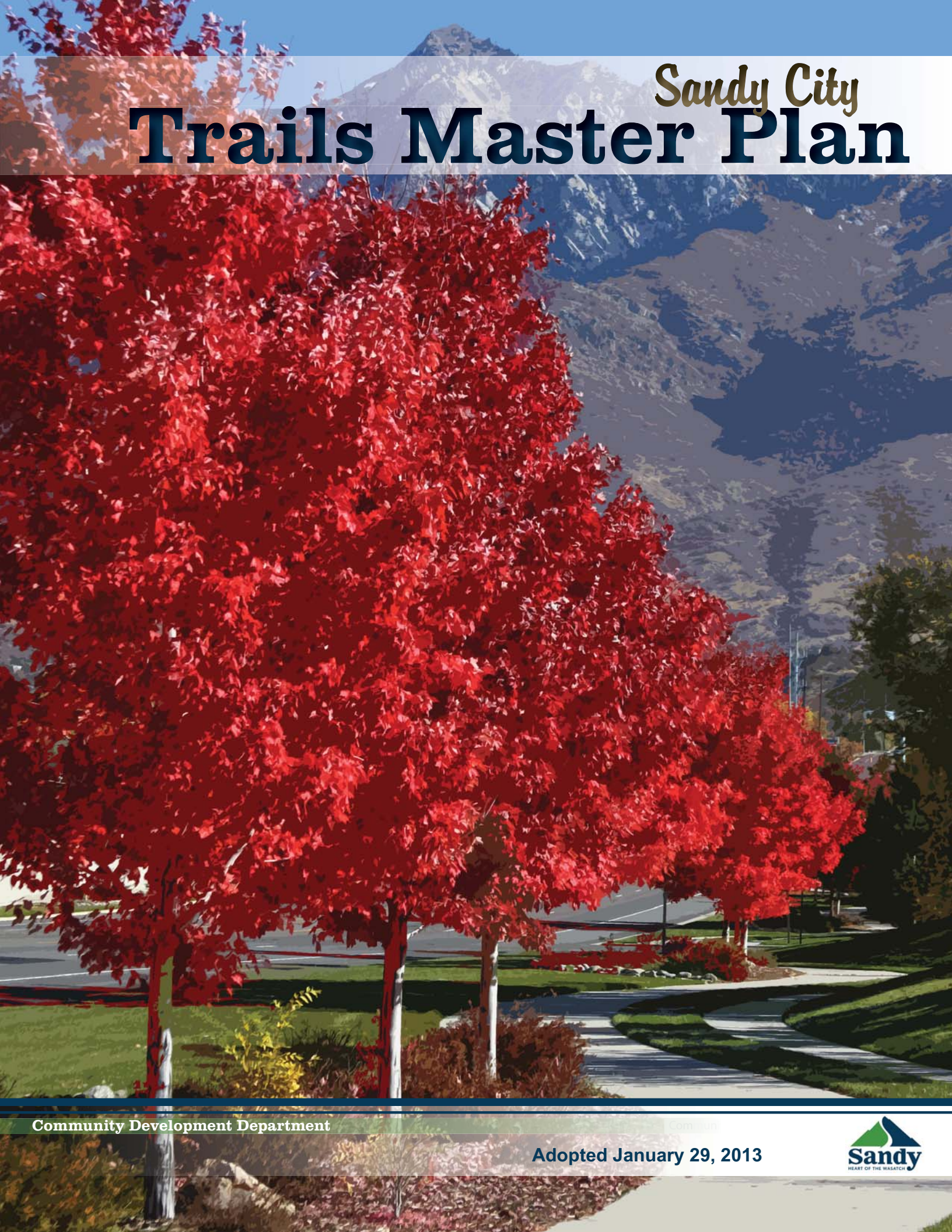

Sandy City Trails Master Plan

Community Development Department

Adopted January 29, 2013

Sandy
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Cover Photo: Jim McClintic

Chapter 1 Summary

1.1 General Overview

This document is intended to update the existing trails chapter of the Sandy City Parks, Recreation, and Trails Master Plan, last updated in 2005 (updated maps in 2008). After conducting a community survey, it became apparent that trails are an important part of our community. This plan works towards solidifying priorities and goals for existing and future trails within the City's network.

Family Hiking

Throughout the planning process, a number of goals were laid out to aid in effectively using the ideas and information in this plan. The key ideas behind these goals include the following:

- Growth of trail assets in the City including coordination and construction of new trail heads
- Integration of new trails into the existing framework
- Coordination with regional amenities
- Connectivity within the network
- Resource management and maximization
- Sustainable development of trails (including ADA accessibility where appropriate)
- Education of citizens and other users

Each of these goals is further detailed through an outline of strategies near the end of this plan in chapter 4.

1.2 Organization of Document

Including this summary, this chapter consists of 7 sections, each dealing with a unique aspect of the planning process for the City's trail network. This section also summarizes the results of a community survey conducted in 2012 (more detailed results can be found in Appendix A-1). Chapter 2 contains a discussion of the public process involved in preparing this update, followed by Chapters 3 and 4, discussing existing and future trail networks and trail designs and priorities. Chapter 5 details safety concerns and suggestions to be incorporated into the designs. Based upon feasibility and input during this planning process, chapter 6 will outline priorities for future trails and basic cost estimates to help the City determine next steps. The final chapter, 7, provides an implementation plan that will help in continuing the work laid out in this plan.

1.3 Community Survey

In 2012, Sandy City hired Dan Jones and Associates to conduct a city-wide survey of residents about trails. The majority of residents surveyed used trails at least a few times a year, expressed interest in investing in a trail network in the community, and were optimistic about the potential benefits a trail system would provide.

When considering the survey, there are a number of important items that stand out among the results. First, residents are very supportive of trails. They consider investing in trails as a worthwhile endeavor, believe that it is appropriate for additional city funds to be used for a trail system, and are willing to support the development and maintenance of a trails network with a

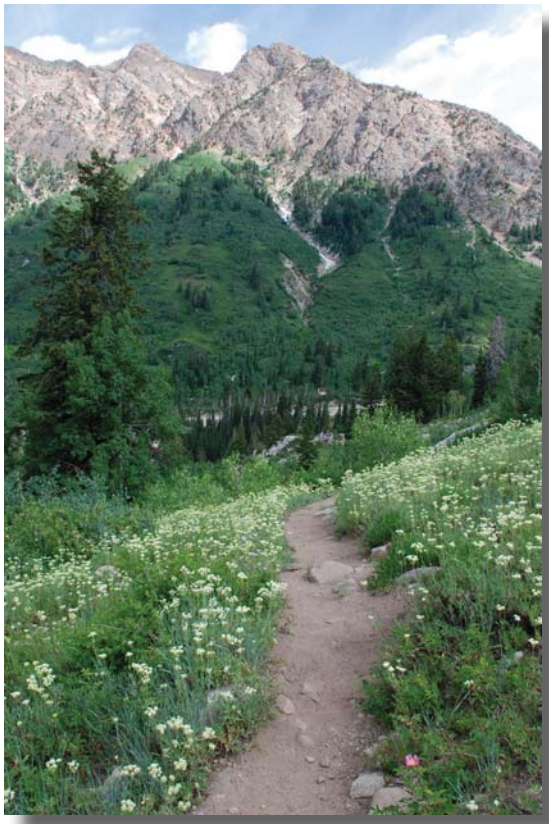
modest fee. Residents also view the development of trails optimistically, as an enhancement to their community, their access to recreation, and even to their own property values. Finally, residents view the safety of the trail system as the most important factor when considering their own use of trails.

These survey results were a key factor influencing the development of this plan. It is clear that the citizens of Sandy City desire to have continued and improved access to a quality trail network that they can utilize for both transportation and recreation. A more detailed analysis of the results of this survey can be found in Appendix A-1 of this plan.

Chapter 2 Public Education

2.1 Importance of Trails in a Community

Using trails is one of America's fasting growing recreational activities. The American Hiking Society reports almost one-third of Americans, more than 67 million, went hiking in the past year. In fact, the USDA Forest Service is predicting steep increases in walking and hiking activities across the country, with some areas showing as much as an 80% increase in participation over the next 50 years.



Mountain Path

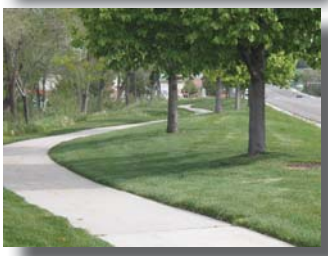
Recreational trail use is often associated with backcountry areas and camping, but as trail use grows and more trails are developed near population centers, communities are recognizing the economic, social and health benefits of trails. These benefits include improvements to physical and emotional health and quality of life, increased property values, reduction of traffic congestion and air pollution, heat island mitigation, and increased city revenues.

As a means of transportation, the development of a trails and greenway infrastructure is essential to enable people to utilize non-motorized means of travel to work, school, or shopping. This will not be realized, however, unless the appropriate land use and infrastructure are present. Current low rates of non-motorized trips appear to exist not because of the lack of desire, but rather because of the lack of infrastructure that supports non-motorized trips. Green infrastructure, bike lanes, sidewalks, trails, and greenways provide the infrastructure that makes non-motorized trips not only possible, but also enjoyable.

2.2 Alternative Transportation

Trail use does not cause air pollution, noise pollution, or traffic congestion, and consumes few natural resources. Motor vehicles, on the other hand, are large consumers of limited energy resources and are a significant source of noise and air pollution in the United States. Where connected to mass transit, trails help to provide an economical and enjoyable alternative method of transportation to motor vehicles.

In spite of growing concerns over motor vehicle usage, only about 3 million of over 80 million bicyclists in the US commute by bicycle to work on a regular basis. This is less than 1% of all commuters in the United States. Many factors influence the commuting public's usage of non-motorized trails. Most people who want to use trails for commuting are not able to make safe connections to their destinations in the majority of American urban environments.



10200 South and State Street

2.3 Clean Air

Each new car produced in the US (in compliance with every federal standard) emits over 100 pounds of pollutants into the air every year. Walking or bicycling to work instead of driving, would result in a reduction of up to 2.0 grams of hydrocarbons, 20 grams of carbon monoxide, and 1.6 grams of nitrogen oxides for every mile traveled. Clearly, trail use can contribute to solving many of today's air pollution problems, especially in Utah's climate.

There is a question as to why more people do not utilize trails when use can improve air quality, reduce traffic congestion, and improve health. The answer seems to lie in the fact that the majority of commuters want safer routes and better facilities at work to store bicycles and change clothes. Communities that rank high in many surveys in the quality of life and physical environment are changing their commuting standards by implementing master planning for trail connectivity, safer environments, and partnering with businesses to encourage workers to commute. Cities such as Madison, WI, Gainesville, FL, Boulder, CO, Eugene, OR, Davis, CA, Minneapolis, MN, Pittsburgh, PA, and Arlington, VA are all addressing the air quality of their communities by making it easier for people to get to their destinations using trails instead of motorized streets.

1760 East 9400 South

2.4 Health Benefits

A Japanese study of 2,211 senior citizens linked longevity to access to walkable green spaces such as parks and tree-lined streets. Living in areas with walkable green spaces positively influenced the longevity of urban senior citizens independent of their age, sex, marital status, baseline functional status and socioeconomic status.

Here in the US, people have recently begun to recognize the tremendous benefits of trails as a resource to improve the health of our nation's citizens. With strong urging from the U.S. Surgeon General's office in Washington, DC, community leaders are now looking at their trail systems as having value far beyond their ability to provide recreational experiences and transportation linkages.

Recent research shared by the Centers for Disease Control and Prevention in Atlanta, Georgia, has prompted recommendations to promote health and to prevent disease, injury, disability, and premature death through increased physical activity. According to their recent publication, "The Guide to Community Preventive Services," a community's access to trails and trail systems can directly and positively impact our nation's rapidly rising obesity epidemic, as well as reduce the health problems associated with many chronic diseases such as hypertension, diabetes, and heart attacks.

A new program, Active Community Environments (ACEs), is an initiative sponsored by the National Center for Chronic Disease Prevention and Health Promotion to support walking, bicycling, and the development of accessible recreation facilities in our nation's communities. ACE encourages community access to pedestrian and bicycle friendly environments and promotes physical activity through trails and partnerships between public health practitioners and public parks, recreation, transportation and planning departments to promote healthy physical activity.

These types of collaborative efforts can directly expand the inherent value of trails to every community in the nation. A synthesis of the literature on the relationship between physical activity and community design points to the need for communities to plan ahead for the health benefits their trail systems can bring to their citizens.

2.5 Economic Benefits

An organized trail system is a desirable amenity and can contribute to the economic vitality of a community. A trail can guide both visitors and residents through diverse natural ecosystems, neighborhoods, and introduce them to interesting shops, enticing restaurants, and many other urban and suburban businesses. Revenue generated from trail-related recreation and sports activities can provide substantial income and employment opportunities.

Outdoor recreation is a booming business. Consumer spending on recreation and entertainment has increased from 6.5% of total consumer spending to 10.5% in the last 15 years. And trails alone have been experiencing a substantial upsurge of use in urban areas. Surveys of communities throughout the US that have created trails and linkages to destinations in their communities all report businesses along trail corridors have experienced increases in excess of 25%.

Another economic benefit is tourism. If a visitor to the community is given one more opportunity to experience the uniqueness of the community, they may stay an additional day. This additional day stay increases revenues from lodging and food. It also may generate additional retail dollars spent in the community. These are non-local dollars that are put into the local economy. This type of benefit can be realized if information is provided to the visitor of the activities which Sandy has to offer.

2.6 Quality of Life

There are some obvious benefits of a trail system. By having a location where walking and jogging can become a daily routine, the general public benefits by improved health. The ease of access and the proximity to the general population encourage the public to utilize the system. With the user cost being free, it is an opportunity for all the public to participate.

The development of trails as an amenity draws people to a community and instills a sense of community pride. These types of intangibles make an impression on people and often determine if the community is one in which they want to live.

2.7 Other Benefits

New trail systems will provide the residents of Sandy with a long-term community asset that will:

- Help preserve access to open space, canyons, creeks and foothills adjacent to Sandy's urban areas.
- Contribute to the preservation of aesthetic, wildlife , historic and educational values of the foothills and other natural areas.
- Serve as a buffer between the developed urban area and the more natural environment of the foothills and other natural areas.

- Provide a community recreation resource in close proximity to a large populated area.

2.8 Awareness and Education

The trail system is only as good as the public's ability to safely and easily access, use, and enjoy it. Their ability to do all these things is largely dependent upon the manner in which the system is made known to the public. Trail users want to know, first of all, where to go. They want to know the rules to follow to minimize their impact on others and to ensure their own safety and enjoyment. Likewise, the public who may not use the trails, but may have them in their neighborhoods, want to know what responsibilities the City has towards those trails, who to call with concerns, and the rules that apply to users.

The City has undertaken awareness and education campaigns on some of these issues already. Information has been posted on motorized vehicle restrictions, maps have been produced for the public showing existing trail systems also highlighting future and existing access points as well as available parking.

2.9 Public Involvement Summary

Several efforts were made to reach out to residents of Sandy City and other trail users. The September issue of the Sandy Newsletter (delivered to Sandy residents) contained an article specifically requesting input on the Trails Master Plan and informing readers of future opportunities to comment. Signs were posted at the major trailheads in an attempt to capture ideas and comments from those who do not receive the newsletter.

An open house was held on September 20, 2012 where a draft of the plan and the new trails map was presented and comments were requested. Several people attended, including members of the Sandy City Planning Commission, and questions and comments were addressed by members of the committee and City staff. An initial public hearing was held before the Planning Commission on October 4, 2012 where the public had an additional chance to comment.

Email, written, and verbal comments were collected at these events as well as throughout the entire planning process. These comments are incorporated into the appendix of this document along with the City's response to each of them. Because this is a master plan, it will be continually updated and priorities may change over time. For this reason, comments are always welcome and will be continue to be considered as new trails are planned and existing trail systems are upgraded. Those wishing to comment or ask questions should direct their communications to the Sandy City Parks and Recreation Department.

Chapter 3 Existing and Future

The following is a brief summary of the major trail networks within Sandy City. Several variations and routes may be discovered through exploration of these systems.

3.1 North South Trails

- **Jordan River Parkway Trail -** This trail is a regional 10 foot wide multi-use trail that passes through Sandy on its west boundary through River Oaks Golf Course. The south end is connected to South Jordan City's portion of the trail, and the north end is anticipated to connect to West Jordan City with a tunnel under 9000 South. In Sandy there is a trail head located next to the River Oaks Golf Course Clubhouse that has a shared use agreement with the golf course for over flow parking for trail or golf course users. The City will work with Salt Lake County to provide safe access for river users (e.g. boat/canoe portages, launching sites, etc).

- **Jordan & Salt Lake Canal Trail –** This trail is a 10 foot wide multi-purpose trail that is within City boundaries between I-15 and 100 East and 11000 South to 9000 South. This trail is constrained due to the inability to cross I-15 and continue into Draper on the south end, and no present trail plans in Midvale currently. The main purpose of this trail is to provide alternative routes and accessibility to businesses, Real Salt Lake Stadium (on the west), and a future park.

- **East Jordan Canal Trail -** This trail is a 10 foot wide multi-purpose trail that is within City boundaries between I-15 and 700 East and 11400 South to 7800 South. This trail is constrained on the south end due to the inability to cross 11400 South, Draper City has not planned for a connection in their Master Plan. However, at this point, it connects to the 11400 South bike and multi-purpose trails. The north end of the trail ends at Union Park connecting to the 7800 South multi-purpose trail. The main purpose of this trail is to provide alternative routes for residents along the trail to access businesses, Real Salt Lake Stadium (on the east), Dimple Dell Regional Park, 10000 S TRAX Station, Dewey Bluth Park, Off Leash Dog Park, Porter Rockwell Trail, and Union Park.

- **Porter Rockwell Trail –** This 10' multi-purpose trail in Sandy is a regional trail that runs parallel to the UTA TRAX line. Due to the nature of this trail there are mid-block crossings that require users to go to the nearest intersection to cross the roads. In the future, crossings will be added as funding permits, lighted crossings at the arterial street crossings.

- **700 East Bike Lane –** This bike trail is a regional bike trail. From the north, it borders 9400 South. This is a bike lane, and from 9400 south to the south city border this is a bike route. This trail is complete in Sandy

- **Sandy Canal Trail –** This trail is a 10' wide multi-purpose trail that is within city boundaries between 700 East and 1000 East. On the north, it ends with connections to the 8600 South multi-purpose trail, on the south, this trail has significant connections into Draper City. Within a short distance from the Draper/Sandy City border, this trail will connect to Porter Rockwell Trail, Draper Parkway bike trail and the Pioneer Road TRAX station (currently under construction). In Sandy, it connects with Eastridge Park, Storm Mountain Park, Dimple Dell Regional Park, Bear Park, and Quarry Bend Park. The main purpose of this trail is to provide residents access to recreational activities.

- **1000 East Multi-Purpose Trail –** This is proposed to be a 10' wide multi-purpose trail

between 8600 South and 7800 South. The purpose of this trail is to provide a north south connection between the two trails on the mentioned streets.

- **1300 East Bike Route -** This bike trail is a regional bike trail. In Sandy this trail is a bike route with protected bike lanes at the intersections. This trail is complete from the north border to 11000 South.

- **1300 East Multi-Purpose Trail –** This multi-purpose trail is 8' wide with a 2' wide stamped concrete separator form the curb. It is intended to be used to provide access for residents to businesses and cultural opportunities. This trail is complete.

- **Highland Drive Bike Route –** This bike trail is a regional bike trail. Within the City boundary this trail is planned to be a bike lane.

- **Highland Drive Multi-Purpose Trail –** This proposed trail is planned to be a 10' wide multi-purpose trail that will run from 9400 South to the southern City border. This trail provides connections to Alta Canyon Park, Dimple Dell Park, and Brandon Canyon.

- **Wasatch Blvd. Bike Lane and Multi-purpose Trail –** These two parallel trails are regional trails that run from the north City border to 1700 East which is the south boundary of Wasatch. At this point the trails connect to the trails on 1700 East and then connect to 11400 South trails. Within Sandy City boundaries these trails are less than 10% complete. The bike trail is planned to be a bike lane and the multi-purpose trail is planned to be a 10' wide trail.

- **Bonneville Shoreline Trail –** This trail is a regional trail and within the Sandy City boundaries, it is a mountain and hiking trail. Currently the only constructed section is at Hidden Valley Park which connects to Draper City's portion of the trail. The section north of Hidden Valley Park is planned for construction in the near future. Due to several canyon crossings, this trail will be difficult to navigate in some locations.

3.2 East West trails

- **Creek Road Multi-purpose Trail –** This trail is planned to be a 10' wide multi-purpose trail running from city boundary to city boundary. It provides connections to several trails and has the potential to connect to Midvale and Cottonwood Heights in the future.

- **Historic Wasatch and Jordan Valley Railroad Trail –** This trail is proposed to follow the original railroad alignment as possible. Since most of the areas along this historic railroad have been developed, it will follow the nearest established public road and sidewalk network. The trail will connect the Porter Rockwell Trail in Historic Sandy, to the mouth of Little Cottonwood Canyon at the Granite Trail Head and could eventually lead up to Alta, where the terminus of this historic railroad was located. The proposed trail passes through three city parks: Bicentennial, Falcon, and the future Quail Hollow Park. In each of these parks, the trail can follow the exact alignment of the historic railroad. This trail would also serve as an educational experience with information signs along the route that would inform and educate the public about this important railroad line in Sandy's development and history.

- **8600 South Bike Route –** This is bike route that runs from Porter Rockwell trail to Quail Hollow Park. This trail also runs parallel to Historic Wasatch and Jordan Valley railroad trails in some locations.

- **Ski Connect Multi-purpose Trail -** This 10' wide multi-purpose trail runs from City border to City Border.

- **Newcastle Drive Bike Lane –** This trail runs from City Border to City Border and is complete within the City boundaries.

- **9800 South Bike Route –** This bike route runs and connects 1300 East to Wasatch and to Highland Drive Bike route.

- **Sego Lily Drive Bike Route –** This bike route runs from the west city border to Salt Lake County's Granite Park. This bike route is complete within Sandy City limits but is not installed through White City Township. This trail services Sandy City Hall, Jordan High School, Dewey Bluth Park, Eastmont Middle School, Parklane Elementary and Granite Park.

- **Dimple Dell Park Trails –** Dimple Dell is a 644 acre open space park located in Sandy City limits. This park is owned and run by Salt Lake County and is considered a major spine in the Sandy City trail network. There are many soft surface hiking, biking, and horseback riding trails throughout the park. Recently there has been tunnel access added at 700 East and 1300 East so that users do not have to cross any roads while using the trails. A tunnel is also partially completed under the UTA TRAX line at the west end of the park. The tunnel will be completed when additional funds become available.

  The City will work in collaboration with Salt Lake County to plan and develop additional trail and trail head options throughout Dimple Dell Park. Sandy City and Salt Lake County have also agreed to design a new road profile for Dimple Dell Road that will include a bicycle and walking trail.

- **Dimple Dell Park North Rim Trail –** This trail is planned to be a hard surface trail that runs on the north rim of Dimple Dell from 1300 East through Granite Park to the Dimple Dell Granite trailhead.

- **10600 South Multi-purpose Trail –** This trail is a multi-purpose connector trail located within Sandy City limits. It runs from State Street to Wasatch Blvd. This trail is 33% complete.

- **11400 South Multi-purpose Trail and Bike Route –** This is a connector trail that is within Sandy City Limits. This trail is proposed to run from State Street to 1700 East. At that point this trail connects to Wasatch multi-purpose trail and bike route via 1700 East. This trail also connect users to Bell Canyon Park and Storm Mountain Park and provides the southern connection for multiple trails.

3.3 Trail Heads

- **Wrangler Trail Head –** This trail head is an equestrian trail head for Dimple Dell Park. It is operated by Salt Lake County.

- **Dimple Dell Granite Trail Head –** This trail head is located on the east end of Dimple Dell Park and serves equestrians, cyclists and hikers.

- **Rocky Mouth Trail Head –** This trail head is for access to a box canyon with a water fall. The typical hiker can reach this water fall within 20 minutes from the trail head. It will also provide future access to Bonneville Shoreline Trail.

- **Pepperwood Creek Trail Head –** This is a future trail head. It is purposed to access

the future Bonneville Shoreline Trail.

- **Boulders and Granite Trail Heads –** These existing trail heads provide access to Bell Canyon reservoir and National Forest Land. The hike to the reservoir will typically take 45 minutes from either trail head. The Boulders trail is shorter but more strenuous than Granite Trail Head. These trail heads will also provide future access to the Bonneville Shoreline Trail.

- **Hidden Valley Park –** This 40 acre park also serves as a trail head to the completed portion of the Bonneville Shoreline trail that connects to Draper. It will provide access to the trail as it extends to the north City boundary.

- **Badger Cove –** This is a future trail head that is purposed to service Dimple Dell Park for hikers.

- **Lone Peak Park Trail Head –** This Park serves as a trail head access into Dimple Dell Park.

- **River Oaks Trail Head –** This trail head has a shared parking agreement with River Oaks Golf Course and provides access to the Jordan River Parkway Trail.

- **Highland Drive Trail Heads –** These are future trail heads that are purposed to serve as soft surface parking lots to provide access to the Highland Drive Corridor and Dimple Dell Regional Park.

Chapter 4 Design

The guidelines that are in this chapter are intended to provide guidance in the design and construction of trails within Sandy City. There are additional references found in the appendix to this plan that may be used to supplement these standards. It is the intent of this section to provide a consistent standard so that those using them can understand and better interact with the trails.

4.1 Trail Types

The following brief definitions are offered in this plan for the purpose of familiarizing trail users with the types of trails offered in Sandy City. These designations are also used on the Sandy City Trails map in order to designate their locations and relationships to the trail network as a whole.

4.1.1 Type A - Walking (Historic Trails and Sidewalks)

This type of trail is a paved surface that is typically found within an urban setting, either roadside or within a residential community. Historic trails follow routes that travel through areas of historic significance within Sandy.

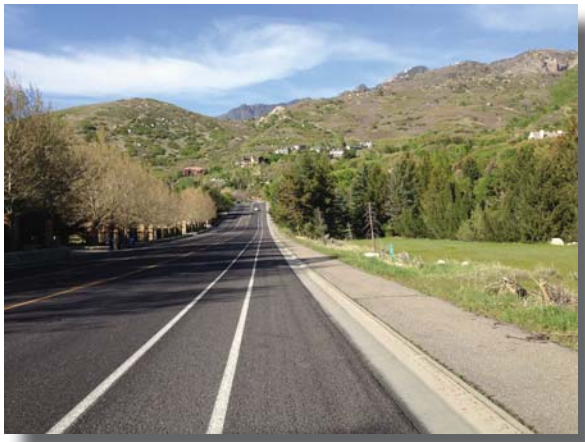
Trails may also include sidewalks as part of the overall network. Older sidewalks are typically four (4) feet wide. Sidewalks built after 2003 are a minimum of five (5) feet wide and sidewalks located against a curb are a minimum of six (6) feet wide. Refer to City Standard Details CD-04, CG-02, and MS-01 (for historic walking tour and trail routes)

The Sandy Museum provides information on the Historic Sandy Walking Tour

4.1.2 Type B - Bike Lanes and Bike Routes

This type of trail is a part of the roadway and is separated from other traffic by striping, signage or a combination of the two. Bicycle lanes serve the needs of all types of cyclists in urban and suburban areas by providing them with a dedicated travel lane within the street space. The Salt Lake County Planning & Development Services Cooperative County Plan should also be referenced.

- A bike lane is a dedicated guideway within the road for cyclists to use. It has specific design standards and legal rights for cyclists. These lanes generally require more right of way, design considerations, and enforcement. They also provide a safer and more visible route and space for cyclists.



Bike Lane along Wasatch Blvd

- Bike routes are on roads that are designated as good cycling routes, but may not have fully dedicated bike lanes. They can be signed and mapped but do not include the same design guidelines or legal rights as bike lanes. Residential and collector roads with shoulders are good candidates for bike routes.

Bike Route along Sego Lily Drive

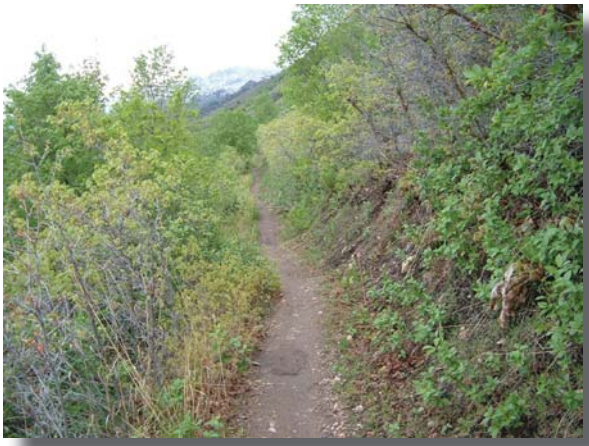
4.1.3 Type C - Equestrian

Equestrian use in Dimple Dell Park

Equestrian trails are intended to accommodate equestrians and their horses, but may also serve as a path for pedestrians and cyclists. Equestrian trails are always unpaved, soft surface trails, and therefore limit the use by design to horses, walkers, joggers, and mountain bikes. Dimple Dell park is the only designated public equestrian use facility within Sandy City limits and is managed by Salt Lake County. Therefore equestrian trails within Sandy City should reference Salt Lake County's Dimple Dell Regional Park Master Plan. There are limited trails that access the park from communities such as Bell Canyon Acres Subdivision and trail heads such as the NW corner of Lone Peak Park. City Standard detail TR-02 should be referenced for construction standards.

4.1.4 Type D - Mountain and Hiking

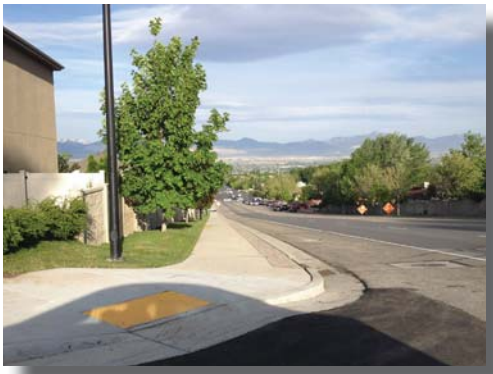
Mountain and hiking trails are single track trails constructed dirt or other soft surface material of a natural nature. They are typically located in the canyons that run through the City or on the mountain side. Therefore they will have some steep terrain and may be difficult to use. And due to their nature and location of these trail types, you may encounter wildlife. Typical wildlife may encounter would include, deer, mountain lions, and snakes. Refer to City Standard Detail TR-02.



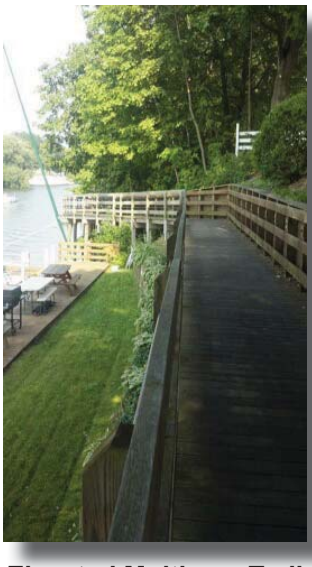
Bonneville Shoreline Trail

4.1.5 Type E - 10-foot Multi-Purpose

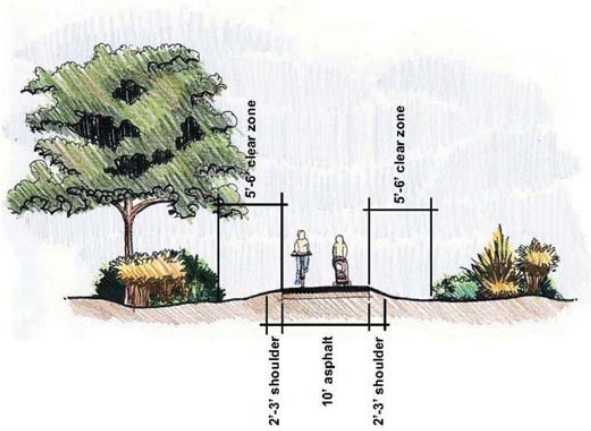
This type of trail should accommodate a wide variety of users, from cyclists and pedestrians, to in-line skaters and people with strollers or dogs. The surface material on these trails must therefore be hard, smooth, and durable with a minimum width of ten (10) feet. They may also have a soft surface running adjacent to it. Refer to City Standard Details TR-01, TR-03, & TR-04.



Multi-purpose trail along 11400 South



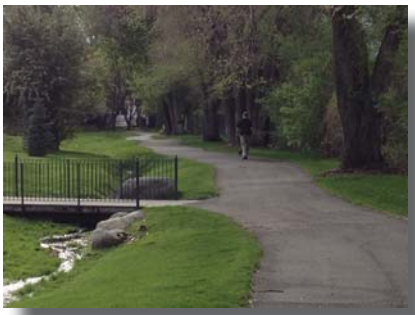
Elevated Multi-use Trail



Multi-use Trail Profile

4.1.6 Type F – Park Walking and Jogging Trails

This type of trail typically accommodates a wide variety of users, from cyclists and pedestrians, to in-line skaters and people with strollers or dogs. They are typically developed with all new parks and have been integrated into most existing parks. These trails are typically ten (10) feet wide and constructed of asphalt or concrete. Refer to City Standard Detail TR-01.



Walking & Jogging Trail in Bicentennial Park

4.1.7 Type G - Secondary/Neighborhood Access

This type of trail provides an alternative route from neighborhoods to other trail types and park facilities. They may also serve as connections between neighborhoods.

4.1.8 Type H - Fire and Maintenance

This type of trail requires construction to withstand emergency vehicle and maintenance access for weight as well as width.

Secondary/Neighborhood Access at Quarry Bend

4.2 Amenities

Amenities located along trails may include such features as trees and landscaping, picnic tables, trash containers, doggie bag dispensers, exercise stations, art, drinking fountains, benches, small pavilions, lighting, mileage markers, and information signs. The amenities should be placed in a manner along the trail to allow access for maintenance vehicles i.e., not on the inside of a curve where the risk is increased to be hit by a vehicle. Amenities should be located at intervals that would provide reasonable accommodations for trail users and should utilize a standard style and design. They should also have a consistent maintenance schedule to ensure upkeep and usability.

Neffs Grove

4.3 Maintenance

Trail maintenance is essential to the safe use, enjoyment, and long-term success of any trail system. Trails will be maintained by various entities. These entities may include private landowners, home owners associations, commercial land owners, school districts, various departments within the City, and volunteers.

Volunteers and City Staff work on the Porter Rockwell Trail

These entities should consider trail type, location, frequency of usage, feedback and information received from users to establish maintenance plans. They should be reviewed and updated periodically to maintain quality control and provide regular inspections. The City should consider conducting periodic inspections of all public trails. The following elements should be evaluated in establishing an effective operations and maintenance plan:

- Routine and remedial maintenance
- User safety and risk management
- Programming and events
- Resource stewardship and enhancement
- Marketing and promotion
- Oversight and coordination

A section of the Porter Rockwell Trail

For regular trail maintenance, the following activities should be considered:

- Periodic routine maintenance
- Snow removal
- Litter control

Establishing periodic schedules should be considered for:

- Inspections and citizen response
- Signage (inspections, repair, installation)
- Amenity maintenance
- Vegetation management, i.e.: weed control, pruning, trimming overhanging branches
- Striping
- Restoration of soft surface trail surfacing (i.e. repair erosion)

As needed:

- Address safety concerns
- Vandalism repair and/or graffiti removal
- Response to trail user concerns
- Coordinate volunteer efforts
- Trail reconstruction
- Pest control: rodents, wasps, insects
- Drainage: irrigation, dust reduction, erosion control

4.4 Signage and Lighting

Signs should be considered for placement along the trail at appropriate locations based on their intended purpose. Additional considerations for signage are addressed in the Trail Safety section of this plan.

4.4.1 Wayfinding

This type of sign is used to provide direction and location for trail users, emergency response, and maintenance personnel. This sign type would include mile posts.

4.4.2 Rules and Regulations

This type of sign is used to explain rules and trail conduct for trail users.

4.4.3 Historical

This type of sign is used to explain the historical significance of an area or feature.

4.4.4 Educational

This type of sign is used to educate trail users on environmental features. These may include plant life, wetlands, and aquatic or geological features of an area.

4.5 Lighting

Trail lighting may be considered at certain locations to help users avoid conflicts along paths and at intersections and to better observe trail direction, surface conditions and obstacles. Lighting may reduce potential conflicts and increase the sense of security along the trail. Lighting considerations will vary by level of use as well as by safety and security needs. Therefore lighting may range from none in some areas to full coverage lighting in others. Trail lighting at trail heads, destination areas and trail intersections should be carefully reviewed and determined on a case by case basis.

Sample Trail Lighting

Chapter 5 Safety

Safety is a significant concern in the development, utilization and maintenance of trails. Various issues need to be addressed in order to increase the safety of trails and enhance the user's experience. A variety of users enjoy trail use including hikers, pedestrians, runners, cyclists, skaters (in-line, roller, and skateboard), and equestrians. In addition, many trails offer opportunities to those with disabilities, children in strollers, and people with pets. Trails may be located in a wide variety of places and locations. They are often found within roads (bike lanes or bike paths), along sidewalks, in the mountains, near rivers and canals, and within or adjacent to railway corridors. Each of these safety measures mentioned below needs to be carefully considered and evaluated during the development, utilization and maintenance of trails. Safety measures may vary from trail to trail depending on the trail location, type of user, trail type, trail surface and other factors.

5.1 Reducing user conflicts

All trails have the potential for conflicts between different users who may occupy the trail at the same time. In order to aid in the reduction of these possible conflicts, the following safety measures should be considered to be implemented:

- **Warning Signs** - both for vehicles and trail users to alert both to upcoming crossings including roadway and trail signs, alerting devices, roadway striping or changes in pavement texture, pavement markings, bollards or kinks in the trail.
- **Directional Signs** - help to both warn and promote use of the trail and direct people to their destinations. They can also help users know which trail they are following and where it goes in case of emergencies.

- **Informational Signs -** at trail heads, major crossroads and along the trail help users find their way and impart rules of the trail and safe practices. These can also help users provide location information in emergency situations.
- **Striping Patterns** - help organize and warn trail users, help them find their way and acknowledge rules of the trail.

5.2 Visibility

Sight visibility is a big issue on trails from both a security and a safety standpoint. Some of the most effective safety measures that can be implemented are related to "seeing and being seen" on a trail. The following are some possible visibility measures that should be considered for implementation:

- Pedestrian-scale lighting allows the trail user to see trail markings and observe changes in the surface and direction of the trail as well as any hazards along the way. It may also enable the trail to be used year-round as well as in the early morning or late evening hours. Type and amount of lighting will vary by trail type and the need for lighting of individual areas.

- Overhead lighting, in addition to the above, allows the trail user to observe other users and upcoming conditions on or in the vicinity of the trail. Overhead lighting also allows the trail user to be observed by other users or emergency personnel. Type and amount of lighting will vary by trail type and the need for lighting of individual areas.

5.3 Design

Inter-departmental review for all proposed trail improvements, including risk management assessments, should be considered when developing new trails and/or improving existing trails.

- **Tunnels, Bridges, Walls and Corners** - These design features may enhance safety by reducing conflicts between pedestrians and vehicles but may also create line of sight and visibility concerns.

- **Vegetation** - Vegetation will need to be evaluated to determine appropriate types and locations for initial installation of vegetation with consideration to the necessity and frequency of trimming and ongoing maintenance. Plant varieties that will not damage the trail and that require minimal ongoing maintenance should be given high consideration to minimize consequential cost and safety concerns.

- **Surfacing** - Appropriate types of surfacing should be evaluated for each trail dependent on the type of use for the trail, i.e. equestrian, biking, hiking etc.

- **Improvements** (lights, cameras, signs, amenities, etc) - All potential improvements should be evaluated as to their location, use and safety as part of the determination whether to include them on the trail.

- **CPTED** (Crime Prevention Through Environmental Design) - CPTED standards should be considered for all aspects of trail design, installation and development.

- **Trail-Roadway Crossings** - All locations where a trail and roadway intersect will require evaluation and careful design consideration to ensure safe crossings. Trail-Roadway Crossings should comply with the AASHTO (American Association of State Highway and Transportation Officials), UDOT (Utah Department of Transportation), and MUTCD (Manual of Uniform Traffic Control Devices) standards. In some cases, a required trail crossing might be so dangerous or costly to address (tunnel or overpass requirements), that re-evaluation of the trail alignment or terminal points will be required. Evaluation of trail crossings includes analysis of vehicular and trail user patterns. Data such as speeds and traffic volumes, street width, line of sight, and trail user profile need to be collected. There are four basic types of trail crossing options available:

  Type 1: Unprotected/Marked – Unprotected/marked crossings include trail crossings of residential and collector roads.

Type 2: Route Users to Existing Intersections – Trails that are in the vicinity of existing signals should be designed to utilize these crossing points, minimizing costs and increasing safety. This would be the most common treatment of arterial road crossings.

Type 3: Pedestrian Signal/Controlled – When warranted, funded, and in a location that does not conflict with existing signal spacing or corridor agreements, new HAWK (High intensity pedestrian Activated crosswalk) signals may be installed. The approximate cost can range from $100,000 to $200,000.

Type 4: Grade–separated – Bridges or tunnels provide the maximum level of safety and service to traffic and trail users. They are also the most expensive to build and have right-of-way, maintenance, and CPTED conflicts to consider.

5.4 Operation and Maintenance

Routine trail maintenance will assist in protecting the City's investment in its trails but also keep users safe from unreasonable hazards and risks, provide a reasonably safe trail system that remains available to public use long after the trails are constructed and decrease the City's liability exposure. In furtherance of the Governmental Immunity Act requirements set forth above, a program of periodic, routine and remedial inspections and maintenance to address safety concerns and trail hazards should be developed. Operation and maintenance needs should be considered for the following areas:

- **Vegetation** - Vegetation will need to be trimmed and maintained adjacent to each trail so as not to impede users and block visibility.
- **Surfacing** - Surfacing of each trail will need to be checked regularly to remove impediments and hazards to ensure the safe passage of users. A schedule of periodic restoration and rehabilitation of the surfacing of each trail should be considered.
- **Improvements** (lights, cameras, signs, amenities, furniture, etc) - All improvements should be checked for proper operation and utilization on a routine basis to promote safety and avoid hazards by trail users.
- **CPTED** (Crime Prevention Through Environmental Design) - CPTED standards should be considered for all aspects of trail operation and maintenance.
- **Scheduled inspections** - A regular schedule of inspections of individual trails should be established utilizing both volunteers and City staff. Frequency of inspection may vary according to the type of trail.

5.5 Reporting

User safety is critical to the operation and management of trails as well as their initial design. Effective trail programs begin with a means of locating and identifying potential problems. Development of accident and crime reporting protocols should be considered. Possible user safety programs could include the use of the following:

- **Volunteers** (VIPs, Volunteer trail inspection program) - A program of volunteers to help educate, inform and have a presence on all City trails so all trail users can coexist. The volunteer program could also help provide a positive and educational experience for all users throughout Sandy City's trail system.

- **Parks and Recreation Employees** - Existing and future employees could do periodic patrols to identify more technical needs of the system like possible reroutes or to follow up on items reported by the volunteers.
- **Police Department** - Patrol officers or authorized volunteers on foot, bikes, equestrian, or other modes of transportation could aid in increasing user safety in regards to crime.
- **Smartphone Apps** - Information regarding trails and their usage, as well as Incident reporting, could be handled via a smartphone app.

Chapter 6 Priorities and Costs

This Chapter addresses the priorities for implementing future trail additions and the estimated costs of each trail segment according to the master plan. Section A.2 of the appendix refers to possible resources which may be utilized to carry out this list of trail additions.

6.1 Priority List - Trail Development

During the development of this master plan, part of the public input process regarding trails in Sandy involved members of the public who attended the master plan open house rating trail projects across the city according to their own personal priorities. A chart was presented at the open house with twelve identified trail projects. Participants at the open house were each given three votes to use toward identifying their personal trail priorities. If participants didn't see a trail project on the list that they thought important, they were allowed to write in that project and add it to the list of projects to consider. Each vote by a participant had to be used on a different project, so that end results show a cumulative vote on participants' top three projects, rather than a single project receiving all votes from a single individual. At the completion of this exercise, the proposed trail projects came out in the following priority order.

Rank	Project Name	Project Description	Votes	Est. Total Construction Cost
1	Bonneville Shoreline Trail	This project would complete design, acquire property, and construct the Bonneville Shoreline Trail from Hidden Valley Park to Bell Canyon Reservoir. This would provide approximately 12,400 feet of hiking trail and involve 5 water crossings.	19	$1,230,000
2	Dimple Dell Park North Rim Trail	This project will be headed by Salt Lake County. However we would like to support Salt Lake County in the installation of a 10' wide hard surface trail on the north rim of Dimple Dell Park.	14	$3,250,000
3	Bell Canyon Reservoir Trailhead	This project would design and construct an additional trail head to service Bell Canyon Reservoir area.	10	$705,000

Rank	Project Name	Project Description	Votes	Est. Total Construction Cost
4a	Jordan River Trail	This project would design and construct the remaining portion of the Jordan River Trail located within River Oaks Golf Course. This would connect to the tunnel that is scheduled to be constructed at 9000 South by West Jordan City in Spring of 2013. This would complete the trail in Sandy City.	9	$290,000
4b	Porter Rockwell Trail Intersection	This project would install a signalized pedestrian crossing at 9000 South.	9	$200,000
4c	Bell Canyon Reservoir Restroom	This project would install a restroom facility at Bell Canyon Reservoir. And would provide needed protection for our watershed.	9	$150,000
5a	Sandy Canal Trail	This project would install the first phase of this trail from 11400 South to 11000 South or a half mile of trail. The entire trail is 4.7 miles. This cost is for the trail only. It is anticipated that the canal will be filled and graded utilizing exports from other city projects. Landscaping will be done at a future time. In addition, future phases will need to include cost for mid-block crossings on major streets	8	$170,000
5b	Dry Creek Trail - Tunnel	In the spring of 2012 the tunnel was installed under the UTA TRAX line at 10200 South. This project would the install the ramps to complete the tunnel.	8	$700,000

Rank	Project Name	Project Description	Votes	Est. Total Construction Cost
6	Dry Creek Trail East of State St.	This project would design and construct a loop trail along dry creek and 10200 South from TRAX to State Street. . These costs do not include the bridge that is anticipated to be constructed over State Street to connect the Dry Creek trail on both sides of State Street.	7	$385,000
7	Trail @ Quail Hollow	Write in project – This project would install the Trails in Quail Hollow Park and provide improvements along Little Cottonwood Creek to Wasatch Blvd.	3	$405,000
8	Highland Drive Trail	This project would enhance existing soft surface trails in undeveloped sections of the Highland Drive Corridor and provide additional access to Dimple Dell Regional Park.	2	$325,000
9a	Dry Creek Trail West of State St.	This project would design and construct the trail along the dry creek corridor from State Street to I-15. These costs do not include the bridge that is anticipated to be constructed over State Street to connect the Dry Creek trail on both sides of State Street.	1	$435,000
9b	Brandon Park	This project would complete the hiking trail system inside and adjacent to Brandon Canyon, including sidewalk improvements and signage. While in this master plan process, 80% of the project was completed through the efforts of volunteers. This cost represents the remaining 20%.	1	$50,000

Rank	Project Name	Project Description	Votes	Est. Total Construction Cost
9c	Rail Trail	Write in project – This project would construct the parts of the Historic Rail Trail that is missing. There are three main areas that need to be constructed. They are Falcon Park to Highland Drive, Quail Hollow Park to Grand View Drive, Keel Drive to Granit Trail Head along Little Cotton Wood Road. These costs do not include any signage or property cost. Property cost were not included because the route is over public land and Metropolitan Water District land and it is assumed that we would be able to acquire the land at no cost.	1	$775,000

The top project, the Bonneville Shoreline Trail, placed well above the other projects receiving 19 votes, five more than the second place project. This clearly shows a desire of the open house participants to have this trail project developed soon.
These rankings will be used as a guideline for the priority of the projects to be constructed. No contracts, warranties, or promises should be assumed by the nature of this prioritization list. The actual completion of projects will be completed based upon the availability of funds, grants, land, and other opportunities which may present themselves in the future relative to a specific trail project. For example, although the Bonneville Shoreline trail came through the open house public input process as the highest prioritized trail project, the Jordan River Trail segment may be completed first based upon the relative cost and the specific opportunities available in working with other jurisdictions to connect this regional trail network.

6.2 Capital Costs

Capital costs to construct new trail projects throughout Sandy City will vary dramatically by project. The factors determining the costs of a particular trail include:

- Costs for acquiring land for the trail
- Different costs based on the type of trail surface desired
- Cost variations in the site work, engineering, soil preparation, etc.
- Costs associated with safety features, intersection crossings, and so on
- The length, accessibility, and terrain of the proposed trail project

The estimated total capital costs for each trail project are found in the following table:

Project Name	Trail Length	Property Cost	Design Cost	Const. Cost	Traffic Cross. Cost	Total Cost
Bonneville Shoreline Trail	12,378 ft.	$433,230	$45,000	$750,000		$1,228,230
Dimple Dell Park North Rim Trail			Completed	$3,250,000		$3,250,000
Bell Canyon Reservoir Trailhead		$340,000	$35,000	$330,000		$705,000
Jordan River Trail	1,650 ft.		$26,000	$265,900		$291,900
Porter Rockwell Trail Intersection					$200,000	$200,000
Bell Canyon Reservoir Restroom				$150,000		$150,000
Sandy Canal Trail	2,620 ft.		$15,000	$154,580		$169,580
Dry Creek Trail Tunnel			Completed	$1,500,000		$1,500,000
Dry Creek Trail East of State St.	4,700 ft.	$79,900	$27,500	$277,300		$385,700
Trail at Quail Hollow			$27,500	$275,000		$302,500
Highland Drive Trail	8,800 ft.			$175,000	$150,000	$325,000

Project Name	Trail Length	Property Cost	Design Cost	Const. Cost	Traffic Cross. Cost	Total Cost
Dry Creek Trail West of State St.	3,200 ft.	$54,400	$190,000	$188,800		$433,200
Brandon Park	8,200 ft.		Completed	$50,000		$50,000
Rail Trail	11,900 ft.		$70,000	$702,100		$772,100

6.2 Maintenance Costs

The maintenance costs for trails and trail elements will vary depending on the type of trail surface used, the type of trail element(s) used along the trail, the intensity with which the city chooses to complete maintenance along the trail (such as the frequency of snow removal), and so on. Currently, the city uses volunteer labor to dramatically offset the on-going maintenance costs of soft surface trails. As such, we assume current annual maintenance costs to supervise and equip volunteers to complete work along mountain hiking trails to cost about $.50 per linear foot. The annual maintenance costs for asphalt trails in Sandy are estimated to be about $1.21 per square foot based on current levels of service. It is assumed that most asphalt trails in Sandy will be eight feet wide. Given these assumptions, the following on-going maintenance costs are estimated:

Priority Rank	Project Name	Project Description	Trail Length	Estimated Annual Maint. Cost
1	Bonneville Shoreline Trail	This project would complete design, acquire property, and construct the Bonneville Shoreline Trail from Hidden Valley Park to Bell Canyon Reservoir. This would provide approximately 12,400 feet of hiking trail and involve 5 water crossings.	12,378 ft.	$6,189
2	Dimple Dell Park North Rim Trail	This project will be headed by Salt Lake County. However we would like support Salt Lake County to install a 10' wide hard surface trail on the north rim of Dimple Dell Park.	13,500	$130,680

Priority Rank	Project Name	Project Description	Trail Length	Estimated Annual Maint. Cost
3	Bell Canyon Reservoir Trailhead	This project would design and construct an additional trail head to service Bell Canyon Reservoir area.		
4a	Jordan River Trail	This project would design and construct the remaining portion of the Jordan River Trail located within River Oaks Golf Course. This would connect to the tunnel that is scheduled to be constructed at 9000 South by West Jordan City in Spring of 2013. This would complete the trail in Sandy City.	1,650 ft.	$15,972
4b	Porter Rockwell Trail Int.	This project would install a signalized pedestrian crossing at 9000 South.		
4c	Bell Canyon Reservoir Restroom	This project would install a restroom facility at Bell Canyon Reservoir. And would provide needed protection for our watershed.		$20,000
5a	Sandy Canal Trail	This project would install the first phase of this trail from 11400 South to 11000 South or a half mile of trail. The entire trail is 4.7 miles. This cost is for the trail only. It is anticipated that the canal will be filled and graded from exports from other city projects. Landscaping will be done at a future time. IN addition future phases will need to include cost for mid-block crossings on major streets	2,620 ft.	$25,362

Priority Rank	Project Name	Project Description	Trail Length	Estimated Annual Maint. Cost
5b	Dry Creek Trail - Tunnel	In the spring of 2012 the tunnel was installed under the UTA TRAX line at 10200 South. This project would the install the ramps to complete the tunnel.		
6	Dry Creek Trail East of State St.	This project would design and construct a loop trail along dry creek and 10200 South from TRAX to State Street. . These costs do not include the bridge that is anticipated to be constructed over State Street to connect the Dry Creek trail on both sides of State Street.	4,700 ft.	$45,496
7	Trail @ Quail Hollow	Write in project – This project would install the Trails in Quail Hollow Park and provide improvements along Little Cottonwood Creek to Wasatch Blvd.		
8	Highland Drive Trail	This project would enhance existing soft surface trails in undeveloped sections of the Highland Drive Corridor.	8,800 ft.	$85,184
9a	Dry Creek Trail West of State St.	This project would design and construct the trail along the dry creek corridor from State Street to I-15. These costs do not include the bridge that is anticipated to be constructed over State Street to connect the Dry Creek trail on both sides of State Street.	3,200 ft.	$30,976

Priority Rank	Project Name	Project Description	Trail Length	Estimated Annual Maint. Cost
9b	Brandon Park	This project would complete the hiking trail system inside Brandon Canyon. While in this master plan process 80% of the project was completed through the efforts of volunteers. This cost represents the remaining 20%.	8,200 ft.	$4,100
9c	Rail Trail	Write in project – This project would construct the parts of the Historic Rail Trail that is missing. There are three main areas that need to be constructed. They are Falcon Park to Highland Drive, Quail Hollow Park to Grand View Drive, Keel Drive to Granit Trail Head along Little Cotton Wood Road. These costs do not include any signage or property cost. Property cost were not included because the route is over public land and Metropolitan Water District land and it is assumed that we would be able to acquire the land at no cost.	11,900 ft.	$115,192

While these maintenance costs are estimated in the above table given the assumptions noted above, it should be stated that many factors will likely reduce these on-going maintenance costs. Some of these factors may include:

- Salt Lake County's willingness to maintain and snowplow the Dimple Dell Park North Rim Trail
- Many of these trails may have the snow plowing on the trail done at a less frequent interval than what currently occurs along trails in city parks. Once a hard surface trail is complete, snow removal will be prioritized based on staffing availability and the amount and types of use the trail receives.
- Many of these trails may be built first with a soft surface such as pea gravel or wood chips before a hard surface trail is installed. If that is the case, snowplowing and maintenance costs would be reduced dramatically.

Given these and other factors, the maintenance costs above should be considered as maximum costs given full build out.


Sandy
HEART OF THE WASATCH

Chapter 7 Goals & Implementation

In order to effectively utilize this master plan, it is important to identify general implementation goals and strategies relative to the plan. Once these goals and strategies are developed and accepted through the plan development process, specific implementation policies and both public and private action items can be developed and updated on a regular basis. The following eight general implementation goals and related implementation strategies are provided.

7.1 Growth

GOAL

The trail assets of the City need to meet the expectations and desires of the Citizens of Sandy City.

STRATEGIES:

- Identify opportunities for trail system expansion through this Plan.
- Increase funding to trail system expansion.
- Encourage public involvement in planning and implementation.

7.2 Integration

GOAL

New trail assets need to be integrated by building upon the existing network of trail resources and by the various types of trails.

STRATEGIES:

- Further refine the classification of trails as to types to manage potential user conflicts and adapt to specific terrain/design suitability issues.
- Identify opportunities for expansion by trail types and for improved transitions between trail and trail types.
- Further refine suitability for expansions and connections through the specific trails plan by quadrant review.

7.3 Coordination

GOAL

Coordinate and integrate the trail assets into the broader community and regional context.

STRATEGIES:

- Design and locate trails by type and integrate them into the multi-modal transportation

master plan of the City and the context community.

- Coordinate with trails and transportation plans of adjacent communities and governmental jurisdictions.
- Examine all connections and continue trails through the Sandy City wherever possible. Specifically address where and why trails cannot continue from other jurisdictions through Sandy City, where applicable.
- Involve abutting communities and jurisdictions to review this plan.

7.4 Connectivity

GOAL

Enhance the connectivity by targeting the internal network gaps and making appropriate transitions.

STRATEGIES:

- Examine the existing development of trail corridors to identify right of way and physical improvement gaps on a trail by trail basis during the quadrant reviews.
- Examine specific connection and transition points in the existing and proposed trail system plan to address specific connectivity enhancements on a trail by trail basis during the quadrant reviews.
- Prioritize the potential elimination of existing and future gaps and allocate resources to maximize connectivity.
- Establish connections between the trail network and other modes of transportation, including the existing Light Rail and Commuter Rail transportation stops.

7.5 Resources

GOAL

Maximize the available resources to accomplish goals.

STRATEGIES:

- Examine cost sharing and public-private partnerships to produce the maximum physical improvements on the ground in each incremental implementation action and analyze them in order to set priority.
- Utilize grants, matching funds and partnering to provide maximum funding for incremental projects.
- Generate maximum public interest in participating in new implementation projects.
- Utilize volunteer labor to the maximum extent possible, to lower costs and increase community acceptance and ownership perception.

7.6 Sustainability

GOAL

Maximize the sustainability of the trail assets through Management for the public benefit.

STRATEGIES:

- Complete this trails specific master plan update through approval by Planning Commission and adoption by City Council.
- Incorporate trail corridors into all new development projects and assess cost sharing participation by City in each incremental construction project.
- Incorporate trail corridors into all new City infrastructure and improvement projects.
- Promote City Department consideration of trail master plan recommendations into operating plans and budgeting where applicable.
- Develop an administrative branch goal for the ongoing maintenance cost funding of the trails infrastructure network.
- Recognize that future trail maintenance will be provided by various agencies, entities and groups. The city can assist by conducting periodic inspections of trail assets for maintenance needs and conditions.
- Develop an administrative branch goal for the ongoing policing cost funding of the trails infrastructure network.
- Prepare designation of trail types to identify compatible users or groups of users for each designated trail corridor, based upon the trail location, connections, topography, trail bed type, etc., to help minimize trail group user conflicts. Insure the highest possible trail user experience, based upon trail characteristics and improvements.
- Develop a policy and action plan to address the treatment of trail crossings of arterial streets.
- Develop a comprehensive analysis of issues, standards and requirements to promote user and neighbor safety.
- Develop a policy and action plan to address the acquisition of needed property ownership or right of way or easements for trails and needed connections.
- Develop a policy and action plan to address trail safety, including appropriate trail bed surfaces, appropriate landscaping, trail signage and milepost identification.
- Develop a policy and action plan to address the trail head and neighborhood scale access points and management needs.
- Develop a policy and action plan to address the protection of sensitive lands and watershed areas, relative to trail location and trail use.

- Routine trail maintenance will assist in protecting the city's investment in its trail assets and will also keep users safe from unreasonable hazards and risks, provide a reasonably safe trail system that remains available to public use long after the trails are constructed and to decrease the city's liability exposure.

- User safety is critical to the operation and management of trails as well as their initial design. Effective trail programs begin with a means of locating and identifying problem or emergencies. Development of a system of location references on the ground and the development of accident and crime reporting protocols should be considered.

7.7 Education

GOAL

Educate citizens and users as to opportunities, safety, trail etiquette, and to minimize potential user conflicts.

STRATEGIES:

- Produce user friendly trails maps in foldable map format to communicate existing trail opportunities.

- Use City website to communicate maps and opportunities to the general public.

- Promote awareness and develop education campaigns issues such as motor vehicle restrictions, trail head parking and sanitation.

- Prepare information and requirements for safety, trail etiquette, "Leave No Trace", protection of sensitive lands and watershed areas, fire restrictions, etc., and effectively communicate this information to trail users.

- Examine the use of technology to provide information about trails via the internet and by using smartphone apps to communicate information, suitability, safety concerns, temporary closures, etc.

- Develop trail building design and practice guidebook or pamphlet providing volunteer groups with trail standards, construction details, cross sections, etc., to help with volunteer efforts in trail development and maintenance.

7.8 Policy

GOAL

Develop written policies and action items, after approval of the trails master plan.

STRATEGIES:

- Develop written policies and action items, after approval of the trails master plan.

- Hold staff and Steering Committee Implementation Workshops to review accomplishments, determine new projects and prioritize actions for the expansion of system and for the needed maintenance or improvements.

- Develop specific action items for both public and private entities.

Trails Maps

Appendix

A.1 Survey details

A.1.1 Survey Methodology

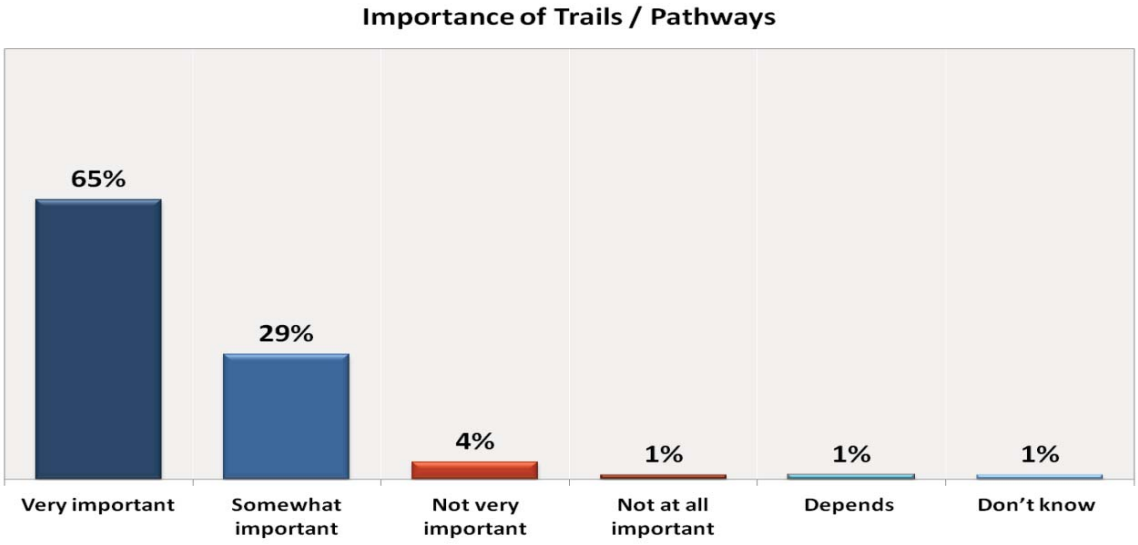
Dan Jones and Associates developed a survey questionnaire about trails in conjunction with Sandy City. To meet the research objectives, 344 Sandy residents were surveyed by telephone and through an on-line survey during February 2012. All telephone interviews were conducted by Dan Jones and Associates and participation in on-line surveys were by residents selected through the survey sampling process and specifically invited by a postcard sent from Sandy City.

The margin of error for this survey is +/- 5% for current total data. The study has a 95% confidence level. In other words, 95% of the time, the actual results would be within +/-5% of the survey results if answers were obtained from polling every person in Sandy.

A.1.2 Sandy Residents Use of Trails

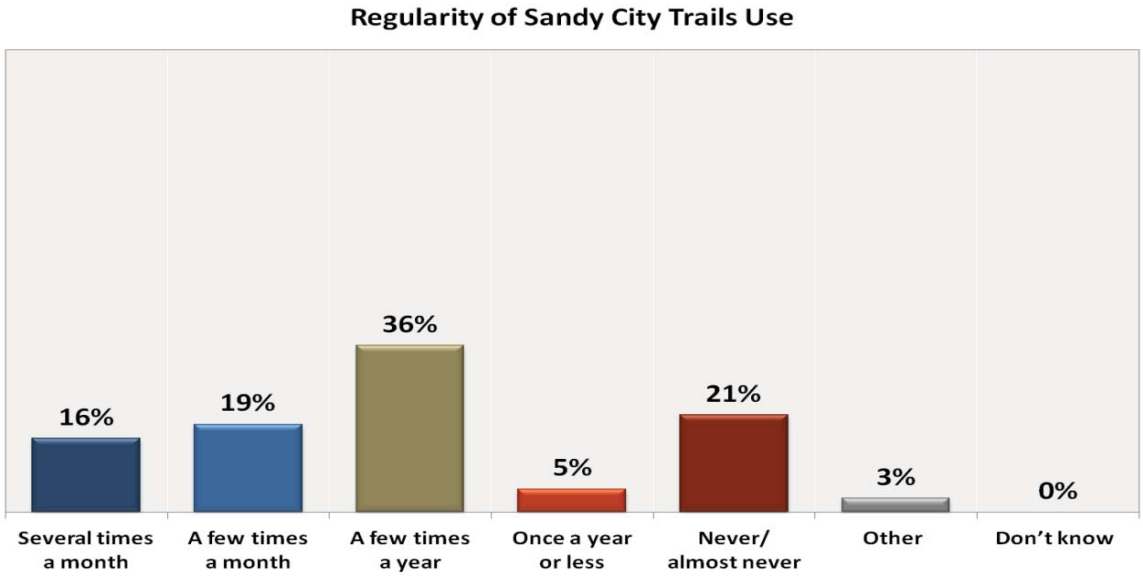
The vast majority of Sandy residents feel that trails, pathways, and green space are very important. The following answers were received during the survey:

Q. How important do you feel trails, pathways, and green space are to Sandy?



In addition to feeling that trails, pathways, and green space are important, over two thirds of respondents reported using trails at least a couple of times per year and over one third of respondents mention using trails at least a few times per month:

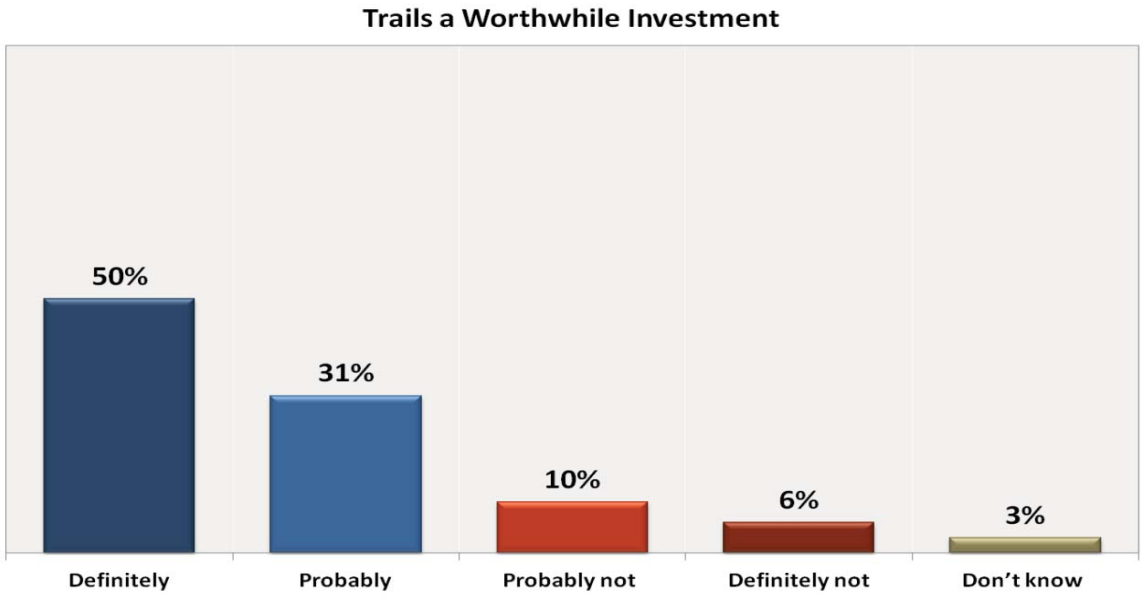
Q. How often do you use the trails, pathways, and green space in Sandy?



A.1.3 Investing in a Trail System

The survey by Dan Jones and Associates showed that Sandy citizens generally view trails as a worthwhile investment in the community and they are supportive of the city using its resources to build and maintain a trail network throughout the community. Three questions which were asked in the survey illustrate this point:

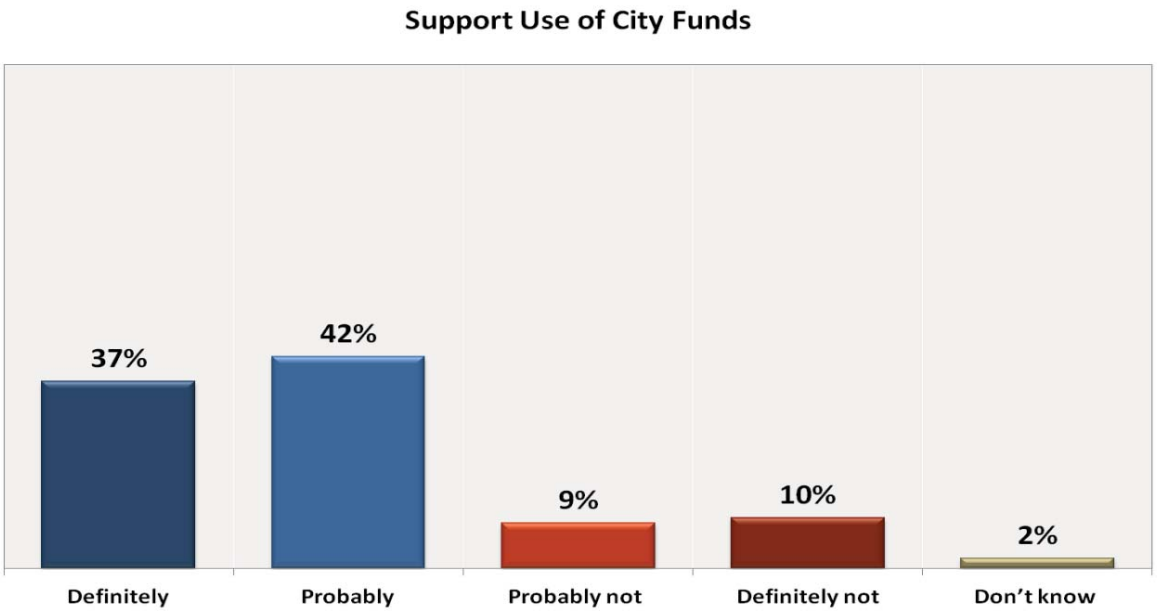
Q. Do you think a trail system is a worthwhile investment for Sandy City?



Four out of five respondents tend to feel that a trail system is a worthwhile investment for Sandy City. Among households that own dogs (about 35% of households in Sandy), the support for trails as an investment increases significantly.

In addition to being asked if they felt like trails were a worthwhile investment, residents were asked if they are willing to use additional city funds to support a trail system within Sandy. Specifically, the survey used the following language, "To build a trail system throughout Sandy, with some of the amenities and benefits discussed in the survey would require some city funds. The cost of designing and constructing trails as well as the cost of maintaining the trail system will be the responsibility of Sandy City." The question was then posed:

Q. Are you willing to use additional city funds to support the Sandy City Trail system?



Nearly 80% of residents responded that they are definitely or probably willing to use additional city funds to support the Sandy City trail system. Those respondents who reported an annual household income greater than $80,000 were significantly more likely to support the use of city funds to finance a trail system (42% of respondents reported an annual household income greater than $80,000).

After residents were asked if they support the use of city funds for a trail system, they were asked specifically about their willingness to pay a monthly fee to build and maintain a trail network.

Q. Are you willing to pay a $1.00 monthly trail fee?

DEFINITELY	46%
PROBABLY	30%
PROBABLY NOT	10%
DEFINITELY NOT	13%
DON'T KNOW	2%

Over three quarters respondents reported that they are definitely or probably willing to pay a trails fee of $1.00 per month in order to build and maintain trails throughout the city.
Those who were definitely or probably willing to pay $1.00 per month were then asked if they would be willing to pay $2.00 per month.

Q. Are you willing to pay a $2.00 monthly trails fee? (Asked of those willing to pay $1.00 per month)

DEFINITELY	32%
PROBABLY	43%
PROBABLY NOT	19%
DEFINITELY NOT	5%
DON'T KNOW	2%

Three quarters of those who were definitely or probably willing to pay $1.00 per month, were also generally willing to pay $2.00 per month. However, remember that the numbers above were the results from only asking those who were willing to pay the $1.00 per month fee. If we assume that those unwilling to pay $1.00 per month would also be unwilling to pay $2.00 per month, then the survey results among all respondents is as below:

Q. Are you willing to pay a $2.00 monthly trail fee? (Among all respondents)

DEFINITELY	24%
PROBABLY	32%
PROBABLY NOT	14%
DEFINITELY NOT	26%
DON'T KNOW	3%

When considering all respondents, 56% of residents are definitely or probably willing to pay a $2.00 per month fee to support the acquiring, building, and maintenance of trails. Of those who responded probably or definitely willing to pay a $2.00 per month fee, the question was asked:

Q. Are you willing to pay a $3.00 monthly trail fee? (Asked of those willing to pay $2.00 per month)

DEFINITELY	23%
PROBABLY	45%
PROBABLY NOT	27%
DEFINITELY NOT	4%
DON'T KNOW	1%

Of those who were definitely or probably willing to pay $2.00 per month, 68% were definitely or probably willing to pay $3.00 per month. Again, however, these numbers represent the responses only of those persons who were willing to pay a $2.00 per month fee. Also, again if we assume that those unwilling to pay $1.00 per month are also unwilling to pay $2.00 or $3.00 per month, then the survey results among all respondents is as below.

Q. Are you willing to pay a $3.00 monthly trail fee? (Among all respondents)

DEFINITELY	13%
PROBABLY	25%
PROBABLY NOT	15%
DEFINITELY NOT	43%
DON'T KNOW	4%

Thus, when considering all respondents, only 38% of residents are definitely or probably willing to pay a $3.00 per month fee to support the acquiring, building, and maintenance of trails.

A.1.4 Trail Systems and Assets

From the survey results, it is apparent that residents view the positive aspects of trail development throughout the community as generally a greater benefit than any negative aspects associated with trail development in the city. In the survey, residents were asked to rate different potential benefits of a trail system on a scale of 1 to 5. On the scale, a "5" means a trail system "definitely would" provide the benefit, and a "1" means a trail system "definitely would not" provide the benefit:

- When asked if a trail system would "Create recreation opportunities," 83% answered a 4 or 5
- When asked if a trail system would improve health and wellness, 80% of residents answered a 4 or 5
- 76% of respondents answered a 4 or 5 when asked if a trail system would preserve open space and the environment
- 79% of respondents gave a 4 or 5 when answering if a trail system would make Sandy a better place to live
- When asked if a trail system would improve property values, 66% of respondents answered a 4 or 5

A.1.5 Ideal Characteristics of a Trail System

The Dan Jones Survey also asked residents about the characteristics and amenities residents would like to see associated with a trail system throughout the city. Three different types of questions were asked in this part of the survey.
First, residents were asked, "How important are the following aspects of a trail to you?" with a "5" being very important and a "1" being not important:

- Personal Safety – 90% of residents responded with a 4 or 5
- Safe Road Intersections – 88% of respondents answered a 4 or 5
- Wide / Allows for Side by Side Walking – 86% of respondents answered with a 4 or 5
- Beauty and Feeling of Open Space – 82% of respondents gave a 4 or 5
- Pet Waste Disposal – 72% gave a 4 or 5

- Proximity to Home – 72% gave a 4 or 5

Other characteristics such as lighting, garbage cans, restrooms, signage, and benches were also noted as relatively important to residents although not as important as those amenities listed above.

Second, residents were asked, "How would the following affect your likelihood of using the trail?" with a "5" being "much more likely to use the trail" and a "1" being "much less likely to use the trail."

- Trail is paved – 66% of respondents are more likely to use the trail if it is paved
- Trail allows bikes – 62% of respondents are more likely to use a trail system if it allows bikes
- Trail allows dogs – residents were split on the issue of whether dogs would make them more or less likely to use a trail
- Trail allows horses – 51% of respondents were less likely to use a trail if horses were allowed
- Trail allows skateboards and rollerblades – 54% of respondents were less likely to use a trail if it allowed skateboards and rollerblades

Finally, residents were asked in an open-ended format to specify three characteristics of a trail that would make them most likely to use a trail system. By far, the most desired trail characteristic mentioned was safety with 15% of respondents citing safety as one of their top three characteristics. On this open ended question, the next most desired trail characteristics included:

- Proximity to home – 8%
- Scenery / Beauty – 7%
- Paved – 5%
- Accessibility – 5%
- Width of Trail – 4%
- Allows Dogs – 4%
- Well Maintained – 4%

A.2 Funding alternative and opportunites

Completing the trail system in Sandy will require a variety of funding sources as well as human and other resources. There are a wide variety of options available to Sandy City to use as elected officials, city staff, citizens, and other stakeholders consider what resources and opportunities should be called upon to complete the trail network. The following list represents many, but not all, of the opportunities and options available for acquiring resources to develop trails throughout the community. The intent of this list is to provide policy makers and stakeholders an idea of the breadth of options and resources available to those working to fulfill this

master plan.

A.2.1 Taxes and Fees

A number of taxes and fees are available to local municipalities to fund various projects, including trails.

A.2.1.1 Property Tax

The property tax is a tax revenue source which may be used to develop and maintain trails throughout Sandy, both through the city's general fund or as a dedicated revenue source earmarked for trails.

Property tax is the most stable source of revenue available to municipalities in Utah. However, there are some major disadvantages:

- The property tax is generally an unpopular tax among taxpayers.
- While the property tax is a stable tax, it is also a stagnant tax. It doesn't increase as a revenue source over time without a formal process and active raising of the tax.
- A city property tax for trails could be levied to all property owners within the city, having taxpayers pay a property tax relative to the value of their property, not proportionate to their use of or proximity to trails.

A.2.1.2 General Fund Revenues

General fund revenues, which come from a variety of taxes and fee sources are unrestricted revenues available to Sandy City and may be used toward the development of trails.

General fund revenues are fairly stable and controlled by the local government and may be used toward any aspect of a trails master plan as determined by the local elected officials.

Unfortunately, general fund revenues are used for general government operations and as such, there are a number of other important needs which compete for these limited financial resources.

A.2.1.3 Special Taxes

Tax revenue collected for a specific purpose may be designated for the development of trails. For example, innkeeper fees, room taxes, which currently have some restrictions could possibly in the future be earmarked for trails development.

Special taxes used for trails can create a revenue source outside of general fund revenues, and thus could be earmarked for trails by local elected officials. Depending on what they are and how they are structured, they can be fairly stable revenue sources.

The disadvantage are that the control and use of special taxes is not often dictated by Sandy City officials and these limited revenues are currently being utilized for other projects.

A.2.1.4 Trail Fees

A trail fee, levied monthly to homeowners or businesses, could possibly be used to

raise revenue for the development of trails. According to the recent survey discussed earlier in this chapter, a modest trail fee would be supported by a majority of residents in Sandy.

A trail fee would create an on-going, dedicated revenue source for trail development and maintenance.

A.2.1.5 Tax Increment Revenues

As development and redevelopment occurs in areas where tax increment is captured, these funds can, at the discretion of the RDA board, be used to develop trails in the designated redevelopment area.

Tax increment revenues are not garnered from the city as a whole, and thus can be used to develop trails in areas near where the tax increment is created. New trail development in areas designated as a redevelopment area can enhance surrounding property values and thus help to create more tax increment.

However, geographic designations restrict where tax increment revenues can be used. Tax increment funds are frequently in demand for support for other aspects of redevelopment and thus trails must compete with other projects for the use of these funds.

A.2.1.6 User Fees

User fees are fees charged to those who specifically use a product, piece of infrastructure, or service provided by the city. User fees are not typically charged for the use of trail systems. However, it is possible to assess user fees if such fees are levied for the use of popular trails, for parking at popular trailheads, etc. Such funds could then be used to maintain the trail system and develop additional trails.

User fees charge only the users of the trail, so those who receive the most benefit from the trail pay for the costs of the trail. But, user fees for trails and trailheads are typically assessed in areas where supply is limited, such as very popular trails in unique places, or trailheads and picnic grounds with limited available parking nearby. User fees for trails in an urban or suburban setting may be impractical.

A.2.1.7 ZAP Tax Revenues

In Salt Lake County, a Zoo, Arts, and Parks (ZAP) tax has been approved by voters. This ZAP tax generates funds from a portion of the sales tax generated within the county. These funds are used to complete projects as designated by a county-wide committee. This tax revenue could be used to complete trails throughout Sandy.

The ZAP tax is already levied to taxpayers in Salt Lake County, but wouldn't require an additional tax from Sandy residents in order to be used for trails. Also, the ZAP tax, as a portion of the sales tax, grows whenever sales increase in Salt Lake County.

The use of ZAP tax revenue is controlled by a county committee and so trail projects in Sandy must compete with other requests for the funds throughout the Salt Lake area.

A.2.2 Private Sector Resources

While often more difficult to obtain, there are a number of other sources available for the building and maintenance of trails.

A.2.2.1 Impact Fees

Impact fees are fees which are charged to a developer who wishes to develop on a raw piece of land or increase the intensity of use on a particular piece of land. The intent of impact fees is to help pay for the subsequent development's impacts on infrastructure required to support the developed land. Impact fees can be used to help pay for the development of trails assuming that new trails support the development where the impact fee is levied.

Sandy already has in place an impact fee which is earmarked for park and trail development. Impact fees help the community to maintain a specified level of service as new development puts strain on existing facilities and assure that new development pays its fair share to maintain quality of life expectations for residents.

As structured, impact fees are a one-time revenue source and their receipt is determined by the growth of new development. They are therefore unstable and unpredictable. They must also be used within six years of receipt or returned to the developer. Impact fees can only be used for projects identified in a capital plan and are not flexible as a revenue source as plans are subject change. In addition, Sandy City has limited future opportunities for impact fees to be applied to trail development due to the small amount of vacant land available within the city limits.

A.2.2.2 Private Development Exactions, Dedications, and Development Agreements

As developers build new homes or businesses, they may at times build pieces of infrastructure, including trails, which are either in lieu of impact fees, or required so that they can build on a particular piece of land. The extent of these projects are normally based on the impacts caused by the development.

Development exactions, dedications, or agreements can help build critical pieces of infrastructure without the costs being born by the general taxpayers.

Exactions, dedications, and development agreements are a one-time resource and can thus help with the development of trails, but not the long-term maintenance of a trail network. They are determined on a project by project basis and are unpredictable and determinant upon development conditions and market forces outside of the city's control. As with impact fees, because Sandy City is mostly built-out, future opportunities for exactions, dedications, and development agreements to be used to help build the trail system may be limited.

A.2.2.3 Public/Private Partnerships or Joint Development Agreements

Governmental entities and a private development may cooperate to build a facility that serves the public and is attractive to private investment for a specific reason. Public/Private partnerships, or joint development agreements, can build trail infrastructure without substantially adding to the taxpayer burden.

However, these partnerships with the private sector typically must be unique, have

a special use, or some kind of disproportionate benefit in order to be considered as a possible resource. They are not typically available as a resource option for building aspects of the trail system where access is free or uncontrolled and benefits are broadly received.

A.2.2.4 Private Donations/Fundraising

Private donations and private fundraising is a possible revenue source for the development of a trail system. Public monies can sometimes be leveraged with private donations to fund public infrastructure items, particularly high profile facilities.

Private donations can allow infrastructure items to be built without taxpayer resources being expended. Unfortunately donations from private individuals or foundations may involve specific requests by the donor which are different than or outside of the goals of the city. Such a revenue source is typically only available one-time, and is highly unpredictable.

A.2.3 Governmental Transfers and Grants

In addition to those opportunities listed in the sections above, there are a few more sources of funding available that should be considered.

A.2.3.1 Federal Funding/ Federal Resources

Federal funding can include a wide variety of resources which can support trail development in Sandy in several different ways, including grants, appropriations, human, technical, or other resource support, and so on. The availability of these resources may change annually depending on budget allocations and elected representatives at federal level.

Using federal funding for trails in Sandy helps Sandy residents realize locally a use of their federal tax dollars, but there are some disadvantages as well. Although Sandy City can provide input to federal representatives, the allocation of federal resources toward trail projects in Sandy is out of the hands of Sandy officials. Using federal resources typically involves additional study, costs, time and other considerations with a project before federal funds can be used as opposed to locally generated funds.

A.2.3.2 Interlocal Agreements/Joint Governmental Development

Joint development opportunities may occur between Sandy City and other municipalities and governmental entities to develop the trail network throughout the broader community. Interlocal agreements will be critical for trails that cross jurisdictions or property lines owned by different government entities or special service districts. Interlocal agreements and joint development agreements may include easements, joint funding schedules, infrastructure development agreements, or maintenance agreements. Interlocal agreements may be the only way certain pieces of the infrastructure can be completed.

Interlocal agreements leverage resources from multiple governmental entities, but a high degree of cooperation is required and governmental entities may have different goals, funding resources, or time lines.

A.2.3.3 Urban Parks and Recreation Recovery Program

The National Park Service Urban Park and Recreation Recovery (UPARR) program was established in 1978 to provide grants and assistance to urban communities for the rehabilitation of critically needed recreation facilities. The program encourages local funding and commitment to the operations and maintenance of recreation programs, sites, and facilities.

UPARR provides resources from federal funds with a number of possible drawbacks. Typically, only cities and urban counties meeting established criteria are eligible for assistance, although a portion of the grant is available to non-qualifying cities and counties annually. As a grant program, control of funds is outside of the city's control and the city must compete with other entities to make application for the use of funds or resources. Funds, if received, will likely be limited to use as per the application and grant restrictions.

A.2.3.4 Land and Water Conservation Fund

This federal money is made available to States, and in Utah is administered by the Utah State Division of Parks and Recreation. Funds are matched with local funds for acquisition of park and recreation lands, redevelopment of older recreation facilities, trails, improvements to accessibility, and other recreation programs and facilities that provide close-to-home recreation opportunities for youth, adults, senior citizens, and persons with physical and mental disabilities.

This grant leverages federal dollars in the local community and has a dedicated portion for Utah. As an applying community, Sandy would only compete for program dollars against other Utah communities.

As with other federal grant programs, control of funds is outside of the city's control and the city must compete with other entities to make application for the use of funds or resources. Funds, if received, will likely be limited to use as per the application and grant restrictions.

A.2.3.5 MAP-21

The Moving Ahead for Progress in the 21st Century program (MAP-21) establishes federal transportation policy and funding. It continues programs and creates new programs for transportation enhancements, including recreation trails and Safe Routes to Schools.

This grant leverages federal dollars in the local community and is available for planning, program design, and programs to encourage biking and alternative transportation use, as well as infrastructure components.

It is however, limited by funds being outside of the city's control and the city must compete with other entities to make application for the use of funds or resources. Funds, if received, will likely be limited to use as per the application and grant restrictions.

A.2.3.6 Federal Recreation Trails Program

The Utah Department of Natural Resources, Parks and Recreation Division administers these Federal funds. The funds are available for motorized and non-motorized trail development and maintenance projects, educational programs to promote trail safety, and trail related environmental protection projects.

This grant leverages federal dollars in the local community and has a dedicated portion for Utah. As an applying community, Sandy would only compete for program dollars against other Utah communities.

Again, as a grant program, control of funds is outside of the city's control and the city must compete with other entities to make application for the use of funds or resources. Funds, if received, will likely be limited to use as per the application and grant restrictions.

A.2.3.7 Utah Trails and Pathways / Non-Motorized Trails Program

Funds are available for planning, acquisition, and development of recreational trails. The program is administered by the Board of Utah State Parks and Recreation, who awards grants at their fall meeting based on recommendations of the Recreation Trails Advisory Council and Utah State Parks and Recreation.

As a grant, this resource brings outside revenues into the community, reducing the burden on local taxpayers.

Control of funds is outside of the city's control and the city must compete with other entities to make application for the use of funds or resources. Funds, if received, will likely be limited to use as per the application and grant restrictions and grant amounts are typically smaller and may not be used for on-going costs.

A.2.3.8 LeRay McAllister Critical Land Conservation Fund

The fund is administered by the Utah Quality Growth Commission and provides funds each year to preserve or restore critical open or agricultural lands in Utah, and targets lands deemed important to the community such as agricultural lands, wildlife habitat, watershed protection, and other culturally or historically unique landscapes. Money from the fund must be used to preserve or restore agricultural lands. Applicants must provide matching funds equal to or greater than the amount of money received from the fund. Funds must be spent within one year from the date of the grant award. The size of parcels for a purchase is limited to 20 acres or less. Purchases of conservation easements or restoration projects are exempt from this restriction.

This grant brings outside revenues into the community, reducing the burden on local taxpayers and provides resources specifically for land acquisition. As a Utah based grant, Sandy would only have to compete against other Utah entities for the grant acceptance.

As with other grants, control of funds is outside of the city's control and the city must compete with other entities to make application for the use of funds or resources. Funds, if received, will likely be limited to use as per the application and grant restrictions.

A.2.3.9 Rivers, Trails and Conservation Assistance Program

The Rivers, Trails and Conservation Assistance (RTCA) Program is to assist community-led natural resource conservation and outdoor recreation initiatives. The grant is administered by the National Park Service and provides technical assistance and human resource support to awarded communities for the development or protection of trails, waterways, critical lands, and so on.

The RTCA grant specifically focuses on helping communities build trail networks. The RTCA program however, does not provide funding for communities, only technical support and staff support and control of the resources is outside of the city's control and the city must compete with other entities to make application for the use of resources.

A.2.3.10 CDBG Funds

Community Development Block Grants (CDBG) can be used for recreation development in parts of the City that qualify as low and moderate income areas, including upgrading park, recreation, and trail infrastructure, and improving accessibility. Additionally, CDBG funds may be used for projects that remove barriers to access for the elderly and for persons with severe disabilities.

CDBG funds provide federal resources to Sandy without coming from the municipal tax base. As an entitlement entity, the City already receives CDBG funds annually and has input on how those funds are spent locally.

Federal regulations on these funds can be restrictive, including the requirement that CDBG funds be spent in low to moderate income areas of the city. CDBG funds also have many competing interests requesting the use of such funds.

A.2.4 Debt Service

A.2.4.1 General Obligation Bonds

General obligation (GO) bonds have the lowest financing costs of any form of debt service. General obligation bonds are secured by the unlimited pledge of the taxing ability of the governmental entity issuing the bonds. Because GO bonds are secured by and frequently repaid from property taxes, they are viewed as the lowest credit risk to bond investors, thus receiving the lowest interest rate of any type of municipal bond. GO bonds must be approved by a majority of voters in a bond election.

GO bonds offer the lowest bond issuance costs and interest rates, and because they have to be passed by voters, are typically well accepted by taxpayers. The bonds can be used for purposes identified and communicated to citizens. Once approved by citizens and issued against a property tax levy, general obligation bonds provide entirely new funding to the city unnassociated with any previously existing revenue source.

General obligation bonds must be approved by voters and are restricted by time limitations. As a one-time revenue source, bonds shouldn't be used for on-going expenses. The total issuance of general obligation bonds is restricted based on the taxable value within a city.

A.2.4.2 Sales Tax Revenue Bonds

Municipalities in Utah may issue debt secured by a pledge of their sales tax receipts. These are called sales tax revenue bonds. Sales tax revenue bonds have generally low financing costs (typically within 5 to 15 basis points of where a city's general obligation bond debt would likely price).

Sales tax revenue bonds have low financing costs and do not require a vote before issuance. They can be used for any one-time projects as deemed necessary by

the local elected officials.

Most cities, including Sandy, rely on sales tax revenue to pay for municipal operations, leaving little revenue to repay bond obligations. These bonds have higher financing costs than general obligation bonds and do not create a new revenue source, but rather issue debt against existing revenue sources.

A.2.4.3 Lease Revenue Bonds

One financing option which, until the advent of sales tax revenue bonds, was frequently used to finance recreation facilities is a Lease Revenue Bond issued by the Municipal Building Authority of the City. This type of bond would be secured by the recreation center property and facility itself, not unlike real property serving as the security for a home mortgage. Lease revenue bonds are repaid by an annual appropriation of the lease payment by the City Council. Interest rates are higher than on general obligation bonds or sales tax revenue bonds and the life of the bond may not exceed the useful life of the facility used to back the bonds.

Lease revenue bonds may be issued without a vote of the citizens. No specific revenue is pledged to repay the bond.

Lease revenue bonds have higher financing costs than general obligation bonds or sales tax revenue bonds and existing revenue sources must be used to repay the debt service payment. Lease revenue bonds must be used to build a facility that can secure the debt.

A.2.4.4 Private Placement Bonds

Private placement bonds are sold not through a public offering but rather a private offering, mostly to a small number of chosen investors.

Private placement bonds can be used when a public offering may not be well received by the market. These bonds can be structured and secured in any way that is acceptable to the bondholders and may be used for any purpose as is desired by the local elected officials and acceptable to the bondholders.

Private placement bonds have higher financing costs because they are not open to the competitive forces of the market. Private placement bonds can be difficult to issue.

A.2.4.5 Private Financing

Private financing includes any arrangement between Sandy City and parties who may be willing to lend Sandy City money. Private financing can be structured and secured in any way acceptable to both parties.

Private financing is very flexible and can be very creative. However, private financing is more expensive than issuing debt in the municipal bond market because it does not offer investors the tax advantages of municipal bonds. It will typically involve financing terms which are more aggressive than more traditional bond issuances because they are often secured by risky assets.

A.2.4.6 Miscellaneous Debt Service

Numerous other debt service opportunities exist for municipalities to use for the development of infrastructure. Elected Officials and staff should be cautious when

using non-traditional forms of financing to complete their desired goals.

A.2.5 Special Districts and Service Districts

A.2.5.1 Special Improvement District / Special Assessment Area

Special Improvement Districts (SID), or Special Assessment Areas (SAA) allow municipalities to designate specific geographic areas as the beneficiary of an improvement and then levy an assessment to the properties in that area to help pay for the improvements. The assessment levy is then pledged as a security for which to issue bonds to complete the needed improvement. Special assessment areas can be used to build trails and trail infrastructure if the primary users of the trail will be from a specific part of the city. Proportionate payments of a Special Assessment Area levy can be based on property value, square footage of land ownership, road frontage, per residence, etc.

Special Assessment Areas can create a 'new' revenue source to pay for capital expenses. The beneficiaries of a piece of infrastructure proportionately pay a greater share of the capital costs. No general vote of the public is required to create a Special Assessment Area or Special Improvement District but those who are in the area can challenge the creation of a SAA or SID.

Bonds issued against a SID or SAA levy have higher financing costs and the city incurs significant administrative costs associated with managing a SID and its associated improvement levy and debt service.

A.2.5.2 Recreation Special Service District

A recreation special service district can be created by a vote of the residents in a particular part of the city for the development of recreational facilities. In Sandy, there already exists the Alta Canyon Service District which was created for this very purpose. With a recreation special service district, a property tax can be levied to all property owners within the specified district to pay for the construction and the operations and maintenance costs for recreation facilities. A recreational special service district actually creates a new entity with its own governing board, although some of its powers may be restricted to approval by the City Council.

The creation of a recreation special service district can create 'new' revenues for a trail system. Recreation special service district revenues can be used for both capital development and on-going operations and maintenance costs. A recreation special service district would levy a property tax to just the property owners within the district, and would only be created by a vote of the people within the district, thus enjoying a measure of approval and support for its creation. Because the district is geographically designated, the benefits can be focused to the taxpayers within the district.

Recreation facilities developed and maintained by a recreation special service district must be concentrated to benefit those within the district primarily, they can't be used for city-wide infrastructure. A separate layer of government is created, sometimes creating inefficiencies or additional challenges. A recreation special service district must be created by a vote of the people, thus creating challenges with timelines and public support.

A.2.6 Donated Resources

A.2.6.1 Volunteers

Volunteers are a critical resource for the development of trails throughout the community. In Sandy, the Parks and Recreation Department has had a long history of working well with volunteers to build and maintain trails and trailheads. The volunteer support for trails in Sandy has included numerous Eagle Scout projects, coordinating efforts of volunteers from local religious organizations, and partnering with local businesses who volunteer staff time and resources to help build and maintain trails in Sandy.

Volunteers provide a resource to develop trails in Sandy without the cost being born by taxpayers throughout the city. The volunteers who work on trails in Sandy are usually happy to provide the service and capable of producing work which saves the city thousands of dollars annually.

Volunteer support may not be provided in the type, form, manner, or timing as desired by the city and is limited in what they can do on trail construction and maintenance. Volunteers also require staff resources for support and direction.

A.2.6.2 Service Organization Partners

Sandy City has several service organizations who have supported and volunteered for the development of trails throughout the city. By partnering with organizations such as the Rotary Club, Exchange Club, and other similar organization, or by partnering with groups from the business community, Sandy City can leverage resources which go beyond those acquired from taxpayers to help build and maintain a trail network.

Partnering with service organizations brings resources to bear without taking those resources from taxpayers within the community. Service organizations sometimes can bring unique skills or perspectives to a project. Support from these organizations permeates through the community in a way that isn't possible if a project is simply completed by the local government only.

Support or partnerships with service organizations is unpredictable and limited to the willingness of outside organizations to form partnerships or donate time and resources.

A.2.6.3 In-Kind Goods and Services

In-kind goods and services may also be donated by individuals or groups within the community to help with the development of trails in Sandy. Informal donations currently occur, but the city could possibly implement or partner with another group to form a more formal recruitment of resources to help develop, maintain, and patrol trails within the city. Examples could include adopt-a-trail programs, trail patrol volunteers, and other similar efforts.

The donation of in-kind goods and services can leverage taxpayer resources to help build, maintain, and protect a trail system. Stakeholders who are most supportive of the development of a trail system are most likely to provide many of the goods and services.
Donations and volunteering of time is always contingent on outside forces and

availability. Donations received, whether goods, or the abilities of volunteers, may not be what is desired or most needed and resources must be used to manage the donation of goods or volunteer time.

A.3 Public comment

The following is a summary of public comment received during the planning process. Some of the comments listed below are summaries of overall comments or a combination of multiple but similar comments received:

Comment	Response
Ralign access to Bonneville Shoreline Trail in Hidden Valley Park so it's not so steep. Also route through park and make trail 2 feet wide instead of 3 feet.	The current trail accesss alignment from Hidden Valley Park to the Bonneville Shoreline Trail will retain its original alignment. The trail will remain at its proposed width in order to allow for two way traffic on the trail.
Add no smoking signs.	Sandy City attempts to promote safe and conscientious use of the entire trail network through providing signage where appropriate as well as educating the public and trail users whenever possible. This includes information regarding possible fire hazzards.
Add bio-degradeable toilet in Bell Canyon.	The City is considering adding restroom facilities at the lower Bell Canyon Reservoir site. Bio-degradeable toiets, alogn with various other types of toilet facilities are being studied.
Provide safe hiking route from Hidden Valley Park to Bell Canyon. Walking/hiking along Wasatch Blvd. does not feel safe.	The completion of the Bonneville Shoreline Trail through the City will create this connection.
Clarify "no dogs" above Hidden Valley Park.	It is planned to restrict domestic animals along the entire Bonneville Shoreline Trail due to watershed protection concerns. The City will add signage as necessary and seek other effective ways to educate trail users and enforce this restriction.

Comment	Response
Anxious to see the Wasatch and Jordan Valley Railroad Trail developed.	This is in a very preliminary stage and will continue to be looked at by the City as time and funding allow.
Please get the Dry Creek project/trail completed ASAP. Need the TRAX access from 10200 South.	The City is currently working with the developers in that area to provide this access as part of the overall development of the site.
Develop the Highland Drive Multi-purpose trail prior to road construction (realizing that the road is probably very far off into the future).	Currently several unimproved/user created trails exist within the corridor. The City is considering improving a trail system, but they will likely remain unpaved until the road is developed.
Bike lanes should be included along 10600 South from 1300 East to 1700 East.	This section is intended to be a multi-use trail, including the accomodation of bikes. The 10' (8' with 2' of stamped concrete) trail was designed to accommodate both pedestrian and bicycle traffic.
Bike routes should be included along 11400 Sotuh between 1700 East and 2000 East/ Highland Drive.	The proposed plan now shows a future bike route in this area.
Has the Badger Cove trailhead been approved by the City? What about providing equestrian parking here?	The master plan includes a trailhead at Badger Cove, but the City does not currently own or control the property. Equestrian parking is provided at the Wrangler trailhead which is in close proximity to this location.
When will the Lone Peak Park trailhead be developed and will it include equestrian parking?	The trailhead will be developed in cooperation with Salt Lake County as it is on county owned land and is part of the overall Dimple Dell Park system.

Comment	Response
The equestrian has been eliminated from the Sandy Draper Irrigation Canal, why?	In the more detailed analysis of this master plan, it was determined that equestrian use along this trail would be limited by the fact that it does not loop or provide appropriate destinations. Additional conflicts would arise at the large number of street crossings.
Why was the equestrian trial eliminated from the Porter Rockwell trail system (UTA/ TRAX trail)?	The design standards identified by UTA do not allow for equestrian use within their right-of-way.
Have you looked into the feasibiilty of including a frisbee golf course along any of the trails or as part of some existing open space?	Although not part of this master plan, a frisbee golf course is planned for Quail Hollow Park. This type of use could be considered in wider linear type parks and trails.
Please maintain the natural and native feel of the Quail Hollow Trail and park. It is ideal just the way it is (2 comments).	This park has always been planned to provide sport fields and other activities in the northwest portion when funding is available. The southeast is intended to remain in a more natural state where the trail currently exists along Little Cottonwood Creek.
Would it be possible to run water through the irrigation ditch at Quail Hollow Park a few times a year to maintain the trees there?	Unfortunately, the City does not control the flow of water through the canal. This is maintained by a private entity and is based upon providing water rights to owners along the canal.
Concerns regarding pedestrian/ bicycle conflicts (2 comments).	It is not the City's intent to restrict bicycle use on the trail network. However, efforts are and will continue to be made to educated users on trail etiquette and courteousness to other users.

Comment	Response
I would like to see more priority put on trails in Sandy and also the abilitiy to take my dog to those trails...off leash.	This plan is a direct response to the desire of Sandy residents to have more trails, as expressed in the community survey conducted earlier this year. While we understand the desire of dog owners to have off leash areas, a number of safety concerns and user conflicts arise when allowing them along trails for various types of users (pedestrian/equestrian/bicycle). There are also water quality concerns and laws that prohibit domestic animals in watershed areas. The City has tried to meet some of the demand for off leash dogs by providing a designated dog park located at 9980 South 300 East.
The table of trail priorities in section 6.1 lists funding that is shown in the current City budget book (specifically 4b, 5a, 5b). There are differences between what is shown in the budget book and what is shown as the cost in this plan.	The allocations shown in the City's budget book are not always reflective of the entire cost of a project. Many times these projects are partially funded, either as multi-year projects (receiving partial funding each year), or in the anticipation that the remaining funds will be obtained from other sources (e.g., grants, multi-jurisdictional participation, etc.).

References/Additional Sources

R.1 Previous Planning efforts

R.1.1 2012 - Sandy City Civic Center Area 30-Year Development Plan

While this plan was developed to address a specific geographical location, great importance was placed on trails as a key amenity in making the future development successful. A number of ideas regarding the role of trails can be accessed in this plan.

R.1.2 2005 - Sandy City Parks, Recreation, and Trails Masterplan

This plan outlines the City's goals for existing and future parks, recreation, and trails within the city limits. Specifically, chapter four addresses trails and this plan was built upon the fundamental framework of that chapter.

R.1.3 2005 - Salt Lake County Parks and Recreation Master Plan

This plan, completed by the Salt Lake County Parks and Recreation Department, outlines existing and future trails and facilities owned and controlled by Salt Lake County. This includes details in regards to the Dimple Dell Regional Park and Trail system.

R.1.4 1997 - East Bench Trailhead Master Plan

This plan outlines possible trailhead access points to the Bell Canyon area. Alternative locations were planned to provide managed access points and to address concerns and desires of residents and neighbors.

R.2 Additional standard references

R.2.1 American Association of State Highway and Transportation Officials

AASHTO - American Association of State Highway and Transportation Officials: AASHTO is a non-profit, nonpartisan organization that publishes specifications, test protocols and guidelines for highway and roadway projects. AASHTO applies to five transportation modes: air, highways, public transportation, rail and water. AASHTO serves as a liaison between state departments of transportation and the Federal government; they are also often utilized by local municipalities. AASHTO should be referenced for technical standards for roadway designs that involve bike lanes and trail components.

R.2.2 Manual on Uniform Traffic Control Devices

MUTCD – Manual on Uniform Traffic Control Devices: MUTCD is published by the Federal Highway Administration (FHWA) under 23 code of Federal Regulations (CFR), Part 655, Subpart F. MUTCD is a national standard document for traffic control devices, including road markings, highway signs, and traffic signals. Regulatory signage for trails is also included in the MUTCD manual and should be referenced as needed for multi-use and roadway type trails.

R.2.3 International Mountain Bicycling Association

IMBA – International Mountain Bicycling Association: IMBA is a non-profit organiza-

tion that provides resources such as “Managing Mountain Biking” and “Trail Solutions” to help create, enhance and preserve mountain biking trails. IMBA encourages low impact riding, volunteer trail work participation, cooperation among user groups, grass-roots advocacy and innovative trail management solutions.

R.2.4 Federal Highway Administration

FHWA – U.S. Department of Transportation’s Federal Highway Administration: The FHWA is a great resource for manuals and guidelines that provide information for trail planning, design, construction, maintenance, operation, and management, as well as signage. In addition the FHWA has a Recreational Trails Program (RTP) that is an assistance program that provides funds to the States to develop and maintain recreational trails and trail-related facilities for motorized and non-motorized recreational trail uses. Reference to the RTP should be made when designing for trails that have been federally funded.

R.2.4 American Trails

American Trails is a non-profit organization that provides resources for all trail interests, including hiking, bicycling, mountain biking, and horseback riding. The American Trails website provides several resources for trail building, trail planning, impacts, management, land and rights-of-way, advocacy and education.

R.2.5 Sandy City Standard Specifications for Municipal Construction (SCSS)

The city standards should be referenced for design guidelines and specifications as they pertain to trails (standards may be found on the Sandy City website).

R.2.6 Other Governmental Jurisdictions

Adjacent municipalities, trails maintained and governed by others, state and federal reference and design standards should also be referenced.