

# The Ann and Roy Butler Trail at Town Lake Metropolitan Park

## OPERATIONS AND MAINTENANCE PLAN

Prepared for: THE TRAIL FOUNDATION BOARD OF DIRECTORS

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## ACKNOWLEDGMENTS

The Trail Foundation is a non-profit parks organization, whose mission is to protect, enhance, and connect the Butler Hike-and-Bike-Trail at Lady Bird Lake for the benefit of all. The Butler Trail at Lady Bird Lake Operations and Maintenance Plan was developed in coordination between The Trail Foundation staff, The Trail Foundation Board of Directors, and the Austin Parks and Recreation Department.

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# 1.0 INTRODUCTION

## 1.1 O&M Plan Utility

This document outlines a methodical process for the transfer of appropriate operations and maintenance of the Butler Hike-and-Bike-Trail at Lady Bird Lake (Butler Trail) and Town Lake Metropolitan Park from Austin Parks and Recreation Department (PAR) to The Trail Foundation (TTF). Maintenance activities and standards outlined in *Section 2.1* of this document apply to TTF operations and are not expectations for municipal entities which have their own standard operating procedures. *Section 2.3* outlines the phasing of transfer of responsibilities. Timing of these transfers will be agreed upon on an annual basis between the PAR Director and TTF. *Section 2.4* specifically outlines those activities TTF will be undertaking in year one of this plan. This plan has been created to be a living document, capable of agreed upon adjustments, and TTF will continue to work in close contact with all appropriate City partners on work conducted.

## 1.2 History and Location

The Trail Foundation is a non-profit parks organization, whose mission is to protect, enhance, and connect the Butler Hike-and-Bike-Trail at Lady Bird Lake for the benefit of all. The Butler Trail is a 10-mile loop trail with extensions and bridges totaling a 16-mile natural urban trail system in the heart of Austin that gets more than 4.5 million visits every year. TTF was formed in 2003 to bridge the gap between the realistic needs of and the available resources for this trail system. The rapid growth of Austin has continued to push the resource gap wider, necessitating the need for a formal partnership with TTF to address the ever-increasing operations and maintenance of the space.



## 1.3 Natural Areas and Urban Forestry

The urban forest and natural areas around Lady Bird Lake are part of the very reason Austin exists and has become the city we know today. Like its cultural significance, the ecological importance of this area cannot be overstated. The Lake, Trail, urban forest, and natural areas perform critical tasks for our wellbeing, including cleaning the air, reducing noise pollution, enhancing water quality, sequestering carbon, intercepting rainfall, mitigating flooding, reducing erosion, decreasing urban temperatures, shading our recreation areas, protecting the shoreline, building soil, providing wildlife habitat, increasing public health, increasing property values, reducing infrastructure costs, and making people happy. The recommendations here acknowledge the ecological and cultural significance of the site. The strategy put forward recommends ways to sustain and improve the user experience and ecological function of the urban forest and natural areas through responsible stewardship and proper maintenance.

As stated in *The Butler Trail at Lady Bird Lake Natural Areas and Urban Forestry Guidelines*, this document also champions the following goals for managing natural areas and the urban forest:

**Restore and enhance plant communities:**

Manage native trees, understory, and groundcover to create diverse and aesthetically appealing plant communities that provide rich wildlife habitat.

**Repair and improve ecological function:**

Manage landscape to better absorb and clean water, regenerate native flora, filter air, create and stabilize soil, reduce urban temperatures, and provide more shade.

**Enhance resiliency:**

Manage landscape to adapt to and withstand drought, heavy use, climate change, and other major disturbances.

**Enhance the user experience:**

Provide aesthetically pleasing, compelling, and comfortable natural surroundings.

**Facilitate stewardship:**

Catalyze opportunities to appreciate, observe, and care for the natural environment as an ongoing part of people's lives.

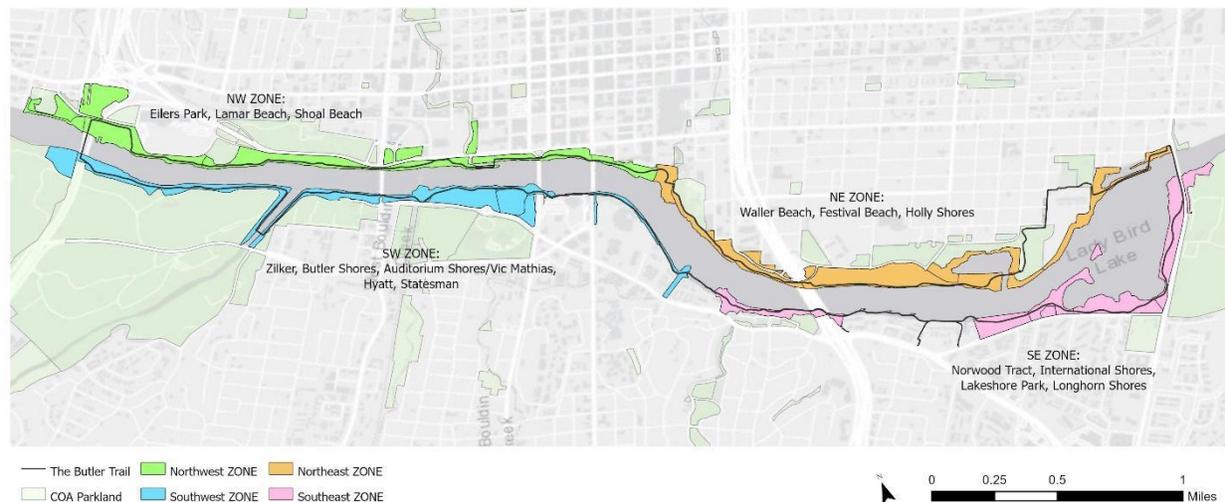
## 1.4 Placemaking

TTF has a successful record of leading and providing significant support to the capital improvements of the Butler Trail. Additionally, TTF has already committed to completing more than ten new projects in the next four years. The rapid progress of parkland improvements come as part of TTF’s strategic plan, developed and adopted in 2020, which identified the enhancement of the Trail as one of its core priorities. TTF intends to seize and optimize the new opportunities created by the foreseeable development along Lady Bird Lake through the support of active transportation and placemaking projects. Opportunities that will facilitate community gatherings and engagement. The adoption of this priority reflects the sustained and expanded commitment to ecological restoration/conservation, project completion, and placemaking.

## 1.5 Overview of Recommendations

The area described in the plan includes 259 acres of land surrounding Lady Bird Lake, divided into 4 sections or “maintenance zones.” TTF already conducts operations and maintenance activities throughout the area; however, with the establishment of the Parkland Operations and Maintenance Agreement (POMA), TTF will be responsible for specific O&M maintenance tasks and other activities. The transition of primary responsibility will be phased over 10 years while TTF builds capacity to increase staff, resources and funding. Each maintenance zone will transition through at least 3 phases. The timeline for each zone is staggered to accommodate organizational growth (*see Section 2.4 Maintenance Zones*).

The Trail Foundation Maintenance Zones



## 2.0 RECOMMENDATIONS

As a long-existing public amenity, the Butler Trail at Lady Bird Lake has been historically maintained at levels that accommodate a limited municipal operations budget, sometimes resulting in high capital expenses to replace or repair damages that could have been prevented through an investment in maintenance or mitigation such as green stormwater infrastructure projects. It must be noted that excessive maintenance budgets are not always fiscally sustainable and must be balanced against capital replacement costs. The maintenance recommendations described below represent strategic adjustments to land management practices and standards of care which aim to simultaneously limit increases in annual operations spending and reduce capital replacement budgets over time. These activities and standards apply only to TTF operations and are not expectations for municipal entities which have their own standard operating procedures.

### 2.1 TTF Maintenance Activities and Standards

The maintenance standards described in this document represent the recommended minimum TTF requirements for each activity per maintenance cycle or visit. The frequency of cycles recommended for maintenance activity differ across the 4 zones and are designated by the “Level of Service” (see below Section 2.2). Level of Service designations are based on intensity of use.

TTF maintenance activities can be categorized into the following 3 resources categories:

Category	Description
<b>Built Assets</b>	Activities which address appearance, function, safety, and sanitary condition of built elements including the trail, facilities, structures, and furnishings.
<b>Natural Assets</b>	Activities which address stewardship of natural resources and health and function of natural areas, the urban forest, manicured landscapes, green infrastructure, and turf areas.
<b>Special Assets</b>	Non-public facilities and equipment maintenance, along with seasonal or special event-related maintenance

## Built Assets: Maintenance Standards

### General Maintenance and Safety Hazards

The Butler Trail includes a variety of assets that range in use, maintenance requirements, and repair cost. Regardless of the asset type and the differences in conditions assessments or maintenance schedules, all documented safety and hazard concerns should be addressed in an appropriate, timely manner. As a part of the regular maintenance for each asset type, inspections should include conditions assessments and reporting of safety hazards.

- Report safety hazards in an appropriate, timely manner to TTF maintenance managers.
- Document and report safety hazards to PARD.
- Secure hazard zones using appropriate signage, barricades and/or traffic safety devices.
- Address safety hazards and maintenance concerns as determined by the maintenance manager. The method and scope of maintenance repairs should be based on the severity and extent of a hazard, the long-term efficacy of the method, and cost.
- Cleaning and maintenance products should be non-toxic, environmentally sensitive and aquifer-friendly following PARDs adopted Integrated Pest Management Plan (IPM).
- Regularly document and track maintenance activities, making recurring maintenance issues easy to identify (*see Section 4.2 Maintenance Reporting*).
- Give special consideration to repair and maintenance methods that are sustainable, incorporate green infrastructure practices, and/or improve ecological function.

### Trail Surface and Infrastructure

The 10-mile Butler Trail loop is primarily a soft surface trail constructed with decomposed granite. Sections of the Trail have been reinforced and repaired with stabilized decomposed granite or concrete, with edges reinforced with stone, concrete and timber retaining walls. Additionally, the Trail is connected to hard-surfaced concrete bridge and boardwalk structures that provide trail users with access across the river and over the water. A few wooden foot bridges and sections of asphalt are also represented in the Trail system. The frequent transitions between hard and soft surfaces are a maintenance concern. The impacts of heavy daily use and intense, seasonal rain also contribute significantly to the maintenance load. Lastly, 80% of the Trail is located within the 100-year floodplain, making it vulnerable to catastrophic flood events. With these conditions in mind, maintenance staff should regularly assess the Trail for safety hazards. Regular maintenance should include:

- Assess Trail at regular, frequent intervals (*refer to Section 2.2 Levels of Service*) and within 24 hours of heavy rain events.
- Identify safety hazards and maintenance concerns including but not limited to uneven surfaces, trip hazards, damaged infrastructure, pooling water, debris deposition, and excessive vegetation.
- Coordinate with COA and structural engineers to assess any large infrastructure maintenance
- Repair rill and gully erosion by resurfacing decomposed granite trail, ensuring proper material compaction and outslope grade. Stabilization of surface material should be considered in areas that consistently experience erosion.
- Repair outslope to improve water drainage - grade adjustment and/or removal of accumulated soil along trail edge.
- Repair or install retaining structures on and off trail (e.g., retaining walls, berms, check dam, etc.) to reduce erosion.
- Remove accumulated debris, soil and leaf matter from trail surface and drainage inlet grates

- Repair or install drainage infrastructure (*see Drainage Infrastructure SOP*).
- Improve transition between decomposed granite and hard surface materials.
- Replace wooden decking on foot bridges as needed.
- Reduce excessive vegetation at trail edge (*see Trail Edge Vegetation SOP*).
- Maintain 8-10 ft vertical clearance 2' from either side of the Trail, exceptions to be assessed on a case-by-case basis by PARD Forestry (*see Urban Forestry Tree Pruning SOP*).

#### Drainage Infrastructure (e.g., culverts, drainage pipes, concrete channels, etc.)

Heavy seasonal rain events bring high velocity stormwater flows through the parkland and onto the Butler Trail when water is diverted from adjacent impervious surfaces and directed into Lady Bird Lake to prevent dangerous flood conditions. Hard armored surface drainage structures, including concrete channels, drainage pipes, and culverts, are installed around the Trail, and adjacent parkland, to manage the impact of stormwater. Regular conditions assessment and maintenance of these structures can prevent expensive damage. Regular maintenance should include:

- Assess drainage infrastructure at regular, frequent intervals (*refer to Section 2.2 Levels of Service*) and within 24 hours of heavy rain events.
- Clear drainage structures of debris, silt, or overgrown vegetation that may impede the intended flow of water.
- Assess adjacent areas for potential impacts to the drainage structure function. Grading adjustment, vegetation management, and soil removal/replacement may be required.
- Assess drainage inlets/outlets for erosion. Energy dissipation methods may be required to reduce water velocity coming into or out of the drainage structure.
- Coordinate repairs with Watershed Protection and/or PARD Trails depending on the location and function of the infrastructure.

#### Gathering Areas (e.g., overlooks, pavilions, seating areas, picnic areas, etc.)

Parkland improvement projects built on the Butler Trail are typically designed to function as attractive, accessible places for people to gather. To that purpose, these places incorporate hardscape elements and landscape features that can typically accommodate heavy foot traffic and use. Examples include but are not limited to large deck structures, hard-surfaced seating areas constructed from concrete or brick pavers, steel framed pavilions, and concrete-edged gravel gathering areas. While these elements are designed and constructed for durability, they require regular maintenance and inspection. Regular maintenance should include:

- Regular patrol and assessment of safety hazards and maintenance concerns, including but not limited to trip hazards, uneven surfaces, broken or damaged features, vandalism including graffiti, litter accumulation, and cleanliness.
- Keep areas free of litter and debris.
- Sweep out or use blowers on structures and surfaces and wipe down areas with picnic tables as needed.
- Remove unwanted vegetation growth from hardscape areas including cracks, seams and expansion joints.
- Assess and repair wooden and deck structures with replacement lumber as needed. Monitor wood surface finish for reapplication or reconditioning.

- Assess brick paver areas for uneven or shifting bricks and repair/replace as needed. These areas are regularly swept and/or cleared of dirt with a blower to prevent surface accumulation along the brick seams.
- Wash surfaces following periods of high use or in areas where food and beverages are regularly consumed. Surfaces may be power washed with a fan-tipped nozzle to prevent damage or cleaned with a stiff-bristle broom.
- Rake gravel areas to an even surface, monitor and treat for unwanted vegetation growth, and replenish with material as needed to maintain attractive appearance. Leaves and other organic material should be removed to prevent accumulation.
- Spot clean structures as needed, as determined by inspections.

## Trash and Recycling

The accumulation of trash along the Trail and throughout the parkland is one of the primary causes of complaint from the public. Trash receptacles are regularly placed throughout the area; however, the regular collection of trash and assessment of accumulation cycles is necessary to provide the public with a positive Trail experience. Additionally, recycling is promoted on the Butler Trail and TTF supports sustainable approaches to waste reduction. The regular maintenance cycle should include:

- Assess trash and recycling receptacles and manage the accumulation of litter.
- Keep trash and recyclable items separate when possible. Items to be recycled include aluminum, plastic, paper, cardboard, Trash and recycling are removed from receptacles when bins are more than half full.
- Collect and remove trash or debris in the immediate area around the receptacle
- Always install bin liners in receptacles.
- Dispose of trash and recycling offsite at City owned and designated dump locations.
- Monitor the trail and adjacent parkland for trash accumulation and report for additional service.
- Coordinate volunteers to help with the removal of excessive trash and debris beyond the scope of a regular maintenance cycle.

## Restrooms

The restroom facilities on the Butler Trail are subject to significant impact from high use. The facilities remain unlocked 24 hours a day (unless closed and locked for maintenance repairs) but are closed during the park curfew hours of 10pm to 5am. Regular and frequent maintenance cycles will help keep the restrooms open and available to the public. All purchases of cleaning and maintenance products must be safe for the environment, ground water, sewer systems, and not harmful to people in accordance with city codes and ordinances and the PARD IPM plan.

The regular maintenance cycle should include:

- Assess proper function of lights, ventilation system, sinks, toilets, stall doors, locks, hand dryers and other features.
- Clean floors, walls and stalls.
- Empty trash receptacles.
- Wipe down and sanitize surfaces including toilets, sinks, fixtures and mirrors.
- Replenish toilet paper, paper towels, and/or soap as appropriate.

- Report vandalism, graffiti, damage or maintenance issues to Park Operations Director with photos as needed.
- Winterize restrooms before deep freezes.

## Drinking Fountains

In addition to the drinking fountains located at the restroom facilities, there are also a number of free-standing drinking fountains. These serve the heavy recreational needs of the Butler Trail, and their maintenance is an important element in providing a positive experience for Trail users. Regular maintenance should include:

- Daily clean and wipe down drinking fountains.
- Check for water flow, remove any debris that clogs drains, and check for damage.
- Assess for the need to descale, adjust valve taps, and repair leaks, and schedule repairs as needed.
- Winterize drinking fountains before deep freezes.

## Lighting

Lighting along the Trail helps the public enjoy the space at night. Only approximately 50% of the Butler Trail is currently lit and recommendations for improvements to the existing facilities and unlit spaces can be found in the *Butler Hike-and-Bike Trail Safety and Mobility Study*. Regular maintenance, assessment, and repairs should be completed by a licensed electrician and should include:

- All maintenance and repair should be completed by a licensed electrician.
- Assess all area and security lighting regularly, completed when light conditions are low enough to accurately assess the conditions of the lighting feature – before sunrise, after sunset.
- Check electrical system and components for function and compliance with applicable building codes.
- Check lamps for function and report outages to maintenance managers for replacement plan.
- Check for exposed electrical conduction wires and report to maintenance managers
- Check proper installation of ballast boxes and components.
- Adjust lights for uniform coverage on facilities and fixtures and to eliminate dark or blind areas and reduce glare and over lighting.
- Secure fixture and poles according to manufacturer’s specifications.
- Assess poles and fixtures after major wind, ice or hailstorm events.
- Assess lighting which is damaged to the point of no longer meeting “full cut off” requirements, and repair to standards.
- Report damaged, vandalized, or bulb outage as soon as possible.

## Fencing

Fencing, railings, and walls are used on the Butler Trail to either limit foot traffic or prevent access. Examples of this include the metal guard railings along the boardwalk and bridge structures, the split-rail cedar fencing along sensitive natural areas and sections of steep terrain, and the limestone block walls along the Norwood Tract. These structures are relatively low maintenance, but regular assessment and as needed repair can extend their longevity. Regular maintenance should include:

- Assess for damage, loose connections, broken pieces, shifted limestone (walls), and evidence of trespassing/vandalism. Fencing assessments can occur during trail surface inspections.
- Regularly clean and wipe down handrails.
- Repaint metal handrails as needed.
- Replace and repair broken split-rail fence timbers as needed.

## Furnishings (e.g., picnic tables, park benches, bike racks, etc.)

There are several types of furnishing throughout the Butler Trail including but not limited to benches, picnic tables, bike racks, and other assets. Maintenance staff will need to regularly assess these furnishings to determine maintenance or replacement needs. Regular maintenance should include:

- Daily assessment of furnishings for damage, broken pieces, and graffiti.
- Check benches and picnic tables for loose seating connections or unstable surfaces.
- Repair and replacement done as needed.
- Power washing may be needed in areas close to where food and beverages are consumed.

## Trail Counters

The Trail usage is monitored by a series of electronic trail counters which transmit information to a mobile application. The data generated from these units helps to inform operational decisions for both The City of Austin and TTF. The regular care of the trail counter units affects the reliability and transmission of data. Regular maintenance should include:

- Assess physical damage, water damage, graffiti, or dirt/debris accumulation.
- Regularly wipe counter lens clean.
- Confirm data reliability through count verification using “Eco-Link” app.
- Adjustment and sensitivities may need to be adjusted with the help of Eco Counter representative.

## Fitness and Play Features

The Butler Trail currently provides a variety of fitness equipment and will include numerous new fitness and play features as a part of future park improvements. These assets include both stationary and interactive pieces that require regular assessment and maintenance for the safety of users. Regular maintenance should include:

- Assess all fitness/play equipment and areas for safety, cleanliness, operating condition and surfacing that is free and clear of hazards. Certified inspectors may be required based on the feature being assessed.
- Visually assess nails, bolts or screws to ensure they are well connected, flush with surfaces, and undamaged.
- Mechanically inspect features to ensure there is no damage to any components.

- Wipe down and clean equipment as needed.
- Assess lumber components of play features for replacement due to damage or rot.
- Assess fall surfacing for reconditioning or replenishing.
- Check equipment for unwanted animals and pests, such as wasps, rodents, and birds.
- Any unique parts or paints should be kept as attic stock in order to make repairs as soon as possible to avoid shutting down the feature for an extended period of time.

### Installations (e.g., public art, temporary and permanent)

The Butler Trail plays host to a variety of both temporary and permanent installations which may include public art pieces, play features, and other installation types. These assets sometimes require unique maintenance based on the elements of the installation. Maintenance staff should coordinate special care standards with the associated designer, artist, or consultant associated with the installation. Regular maintenance should include:

- Regularly check installations for safety and visual appearance.
- Repairs and maintenance are unique to each individual piece depending on its location, material construction, and purpose, so repairs should be coordinated with the artist or consultant.
- A separate maintenance plan should be created for individual pieces for optimal care.

### Signage

Wayfinding, interpretive, and regulator signs are all represented on the Butler Trail. Additionally, individual projects and park areas may be designated with location name or donor signage. Many other signage types also occur and include but are not limited to Trail maps, mile markers, informational kiosks or bulletin boards, and temporary signage. Regular maintenance should include:

- Regularly check signage which can be done during trash/recycling removal, mowing or patrolling the Trail.
- Check park identification and wayfinding signs are in good condition, secured and properly installed.
- Check disabled parking signs are secure, visible, and installed to code.
- Check park rules signs are secure and properly installed at the appropriate location
- Check restroom signs are secure and visible.
- Check directional and regulatory signs are clean, painted and free of protrusions and graffiti, and are in the appropriate locations.
- Assess and update Interpretive signage, as necessary, with new research at least every two to three years.
- Repair and recondition donor signage as needed.
- Remove temporary signage as needed.

### Graffiti

Maintenance staff shall report signs of graffiti or vandalism to a maintenance supervisor or park manager. The park manager shall coordinate with the appropriate maintenance staff to clean up or repair the incident as soon as possible. All built assets will be regularly checked for graffiti.

## Natural Assets: Maintenance Standards

### Turf Care

The lawn areas around Lady Bird Lake represent an important source of recreation for the community. These areas are also the location of special events and community gatherings. Regular turf maintenance will vary between park areas due to the differences in use. Maintenance will include:

- Mowing and edging of turf areas are scheduled based on park usage where highly used parkland will be mowed more regularly based on park standard level.
- Mowing and edging cycles increase during the growing seasons between the months of March and September.
- Regularly aerate level 1 turf areas.
- Fill any ruts caused by mowing (no mowing to occur on wet turf).
- Use care to avoid hitting shrubs and planting beds during mowing, and do not damage trees.
- General weeding is performed as needed.
- Reseeding or sodding efforts occur as needed; install and maintain temporary fencing as needed to protect establishing turf.
- Fertilize turf as needed. Only plant derived fertilizers are allowed within the floodplain.
- Assess turf areas for conversion to natural area status when possible, based on use, topography, and community support.

### Trail Edge Vegetation

Vegetation growing along the edge of the Trail plays an important ecological role in stabilizing the soil, providing habitat, filtering and slowing stormwater, and numerous other ecological benefits. Due to the proximity of the Trail to sensitive riparian habitat along the shoreline, it is important for maintenance staff to receive training in plant identification. Additionally, the establishment of Grow Zone areas help preserve the function of these spaces. To balance the needs of Trail users with habitat protection, a regular maintenance cycle should include:

- Regularly assess trail edge vegetation.
- Prune and mow trail edge vegetation such that it never exceeds the minimum requirement to provide a safe Trail experience.
- Remove herbaceous vegetation from the trail surface and mowed to a maximum width of 3 ft from the Trail edge. Maintenance staff should be well acquainted with the location of Grow Zones and avoid mowing in these areas even when they touch the edge of the Trail.
- Special consideration is given to park bench clearance within the Grow Zone areas such that a maximum 5ft buffer will be maintained around the bench. Herbaceous vegetation in the Grow Zone should be pruned to the minimum height of 3-8' needed to provide views of the water in areas designated for views.
- Manage vegetation around built assets including but not limited to trash/recycling receptacles, drinking fountains, handrails, signage, bridges, retaining walls, gathering areas, and restroom facilities.
- Provide 8-10 ft maximum vertical clearance at Trail edge with the exception of special circumstances to be assessed on a case-by-case basis by PARD Forestry (*see Urban Forestry SOP*).

- Remove nuisance and invasive plant species in coordination with TTF, PARD and WPD staff to ensure successful reduction of the plant population.
- Poison ivy occurring on the edge of the Trail is not managed with power tools or heavy equipment due to the aerosolization of the urushiol oils. Poison ivy vegetation will be managed by trained staff and may require the use of herbicide (to be assessed on a case-by-case basis by WPD staff).
- Revegetation efforts along the Trail edge will be coordinated with input from TTF, PARD, and WPD staff.

### Manicured Planting Areas

As a part of all parkland improvement projects promoted and led by TTF, native planting areas play a significant role in both the aesthetics of the space and its ecological function. Planting beds, including those in the TTF Adopt a Garden Program, shall be maintained to promote the health, visibility, natural colors and variety of each species. Regular maintenance should include:

- Perform general maintenance (pruning, weeding, trimming, etc.) regularly with an increase in the maintenance cycle occurring during the months of March and September.
- Trim groundcovers to prevent encroachment onto walkways.
- Regularly prune plants to best accommodate growth habit of each species.
- Remove nuisance and invasive plant species using mechanical methods. Chemical herbicides are not used in the planting areas.
- Fertilize planting areas with plant-based products.
- Add mulch to planting bed once a year or as needed.
- Assess planting areas for replanting needs. Special consideration should be given to incorporating volunteers in these efforts.

### Green Stormwater Infrastructure

Green stormwater control systems are designed to help mitigate and control stormwater during rainfall events by reducing downstream flooding, erosion, and filtering pollutants from water. They can be designed in many forms, but GSI practices used around Lady Bird Lake are usually restricted to rain gardens and vegetated buffer strips. Around the Trail these systems are both a necessity and an amenity that should be treated and cared for equally as such. Regular maintenance should include:

- Assess features regularly and within 24 hours after a heavy rain event.
- Manage and prune turf grass areas such that vegetation does not exceed 18 inches in height.
- Care for special plantings as appropriate to support plant health.
- Regularly remove trash, debris and sediment build-up especially at inlet and outlet structures, and after rain events.
- Provide corrective maintenance when a GSI practice does not drain properly.
- Repair of any deterioration or damage to concrete and stone elements as needed.
- Replant non-vegetated or washed-out areas as soon as possible to minimize erosion.
- Remove nuisance and invasive plant species.
- Coordinate maintenance efforts and repairs with WPD.

## Urban Forestry

The thousands of trees that grow along the banks and around the parkland of Lady Bird Lake represent one of the most important natural resources of downtown Austin. In general, all maintenance activities should aim to best promote the long-term health of our urban canopy while providing a safe experience for visitors. Managing the urban forest will require regular inspections, new plantings, pruning and other forestry related activities to support healthy tree growth. These efforts should be overseen by an ISA certified arborist. Ongoing maintenance should include:

### Inspections and General Maintenance

- Inspect trees annually and pruned as needed for public safety.
- Assess all damaged or diseased trees for safety, and when removal is recommended, new trees are installed as appropriate and as resources allow.
- Maintenance activities should coincide with low demand periods and take advantage of special growing characteristics.
- Closely monitor and assess all trees and woody species during routine maintenance for insect and disease problems.
- In open lawn areas, spread mulch around the base of each tree, starting 1-3 ft out from the trunk and extending to the dripline (when possible). Volunteers should be considered for this annual effort.

### Planting and Tree Establishment

- Coordinate locations for new tree planting efforts along the Trail with input from TTF, PARD, and WPD staff.
- Stake newly planted trees as needed. Stakes should remain until trees are established and are able to stand without support (between one and two years from tree installation). Stakes may be left in place after the establishment phase to prevent damage or vandalism to young trees.
- Assess tree guys and adjust as needed to maintain tautness and avoid girdling of trees.
- When appropriate, maintenance staff should remove and dispose of guying system.
- Irrigate all newly planted containing trees and large woody species for 2-3 years.

### Pruning

- Prevent branch and foliage interference with requirements of safe public passage. Keep over street clearance to a minimum of 14 feet above the paved surface of the street, and 8-10 feet above the surface of the Trail and adjacent pedestrian facilities. Exceptions may be allowed for young trees, which would be irreparably damaged by such pruning action.
- Remove dead and dying branches and branch stubs that are 2-inch diameter or larger.
- Remove broken or loose branches.
- Remove live branches which interfere with the tree's structural strength, and healthful development.
- Prune to reduce weight where excessive overburden appears likely to result in breakage of supporting limbs. Prioritize end weight reduction.
- Monitor new or excessive epicormic growth for possible removal. Considerations should be given to the tree age, recent weather conditions and other environmental stressors. When removal is recommended, clear trees of epicormic growth to a minimum height of 8 feet above ground level.
- Pruning schedules consider bloom cycle and should be done to promote each species natural habit and aesthetic appearance.

- Pruning within Grow Zone areas will be coordinated with input from TTF, PARD, and WPD staff, following all City code and regulations.

#### Improper pruning (DO NOT PERFORM)

- Severe cutting back of all growing tips usually referred to as topping.
- Flush cutting where a cut is made even with the surface of the trunk or limb, removing the branch collar and branch bark ridge.
- Stub cutting where branch removals result in the base of branch removed protruding more than approximately 1/4 inch beyond the zone of branch collar and branch bark ridge.
- Removal of a healthy main leader.
- Excessive cutting or lifting that exceeds the International Society of Arboriculture or these specifications.

#### Irrigation

Temporary and permanent irrigation systems are used around the Trail to support parkland improvement projects and establish trees and native plantings. The use of water resources to support the health of trees and other plantings will be done sustainably and irrigation systems will be designed and maintained to reduce water loss and runoff. Irrigation water sources should come primarily from non-potable sources (if available). Regular maintenance should include:

- Check irrigation system is fully operational with complete and uniform coverage.
- Check water lines for leaks.
- Check backflow prevention devices are in place and functioning properly
- Check heads are installed properly for intended use.
- Properly adjust heads with rotations and arcs to reduce water runoff.
- Set systems to run at specific times to minimize evaporation and waste.
- Repair excavations are properly compacted, and turf is restored.

#### Natural Areas

The natural areas around the Trail not only function as a natural respite for the community but they also perform the role of reducing urban temperatures, improving air and water quality, providing habitat and reducing erosion. The plant communities represented on the Trail (and recommended for restoration) include floodplain terrace woodland, riparian woodland, savanna grassland, and wetland areas. A more detailed documentation of these areas and restoration recommendations can be found in *The Butler Trail at Lady Bird Lake Natural Areas and Urban Forestry Guidelines*. Regular maintenance should include:

- Train staff on the importance of protecting, restoring, and expanding the natural areas along the Trail.
- Regularly remove trash and debris when safely accessible with the help of both maintenance staff and volunteers.
- Assess natural areas for invasive species and plan annual efforts to reduce their impact on natural areas. Invasive species include but are not limited to: Chinaberry (*Melia azedarach*), Chinese parasol tree (*Firmiana simplex*), Chinese tallow (*Triadica sebifera* (L.) Small), Japanese privet (*Ligustrum japonicum*), golden raintree (*Koelreuteria paniculata*), paper mulberry (*Broussonetia papyrifera*, syn. *Morus papyrifera* L), heavenly bamboo (*Nandina domestica*), giant reed (*Arundo donax*), johnson grass (*Sorghum halepense*), hedge parsley (*Torilis arvensis*), cat claw vine

(*Macfadyena unguis-cati*), sweet autumn clematis (*Clematis terniflora*). For more detail on removal and mitigation, see the Natural Areas and Urban Forestry Guidelines.

- Plan annually planting for the installation of native herbaceous and woody species. Species selection is based on plant community type and site conditions. These efforts are coordinated with the help of volunteers.
- Mow savanna grassland areas as needed not to exceed 1-2 times a year .
- Reseed natural areas with native seed mixes to improve biodiversity as needed. Give special attention to improve and increase the native wildflower species in savanna areas.
- Assess nesting boxes annually and repair as needed.
- Assess wetland enclosure fencing annually and repair as needed.

### Integrated Pest Management

The Trail Foundation is committed to an Integrated Pest Management (IPM) approach that utilizes the most environmentally sound approaches to pest management and reduces and eliminates, where possible, the volume and toxicity of chemical pest control treatments. TTF will coordinate with PARD and WPD to develop an IPM plan in alignment with existing best practices and City policy.

## Special Assets: Maintenance Standards

### Park Programs and Special Events

For the purposes of this the Butler Trail O&M plan, special events are defined as events that:

- Occur one time or annually and whose primary purpose is to entertain
- Primarily use The Butler Trail and Town Lake Metropolitan Park as an event venue
- Can severely impact the Trail and surrounding landscape

### Potential Impact of Special Events

The primary impact of special events is to turf areas due to overuse and lack of adequate time for resting between events. Constant use of lawn areas can place a heavy burden on the turf, particularly if events are back-to-back. The overuse will result in compacted soil with unhealthy and spotty vegetation growth. Soil compaction is one of the first symptoms of overuse. The presence of vehicles on the lawns accelerates soil compactions. Additionally, park users may spill over inadequate path systems leading to the site, creating compacted areas through the surrounding landscape and trampling adjacent landscape plantings.

Compacted soil prevents the absorption of rainwater, deprives roots of oxygen and limits root growth. As a result, turf surfaces lose their durability and anchoring capacity and become increasingly vulnerable to wear and tear. Additionally, trees within the event area are impacted by soil compaction. With continued overuse, the turf surfaces begin to wear thin, exposing the compacted subsoil underneath. Severe runoff can develop as rainwater erodes the exposed topsoil, eliminating any possibility of turf recovery.

Damage also occurs during set-up and clean-up. Tractor-trailers, vans and other vehicles involved in event set-up and removal of stages, sound systems, barricades, vendor tents, deliveries and other event support activities frequently drive off paved paths, adding to soil compaction and turf or vegetation damage.

Common types of wear and tear from special events include:

- **Soil compaction and rutting** caused from foot traffic, vehicles, and event equipment such as staging, pallets, tents, and tables. Often this presents itself in damaged turf or “desire lines” that may require a turf amendment of aeration and re-seeding, or re-sodding.
- **Damaged infrastructure**, such as a knocked over lamp post caused by a delivery truck cutting a turn too sharply, a bathroom sink clogged with cooking oil from a food festival vendor, or a cracked paver from a tent stake.
- **Damaged horticulture**, such as plantings that have been cut back or removed for a view, vegetation erosion by tire rotations, or a tree trunk that has been scraped by an oversized vehicle.
- **Leftover debris** in landscapes, such as metal fittings from dismantled bleachers, “craft service” signs attached to park trees from a film crew, or scattered fliers from a protest or event.
- **Leftover equipment**, such as a shipping container, a forklift, or a stack of barricade fencing.
- **Trash and recycling** left by the event staff for staff to remove.
- **Organizational reputation**, which may be easy to overlook but is critical to consider. Often the public is not aware that the event organizer might be unrelated to the park organization or agency.

## Recommended Special Event Standards

To best promote the resiliency of the natural resources along the Butler Trail and in surrounding park spaces the following standards are recommending for use in planning special events:

- Type and Size
  - Consider size, scale and timing of event as it relates to the park and its schedule
  - Establish a maximum event capacity based on the landscape and type of event.
  - Do not hold events in an area if there are reasons to conclude that the event will attract an audience that will exceed the maximum capacity of that area.
- Scheduling
  - Allot adequate time between events for event takedown, turf resting, and event set-up.
  - Review existing schedules for park construction to determine any interference
  - Coordination with adjacent stakeholders is necessary (e.g., Long Center, Parmer Events Center, Mexican American Cultural Center, etc.)
- Time Limits
  - Consider restrictions on the number and length of multi day events including set-up, takedown and clean-up. Large special events should be reviewed and approved by the Parks and Recreation Director.
- Access and Parking
  - Consider the availability of parking and accessibility of the event site for both staff and attendees
- Traffic
  - Review the potential impact to local traffic as a result of the event, including set-up and takedown.
- Vehicles and Production Trailers
  - Review and determine vehicle and production trailer requirements on an event-by-event basis. Vehicles associated with an event must be permitted and will be limited to those directly associated with the event.
- Weather
  - Protect and adjust for weather. In order to prevent damage, lawns may be closed to either recreation or for special event use in the event the grass is wet.

## Facilities and Equipment

The importance of having the appropriate equipment to perform maintenance tasks cannot be overstated. Identifying useful new equipment, ensuring that the optimal equipment mix is maintained and developing an equipment replacement schedule are important issues for park maintenance. Even in cases of a well-equipped fleet and well-maintained equipment, there is the need to always be planning for replacements and experimenting with new, more effective vehicles and equipment.

Small electric or gas-powered vehicles and mini pickups should be purchased for operational effectiveness. Primary use of small ATV vehicles is appropriate for the Butler Trail, rather than many full-size vehicles for reasons of maneuverability, economy and ease of maintenance; and they are more user-friendly. The use of full-size vehicles including trucks, tractors, and large mowers should be limited to the extent that they fill needs that cannot be met by smaller, more economical and sustainable vehicles. Use of floor matting for vehicles to access turf areas are highly recommended

## 2.2 Levels of Service

Designations for Level of Service (LOS) should be reconsidered on an annual basis and adjusted based on use. These levels of service apply only to TTF operations and are not expectations for municipal entities which have their own operational levels of service.

	Service Level		
	LEVEL 1 Destination Areas	LEVEL 2 Typical Trail	LEVEL 3 Moderate Use Areas
<b>Service Goal</b>	<i>Maximum maintenance applied to high-quality, highly-visible areas along the Butler Trail associated with high levels of use.</i>	<i>High-quality maintenance to ensure a safe, attractive, and functional site and accommodate high levels of visitors.</i>	<i>Moderate level of maintenance associated with more natural areas of the Trail that experience lower to moderate, but consistent use.</i>
<b>BUILT ASSETS</b>			
<b>General Maintenance</b>	Immediate response to all elements of design when problems are discovered.	Done whenever safety, function, or appearance is in question.	Done whenever safety or function is in question.
<b>Trail Surfacing</b>	Prioritized care, repairs, e.g. stabilize and reinforce trail.	Prioritized care after Level 1, repairs, e.g. stabilize and reinforce trail.	Prioritized care after Levels 1 and 2, repairs, e.g. stabilize and reinforce trail.
<b>Drainage Infrastructure</b>	Prioritized care, repairs, e.g. clear culverts and improve drainage	Prioritized care, repairs, e.g. stabilize and reinforce trail.	Prioritized care, repairs, e.g. stabilize and reinforce trail.
<b>Gathering Areas</b>	Kept tidy and clear of debris, and are cleaned prior to and after anticipated heavy use. At no time does an accumulation of dirt or leaves distract the appearance or safety of the area.	Kept tidy and clear of debris, and are cleaned prior to and after anticipated heavy use. Cleaned regularly. Repaired or replaced when appearances have noticeably deteriorated and when a safety hazard.	Some tolerance of natural debris, and are cleaned prior to and after anticipated heavy use. Cleaned seasonally and on a complaint basis. Repaired or replaced as budget allows or when a safety hazard.
<b>Trash and Recycling</b>	Once per day during weekdays, twice per day during weekends.	Minimum of once per day, five days per week.	Minimum of once per day, five days per week.
<b>Restrooms</b>	Unlocked 24 hours a day (unless closed and locked for maintenance repairs), closed during park curfew hours of 10pm to 5am.Cleaned & restocked 2 times per day.	Unlocked 24 hours a day (unless closed and locked for maintenance repairs), closed during park curfew hours of 10pm to 5am.Cleaned & restocked 2 times per day.	Unlocked 24 hours a day (unless closed and locked for maintenance repairs), closed during park curfew hours of 10pm to 5am.Cleaned & restocked 2 times per day.

<b>Drinking Fountains</b>	Kept tidy and clear of debris, cleaned twice per day	Kept tidy and clear of debris, cleaned once per day	Kept tidy and clear of debris, cleaned as needed
<b>Lighting</b>	Checked monthly	Checked quarterly	Checked quarterly
<b>Fencing</b>	Assess with other maintenance tasks. Inform maintenance managers of any damages, issues, etc.	Assess with other maintenance tasks. Inform maintenance managers of any damages, issues, etc.	Assess with other maintenance tasks. Inform maintenance managers of any damages, issues, etc.
<b>Furnishings</b>	Kept clean and functional. Minimal tolerance of visible wear and tear.	Kept clean and functional. Tolerance of minor wear and tear.	Kept clean and functional. Tolerance of moderate wear and tear.
<b>Trail Counters</b>	Kept functional and checked for data reliability annually	Kept functional and checked for data reliability annually	Kept functional and checked for data reliability annually
<b>Fitness and Play Features</b>	Kept clean and functional. Minimal tolerance of visible wear and tear.	Kept clean and functional. Tolerance of minor wear and tear.	Kept clean and functional. Tolerance of moderate wear and tear.
<b>Installations</b>	Check daily. Clear debris and litter. Contact artist for seasonal cleaning as needed.	Assessment frequency determined on case-by-case basis. Contact artist for seasonal cleaning as needed.	Assessment frequency determined on case-by-case basis. Contact artist for seasonal cleaning as needed.
<b>Signage</b>	Checked monthly	Checked quarterly	Checked quarterly
<b>Graffiti</b>	Report immediately, prioritized removal, ASAP	Report immediately, removal ASAP, prioritized before C levels and after A	Report immediately, remove ASAP
<b>NATURAL ASSETS</b>			
<b>Turf Care</b>	Mowed at least once every five working days in the growing season. Aerate at least twice per year and reseed/ resod as needed.	Mowed at least once every 2 weeks in the growing season. Aerate once per year and reseed/ resod as needed.	Mowed at least once every two weeks in the growing season. Aerate once per year and reseed/ resod as needed.
<b>Trail Edge (Vegetation)</b>	Vegetation is managed at least once every month in the growing season. Seeded and planted twice per year	Vegetation managed at least once every quarter. Seeded and planted twice per year	Vegetation managed at least once every quarter. Seeded and planted twice per year
<b>Green Stormwater Infrastructure</b>	Inspected every two weeks and within 24 hours of heavy rainfall. Maintenance cycle every 2 weeks	Inspected every month and within 24 hours of heavy rainfall. Maintenance cycle every month	Inspected every month and within 24 hours of heavy rainfall. Maintenance cycle every month

<b>Manicured Plantings</b>	Maximum care (water, weeding, etc.) is done at min. once-twice per week in the growing season and once every 3 weeks-monthly the rest of the year.	Plant care (water, fertilizing, weeding, etc.) is done once every two weeks in the growing season and monthly the rest of the year.	Plant care (water, fertilizing, weeding, etc.) is done monthly in the growing season and every other month the rest of the year.
<b>Trees</b>	Annual safety inspection	Annual safety inspection	Annual safety inspection
<b>Irrigation</b>	Frequency of use follows rainfall, temperature, etc. Inspected every two weeks.	Frequency of use follows rainfall, temperature, etc. Inspected once per month	Frequency of use follows rainfall, temperature, etc. Inspected once per month.
<b>"Natural" Areas</b>	Monthly care during the growing season (pruning, invasive species control, etc.). Litter removal weekly. Immediate removal of safety hazards.	Monthly care during the growing season (pruning, invasive species control, etc.). Litter removal every two weeks. Immediate removal of safety hazards.	Monthly care during the growing season (pruning, invasive species control, etc.). Monthly litter removal. Immediate removal of safety hazards.

## 2.3 Roles and Responsibilities

Refer to *2.4 Maintenance Zones* for how Phases are defined; Phase timelines vary by Maintenance Zone

Responsibilities for each maintenance task are determined by type, location, and ownership (i.e., PARD is primary responsible party for PARD owned/managed memorial benches; TTF is responsible for TTF built boardwalk memorial benches). Tasks shown in the table below are color coded based on assumed primary or secondary/supplemental responsible party. Tasks highlighted in yellow show a change in primary responsible party over the course of the plan. In those tasks where TTF assumes primary responsibility, the associated SOPs in *Section 2.1* will apply

TASK	Phase 1		Phase 2		Phase 3		Volunteers (Y/N)	ASSUMPTIONS
	Primary Respon.	Secondary Respon.	Primary Respon.	Secondary Respon.	Primary Respon.	Secondary Respon.		
	TTF	PARD	WPD	Public Works	Private Land Owner			
<b>TOTALS</b>								
<b>Trail Surface/Infrastructure</b>								
PARD Owned/Managed							N	TTF will provide a supporting role to PARD in the repair of minor trail surface and infrastructure issues. For larger repairs or replacements, TTF will consider more significant capital improvements as coordinated with City partners. TTF will maintain any TTF-built trails.
TTF Built							Y	
Public Works Managed							N	
Private Owned/Managed							N	
<b>Drainage Infrastructure</b>								
PARD Owned/Managed							N	TTF will provide a supporting role to PARD and Watershed in the maintenance of drainage infrastructure. For larger repairs or replacements, TTF will consider more significant capital improvements as coordinated with City partners
TTF Built							N	
WPD Owned/Managed							N	
Privately Owned/Managed							N	
<b>Gathering Areas</b>								
PARD Owned/Managed							N	TTF will continue to act as the primary responsible party for TTF-built projects. In the Phase 3, TTF will also act as primary on all gathering areas.
TTF Built							Y	
Public Works Managed							N	
Privately Built							N	

Trash & Recycling Receptacles								
PARD Owned/Managed	Green	Orange	Green	Orange	Green	Orange	N	TTF will provide support for PARD.
TTF Built	Green	Orange	Green	Orange	Green	Orange	N	
Privately Owned/Managed	Purple	Grey	Purple	Grey	Purple	Grey	N	
Restrooms								
PARD Owned/Managed	Green	Orange	Green	Orange	Green	Orange	N	TTF will provide support for PARD built facilities. TTF will act as primary responsible party for TTF-built facilities starting in Phase 2.
TTF Built	Green	Orange	Green	Orange	Orange	Green	N	
Drinking Fountains								
PARD Owned/Managed	Green	Grey	Green	Orange	Green	Orange	N	TTF will provide support for PARD built facilities. TTF will act as primary responsible party for TTF-built facilities starting in Phase 3.
TTF Built	Green	Grey	Orange	Green	Orange	Green	N	
Lighting								
PARD Owned/Managed	Green	Grey	Green	Orange	Green	Orange	N	TTF will provide support for PARD and other city departments.
TTF Built	Green	Grey	Orange	Green	Orange	Green	N	
Public Works Built	Brown	Grey	Brown	Grey	Brown	Orange	N	
Privately Owned/Managed	Purple	Grey	Purple	Grey	Purple	Grey	N	
Fencing								
PARD Owned/Managed	Green	Grey	Green	Orange	Green	Orange	N	TTF will provide support for PARD built facilities. TTF will act as primary responsible party for TTF-built facilities starting in Phase 2.
TTF Built	Orange	Green	Orange	Green	Orange	Green	Y	
Public Works Managed	Brown	Grey	Brown	Grey	Brown	Grey	N	
Privately Owned/Managed	Purple	Grey	Purple	Grey	Purple	Grey	N	
Furnishings								
PARD Owned/Managed	Green	Orange	Green	Orange	Green	Orange	N	TTF will provide support for PARD built facilities. TTF will act as primary responsible party for TTF-built facilities.
TTF Built	Orange	Green	Orange	Green	Orange	Green	Y	
Public Works Managed	Brown	Grey	Brown	Grey	Brown	Grey	N	
Privately Owned/Managed	Purple	Grey	Purple	Grey	Purple	Grey	N	

Trail Counters								
TTF Built							N	TTF will provide support for Public Works. TTF will act as primary responsible party starting in phase 3.
Fitness and Play Features								
PARD Built							N	TTF will provide support for PARD built facilities. TTF will act as primary responsible party for TTF-built facilities starting in Phase 3.
TTF Built							N	
Privately Owned/Managed							N	
Installations								
PARD Owned/Managed							N	TTF will provide support for PARD built facilities. TTF will act as primary responsible party for TTF-built facilities starting in Phase 1.
TTF Built							Y	
Privately Owned/Managed							N	
Signage								
PARD Owned/Managed							N	TTF will provide support for PARD built facilities. TTF will act as primary responsible party for TTF-built facilities starting in Phase 1.
TTF Built							Y	
Privately Owned/Managed							N	
Turf Care								
PARD Owned/Managed							N	TTF will provide support to PARD for turf care with increasing support as capacity building allows.
Privately Owned/Managed							N	
Trail Edge Vegetation								
PARD Owned/Managed							Y	TTF will provide support to PARD for vegetation management with increasing support. TTF will act as primary responsible party in Phase 3.
Public Works Managed							Y	
Privately Managed							N	
Manicured Planting Areas								
PARD Owned/Managed							Y	TTF will provide support for PARD built manicured garden spaces. TTF will act as primary responsible party for TTF-built areas starting in Phase 1.
TTF Built							Y	
Privately Owned/Managed							N	
Green Stormwater Infrastructure								

PARD Owned/Managed	Green	Orange	Green	Orange	Green	Orange	Y	TTF will provide support for PARD and WPD built facilities. TTF will act as primary responsible party for TTF-built facilities starting in Phase 1.
TTF Built	Orange	Blue	Orange	Blue	Orange	Blue	Y	
WPD Owned/Managed	Blue	Orange	Blue	Orange	Blue	Orange	Y	
Privately Owned/Managed	Purple	Grey	Purple	Grey	Purple	Grey	N	
<b>Urban Forestry</b>								
<b>General Maintenance</b>								
PARD Owned/Managed	Green	Orange	Green	Orange	Green	Orange	N	TTF will provide significant secondary support for PARD Forestry but will not act as primary responsible party.
Privately Owned/Managed	Purple	Grey	Purple	Grey	Purple	Grey	N	
<b>Planting and Tree Establishment</b>								
PARD Owned/Managed	Green	Orange	Green	Orange	Green	Orange	Y	TTF will provide significant support for PARD tree plantings. TTF will act as primary responsible party for TTF installed tree plantings starting in Phase 1.
TTF Built	Orange	Green	Orange	Green	Orange	Green	Y	
Privately Owned/Managed	Purple	Grey	Purple	Grey	Purple	Grey	N	
<b>Pruning</b>								
PARD Owned/Managed	Green	Orange	Green	Orange	Green	Orange	N	TTF will provide significant secondary support for PARD Forestry but will not act as primary responsible party.
<b>Irrigation</b>								
PARD Owned/Managed	Green	Orange	Green	Orange	Green	Orange	N	TTF will provide support for PARD built facilities. TTF will act as primary responsible party for TTF-built facilities starting in Phase 1
TTF Built	Orange	Green	Orange	Green	Orange	Green	N	
Privately Owned/Managed	Purple	Grey	Purple	Grey	Purple	Grey	N	
<b>Natural Areas</b>								
PARD Owned/Managed	Orange	Green	Orange	Green	Orange	Green	Y	TTF will act as primary responsible party for natural areas starting in Phase 1.
Privately Owned/Managed	Purple	Grey	Purple	Grey	Purple	Grey	N	
<b>Park Only Event Reservations</b>								
PARD Owned/Managed	Green	Orange	Green	Orange	Green	Orange	N	TTF will act as primary responsible party for event reservations starting in Phase 3. Does not include ACE permitting.
<b>Facility Reservations</b>								
PARD Owned/Managed	Green	Orange	Green	Orange	Green	Orange	N	TTF will act as primary responsible party for facilities reservations starting in Phase 3.
TTF Owned/Managed	Green	Orange	Green	Orange	Green	Orange	N	

### 2.3.1 TTF Year One Roles and Responsibilities

During the first year of TTF’s Park Operations and Maintenance Agreement (POMA), TTF will assume the roles and responsibilities as described in the Phase 1 column for all 4 of the maintenance zones. The table below provides further clarification for the Year One Roles and Responsibilities. When PARD, WPD, Public Works are primary, they will continue to follow their own SOPs.

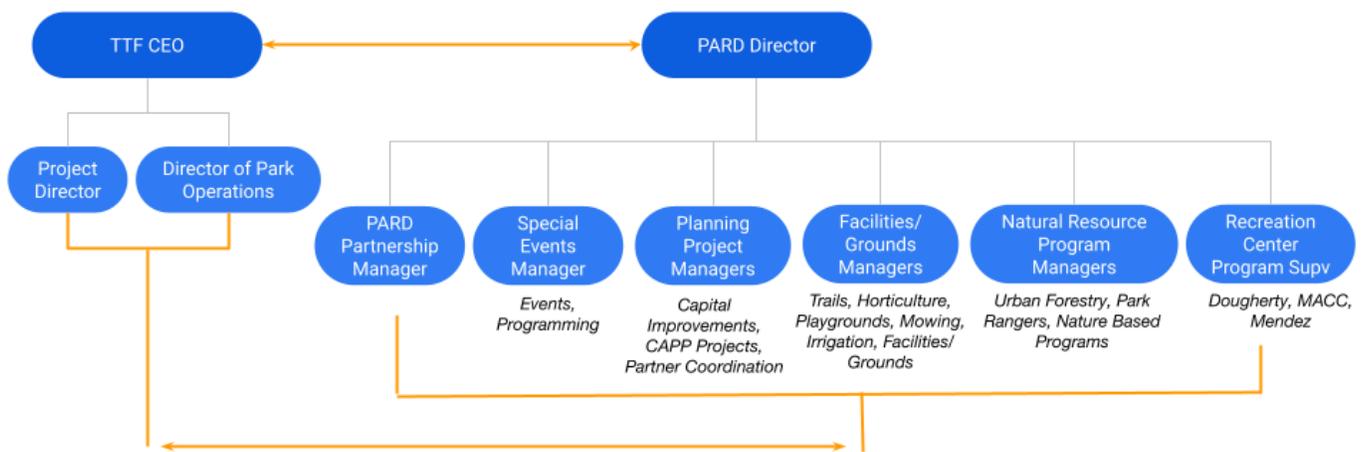
TASK	TTF ROLE	ASSUMPTIONS
<b>Trail Surface/Infrastructure</b>		
PARD Owned/Managed	NA	
TTF Built	Secondary/Supplemental	TTF will provide repair of minor trail surface and infrastructure issues for TTF built trail.
<b>Drainage Infrastructure</b>		
PARD Owned/Managed	NA	
TTF Built	Secondary/Supplemental	TTF will provide maintenance of TTF built drainage infrastructure.
<b>Gathering Areas</b>		
PARD Owned/Managed	NA	
TTF Built	Secondary/Supplemental	TTF will continue to act as the primary responsible party for TTF-built projects. See SOP Section 2.1: Built Assets: Maintenance Standards: Gathering Areas.
<b>Trash &amp; Recycling Receptacles</b>		
PARD Owned/Managed	Secondary/Supplemental	TTF will provide minor support for trash and recycling at the request of PARD and as a part of TTF volunteer programming.
TTF Built	Secondary/Supplemental	TTF will provide minor support for trash and recycling at the request of PARD.
<b>Restrooms</b>		
PARD Owned/Managed	Secondary/Supplemental	TTF will provide support for PARD built facilities such as general cleanup after significant damage but not including daily maintenance or plumbing.
TTF Built	Secondary/Supplemental	TTF will provide support for TTF built facilities such as painting or general cleanup after significant damage but not including daily maintenance or plumbing.
<b>Drinking Fountains</b>		
PARD Owned/Managed	Secondary/Supplemental	TTF will provide support for PARD built facilities such as additional cleanup and reporting.
TTF Built	Secondary/Supplemental	TTF will provide support for TTF built facilities such as additional cleanup and reporting.
<b>Lighting</b>		
PARD Owned/Managed	NA	TTF will not be responsible for the maintenance of lighting systems in this phase.
TTF Built	NA	TTF will not be responsible for the maintenance of lighting systems in this phase.
<b>Fencing</b>		
PARD Owned/Managed	NA	
TTF Built	Secondary/Supplemental	TTF will provide maintenance of TTF built fencing.
<b>Furnishings</b>		
PARD Owned/Managed	Secondary/Supplemental	TTF will provide support for PARD built furnishings such as additional agreed upon cleaning at PARD request.
TTF Built	Secondary/Supplemental	TTF will provide support for TTF built furnishings such as additional cleaning, and minor agreed upon repairs at PARD request.
<b>Trail Counters</b>		
TTF Built	Secondary/Supplemental	TTF will provide support for Public Works including regular assessment of Trail Counters.

TASK	TTF ROLE	ASSUMPTIONS
<b>Fitness and Play Features</b>		
PARD Built	Secondary/Supplemental	TTF will provide support for PARD built facilities such as additional agreed upon cleaning at PARD request.
TTF Built	Secondary/Supplemental	TTF will provide support for TTF built facilities such as additional cleaning, and minor agreed upon repairs at PARD request.
<b>Installations</b>		
PARD Owned/Managed	NA	
TTF Built	Primary	TTF will continue to act as the primary responsible party for TTF-built installations. See SOP Section 2.1: Built Assets: Maintenance Standards: Installations.
<b>Signage</b>		
PARD Owned/Managed	NA	
TTF Built	Primary	TTF will continue to act as the primary responsible party for TTF-built signage. See SOP Section 2.1: Built Assets: Maintenance Standards: Signage.
<b>Turf Care</b>		
PARD Owned/Managed	NA	
TTF Built	NA	TTF will not be responsible for the maintenance of turf areas in this phase.
<b>Trail Edge Vegetation</b>		
PARD Owned/Managed	Secondary/Supplemental	TTF will provide support to PARD for vegetation management such as minor agreed upon maintenance, condition assessments and reporting.
TTF Built	Secondary/Supplemental	
<b>Manicured Planting Areas</b>		
PARD Owned/Managed	Secondary/Supplemental	TTF will provide support to PARD for PARD-built manicured planting areas such as minor agreed upon maintenance, condition assessments and reporting.
TTF Built	Primary	TTF will continue to act as the primary responsible party for TTF-built manicured planting areas. See SOP Section 2.1: Natural Assets: Maintenance Standards: Manicured Planting Areas.
<b>Green Stormwater Infrastructure</b>		
PARD Owned/Managed	Secondary/Supplemental	TTF will provide support for PARD built facilities, such as minor agreed upon maintenance, condition assessments and reporting.
TTF Built	Primary	TTF will continue to act as the primary responsible party for TTF-built GSI structures. See SOP Section 2.1: Natural Assets: Maintenance Standards: Green Stormwater Infrastructure.
WPD Managed	Secondary/Supplemental	TTF will provide support for WPD built facilities, such as minor agreed upon maintenance, condition assessments and reporting.
<b>Urban Forestry</b>		
<b>General Maintenance</b>		
PARD Owned/Managed	Secondary/Supplemental	TTF will provide significant secondary support for PARD Forestry such as maintenance including invasive species removal, mulching, and assessment.
<b>Planting and Tree Establishment</b>		
PARD Owned/Managed	Secondary/Supplemental	Provide support to PARD as needed, such as minor agreed upon maintenance, condition assessments and reporting.
TTF Built	Primary	TTF will continue to act as the primary responsible party for TTF-built plantings. See SOP Section 2.1: Natural Assets: Maintenance Standards: Urban Forestry: Planting and Tree Establishment.
<b>Pruning</b>		
PARD Owned/Managed	Secondary/Supplemental	TTF will provide significant secondary support for PARD Forestry by inspecting trees regularly and reporting to Urban Forestry with issues to be addressed. TTF will deploy agreed upon support per SOP guidelines on issues agreed upon with Forestry.
<b>Irrigation</b>		
PARD Owned/Managed	Secondary/Supplemental	Provide support to PARD as needed, such as minor agreed upon maintenance, condition assessments and reporting.
TTF Built	Primary	TTF will continue to act as the primary responsible party for TTF-built irrigation systems. See SOP Section 2.1: Natural Assets: Maintenance Standards: Irrigation.
<b>Natural Areas</b>		
PARD Owned/Managed	Primary	TTF will continue to act as primary responsible party for natural areas. See SOP Section 2.1: Natural Assets: Maintenance Standards: Natural Areas.

## 2.4 Operations

### 2.4.1 Communications

The Trail Foundation’s organizational communication will provide structure for the flow of information both internally and between the organization and city departments especially between TTF and PARD. The flow of communications between the members and individuals of each party need not be strictly formal but should be regularly occurring. Lateral communication between departments and units within the same level of organization is important to maintain smooth operations. The table below shows the appropriate flow of communications as it relates to the existing chain of command within TTF and PARD.



### Organizational Communications

Existing strategies for organizational communication should continue and be improved upon including:

- Weekly informal check-in meetings for all pathways of communication (or bi-weekly depending on complexity of project).
- Quarterly presentations by TTF to PARD and other city partners with additional breakout meetings as needed for further coordination.
- Regular site-visits coordinated between TTF Directors and PARD Managers.
- Monthly formal meeting between TTF CEO and PARD Director.

### External Communications

*(TTF to add external communication flowchart, including 311, PARD, APD, PIOs, media, CAFS)*

### Contractor Communications

The Trail Foundation will regularly communicate with all contractors while they are on-site. Communications with TTF contractors should follow the organizational communications chart above such that if PARD staff needs to communicate with TTF contractors, TTF Directors will be contacted first.

## Public Notices

The Trail Foundation will provide notice to the public in advance of events, meetings, construction, etc. which affect the public. These notices should be done in coordination with PARD Public Information Officers and Community Engagement Staff. Dependent on the nature of the operation, different timelines of advance notice will be established in coordination with TTF and PARD.

### 2.4.2 Trail Reroutes

There are times when operations require the temporary rerouting of the Trail. These may occur due to construction, special events, or emergency response. In the event of a trail-reroute, TTF will follow these guidelines:

- Submit a re-route plan to PARD Public Information Officer and relevant PARD Community Engagement Staff.
- Communicate re-route plan with reasonable notice to the public through media outlets.
- Provide appropriate signage for re-route.
- If necessary, provide staffing to communicate and manage traffic.

### 2.4.3 Encampments

Illegal camping in City parks is the purview of the City of Austin. TTF will follow all current City policies and procedures surrounding encampments. Staff will report associated concerns as service requests through Austin 311. If the issue raises safety concerns or hinders TTF or its contractor's ability to maintain or operate the parkland as outlined in this document, a TTF representative will contact the appropriate contact at PARD or report the issue(s) at the regular weekly field operations meetings.

### 2.4.4 Shared Use Space (non-public)

The sharing of non-public space and/or equipment will be negotiated on a case-by-case basis. This includes but is not limited to parking, storage, office space, construction equipment, etc.

### 2.4.5 Personnel

TTF will follow all government mandated fair hiring practices. Additionally, all personnel will undergo a background check before being hired and/or when supervising minors. TTF staff will receive the appropriate training as it relates to their position and opportunities for professional development will be available on an annual basis.

### 2.4.6 Partnerships

In the spirit of community driven stewardship, TTF acknowledges and embraces its nonprofit partners along the Butler Trail and in the Town Lake Metropolitan Park, including but not limited to Waterloo Greenway, Keep Austin Beautiful, and Shoal Creek Conservancy. In areas where a partner's mission physically overlaps with TTF, TTF will maintain regular communication regarding maintenance and programming activities and will collaborate with partners on any projects in the overlapping area.

TTF and Keep Austin Beautiful (KAB) will be partnering around the series of volunteer events as outlined in the Lady Bird Lake Shoreline Stewardship Program (COA Contract Number: MA 1500 NA210000164). The collaboration between the two entities will amplify the efforts and mission of each organization.

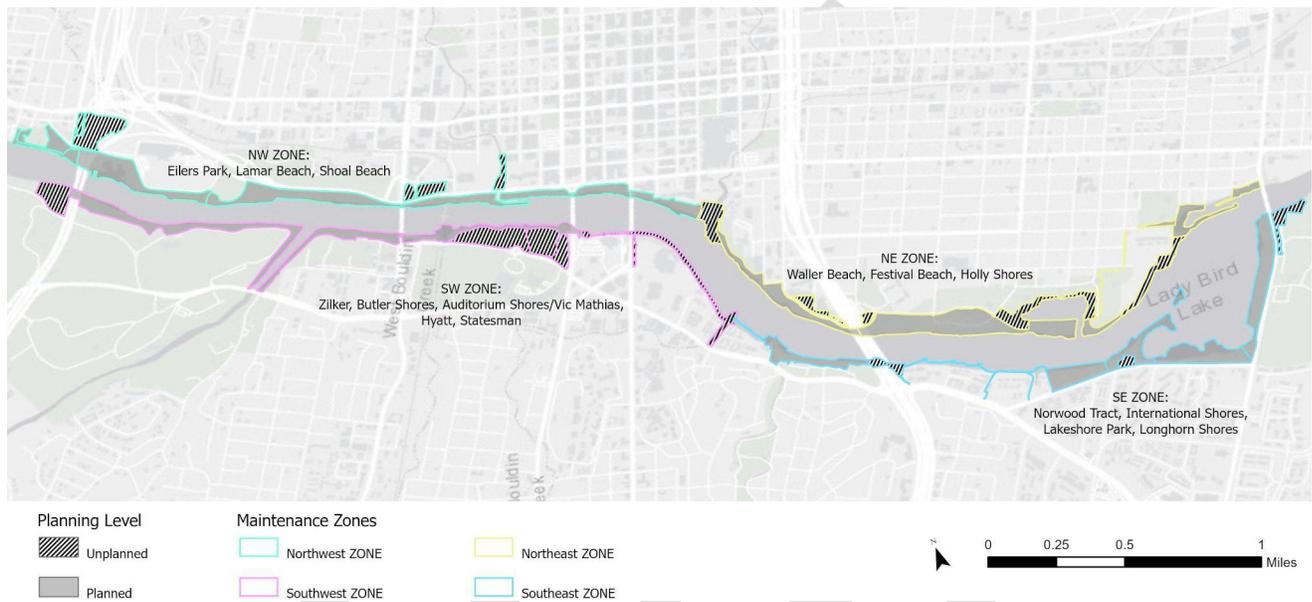
#### 2.4.7 Comprehensive Signage Plan

In 2022 TTF will be spearheading an effort to create a comprehensive signage plan for the Butler Trail with input from the City of Austin and significant community engagement. This project intends to review and update existing signage plans for success and opportunities for improvement, expansion, increased visibility and community need. The scope of this project will include inventory, evaluation of opportunities, creation of a comprehensive directional/wayfinding signage plan, updated mile markers (given the projects in progress that will change the current distances such as the Lakefront Trail at the decommissioned Holly Power Plan), an interpretive signage plan, ecological signage (flora, fauna, natural systems), historical signage (with a focus on telling of cultural stories), art interpretation signage, and an installation phasing plan.

All signage will be coordinated with city departments to ensure clarity and cohesion, and TTF will undergo appropriate review and permitting processes whenever signage installments are planned.

## 2.5 Maintenance Zones

The Butler Trail passes through many parks and easements along its 10.1-mile loop around Lady Bird Lake. For the purpose of this O&M plan, the parkland on which the Trail sits has been divided into four maintenance zones, divided into north/south sections along Lady Bird Lake, and divided into east/west sections along Waller Creek in the north and Blunn Creek in the south. A more in-depth look at each zone can be found below.



The O&M recommendations described below were fully developed for the 185.0 acres identified as “planned.” The land around Lady Bird Lake represents a mosaic of ownership including private land and state agency managed land. At this time, only City of Austin parkland (Town Lake Metropolitan Park) has been included in O&M planning efforts. In future updates to this plan, O&M plans for “unplanned” areas should be included when agreements for their management are developed.

Zone	Unplanned (acres)	Planned (acres)	Total (acres)
SE Zone	7.2	48.4	55.6
NE Zone	20.8	49.3	70.1
SW Zone	30.6	33.1	63.7
NW Zone	14.1	55.1	69.2
Study Area	72.7	185.9	<b>258.6</b>

Each maintenance zone has Level of Service designations based on usage level (*see 2.5-2.8 Zone Maintenance*). Usage level will be monitored year over year using the data from electronic trail counters to determine changes in Level of Service designation.

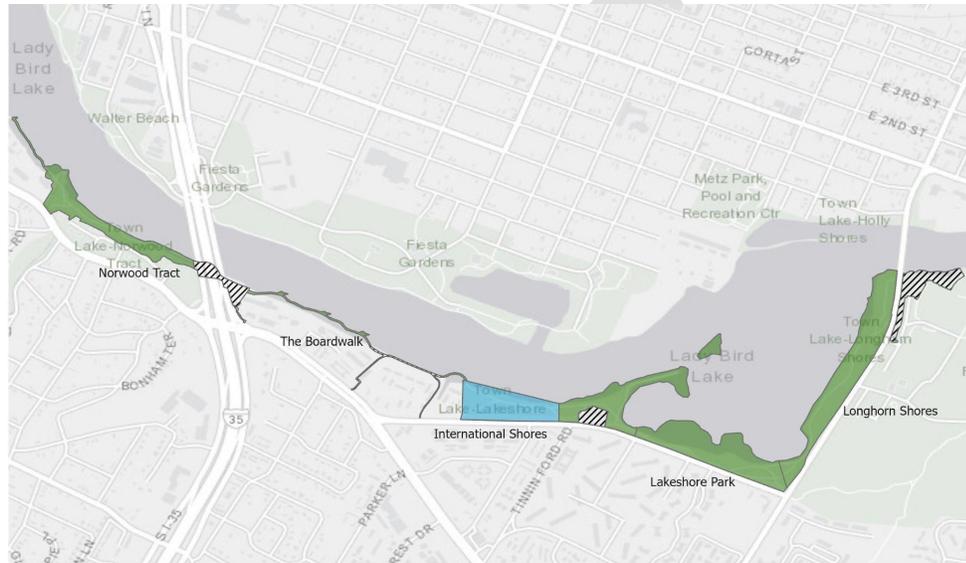
### 2.5.1 High Level High-level Cost Estimating for Year 1 (baseline without unplanned future development)

The table below provides details about the high-level cost for the operations and maintenance planned for the 4 maintenance zones in year one according to the responsibilities laid out in *Section 2.3.1*. A more detailed account of the cost estimates for each zone in year one can be found below under the section heading for the individual maintenance zone.

<b>All 4 Zones (planned areas only)</b>	<b>Year 1 / Phase 1</b>
Southeast Zone	\$169,225
Northeast Zone	\$178,955
Northwest Zone	\$302,505
Southwest Zone	\$196,735
<b>TOTAL</b>	<b>\$847,420</b>

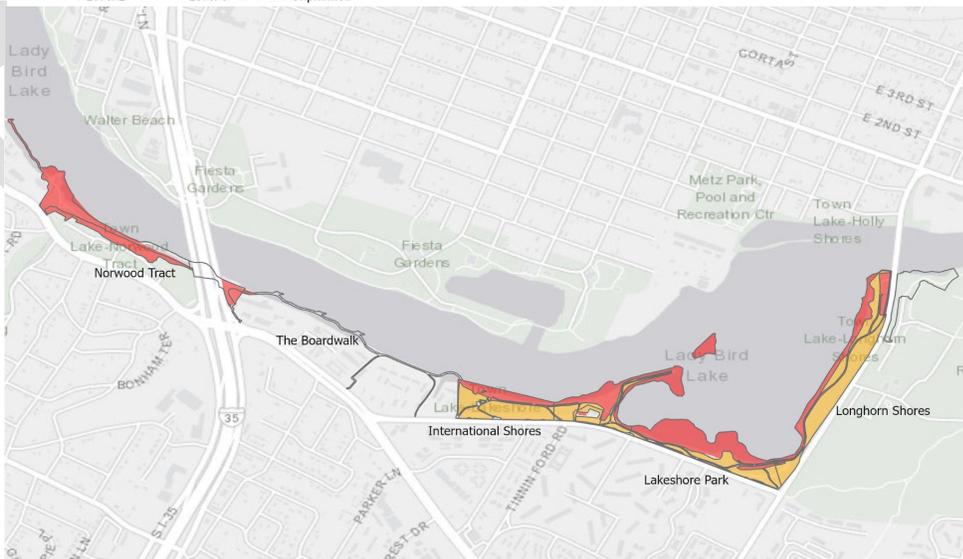
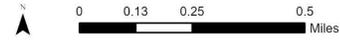
## 2.6 SE Zone Maintenance

The Southeast maintenance zone is approximately 55 acres and includes Longhorn Shores, Lakeshore Park, International Shores, Norwood Tract, and the Boardwalk. It also includes private property with public easements for the Trail. The maps below show the Level of Service (LOS) recommendations and landscape types for the area. Only one area in the SE Zone (International Shores) is recommended for Level 2 due to the higher level of use. Additionally, there are 3.6 miles of trail, 19.7 acres of turf area and 28.1 acres of natural areas in this zone.



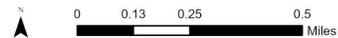
SE Zone Maintenance Levels of Service

■ Level 2   
 ■ Level 3   
  Unplanned



SE Zone Maintenance Landscape Types

■ Turf   
 ■ Natural Areas



### 2.5.1 Detailed account of elements in SE Zone

Item/Feature	Quantity
<b>TOTAL AREA (Acres)</b>	<b>55.6</b>
Level 2	7.6
Level 3	40.8
Unplanned	7.2
<b>Trail Surface (miles)</b>	<b>3.6</b>
Gravel	1.9
Concrete / Concrete Pavers	1.7
<b>Trail Infrastructure</b>	<b>8</b>
Culverts and Drains	8
<b>Gathering Areas</b>	<b>15</b>
Lakeshore Park (Amphitheater and Memorial Bricks)	1
Longhorn Point Seating Area	1
PARD Scenic overlook	2
PARD Gazebo	2
Boardwalk Pier Rest Area	9
<b>Trash &amp; Recycling</b>	<b>28</b>
Trash Receptacle	23
Recycling Receptacle	5
<b>Restrooms</b>	<b>1</b>
Restroom at Lakeshore Park	1
<b>Drinking Fountains</b>	<b>2</b>
<b>Lighting</b>	<b>1</b>
Boardwalk Lighting	1
<b>Fencing (linear ft)</b>	<b>1600</b>
Split Rail Fencing	1600
<b>Furnishings</b>	<b>10</b>
TTF Memorial Bench	18
PARD Memorial Bench	7
Picnic Table	3
Bike Rack	3
Mutt Mitt	7
<b>Trail Counters</b>	<b>1</b>
Longhorn Dam Trail Counter	1
<b>Fitness and Play Features</b>	<b>1</b>
Lakeshore Park Exercise Equipment	1
<b>Installations</b>	<b>5</b>
Art (Betling it out sculptures)	4
Fortlandia installation site	1
<b>Signage</b>	<b>13</b>
Informational Sign	1
Rules Sign	3
Secondary sign (park name sign)	1
Mile marker signs	8
<b>Turf (acres)</b>	<b>19.7</b>
<b>Trail Edge Vegetation (miles)</b>	<b>2.18</b>
<b>Manicured Planting Areas (sqft)</b>	<b>500</b>

Butterfly Garden at Lakeshore Park	500
Green Stormwater Infrastructure	2
Longhorn Point GSI	1
Watershed Protection GSI	1
Urban Forestry (num. trees)	1560
Irrigation	2
Lakeshore Planting	1
Temporary Irrigation	1
Natural Areas (acres)	28.1

### 2.6.2 Unplanned and new future elements

Notable unplanned or future elements within this zone include the new “wishbone” pedestrian bridge project led by Public Works, the Hostel International building on Lakeshore Blvd., and the small section of Roy G Guerrero Park. In future updates to this plan, information on these elements/spaces can be added as appendices to this document.

### 2.6.3 High-level Cost Estimating for Year 1 (baseline without unplanned future development)

SE ZONE	Year 1
<i>Built Assets</i>	<i>\$31,925.00</i>
<i>Natural Assets</i>	<i>\$88,950.00</i>
Personnel Total	\$120,875.00
OTPS 30%	\$36,262.50
Administrative 10%	\$12,087.50
<b>TOTAL</b>	<b>\$169,225.00</b>

\*\*OTPS stands for Other Than Personnel Costs and includes costs for materials, equipment, utilities, etc.

## 2.7 NE Zone Maintenance

The Northeast maintenance zone is approximately 70 acres and includes Waller Beach, Festival Beach and Holly Shores. It also includes sections of the now decommissioned Holly Power Plant, through which the Trail will eventually be rerouted (planned for 2021-2022). The area is primarily recommended for a LOS of Level 2, with the exception of the Holly Shores area. There are 3.3 miles of trail, 31.5 acres of turf area and 14.6 acres of natural areas in this zone.



NE Zone Maintenance Level of Service

■ Level 2   
 ■ Level 3   
  Unplanned

0 0.13 0.25 0.5 Miles



NE Zone Maintenance Landscape Type

■ Turf   
 ■ Natural Areas

0 0.13 0.25 0.5 Miles

### 2.7.1 Detailed account of elements Northeast Zone

Item/Feature	Quantity
<b>TOTAL AREA (Acres)</b>	<b>70.1</b>
Level 2	41.4
Level 3	7.9
Unplanned	20.8
<b>Trail Surface (miles)</b>	<b>3.3</b>
Gravel	2.4
Concrete / Concrete Pavers	0.9
<b>Trail Infrastructure</b>	<b>6</b>
Culverts and Drains	6
<b>Gathering Areas</b>	<b>7</b>
Picnic Shelter	1
PARD Scenic overlook	4
PARD Gazebo	1
Wooden Fishing Pier	1
<b>Trash &amp; Recycling</b>	<b>57</b>
Trash Receptacle	45
Recycling Receptacle	12
<b>Restrooms</b>	<b>2</b>
Miro Rivera Restroom w/ Rinse Station	1
Festival Beach Restroom	1
<b>Drinking Fountains</b>	<b>8</b>
<b>Lighting</b>	<b>0</b>
<b>Fencing (linear ft)</b>	<b>0</b>
<b>Furnishings</b>	<b>50</b>
PARD Memorial Bench	24
Picnic Table	19
Bike Rack	3
Mutt Mitt	4
<b>Trail Counters</b>	<b>0</b>
<b>Fitness and Play Features</b>	<b>0</b>
<b>Installations</b>	<b>4</b>
Trail of Tejano Legends	2
Big Arch	1
Brazos Art Sculpture	1
<b>Signage</b>	<b>15</b>
Kiosk	1
Stone Plaques	5
Regulatory Sign	1
Mile marker signs	8
<b>Turf (acres)</b>	<b>31.5</b>
<b>Trail Edge Vegetation (miles)</b>	<b>3.3</b>
<b>Manicured Planting Areas (sqft)</b>	<b>2500</b>

Planting at Festival Beach	500
Kids Adopt A Garden at Camacho Activity Center	1500
Kids Adopt A Garden at Mendez Recreation Center	500
Green Stormwater Infrastructure	2
East Avenue GSI	1
East Avenue GSI #2	1
Urban Forestry (num. trees)	1831
Irrigation	1
Kids Adopt A Garden at Camacho Activity Center	1
Natural Areas (acres)	14.6

### 2.7.2 Discussion of unplanned and new elements.

There are several notable unplanned or future elements within this zone. The Trail Foundation will be breaking ground on two new parkland improvement projects: Holly Project and Rainey Trailhead. Additionally, PARD will begin construction on the Lakefront Trail reroute through the Holly power plant, bringing a new section of parkland online for public access and use. Other unplanned areas include the Fiesta Gardens section of Festival Beach, and the Waller Creek Delta where Waterloo Greenway is planning new trail connections and Project Connect is planning the installation of the new Blue Line high-capacity rail. Coordination and engagement around the development of these projects will be an important part of future updates to this plan. Once established, O&M information on these elements/spaces can be added as appendices to this document.

### 2.7.3 High-level Cost Estimating for Year 1 (baseline without unplanned future development)

NE ZONE		Year 1
	<i>Built Assets</i>	\$19,575.00
	<i>Natural Assets</i>	\$108,250.00
Personnel Total		\$127,825.00
OTPS 30%		\$38,347.50
Administrative 10%		\$12,782.50
<b>TOTAL</b>		<b>\$178,955.00</b>

\*\*OTPS stands for Other Than Personnel Costs and includes costs for materials, equipment, utilities, etc.

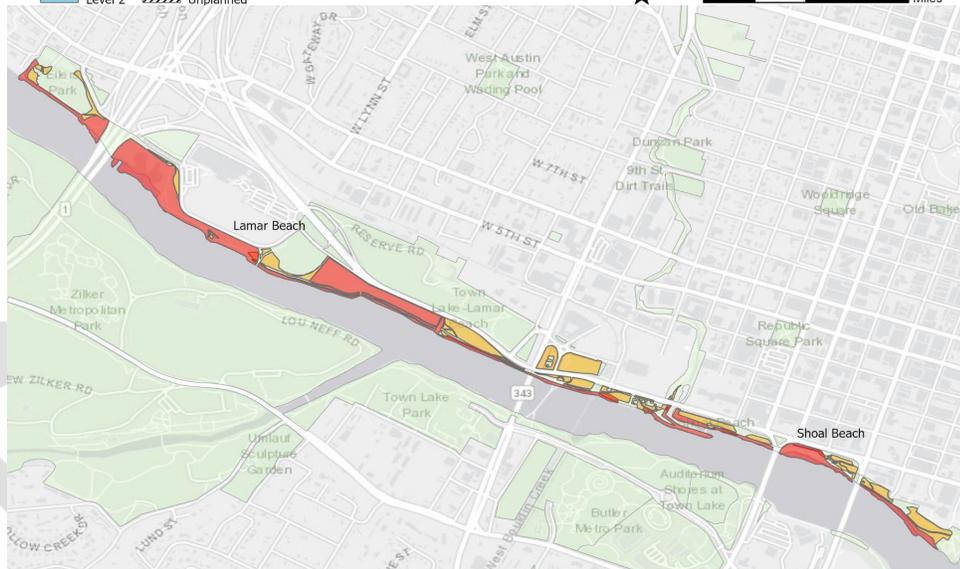
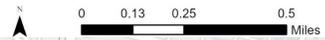
## 2.8 NW Zone Maintenance

The Northwest maintenance zone is approximately 69 acres and includes Shoal Beach, Lamar Beach, and Eilers Neighborhood Park. It also includes Sand Beach Park and a section of the Johnson Creek watershed currently managed by the Texas Department of Transportation. The entire zone is recommended for Level 2 LOS. There are 2.9 miles of trail, 17.9 acres of turf area and 29.5 acres of natural areas in this zone.



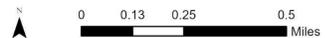
NE Zone Maintenance Landscape Type

Level 2 Unplanned



NW Zone Maintenance Landscape Type

Turf Natural Areas



### 2.8.1 Detailed account of elements in Northwest Zone

Item/Feature	Quantity
<b>TOTAL AREA (Acres)</b>	<b>69.2</b>
Level 2	55.1
Unplanned	14.1
<b>Trail Surface (miles)</b>	<b>2.9</b>
Gravel	1.5
Concrete / Concrete Pavers	1.4
<b>Trail Infrastructure</b>	<b>11</b>
Culverts and Drains	11
<b>Gathering Areas</b>	<b>15</b>
Brazos Bluff	1
Pflugger Circle	1
Johnson Creek Trailhead	1
PARD Scenic overlook	2
PARD Gazebo	2
Buford Tower	1
Fishing Pier/Dock	2
<b>Trash &amp; Recycling</b>	<b>26</b>
Trash Receptacle	16
Recycling Receptacle	10
<b>Restrooms</b>	<b>2</b>
Restroom at Johnson Creek	1
Restroom at Heron Creek	1
<b>Drinking Fountains</b>	<b>8</b>
<b>Lighting</b>	<b>1</b>
Boardwalk Lighting	1
<b>Fencing (linear ft)</b>	<b>2150</b>
Split Rail Fencing between the Bridges	950
Split Rail Fencing at Eilers Neighborhood Park	1200
<b>Furnishings</b>	<b>13</b>
Benches	43
Picnic Table	9
Bike Rack	4
Barbecue Pitt	1
Mutt Mitt	8
<b>Trail Counters</b>	<b>2</b>
North Congress	1
Roberta Crenshaw	1
<b>Fitness and Play Features</b>	<b>1</b>
Fitness Station at Eilers Park w/Rinse Station	1
<b>Installations</b>	<b>7</b>
AIPP Installations	7
<b>Signage</b>	<b>22</b>
Informational Sign	9
Kiosk	4
Mile marker signs	9
<b>Turf (acres)</b>	<b>17.9</b>
<b>Trail Edge Vegetation (miles)</b>	<b>2.9</b>

<b>Manicured Planting Areas (sqft)</b>	<b>7900</b>
Gardens at Johnson Creek Trailhead	3000
Garden at Johnson Creek Restroom	300
Pfluger Circle	1000
Brazos Bluff	3000
Adopt A Gardens	600
<b>Green Stormwater Infrastructure</b>	<b>4</b>
Johnson Creek Trailhead Raingarden	1
Northshore Overlook GSI	1
Congress Ave GSI	1
Brazos Bluff Rain Garden	1
<b>Urban Forestry (num. trees)</b>	<b>2273</b>
<b>Irrigation</b>	<b>5</b>
Johnson Creek Trailhead	1
Temporary Irrigation	2
Pfluger Circle Irrigation	1
Brazos Bluff Irrigation System	1
<b>Natural Areas (acres)</b>	<b>29.5</b>

### 2.8.2 Discussion of unplanned and new elements.

Notable unplanned or future elements within this zone include the renovation of the Seaholm Intake Facility, the Drake Bridge project along the north shore of Lady Bird Lake, Sand Beach Park, and the Orange Line, a high-capacity rapid transit rail construction project led by Project Connect. Coordination and engagement around the development of these projects will be an important part of future updates to this plan. Once established O&M information on these elements/spaces can be added as appendices to this document.

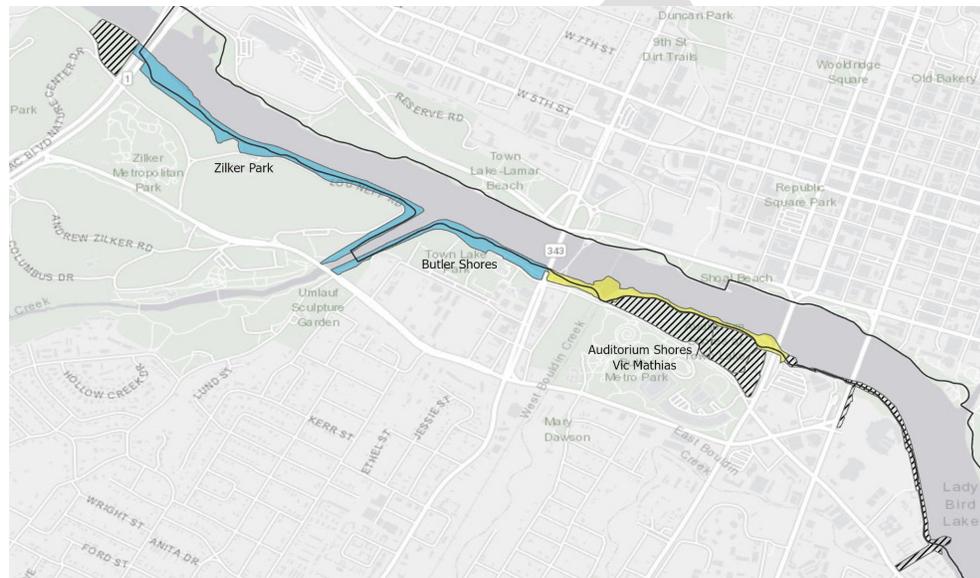
### 2.8.3 High-level Cost Estimating for Year 1 (baseline without unplanned future development)

<b>NW ZONE</b>	<b>Year 1</b>
<i>Built Assets</i>	<i>\$48,275.00</i>
<i>Natural Assets</i>	<i>\$167,800.00</i>
Personnel Total	\$216,075.00
OTPS 30%	\$64,822.50
Administrative 10%	\$21,607.50
<b>TOTAL</b>	<b>\$302,505.00</b>

\*\*OTPS stands for Other Than Personnel Costs and includes costs for materials, equipment, utilities, etc.

## 2.9 SW Zone Maintenance

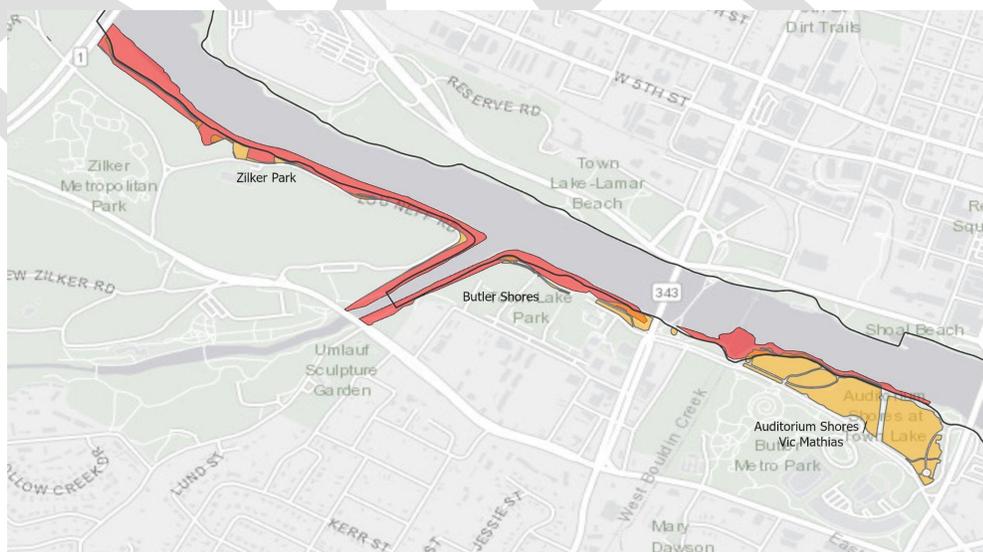
The Southwest maintenance zone is approximately 64 acres and includes a section of Zilker Park, Butler Shores, and Auditorium Shores Vic Mathias. It also includes the privately owned Statesman property site in addition to other public easements for the Trail. The only area in the entire plan recommended for Level 1 LOS is located at Auditorium Shores/Vic Mathias. All other areas in the SW Zone are recommended for Level 2. Additionally, there are 4.7 miles of trail, 18.5 acres of turf area, and 25.5 acres of natural area in this zone.



SW Zone Maintenance Level of Service

Level 1 Level 2 Unplanned

0 0.13 0.25 0.5 Miles



SW Zone Maintenance Landscape Types

Turf Natural Areas

0 0.13 0.25 0.5 Miles

### 2.9.1 Detailed account of elements in Southwest Zone

Item/Feature	Quantity
<b>TOTAL AREA (Acres)</b>	<b>63.7</b>
Level 1	7.9
Level 2	25.2
Unplanned	30.6
<b>Trail Surface (miles)</b>	<b>4.7</b>
Gravel	3.6
Concrete / Concrete Pavers	1.1
<b>Trail Infrastructure</b>	<b>4</b>
Culverts and Drains	4
<b>Gathering Areas</b>	<b>15</b>
Lou Neff Scenic Overlook and Memorial Bricks	1
Butler Point Scenic Overlook and Memorial Bricks	1
Brent Grulke Plaza	1
PARD Scenic overlook	4
Fannie Davis Gazebo	1
<b>Trash &amp; Recycling</b>	<b>46</b>
Trash Receptacle	35
Recycling Receptacle	11
<b>Restrooms</b>	<b>1</b>
Restroom at Vic Mathias	1
<b>Drinking Fountains</b>	<b>8</b>
<b>Lighting</b>	<b>1</b>
<b>Fencing (linear ft)</b>	<b>9000</b>
Split Rail Fencing at Zilker	4000
Split Rail Fencing at Auditorium Shores	5000
<b>Furnishings</b>	<b>27</b>
TTF Memorial Bench	0
PARD Bench	50
Picnic Table	6
Bike Rack	12
Mutt Mitt	15
<b>Trail Counters</b>	<b>2</b>
South Lamar	1
The Boardwalk	1
<b>Fitness and Play Features</b>	<b>2</b>
Butler Shores Exercise Equipment w/ Rinse Station	1
Auditorium Shores Exercise Equipment w/Rinse Station	1
<b>Installations</b>	<b>5</b>
AIPP Permanent Art Installations	4
<b>Signage</b>	<b>16</b>
Informational Sign	1
Regulatory Sign	2
Kiosk	1
Mile marker signs	12
<b>Turf (acres)</b>	<b>18.5</b>
<b>Trail Edge Vegetation (miles)</b>	<b>2.7</b>

Manicured Planting Areas (sqft)	3600
Vic Mathias	600
Between the Bridges	3000
Butler Point	300
Lou Neff Point	1500
Adopt A Gardens	900
Green Stormwater Infrastructure	1
Auditorium Shores Rain Garden	1
Urban Forestry (num. trees)	1760
Irrigation	2
Butler Point	1
Natural Areas (acres)	25.5

### 2.9.2 Discussion of unplanned and new elements.

Notable unplanned or future elements within this zone include the Auditorium Shores/Vic Mathias and Southcentral Waterfront. Auditorium Shores/Vic Mathias planning will require close collaboration with the PARD special events office; and Southcentral Waterfront planning will be contingent upon the development of the statesman site. In future updates to this plan, information on these elements/spaces can be added as appendices to this document.

### 2.9.3 High-level Cost Estimating for Year 1 (baseline without unplanned future development)

SW ZONE	Year 1
<i>Built Assets</i>	\$48,375.00
<i>Natural Assets</i>	\$92,150.00
Personnel Total	\$140,525.00
OTPS 30%	\$42,157.50
Administrative 10%	\$14,052.50
<b>TOTAL</b>	<b>\$196,735.00</b>

\*\*OTPS stands for Other Than Personnel Costs and includes costs for materials, equipment, utilities, etc.

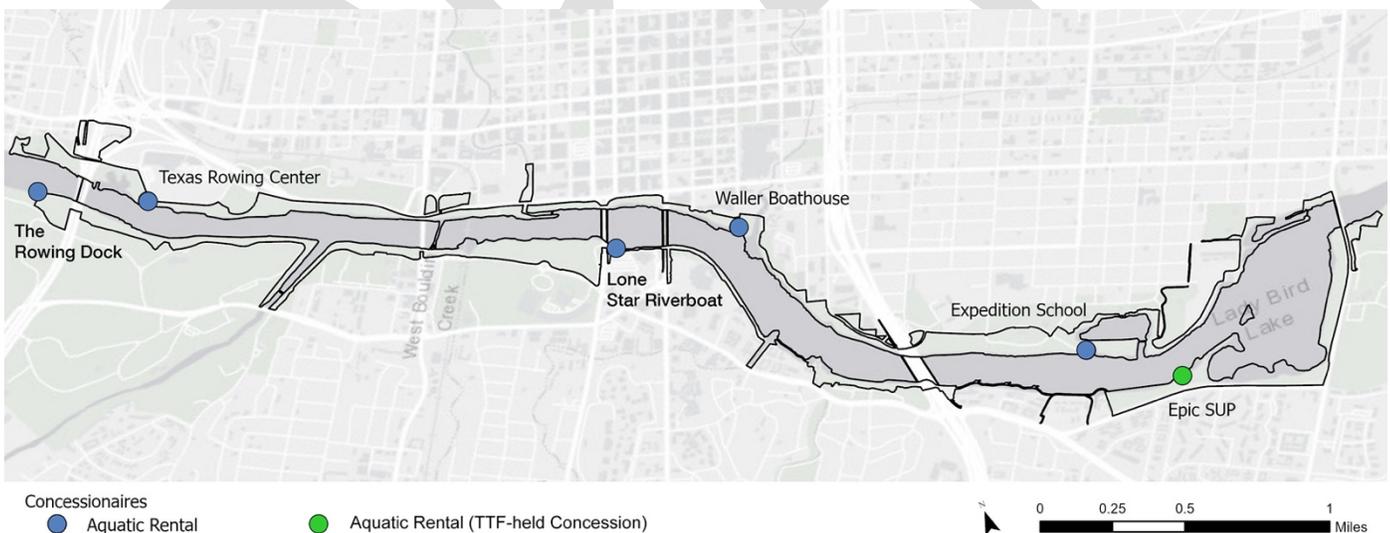
## 3.0 REVENUE

### 3.1 Overview

The Operations and Maintenance Plan is one step in exploring potential revenue sources for spaces along the Butler Trail and around Lady Bird Lake. Earned revenue from concessions and special events is a critical part of sustaining the cost of O&M activities. At this time, the pro forma (expense and revenue projections) for potential and existing TTF concessions, special events and programming have not been included in this document. Future updates to this document should include more detailed financial information on earned revenue from these sources. The following is a list of park concession areas and potential locations that events or additional activities could be held within the study area.

### 3.2 Concessionaires

PARD holds existing long term concessionaire agreements at the locations indicated in the map below. Existing concessionaire agreements held by PARD are indicated in blue. TTF holds the concessionaire agreement with Epic SUP, indicated in green. For any concession agreement where TTF is a party, all revenue from the concession agreement shall be paid to TTF in consideration of TTF’s management of the concession agreement and performance of its obligations therein; provided, however, that such revenue shall be considered gross revenue, shall be deposited into the Park Operations Fund and used to pay Park Operating Expenses.

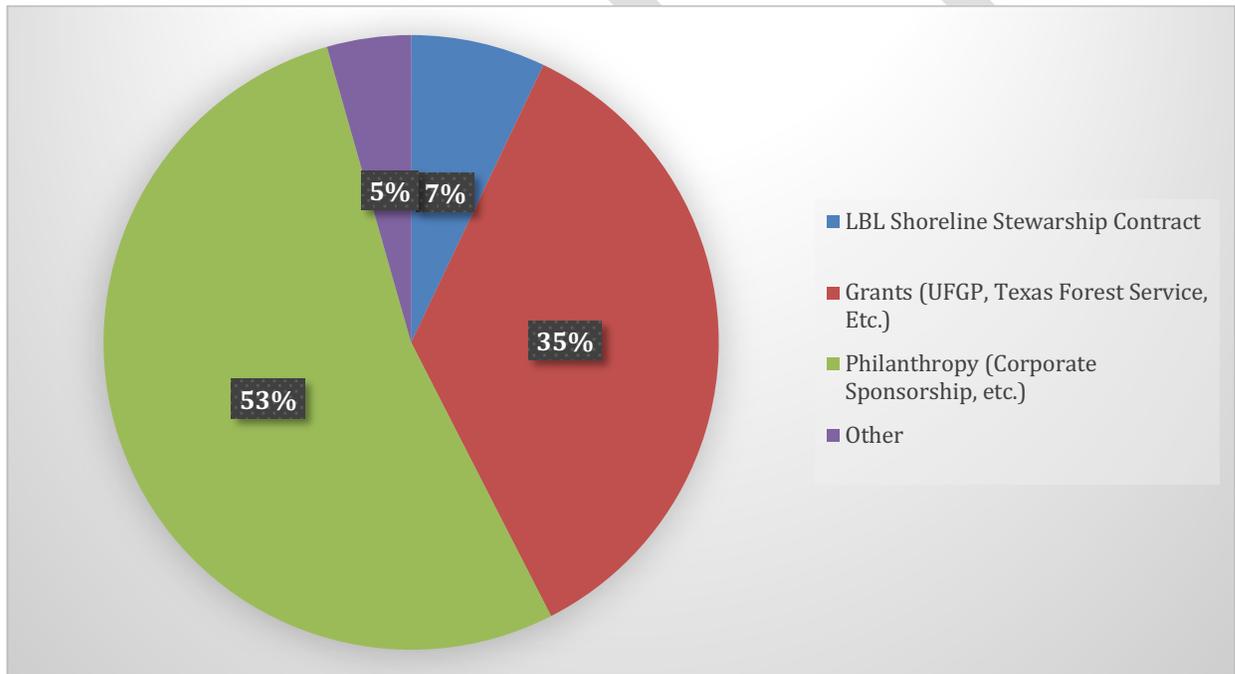


### 3.3 Special Events and Programming

Special events and programming can attract new users to the Trail and provide opportunities to engage with the community. These events can also provide a sustainable source of revenue to support the Trail. Town Lake Metropolitan Park and Ann and Roy Butler Trail already play host to several high profile large special events (e.g. SXSW, Austin Food and Wine Festival, etc.). However, there is an opportunity to expand the programming and special events offerings around the Trail by activating other areas that are able to accommodate gatherings. The annual Programming Plan outlines locations that could be considered for an event based on a recommended event size. Events at these locations would not close or significantly disrupt the access to the Trail.

### 3.4 Funding Sources

Aside from those listed above, The Trail Foundation receives funding from a variety of sources. As it relates to the operations and maintenance of the Trail, revenue can be broken down in the following way.



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## 4.0 REPORTING AND DOCUMENTATION

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### 4.1 Work Order System

The successful implementation of the Butler Trail operations and maintenance plan is contingent upon a system of communication that sets the team up to efficiently and effectively execute their work. The work order management system described below will provide a systematic approach of processing and completing maintenance work orders in a timely manner in order to minimize asset downtime and maximize Trail user experience. All assets and landscape elements are currently tracked and maintained in ArcGIS databases. This plan recommends the development of a work order system that can be integrated with the technology currently used for asset management.

#### 4.1.1 Workforce for ArcGIS

Workforce for ArcGIS is a powerful coordination tool that streamlines field to office workflows. With defined user roles, every team member involved with the operations and maintenance of the Trail will have a designated role. Maintenance managers create and assign work to field maintenance staff, who go into the field to complete the assigned work. This transparent workflow enables efficient coordination, allowing field staff to report back to the office once they've completed a given assignment. Workforce for ArcGIS is a platform designed for field work optimization. Commonly used for inspections and service requests, Workforce for ArcGIS offers real-time awareness for your entire team.

##### Real-time Communication

With a web-based application, the interaction between maintenance managers in the field and in the office is instantaneous. Updates made in the field from a mobile device are immediately reflected for other staff to see.

##### Time Tracking of Labor Hours

Workforce has the ability to capture start and stop times for simple day-to-day tasks, providing powerful, time-based data to build on to future maintenance planning. This is particularly helpful for performing cost estimates and budgeting for future work.

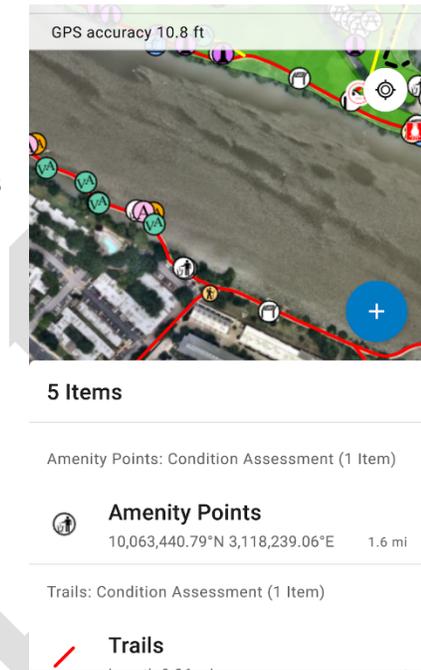
##### Reporting and Tracking

The workforce application creates repeatable workflows that can be easily taught to others and even documented for future growth. The built-in process to execute work orders also provides a complete history of your work order system, all integrated with the GIS.

#### 4.1.2 Collector for ArcGIS

A powerful aspect of Workforce is its ability to integrate with ESRI applications, like Collector for ArcGIS. The Trail Foundation currently uses collector to update the assessment condition of existing assets on the Trail. The field application is a powerful tool that offers the ability to location data, track work, report findings, and capture photos videos from the field. Custom maps can be created for field which provide all of the relevant environmental and asset complete tasks effectively.

Integrating Collector with Workforce offers many benefits the ability to allow field staff to create their own assignments field, without having to rely on maintenance managers.



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#### 4.2 Maintenance Reporting

Reporting on maintenance activities should be standardized across asset and landscape types to ensure proper tracking and execution of maintenance operations. The development of reporting standards will aid in the effective prioritization of work. In particular, this plan recommends the use of a priority ranking which identified maintenance tasks based on the urgency of the issue. For reporting purposes, maintenance work orders should be identified according to one of the four categories:

**1- Day Critical Health and Safety** – Report to the City of Austin staff immediately.

**7- Day Repairs** – Repair to be scheduled within 7 days to prevent the disruption of normal Trail and park use.

**21-Day Non-Critical** – Repair or maintenance should be scheduled within 21 days of reporting to maximize Trail user experience.

**30- Day Non-Critical** – Repair or maintenance should be scheduled within 30 days of reporting but is not significantly impacting Trail user experience and is considered non-critical.

# 5.0 APPENDICES

## 5.1 Maintenance Cost Estimator Template

### The Butler Trail - Maintenance Tasks & Hours

*Tasks in italics represent tasks that are recommended but may not be performed at lower standards.*

*Other tasks may be performed less often at lower standards.*

*Assume additional work needed for establishing landscapes.*

*TTF Cont. = services contracted by TTF*

*AN = As needed*

TASK	TIME	Phase 1		Phase 2		Phase 3		ASSUMPTIONS	Avg. Hourly Rate	Phase 1 Cost	Phase 2 Cost	Final Ph. Cost
		ANNUAL FREQ.	ANNUAL HOURS	ANNUAL FREQ.	ANNUAL HOURS	ANNUAL FREQ.	ANNUAL HOURS					
<b>TOTALS</b>										\$	\$	\$
<b>Trail Surface/Infrastructure</b>									1 unit = 3.6 miles			
Trail inspection								Additional inspection within 24 hours of heavy rain	\$50	0	0	0
Minor maintenance								Raking, spot leveling, refilling, as needed	\$50	0	0	0
Paving repair								Repair markings, cracks, spalling, settling, etc.	\$50	0	0	0
Major renovations								Refilling, releveling, and renovation on a larger scale; often requires bringing in new material and includes restabilizing if using a stabilizer; may be more often in areas with frequent flooding	\$50	0	0	0
<b>Drainage Infrastructure</b>									1 unit = 8 culverts/drains			
Drainage inspections								Additional inspection within 24 hours of heavy rain	\$50	0	0	0
Clean out surface drains & culverts								provide annual support to all 8 drainage infrastructure by Phase 3	\$50	0	0	0
Clean outfalls									\$50	0	0	0
<b>Gathering Areas</b>									1 unit = 15 locations (2 - TTF, 13 - PARD)			
Inspect area and remove litter								Assume 3x per week to daily	\$50	0	0	0
Surface cleaning								May include sweeping, scrubbing, and/or power washing. Includes support for PARD facilities starting in Phase 2	\$50	0	0	0
Surface maintenance									\$50	0	0	0
Maintain brick pavers and gravel areas									\$50	0	0	0
Graffiti removal									\$50			
<b>Trash &amp; Recycling Receptacles</b>									1 unit = 28 receptacles			
Empty receptacle								Completed daily on average by PARD; adjusting for periods of high and low use	\$50	0	0	0
Clean receptacle								Twice per month, or more often if needed	\$50	0	0	0
Pest control									\$50	0	0	0
Basic maintenance								Replace can liners, resecure lids, etc.	\$50	100	250	500

Trash collection/hauling					Remove collected trash from surrounding area	\$50	0	0	0
<b>Restrooms</b>					<b>1 unit = 1 restroom</b>				
Clean & restock					Daily for Level 2 service	\$50	0	0	0
Restroom maintenance					Fixture repairs and replacements, etc.	\$100	0	0	0
Structure cleaning					Spot cleaning every 2 weeks or as needed, with major cleanings once to twice per year	\$50	0	0	0
Structure maintenance					Roof repair, siding repair, etc.	\$100	0	0	0
<b>Drinking Fountains</b>					<b>1 unit = 2 features</b>				
Clean and wipe down						\$50	0	0	0
Inspect for damage/issues					Repair as needed	\$50	0	0	0
Winterize					Frequency includes winterization and spring turn-on	\$100	0	0	0
<b>Lighting</b>					<b>1 unit = lighting Allowance</b>				
Lighting inspection & cleaning					more frequent inspection or as needed after storm events and flooding	\$100	0	0	0
Lighting maintenance					Assume ~10% annually for replacements and/ or repairing damage	\$100	0	0	0
<b>Fencing</b>					<b>1 unit = 2000 LF</b>				
Repairs						\$50	0	0	0
Specialty maintenance					May include repainting, tightening connections, etc.	\$50	0	0	0
<b>Furnishings</b>					<b>1 unit = 38 elements (18 - TTF, 20 - PARD)</b>				
Clean & inspect					usually only once a year or as needed. 18 TTF Memorial benches	\$50	0	0	0
Maintain & repair					Tighten connections, replace slats, etc.	\$50	0	0	0
Graffiti removal									
<b>Trail Counters</b>					<b>1 unit = 1 counter</b>				
Clean & inspect					Kept functional and checked for data reliability annually	\$50	0	0	0
Maintain & repair						\$300	0	0	0
<b>Fitness and Play Features</b>					<b>1 unit = 1 Fitness Feature</b>				
Inspection					Kept clean and functional. Tolerance of minor wear and tear.	\$200	0	0	0
Maintenance and repairs						\$200	0	0	0
Litter removal and tidying						\$50	0	0	0
<b>Installations</b>					<b>1 unit - 1 temporary installation</b>				
Inspection					Daily during installation - 24 hour reporting	\$50	0	0	0
Litter removal						\$50	0	0	0
<b>Signage</b>					<b>1 unit = 13 signs</b>				
Clean & inspect					Monthly (PARD only inspects, not clean)	\$50	0	0	0
Maintain & repair					Tighten connections, refinish/repaint, etc.	\$50	0	0	0

Graffiti removal										
<b>Graffiti</b>										
Graffiti removal							\$50	0	250	500
<b>Turf Care</b>								(total cost)	(total cost)	(total cost)
1 unit = 19.7 acres										
Mowing					Mowed at least once every 2 weeks in the growing season.		\$50	0	0	0
Turf fertilization & weed preventer							\$50	0	0	0
Soil test & evaluation							\$50	0	0	0
Spot weed control							\$50	0	0	0
Seasonal turf renovation					Aerate once per year and reseed/ resod as needed.		\$50	0	0	0
Temporary fencing					Install/maintain as needed		\$50	0	0	0
<b>Trail Edge Vegetation</b>								(total cost)	(total cost)	(total cost)
1 unit = 2.2 miles										
Assessment of trail edge							\$50	0	0	0
Prune, mow, and remove excess vegetation					Maintain 8 -10 ft vertical clearance. Mow to maximum width of 3 ft from the Trail edge.		\$50	0	0	0
Remove nuisance and invasive species					Coordinated with input from TTF, PARD, WPD		\$50	0	0	0
<b>Manicured Planting Areas</b>								(total cost)	(total cost)	(total cost)
1 unit = 500										
General maintenance (purning, weeding, trimming, etc.)					Performed regularly with an increase from March to September		\$50	0	0	0
Mulch					Or as needed		\$50	0	0	0
Remove nuisance and invasive species							\$50	0	0	0
Assess for replanting needs					Special consideration should be given to incorporating volunteers		\$50	0	0	0
<b>Green Stormwater Infrastructure</b>								(total cost)	(total cost)	(total cost)
1 unit = 2 features / 8000 sf										
Monitoring					Weekly and with other maintenance tasks; check for pests, invasives, etc. and maintenance work needed		\$50	0	0	0
Litter removal					Assume 2x to 3x per week, by hand or with skimmer net		\$50	0	0	0
Weed & invasive species control					Tolerance for weed and invasives based on level of service		\$50	0	0	0
Vine management					Cutting, removing, treating, etc.		\$50	0	0	0
Pest control							\$50	0	0	0
Debris removal & sediment control					Removal of silt and larger debris from garden/ bioswale		\$50	0	0	0
<b>Urban Forestry</b>								(total cost)	(total cost)	(total cost)
1 unit = 55.6 acres										
<b>General Maintenance</b>										
Tree inspection					Maintenance should coincide with low demand periods		\$100	0	0	0
Mulch							\$50	0	0	0
<b>Planting and Tree Establishment</b>								(total cost)	(total cost)	(total cost)
1 unit = 10,000 sf										
Tree inspection					Maintenance should coincide with low demand periods		\$100	0	0	0
Maintenance					Monitor and inspect for insect and disease problems		\$50	0	0	0

Mulch						\$50	0	0	0
<b>Pruning</b>						1 unit = 10,000 sf	(total cost)	(total cost)	(total cost)
Removal of excess, dead, broken, etc. branches and foliage					Removal when assessment of damaged/diseased trees recommends it	\$100	0	0	0
<b>Irrigation</b>						1 unit = 10,000 sf of irrigated landscape			
Inspection & system check					Check for adequate coverage, functionality, and any damage	\$50	0	0	0
Maintenance & repair					Can include system cleanout, repairing spray heads and drip lines, etc.; assume about 5 to 10% replacement annually	\$100	0	0	0
<b>Natural Areas</b>						1 unit = 28.1 acres			
Monitoring					Biweekly and with other maintenance tasks; check for pests, invasives, etc. and maintenance needs	\$50	0	0	0
Litter removal					Quarterly effort	\$50	0	0	0
Large debris removal					Fallen debris may remain for ecological value but should be removed on pathways or if a safety hazard	\$50	0	0	0
Natural resource management					Weeding, cleaning, trimming, pruning, monitoring, invasive species control & removal, understory maintenance, tree/shrub planting, etc. with a 6 to 10 person crew one week per quarter	\$50	0	0	0
Vine management					Cutting, removing, treating, etc.	\$50	0	0	0
Poison ivy mangement						\$100	0	0	0
Weed & pest control					Can be done with a wick applicator and/or express roller	\$50	0	0	0
Annual cutback + cleanup after cutback					Done to promote healthy growth and remove unwanted woody vegetation	\$50	0	0	0
Overseeding & plant replacement					Seeding or planting depends on plant species	\$50	0	0	0
Wetland structures /enclosures maintenance					Maintenance of floating wetland structures & wetland plant enclosures	\$50	0	0	0

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