

CHAPTER 7. OPERATIONS AND MAINTENANCE

The creation of an effective operations and maintenance plan that promotes responsible use of the trail system throughout all four seasons is one of the key objectives of this Trails Master Plan. The following chapter explains the recommended maintenance and management program along with estimated costs.

Note: The guidance provided in this chapter will be incorporated into the Mammoth Lakes Trail System Operations and Maintenance Manual, which will be a living document, intended to provide uniform guidance for the ongoing management of the Mammoth Lakes Trail System.

7.1. Maintenance Roles and Responsibilities

7.1.1. Town of Mammoth Lakes

The Town of Mammoth Lakes (TOML) is currently responsible for maintaining all Town owned roads, multi-use paths, sidewalks, and bikeways. Maintenance operations are performed by the Public Works and Parks and Recreation departments, with Public Works maintaining streets. The Parks and Recreation Department maintains identified sidewalk segments as well as maintaining parks and multi-use paths both in Town and on Forest Service land. TOML maintenance and operation of facilities on USFS land are done under agreements known as “Special Use Permits”. These negotiated and binding agreements between TOML and USFS offer significant opportunities for trail facilities in Mammoth Lakes. TOML currently holds a Special Use Permit from the Forest Service to maintain 9.5 miles of “12 foot wide public bike trail” on USFS property including segments of the Main Path, the Welcome Center and Shady Rest Path, the Meridian Path and the future Lake Mary Bike Path. This Special Use Permit expires in 2036. Maintenance is currently paid for through the Town’s General Fund and through Mello-Roos District funding and Assessment Districts. Funding can be used to provide maintenance from both private contractors and/or Town staff. TOML also has an agreement with the Water District to borrow (when feasible) their equipment to pre-groom the eastern segments of the Main Path so that it may be used for cross-country skiing in the winter.

7.1.2. California Department of Transportation (Caltrans)

Caltrans is responsible for the maintenance of Highway 203 which includes Main Street and the section of Minaret Road north of Main Street and adjacent to the North Village. Caltrans does not clear sidewalks or bus stop areas along 203.

7.1.3. United States Forest Service (USFS)

The Forest Service is responsible for the maintenance of all roads and trails within the Inyo National Forest. Key facilities relevant to this plan are the trails and roadways in the Lakes

Basin and Shady Rest area. These facilities are operated and maintained under the Special Use permit identified in 7.1.1 (above). In the winter, the Forest Service grooms the snow on top of Sawmill Cutoff road, and all other snowmachine/multi-use (orange diamond) trails. The Forest Service also pre-grooms the cross-country skiing (blue diamond) trails in the Shady Rest area. Classic cross-country and skate ski tracks are then laid by Mammoth Nordic and available for free use by the general public. In the Lakes Basin, Lake Mary Road is groomed for general winter use. In the Lakes Basin, Mammoth Mountain Ski Area, the operator of the Tamarack Cross-Country ski center, grooms all trails within their fee area for classic cross-country and skate skiing. The project team also noticed corduroy-type grooming extending outward from the road closure at Mill City in February 2008. Key sources of funding for winter trail grooming include the state gas tax and funding acquired through OHV “green sticker” registration fees administered by the California Department of Motor Vehicles. These state funding sources are intended for maintenance of motorized trails. However, a small portion of this funding is used for winter grooming of non-motorized trails that lie within close proximity to the OSV trail system. This non-motorized trail grooming takes place at Shady Rest and Inyo Craters.

7.1.4. Mammoth Community Water District (MCWD)

The Mammoth Community Water District is responsible for maintaining all rights-of-way under its ownership. In addition, MCWD currently loans grooming equipment to TOML in order to pre-groom the Main Path between the Main Street tunnel and Mammoth Creek Park for cross-country skiing in the winter. Mammoth Nordic then lays classic cross-country ski tracks using its own equipment.

7.1.5. Volunteer Maintenance Efforts

Numerous organizations have expressed and/or participated in volunteer summer or winter trail maintenance efforts. Mammoth Nordic currently grooms cross-country ski trails (blue diamonds) in the Shady Rest area. Mammoth Nordic also has a contract with TOML to groom the section of Main Path between the Main Street tunnel and Mammoth Creek Park. The Mammoth Snowmobile Association have also expressed interest and/or actively participated in trail maintenance efforts. Other less documented volunteer maintenance efforts may also be taking place in the area. Local hiking, equestrian, mountain biking, road cycling and numerous other activity groups comprise a large pool of potential volunteer labor.

CALTRANS

- Use: Clears Highway 203
- Equipment in inventory:
- 4 Ton trucks with plow blade and sander
 - Rotary snow plows and graders
 - TOML Clears scenic loop fr 203 to 395



TOWN OF MAMMOTH LAKES

Trackless MT-V

- Use: Clears Town trails and sidewalks



FIGURE 7-1
SNOW MANAGEMENT
EQUIPMENT

TOWN OF MAMMOTH LAKES

CAT 966G

- Use: Clears Town streets
- Also has plow, grader, and blower attachments



TOWN OF MAMMOTH LAKES

Heated Sidewalks

- Use: Sidewalks are heated around North Village
- Most pink concrete sidewalks are plumbed for heating; awaiting geothermal connection



U.S. FOREST SERVICE/MMSA

Pisten Bully: "The Edge" & "100"

- Use: Trail grooming at Tamarack (MMSA) and Shady Rest (USFS)



TOWN OF MAMMOTH LAKES

- Use: Spreads sand/cinders on Town streets; Vacuum trucks and sweepers remove sand and cinders for air quality reasons



PRIVATE SNOW REMOVAL EQUIPMENT

- Use: Clearing private roads, parking lots, and driveways



MAMMOTH NORDIC

Alpina Sherpa & YTS Tracksetter

- Use: Grooming Nordic trails at Shady Rest and along MLTS Main Path



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7.2. Maintenance Guidelines

A high level of trail maintenance is critical to the overall success and safety of the trail system. Maintenance includes such activities as pavement stabilization, landscape maintenance, facility upkeep, sign replacement, fencing, mowing, snow removal, snow grooming, litter removal, painting, and pest control. However, the effects of a good maintenance program are not limited to the physical and biological features of the trails:

- A high standard of maintenance is an effective way of helping advertise and promote trails as a regional and state recreational resource;
- The psychological effects of good maintenance can be an effective deterrent to vandalism, litter, and encroachments;
- Good maintenance is necessary to preserve positive public relations between adjacent land owners and government;
- Good maintenance can help make enforcement of regulations on the trails more efficient. MLTPA, Mammoth Snowmobile Association, Mammoth Nordic, and others local organizations and service groups will take pride in “their” trail and will be more apt to assist in protection of the trail system.
- A proactive maintenance policy will help improve safety along the trails.

A successful maintenance program requires continuity and a high level of citizen involvement. Regular, routine maintenance on a year-round basis will not only improve trail safety, but will also prolong the life of the trails. Maintenance activities required for safe trail operations should always receive top priority.

7.2.1. Paved Multi-Use Path Maintenance

The maintenance of paved paths is similar in some ways to the maintenance of on-street bicycle facilities.

Summer / Fall Maintenance

Cracks, ruts and water damage will have to be repaired periodically. In addition, vegetation control will be necessary on a regular basis.

Where drainage problems exist along the trails, ditches and drainage structures will need to be kept clear of debris to prevent wash outs. Checks for erosion along the trails should be immediately after any storm that brings flooding to the local area.

The trail surface should be kept free of debris, especially broken glass and other sharp objects, loose gravel, leaves and stray branches. Trail surfaces should be swept periodically to keep them clear of debris. Sweeping should be scheduled based on need. For example, path segments in forested areas such as Shady Rest will tend to accumulate surface debris such as leaves and pine needles at a faster rate than other path segments. These areas should be swept more frequently in order to maintain safe surface conditions on paved MUPs.

Winter (Snow) Maintenance

This activity takes place after snowstorms and periodically between storms to condition the snow surface for a variety of winter activities. Snow clearing or grooming machine operators, who are most familiar with the segments in their care, should identify and report any additional maintenance needs while they are in the field.

Paved multi-use pathways require significant public investment and should be used to their fullest potential year-round. Determining the highest and best winter use for the Town's paved multi-use pathways is a subjective decision that can change over time. Fortunately, the fleeting nature of snow allows for significant flexibility and creativity in dealing with it from storm to storm and season to season. The decision to clear, groom, or leave a paved MUP unmaintained should be the result of a public decision making process involving the Town of Mammoth Lakes officials, residents, and stakeholders. The decision will necessarily be based on the demand for different activities on each segment and the physical and budgetary constraints associated with winter pathway maintenance. Any changes to winter maintenance operations along paved paths should be made by early spring so that the appropriate changes can be made to maps and signage in time for the upcoming winter season. The following paragraphs describe the different levels of winter maintenance on the Town's paved multi-use pathways.

Snow Removal or Clearing

After snowfalls, town pathways may be cleared of all snow accumulation, providing a clear paved surface for ideal use by foot traffic. Cleared pathways may also be used for winter bicycle use. Snow removal is best for path segments that provide connections to key pedestrian destinations. The Needs Analysis chapter of this report brought to light a widespread concern for winter pedestrian safety. It also showed that pedestrian/motor vehicle collisions are most likely to occur during winter months. If clearing a segment of paved path will help to improve winter pedestrian safety, the Town should seriously consider clearing that segment, unless it would significantly disrupt the continuity of a groomed path or place an undue burden on Town resources. Currently the Town clears segments of the Main Path and the Meridian Path to provide access to the Welcome Center and schools. If it is decided that a segment of paved path is to be cleared in the winter, every effort should be made to ensure that the segment remains free of ice to prevent slipping injuries. This will likely require ongoing inspection between snow events to ensure that ice buildup and drifting snow is removed promptly. Salt, sand, or de-icing solution should only be used if special circumstances warrant; such as severe ice buildup or freeze thaw cycles on the trail surface. Snow stakes should be used along all paths intended for clearing in order to ensure that only the paved surface is cleared (see **Figure 7-2**).

Grooming

Winter trail 'grooming' involves compacting the snow surface so that it can be more easily used for typical winter activities. Winter trail grooming typically varies based on the intended use of the trail. Winter trails intended for both motorized and non-motorized use generally have a wider groomed area and typically follow an existing roadway (i.e. Sawmill Cut-off road in the Shady Rest area). Non-motorized trails may also have a very wide groomed area if expected levels of use are high (i.e. Lake Mary Road south of the winter closure.) Groomed winter trails can be used for a wide variety of winter recreation activities, including winter walking, snowshoeing, dog-sledding and as connection facilities to winter vistas,

snowplay areas, and backcountry activities. Trails groomed specifically for cross-country skiing typically have two elements, a wide compacted surface with a corrugated surface typically six to twelve feet wide for ‘skate skiers’, and a narrow pressed set of tracks for ‘classic’ or ‘traditional’ cross-country skiing. Typically, grooming equipment is towed behind a wide variety of vehicles from snow mobiles to full sized tracked vehicles. The public-cross country ski trail in the Shady Rest area are groomed by a local non-profit group—Mammoth Nordic—using a grooming attachment that is towed behind a low-emissions snowmobile. Grooming frequency is determined by use and snowfall events. Grooming is typically carried out after at least four inches of new snowfall. Winter grooming of paved path facilities to accommodate the full complement of winter activities may present some limitations in terms of the width of the “groomable” area. Addressing at-grade road and driveway crossings represent challenges to be anticipated and effectively engaged.

No Snow Maintenance

The decision to provide no snow maintenance may be necessary in some cases. Because the Town’s population increases significantly during winter, the need for safe pedestrian passage and recreational facilities in or near Town also increases during winter months. Therefore, the decision not to clear or groom paved pathways will tend to be more budgetary than utilitarian. Snow removal and grooming are a significant expense. In addition, snow can act as an insulating layer and help prevent heaving or other damage. Snow removal on some trails in winter can accelerate the need for major trail maintenance or reconstruction during summer months. In order to ensure that the Town is making the best use of all its resources (infrastructure and capital), the decision not to maintain a segment of paved path during the winter should be made as part of an open public process that clearly presents the mobility, recreational, and budgetary impacts of that decision.

Figure 7-2. Winter Maintenance Issues



Spring Maintenance

As the snow melts in the spring, paved paths can emerge from winter operations covered in dirt and debris. Signage along paved paths generally sustains significant damage from snow maintenance operations and from the effect of natural snow movement. Because residents

and visitor will begin using these facilities as soon as they are exposed, every effort should be made to sweep and clear these facilities as early as practical. Lingering patches of snow should be cleared to provide a safe smooth surface for bicyclists and pedestrians. Any signage that is missing should be replaced and any striping or stenciling that has become well worn should be repainted. This is also an opportunity to remove any irrelevant or misleading signage and add any additional signage that may be relevant to upcoming summer and winter trail activities. For example, if a segment signed for cross-country skiing will not be groomed the following season, the cross-country skiing signs should be removed as part of spring maintenance. These activities should be undertaken as early as possible and constitute the majority of paved multi-use path maintenance.

Figure 7-3. Spring Maintenance Issues

| | |
|---|---|
|  |  |
| <p>Damaged Signage</p> | <p>Lingering Snow</p> |
|  |  |
| <p>Cross Country (XC) Ski Sign</p> | <p>XC Ski Sign along Meridian (This segment is actually cleared—not groomed—in winter.)</p> |

7.2.2. On-Street Bikeway Maintenance

While implementing bikeway facilities is important, keeping them in good condition is equally important. When a bicycle lane becomes filled with debris, for example, cyclists are forced into the motor vehicle lane. Poor bikeway maintenance can contribute to accidents and deter potential cyclists unwilling to risk flat tires and skidding on city streets. Typical seasonal maintenance activities are described below. It should be noted that the “winter (snow)” maintenance season in Mammoth Lakes may extend from late October to early May, making the “spring” and “summer/fall” maintenance periods significantly shorter than the seasons themselves.

Summer/Fall Maintenance

Periodic checks should be made of the on-street bikeway network with work being confined to spot fixes and damage response. Activities during these seasons could be driven by maintenance requests from the public.

Winter (Snow) Maintenance

Like motorists, bicycle commuters require consistent access to roadway facilities year-round. The use of bike lanes and the outside lanes or shoulders of bike routes as winter snow storage should be avoided, because this effectively narrows the roadway width and forces any cyclists using the roadway closer to traffic under conditions which have already been complicated by snow and debris. However, if absolutely necessary bikeways should act only as temporary snow storage areas during plowing operations under winter storm conditions. After storm events, TOML and Caltrans snow removal crews should use blower machinery to remove snow stored on bikeway facilities, both to open these facilities to bicycle use and to clear room for temporary snow storage from subsequent storms.

Spring Maintenance

As temperatures warm in the spring, on-street bikeways emerge from winter operations covered in debris and in some cases bike lane striping and stencils are worn or erased from studded snow tires and plow blades. Every effort should be made to sweep and clear these facilities as early as practical. Any signage that is missing should be replaced and any striping or stenciling that has become well worn should be refreshed. These activities should be undertaken as early as possible and constitute the majority of on-street bikeway maintenance.

7.2.3. Sidewalk Maintenance

The lack of available sidewalks during both summer and winter was a common concern expressed during the summer and winter CAMP sessions. During summer the issue was primarily a lack of infrastructure, with Main Street being the area of greatest concern. In winter, however, the discussion focused heavily on maintenance and the ability to walk in Town.

Aside from being essential to summer and winter “feet first” mobility, the Town’s sidewalks and promenades are key to providing safe and convenient access to the various summer and winter recreational opportunities in and around town. In winter, when the Town’s population is the highest and safety conditions are most precarious, it is essential to provide accessible sidewalks throughout town. It may be necessary to initiate a prioritization process

in order to decide which sidewalks receive (and don't receive) winter maintenance in the short term. However, it should be the ultimate goal of the Town to clear all sidewalks in winter and summer to enhance mobility, access to recreational opportunities, and public safety. Sidewalk maintenance is the responsibility of the Public Works Department and should be achieved either through ordinance or the creation of new assessment districts. Recreational trails funding should not be used for sidewalk maintenance purposes.

Town of Mammoth Lakes Municipal Code is not clear about responsibility for snow removal on sidewalks other than those located within assessment districts. **Figure 7-4** provides sample municipal code language from Fort Collins, Colorado.

Figure 7-4. City of Fort Collins Municipal Code

Sec. 24-21. Removal of snow and ice required; lien.

(a) The owners or occupants of property abutting upon or adjacent to sidewalks within the City shall at all times keep the sidewalks abutting upon or adjacent to the lot or lots owned or occupied by them free and clear of snow and ice. If any such owners or occupants shall fail to remove the snow and ice from the sidewalks abutting upon or adjacent to their property within twenty-four (24) hours after the accumulation of snow and ice, then the City Manager may at once have the hazard corrected by removal of snow and ice from the sidewalk or by the application of abrasive material; and the cost, including inspection and other incidental costs in connection therewith, including the costs for carrying charges and costs of administration, shall be assessed against the property abutting upon or adjacent to the snow obstruction and the owner thereof.

(b) If the property owner contest the declaration of nuisance and/or the assessment of costs, he or she shall file a written request with the Director of Neighborhood and Building Services, within ten (10) days from the service of a notice of assessment, a written request for a hearing before the Referee.

(c) Such assessment shall constitute an automatic, perpetual lien in the several amounts assessed against each property from the date the assessment became due until paid. Such liens shall have priority over all other liens except general taxes and prior special assessments. In case any such assessment that has not been set for hearing pursuant to Subsection (b) is not paid within thirty (30) days after it has been certified by the Director of Neighborhood and Building Services and billed by the Financial Officer or his or her designee to the owner by deposit in the United States mail, addressed to the owner of record at the address as shown on the tax rolls of the County Assessor, or such other, more recent address as may be available to the City, and any agents, representatives or occupants as may be known, the Financial Officer or his or her designee shall be authorized to certify to the County Treasurer the list of delinquent assessments, giving the name of the owner of record, the number of the lot and block and the amount of assessment plus a ten-percent penalty. The certification shall be the same in substance and in the same form as required for the certification of taxes. The County Treasurer, upon the receipt of such certified list, is hereby authorized to place the same upon the delinquent tax list for the current year and to collect the assessment in the same manner as taxes are collected with such charges as may by law be made by the Treasurer, and all the laws of the State for the assessment and collection of the general taxes, including the laws for the sale of property for unpaid taxes, shall apply to and have full force and effect for the collection of all such assessments. Notwithstanding the foregoing, if the offending property is not subject to taxation, the City may elect alternative means to collect the amounts due pursuant to this Article, including the commencement of an action at law or in equity and, after judgment, pursue such remedies as are provided by law.

7.2.4. Summer Grooming

Trailheads, ski lift loading areas, the bottoms of ski swaths near wetlands or trails, and extreme mountain biking trails should be inspected in summer to note if drainage improvements or mulching are needed to keep dust down or limit erosion during worst-case summer convective thundershowers.

7.2.5. Vegetation and Pest Management

In general, visibility between plantings at trailside should be maintained so as to avoid creating the feeling of an enclosed space. This will also give trail users good, clear views of their surroundings, which enhances the aesthetic experience of the trail. Under story vegetation along trail corridors should not be allowed to grow higher than 36 inches. Tree species selection and placement should be made that minimizes vegetative litter on the trail and root uplifting of pavement. Vertical clearance along the trail should be periodically checked and any overhanging branches over the trail should be pruned to a minimum vertical clearance of 10 feet.

The trail system moves through a variety of landscape settings. Some basic measures should be taken to best protect the trail investment. This includes brush removal 2' on each side of the regional and most community trails to prevent invasion of plants into the pavement area.

7.3. Existing Town of Mammoth Lakes Maintenance Policies

The responsibility of maintaining the Town's trail and other infrastructure is shared between the Department of Tourism and Recreation and the Department of Public Works.

7.3.1. Tourism and Recreation

The Tourism and Recreation Department is responsible for maintaining all parks and recreational trails under the jurisdiction of the Town of Mammoth Lakes.

Figure 7-5. TOML Tourism and Recreation Trail Maintenance Policy

The following trail maintenance schedule adopted by the Parks and Recreation Commission (12/2006):

WEEKLY – Summer

1. Sweep entire paved path if necessary
2. Pick up litter, debris, fallen limbs, etc.
3. Check all safety items - repair as needed all safety markers, lights, and reflectors.
4. Check all signing - repair or replace as needed
5. Check all bridges and under crossings - remove any graffiti, check drainage structures, guardrails, reflectors, and lights.
6. Check Culverts - remove clogged debris.

WEEKLY – Winter Use Areas where applicable

1. Check entire winter path for hazards, usability (Use snowmobile or cross-country skis for transport).
2. Pickup litter, debris, fallen limbs, etc.
3. Check all safety items - repair as needed all safety markers, lights, reflectors, if not under snow.
4. Check all exposed signage - repair or replace as needed.
5. Check all bridges and under crossings - remove any graffiti, check drainage structures/, guardrails, reflectors, lights.
6. Check usability of under crossings used for X-country skiing - clear as needed.
7. Check culverts - remove clogs/debris/ice dams if possible.

MONTHLY - Summer

1. Check and repair all drainage structures, diversion weirs, ditches, erosion control devices; clear rocks and debris; remove / modify potential drainage problems.
2. On paved paths, check pavement for hazards, boles, cracks and repair as needed; make even with pavement - eliminate any drop offs,
3. Clear shoulders of unwanted vegetation encroachment; remove overhead limbs and branches in travel way.
4. Check bridges for loose deck members and rails; check support structural members, repair as needed.

MONTHLY - Winter Use Areas where applicable

1. Check and repair all drainage structures; clear ice dams if possible.
2. Check cross-country path for hazards, holes, depressions, rough sections, etc. - repair as needed f cover with snow.
3. Remove overhead limbs and branches in travel way.
4. Check bridges for damaged rails; check support structural members if possible - repair as needed.

SEASONAL MAINTENANCE

Fall

1. Check all cross-country ski trail signage - repair and replace as needed.
2. Check all drainage structures carefully before they are covered with snow.

Spring

1. Perform bridge maintenance; replace worn or defective parts; apply wood preservative/stain; paint/rust-stop all metal parts; replace/repair metal supports as needed.
2. Apply any paint used for striping of pathway; re-stripe pathway where needed.

LONG TERM MAINTENANCE

1. At least every 5 years or as required, repair all cracks, holes, edges, depressions in paved path and apply seal coat - establish rotational program.
2. Reconstruct any section of pathway that may be hazardous, severely eroded.
3. Check structural integrity of all bridges and under crossings.

The Town of Mammoth Lakes General Fund ('08 – '09 budget) allocates monies for the operation and maintenance of Parks, Recreation & Trails (\$1,294,230). The trail system maintenance portion (\$51,001) of the allocated monies is currently only 4% of the total parks, recreation & trails maintenance and operations budget. In addition to the maintenance of the Town's trails and parks, Tourism and Recreation Department staff provides winter snow removal and summer sweeping of sidewalks at the locations described in **Table 7-1**.

Table 7-1. Tourism and Recreation Department Sidewalk Maintenance Efforts

| Location | Funding Source |
|--|-----------------------|
| Old Mammoth Road (both sides) | Assessment district |
| East side of Sierra Park Road from Meridian to the Hospital (general fund) | General Fund |
| North Village | Assessment District |
| Canyon Blvd | Assessment District |
| Welcome Center from the parking lot to the T&R office (cleared) and from T&R office to Sawmill Cutoff Road (groomed) | General Fund |
| At Aspen Village to access bus stop | General Fund |
| Main Path segment from Chateau to Library | Safe Routes to School |

7.3.2. Public Works

The Public Works Department is responsible for maintaining the Town's streets and sidewalks. Public Works also maintains certain sections of paved multi-use paths such as the Meridian Path which is cleared in order to provide a safe route to local schools.

Figure 7-6. TOML Public Works Department Snow Management Policy (Summary)

The Town of Mammoth Lakes has an extensive snow removal policy covering roadways, sidewalks and pathways. Excerpts from this policy are as follows:

Sidewalks shall be blown once per day or when the snow accumulates in excess of 6 inches or more either at the conclusion of or during a storm event. Sidewalk ice conditions shall either be removed by chipping or by other means appropriate to the Division Maintenance Manager, including ice melt and/or cinders. This includes Town sidewalks and trails that are currently being cleared and those sidewalks to be cleared in the future.

The priority order of snow removal is:

1. Support for emergency agency responses.
2. Main arterials and bus routes.
3. Secondary residential streets.
4. Cul-de-sacs.
5. Scenic loop.
6. Park and ride lot.
7. Sidewalks and trails.
8. Bus shelters.
9. Traffic signals and pedestrian beacons.

7.4. Maintenance Budget and Costs

The responsibility of maintaining the Town's trails, bikeways, and sidewalks fall under the purview of two departments—Public Works and Tourism and Recreation. The following pages discuss the costs of this maintenance.

7.4.1. Tourism and Recreation

The cost of maintaining the Town's existing parks and trail system (including sections of Main Path on land administered by the USFS) fall under the purview of the Tourism and Recreation Department. The trails maintenance budget has increased over the last three years, but on average remains at just under five percent of the overall Tourism and Recreation maintenance budget. The most recent (FY 2007/2008) trail maintenance budget was \$35,000. As a point of comparison, the cost for maintaining the Whitmore Park and Pool was \$227,676. **Table 7-2** shows the maintenance budget for trails and parks over the three most recent fiscal years. Maintenance costs include labor, supplies and contractual services. All trail-related equipment and snow removal costs are covered under the Public Works budget.

Table 7-2. Tourism & Recreation Budget

| Tourism and Recreation Expenditures | Fiscal Year 2005-2006 Final Budget | Fiscal Year 2006-2007 Final Budget | Fiscal Year 2007-2008 Final Budget |
|---|--|--|--|
| Main Street Landscaping Maintenance | 59,962 | 80,027 | 102,358 |
| Parks Maintenance | 365,643 | 440,561 | 489,702 |
| Tourism Loan to Fractional District for Parks Maintenance | | 111,689 | 109,138 |
| Trail System Maintenance | 25,000 | 30,000 | 35,000 |
| Total Maintenance Expenditures | 450,605 | 662,277 | 736,198 |
| Total Departmental Expenditures | \$ 3,555,169 | \$ 3,642,646 | \$ 3,931,358 |

While the cost of maintaining the trail system has been relatively low in the past, it will need to increase as the trail system expands and levels of service are improved. Both the Department of Public Works and the Tourism and Recreation Department need to identify funding sources and allocate sufficient funding to maintain the facilities under their purviews. The trails network, the sidewalk network and recreation nodes require the highest achievable levels of maintenance to ensure that residents and visitors have safe and convenient access to recreational opportunities.

Table 7-3. Operations and Maintenance Costs by Facility Type and Frequency*

| Facility Type | Season | Frequency | Annual Cost |
|---|-----------------|---|---|
| Paved Multi-Use Paths and Bikeways | | | |
| Multi-Use Path | Annual | Annual – Includes sweeping, trimming, vegetation, patching pavement, and sign replacement | \$10,500 per mile |
| Bike Lanes | Annual | Based on Five Year Maintenance Cycle including restriping restenciling and replacing signage. | \$3,400 per mile per year |
| Bike Routes | Annual | Replacing signage when needed | \$350 per mile |
| Sidewalks | | | |
| Old Mammoth Road Sidewalks | Winter & Summer | Snow removal following each snow event (including trucking the snow off) also includes summer maintenance including landscape maintenance | \$71,000 - \$142,000 per mile of sidewalk |

*These are average planning-level costs for the State of California. Costs will vary based on desired summer and winter maintenance levels. Maintenance costs for Multi-use paths will vary significantly depending on the selected level of winter maintenance. Economies of scale can potentially lead to lower per unit costs.

7.4.2. Public Works

The Public Works Department budget covers the majority of the Town's maintenance costs including street and sidewalk maintenance, snow removal, and the operation and upkeep of all maintenance facilities and equipment. Activities directly related to this plan include snow removal on paved trails, on-street bikeways and bikeway signage. **Table 7-1** shows the total Public Works budget over the past three years and a breakdown of the maintenance-related elements. Summer maintenance and snow removal expenditures will increase significantly as new sidewalks are built and cleared, but these costs can be offset by additional assessment districts and/or by assigning responsibility for sidewalk snow removal to adjacent property owners.

Table 7-4. Public Works Budget

| Public Works Expenditures | Fiscal Year 2005-2006 Final Budget | Fiscal Year 2006-2007 Final Budget | Fiscal Year 2007-2008 Final Budget |
|---|--|--|--|
| Facility Maintenance | 41,327 | 48,750 | 53,897 |
| Street Maintenance (Gas Tax Fund) | 479,595 | 509,421 | 598,308 |
| Street Sign Replacement | 5,000 | 5,000 | 5,000 |
| General Road Rehabilitation, Curbs & Gutters | 523,491 | 627,211 | 752,211 |
| Snow Removal (Gas Tax Fund) | 839,711 | 992,800 | 1,045,387 |
| Summer Equipment Storage (Gas Tax Fund) | 325,609 | 293,995 | 342,132 |
| Winter Equipment Garage (Gas Tax Fund) | 854,730 | 867,186 | 1,023,932 |
| Corporate Yard Maintenance (Gas Tax Fund) | 120,332 | 116,613 | 125,416 |
| Old Mammoth Road Assessment Levy | 8,837 | 8,837 | 8,837 |
| Transfer for Assessment District-Public Benefit | 46,050 | 98,214 | 41,400 |
| Total Maintenance Expenditures | \$ 3,198,632 | \$ 3,469,813 | \$ 3,955,120 |
| Total Departmental Expenditures | \$ 4,026,737 | \$ 4,337,619 | \$ 4,796,479 |

7.5. Recommended Maintenance Policies

Currently, much of the Town's bicycle, pedestrian, and trail infrastructure is inaccessible during winter months. The following maintenance policy recommendations will allow Mammoth residents to receive the highest level of year-round recreation and mobility benefits from their investments in bicycle pedestrian, and trail infrastructure. The following recommendations are derived from a comprehensive analysis of existing conditions, future needs and public input. Recommendations M2 through M5 relate specifically to sidewalk maintenance which—while significantly impacting recreational trail access—will be more comprehensively addressed through non-recreational planning/policy efforts and non-recreational funding sources. The sidewalk-related recommendations in this plan should be strongly considered in future policy/planning efforts such as Sidewalk Master Plan updates, Mobility Plan, and snow management policies. However, the sidewalk-related maintenance recommendations from those planning and policy documents will ultimately supersede recommendations M2 through M5.

Recommendation M1: Development of Coordinated Year-Round Maintenance Plan

The Department of Tourism and Recreation and the Department of Public Works should work together to develop a year-round maintenance plan. This plan should include a clear division of responsibilities between departments. The plan should also clearly identify funding sources for the maintenance of different facilities. Maintenance efforts can be carried out both by TOML maintenance personnel, and as stewardship opportunities with volunteer organizations.

Recommendation M2: Snow Removal and Grooming on Paved Paths (MUPs) and Sidewalks

All segments of paved pathway within the Town of Mammoth Lakes—or under its control through the Special Use Permit with the Forest Service—should be open and accessible for year-round use. This should be achieved through winter maintenance including clearing some sections of path and grooming others. Funding should be provided through the Tourism and Recreation Department's trail maintenance budget. Snow removal on mid block trail connectors should be funded through Mello-Roos funding or through an ordinance similar to the example provided in **Figure 7-4**. Determining which segments to clear or groom should be accomplished through a public process that may need to be repeated as new MUP and sidewalk segments are constructed and travel patterns change. In preparation for this process, snow stakes should be installed along the Town's multi-use paths to facilitate winter snow removal and grooming.

Recommendation M3: Prioritization of Snow Removal along Individual Paved Path (MUP) Segments

As the paved path system is developed, identify which segments have the greatest transportation value (i.e. those that are school walking routes), and prioritize snow removal on these segments immediately after a snowfall with the goal of having all winter-maintained paved trails cleared within 48 hours from the end of snowfall. **Table 7-5** describes the MUP segments where snow removal is the preferred winter condition.

Table 7-5. MUP Segments Preferred for Snow Removal

| Path Name | From | To | Notes |
|--------------------------------|--------------------|-----------------------------|--|
| College Connector | Sierra Park Road | College Dorms | School route. |
| Lake Mary Path | Davison Road | Minaret Road | Only option for pedestrians along a major road (no sidewalks). |
| Main Path | Old Mammoth Road | Welcome Center | Connects Welcome Center to Main Street Promenade. |
| Main Path (Meridian Boulevard) | Sierra Park Road | Main Path / Industrial Park | Only option for pedestrians along a major road (no sidewalks). |
| Main Path (Old Mammoth Road) | Waterford Avenue | Mammoth Creek Park West | Only option for pedestrians along a major road (no sidewalks). |
| Main Path (S side of 203) | Sierra Park Road | Tunnel Under 203 | Only option for pedestrians along a major road (no sidewalks). |
| Manzanita Connector | Manzanita Road | Tavern Road | Potential to form important pedestrian connection to schools. |
| Meridian Path | Lodestar Path | Joaquin Road | Only option for pedestrians along a major road (no sidewalks). School route. |
| School Connector | Meridian Boulevard | Main Path | School route. |
| Tallus Path | Main Street | Meridian Boulevard | Connects residential and commercial area. |

Recommendation M4: Prioritization of Winter Grooming along Individual Paved Path (MUP) Segments

As the paved path system is developed, identify the segments of path that have the greatest recreational value, and prioritize winter grooming on these paths—where feasible—within 72 hours from the end of snowfall. The following table describes the MUP segments where a groomed surface is the preferred winter condition. TOML prefers that winter grooming activities be carried out by local organizations. **Table 7-6** describes the MUP segments where a groomed surface is the preferred winter condition.

Table 7-6. MUP Segments Preferred for Winter Grooming

| Path Name | From | To | Notes |
|--------------------------------------|---------------------------|-------------------------------------|---|
| College Connector | College Dorms | Main Path | Provides over-snow access between college dorms and groomed sections of Main Path. |
| Forest Trail to Shady Rest Connector | Forest Trail | Sawmill Cutoff Road | Provides over-snow connection between Shady Rest and residences to the west. |
| Knolls Path (south route) | Community Center | Shady Rest | Provides over-snow access between Knolls/North Village and Shady Rest. |
| Lake Mary Path | Twin Lakes Parking Area | Davison Road | Provides over-snow access between Lakes Basin and residences to the north and east. |
| Lodestar Path | Northern Terminus | Meridian Boulevard | Provides over-snow access between Eagle Lodge and residences to the north and east. |
| Main Path | Lodestar Path | Waterford Avenue | Provides over-snow access between Eagle Lodge and residences to the south and east. |
| Main Path | Welcome Center | Mammoth Creek Park | Provides non-motorized winter recreational opportunity. Currently identified as preferred for grooming. |
| Mammoth Creek Park Connector | Meadow Lane | Main Path (Mammoth Creek Park West) | Provides over-snow access between residences and groomed sections of Main Path. |
| Shady Rest Path | Main Path (N side of 203) | Welcome Center | Potential non-motorized loop once extension to Welcome Center is complete. |

Recommendation M5: Preservation of Pavement Markings

It is important that pavement markings on roadways at crosswalks and path crossings be visible and durable. Recessed thermoplastic is recommended to be used as paint gets worn quickly and can fade or disappear in a matter of 1-3 years.

Recommendation M6: Use of Salt, Sand or De-Icing Solution

Sand or de-icing solution should only be used if special circumstances warrant, such as severe ice buildup or freeze thaw cycles on the path surface. Salt should not be used as a de-icing agent.

Recommendation M7: Clearing of Sidewalks for Winter Use

All existing and future sidewalks (including mid-block connectors) should be cleared within a maximum of 24 hours from end of snowfall. This should be achieved through the use of assessment districts and/or the assignment of responsibility for sidewalk snow removal to adjacent property owners through the adoption of an ordinance similar to the example provided in **Figure 7-4**. This recommendation will be studied by the Mobility Commission through the Mobility Plan process before implementation.

Recommendation M8: Prioritization of Sidewalk versus Roadway Snow Removal

Sidewalk clearing operations should be increased in priority from 7th to 3rd on the Town of Mammoth Lakes' snow removal priority list.

Recommendation M9: Prioritization of Snow Removal along Individual Sidewalk Segments

Priority for sidewalk and pathway snow removal should be determined to make best use of TOML resources. It is suggested that the following be considered:

- First priority: School walking paths, heavily used wheelchair accessible areas and high use commercial areas adjacent to main roads. To be cleared during (if necessary) and completely within 12 hours of end of snowfall.
- Second priority: Walks expanding out from the school and along major roads. To be cleared within 18 hours from end of snowfall.
- Third priority: Residential and industrial areas. To be cleared within 24 hours from end of snowfall.

Recommendation M10: Coordination between Roadway and Sidewalk Snow Removal

During heavy snowstorms multiple clearings will be necessary to keep critical pedestrian connections passable. Snowplows unavoidably deposit large amounts snow directly onto the sidewalk. During plowing operations, a sidewalk snow removal crew should follow roadway plowing to remove snow from designated walkways, using tractor and snow blowers. Coordination between roadway and walkway snow removal vehicles is necessary to keep both facilities clear. If snow falls over a long time period, TOML should repeatedly return to priority one areas before clearing lesser-used areas.

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