

APPENDIX 3

Trail Class and Design Parameter Matrices

Trail Class Matrix

Trail Classes are general categories reflecting trail development scale, arranged along a continuum. The Trail Class identified for a National Forest System (NFS) trail prescribes its development scale, representing its intended design and management standards.¹ Local deviations from any Trail Class descriptor may be established based on trail-specific conditions, topography, or other factors, provided that the deviations do not undermine the general intent of the applicable Trail Class.

Trail Attributes	Trail Class 1 Minimally Developed	Trail Class 2 Moderately Developed	Trail Class 3 Developed	Trail Class 4 Highly Developed	Trail Class 5 Fully Developed
Tread & Traffic Flow	<ul style="list-style-type: none"> Tread intermittent and often indistinct May require route finding Single lane with no allowances constructed for passing Predominantly native materials 	<ul style="list-style-type: none"> Tread continuous and discernible, but narrow and rough Single lane with minor allowances constructed for passing Typically native materials 	<ul style="list-style-type: none"> Tread continuous and obvious Single lane, with allowances constructed for passing where required by traffic volumes in areas with no reasonable passing opportunities available Native or imported materials 	<ul style="list-style-type: none"> Tread wide and relatively smooth with few irregularities Single lane, with allowances constructed for passing where required by traffic volumes in areas with no reasonable passing opportunities available Double lane where traffic volumes are high and passing is frequent Native or imported materials May be hardened 	<ul style="list-style-type: none"> Tread wide, firm, stable, and generally uniform Single lane, with frequent turnouts where traffic volumes are low to moderate Double lane where traffic volumes are moderate to high Commonly hardened with asphalt or other imported material
Obstacles	<ul style="list-style-type: none"> Obstacles common, naturally occurring, often substantial and intended to provide increased challenge Narrow passages; brush, steep grades, rocks and logs present 	<ul style="list-style-type: none"> Obstacles may be common, substantial, and intended to provide increased challenge Blockages cleared to define route and protect resources Vegetation may encroach into trailway 	<ul style="list-style-type: none"> Obstacles may be common, but not substantial or intended to provide challenge Vegetation cleared outside of trailway 	<ul style="list-style-type: none"> Obstacles infrequent and insubstantial Vegetation cleared outside of trailway 	<ul style="list-style-type: none"> Obstacles not present Grades typically < 8%
Constructed Features & Trail Elements	<ul style="list-style-type: none"> Structures minimal to non-existent Drainage typically accomplished without structures Natural fords Typically no bridges 	<ul style="list-style-type: none"> Structures of limited size, scale, and quantity; typically constructed of native materials Structures adequate to protect trail infrastructure and resources Natural fords Bridges as needed for resource protection and appropriate access 	<ul style="list-style-type: none"> Structures may be common and substantial; constructed of imported or native materials Natural or constructed fords Bridges as needed for resource protection and appropriate access 	<ul style="list-style-type: none"> Structures frequent and substantial; typically constructed of imported materials Constructed or natural fords Bridges as needed for resource protection and user convenience Trailside amenities may be present 	<ul style="list-style-type: none"> Structures frequent or continuous; typically constructed of imported materials May include bridges, boardwalks, curbs, handrails, trailside amenities, and similar features
Signs ²	<ul style="list-style-type: none"> Route identification signing limited to junctions Route markers present when trail location is not evident Regulatory and resource protection signing infrequent Destination signing, unless required, generally not present Information and interpretive signing generally not present 	<ul style="list-style-type: none"> Route identification signing limited to junctions Route markers present when trail location is not evident Regulatory and resource protection signing infrequent Destination signing typically infrequent outside of wilderness; generally not present in wilderness Information and interpretive signing not common 	<ul style="list-style-type: none"> Route identification signing at junctions and as needed for user reassurance Route markers as needed for user reassurance Regulatory and resource protection signing may be common Destination signing likely outside of wilderness; generally not present in wilderness Information and interpretive signs may be present outside of wilderness 	<ul style="list-style-type: none"> Route identification signing at junctions and as needed for user reassurance Route markers as needed for user reassurance Regulatory and resource protection signing common Destination signing common outside of wilderness; generally not present in wilderness Information and interpretive signs may be common outside of wilderness Accessibility information likely displayed at trailhead 	<ul style="list-style-type: none"> Route identification signing at junctions and for user reassurance Route markers as needed for user reassurance Regulatory and resource protection signing common Destination signing common Information and interpretive signs common Accessibility information likely displayed at trailhead
Typical Recreation Environ & Experience ³	<ul style="list-style-type: none"> Natural, unmodified ROS: Typically Primitive to Roaded Natural WROS: Typically Primitive to Semi-Primitive 	<ul style="list-style-type: none"> Natural, essentially unmodified ROS: Typically Primitive to Roaded Natural WROS: Typically Primitive to Semi-Primitive 	<ul style="list-style-type: none"> Natural, primarily unmodified ROS: Typically Primitive to Roaded Natural WROS: Typically Semi-Primitive to Transition 	<ul style="list-style-type: none"> May be modified ROS: Typically Semi-Primitive to Rural WROS: Typically Portal or Transition 	<ul style="list-style-type: none"> May be highly modified Commonly associated with visitor centers or high-use recreation sites ROS: Typically Roaded Natural to Urban Generally not present in wilderness

Trail Class Matrix courtesy of the USDA

Design Parameters

Design Parameters are technical guidelines for the survey, design, construction, maintenance, and assessment of National Forest System trails, based on their Designed Use and Trail Class and consistent with their management intent¹. Local deviations from any Design Parameter may be established based on trail-specific conditions, topography, or other factors, provided that the deviations are consistent with the general intent of the applicable Trail Class.

Designed Use HIKER/PEDESTRIAN		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
Design Tread Width	Single Lane	0" - 12"	6" - 18"	18" - 36"	24" - 60"	36" - 72"
	Double Lane	36"	36"	36" - 60"	48" - 72"	72" - 120"
	Structures (Minimum Width)	18"	18"	18"	36"	36"
Design Surface	Type	Native, ungraded. May be continuously rough.	Native, limited grading. May be continuously rough.	Native, with some on-site borrow or imported material where needed for stabilization and occasional grading. Intermittently rough.	Native with improved sections of borrow or imported material, and routine grading. Minor roughness.	Likely imported material, and routine grading. Uniform, firm, and stable.
	Protrusions	≤ 24"	≤ 6"	≤ 3"	≤ 3"	No protrusions.
	Obstacles (Maximum Height)	24"	14"	10"	8"	No obstacles.
Design Grade	Target Grade	5% - 25%	5% - 18%	3% - 12%	2% - 10%	2% - 5%
	Short Pitch Maximum	40%	35%	25%	15%	5% - 12%
	Maximum Pitch Density	20% - 40% of trail	20% - 30% of trail	10% - 20% of trail	5% - 20% of trail	0% - 5% of trail
Design Cross Slope	Target Cross Slope	Natural side slope.	5% - 20%	5% - 10%	3% - 7%	2% - 3% (or crowned)
	Maximum Cross Slope	Natural side slope.	25%	15%	10%	3%
Design Clearing	Height	6'	6' - 7'	7' - 8'	8' - 10'	8' - 10'
	Width	≥ 24"	24" - 48"	36" - 60"	48" - 72"	60" - 72"
	Shoulder Clearance	3" - 6"	6" - 12"	12" - 18"	12" - 18"	12" - 24"
Design Turn	Radius	No minimum.	2' - 3'	3' - 6'	4' - 8'	6' - 8'

Chugach State Park Trail Management Plan, 2009

Designed Use BICYCLE		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
Design Tread Width	Single Lane	6" - 12"	12" - 24"	18" - 36"	24" - 48"	36" - 60"
	Double Lane	36" - 48"	36" - 48"	36" - 48"	48" - 84"	72" - 120"
	Structures (Minimum Width)	18"	18"	36"	48"	60"
Design Surface	Type	Native, ungraded. May be continuously rough. Sections of soft or unstable tread on grades < 5% may be common and continuous.	Native, with limited grading. May be continuously rough. Sections of soft or unstable tread on grades < 5% may be common.	Native, with some on-site borrow or imported material where needed for stabilization and occasional grading. Intermittently rough. Sections of soft or unstable tread on grades < 5% may be present, but not common.	Native, with improved sections of borrow or imported materials and routine grading. Stable, with minor roughness.	Likely imported material and routine grading. Uniform, firm, and stable.
	Protrusions	≤ 24"	≤ 6"	≤ 3"	≤ 3"	No protrusions.
	Obstacles (Maximum Height)	24"	12"	10"	8"	No obstacles.
Design Grade	Target Grade	5% - 20%	5% - 12%	3% - 10%	2% - 8%	2% - 5%
	Short Pitch Maximum	30% 50% on downhill segments only.	25% 35% on downhill segments only.	15%	10%	8%
	Maximum Pitch Density	20% - 30% of trail	10% - 30% of trail	10% - 20% of trail	5% - 10% of trail	0% - 5% of trail
Design Cross Slope	Target Cross Slope	5% - 10%	5% - 8%	3% - 8%	3% - 5%	2% - 3%
	Maximum Cross Slope	10%	10%	8%	5%	5%
Design Clearing	Height	6'	6' - 8'	8'	8' - 9'	8' - 9'
	Width	24" - 36" Some vegetation may encroach into clearing area.	36" - 48" Some light vegetation may encroach into clearing area.	60" - 72"	72" - 96"	72" - 96"
	Shoulder Clearance	0" - 12"	6" - 12"	6" - 12"	6" - 18"	12" - 18"
Design Turn	Radius	2' - 3'	3' - 6'	4' - 8'	8' - 10'	8' - 12'

Chugach State Park Trail Management Plan, 2016

Mountain Bike Design Parameters:

The following are design parameters authored by the Bikewood, specifically for Girdwood mountain bike trails. These parameters are based on the US Forest Service Bicycle Designed Use Parameters, shown on the previous page.

Machine-built, single-use, one-way, downhill bike trail:

The design parameters of this trail are most similar to a Class 4/5 bike trail listed above.

Design Tread Width: 48" – 72"

Design Surface: Firm, smooth, hardened tread, well drained, bike features

Design Grade: 5%-8% avg.; increased grades over short distances

Design Cross-slope: 3%-5%; increased cross-slopes for bike features

Design Clearing: 12' wide; 8'-10' feet high

Design Turn Radius: 12'- 18'

Hand-built, one-way, single-use, downhill bike trail:

The design parameters of this trail are most similar to a Class 2/3 bike trail listed above.

Design Tread Width: 18" – 48"

Design Surface: Native surfaces and obstacles, natural bike features, well drained

Design Grade: 8%-10% avg.; increased grades with more difficult trail rating

Design Cross-slope: 3%-5%; increased cross-slopes due to natural terrain

Design Clearing: 12' wide; 8'-10' feet high

Design Turn Radius: 6' – 12'

Machine-built, two-way, multi-use trail:

The design parameters of this trail are most similar to a Class 4/5, two-way bike trail listed above. Even though this is multi-use trail, the bike user group will set the design parameters.

Design Tread Width: 72" – 96"

Design Surface: Firm, smooth, hardened, well drained

Design Grade: 5%-8% avg; 10-12% max grade over short sections, when needed

Design Cross-slope: 3%-5%; increased cross-slopes for bike specific features

Design Clearing: 14' wide; 8'-10' feet high

Design Turn Radius: 12' – 18'

Design Parameters courtesy of the Girdwood Bike Park Master Plan Proposal, Land Use Committee February 2019 meeting packet

Designed Use CROSS-COUNTRY SKI (Diagonal/Classic ski)		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
Design Groomed Width	Single Lane	Typically not designed or actively managed for cross-country skiing, although use may be allowed	24" - 48"	72" - 96"	96" - 120"	Typically not designed or actively managed for cross-country skiing, although use may be allowed
	Double Lane		Typically not groomed	Or width of grooming equipment	Or width of grooming equipment	
	Structures (Minimum Width)		72" - 96"	96" - 144"	144" - 192"	
Design Grooming and Surface	Type	Generally no machine grooming	36"	36"	36"	Regular machine grooming for snow compaction and track setting
	Protrusions		No protrusions	No protrusions	No protrusions	
	Obstacles (Maximum Height)		12"	8"	No obstacles	
Design Grade	Target Grade	Uncommon	5% - 15%	2% - 10%	0% - 8%	No obstacles
	Short Pitch Maximum		25%	20%	12%	
	Maximum Pitch Density		10% - 20% of trail	5% - 15% of trail	0% - 10% of trail	
Design Cross Slope	Target Cross Slope	Uncommon	0% - 10%	0% - 5%	0% - 5%	Widen clearing at turns or if increased sight distance needed
	Maximum Cross Slope (For up to 50')		20%	15%	10%	
	Height (Above normal maximum snow level)		6' - 8'	8'	8' - 10'	
Design Clearing	Width	Light vegetation may encroach into clearing area	24" - 60"	72" - 120"	96" - 168"	Or height of grooming equipment
	Shoulder Clearance		0" - 6"	0" - 12"	0" - 24"	
	Radius		8' - 10'	15' - 20'	≥ 25'	

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Designed Use NORDIC SKI (Skate Ski)		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
Design Groomed Width	Single Lane	Typically not designed or actively managed for skate skiing, although use may be allowed	Typically not designed or actively managed for skate skiing, although use may be allowed	72" - 96"	96" - 144"	144" - 192"
	Double Lane ¹			Or width of grooming equipment	Or width of grooming equipment	Or width of grooming equipment
	Structures (Minimum Width)			96" - 144"	144" - 192"	168" - 288"
Design Grooming and Surface	Type	May receive occasional machine grooming for snow compaction and track setting	Uncommon (no obstacles if machine groomed)	36"	36"	36"
	Protrusions			No protrusions	No protrusions	No protrusions
	Obstacles (Maximum Height)			8"	No obstacles	No obstacles
Design Grade	Target Grade	Uncommon	Smooth compaction using implements designed for creating skate lanes.	2% - 10%	0% - 8%	0% - 6%
	Short Pitch Maximum			20%	20%	20%
	Maximum Pitch Density			5% - 15% of trail	5% - 10% of trail	5 - 8% of trail
Design Cross Slope	Target Cross Slope	Uncommon	Smooth compaction using implements designed for creating skate lanes.	0% - 5%	0% - 5%	0% - 5%
	Maximum Cross Slope (For up to 50')			15%	12%	10%
	Height (Above normal maximum snow level)			8'	8' - 10'	At least 10'
Design Clearing	Width	Light vegetation may encroach into clearing area	Or height of grooming equipment	72" - 168"	96" - 216"	96" - 312"
	Shoulder Clearance			0" - 12"	0" - 24"	0" - 24"
	Radius			15' - 20'	≥ 25'	25' - 30'

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Designed Use Dog Sled: Snow Trail		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
Design Groomed Width*	Single Lane	N/A not designed or managed for dog sleds as primary user.	3'- 4'. If groomed, width of grooming equipment.	6'- 8' (or minimum width of grooming equipment).	8'-10', but typically managed to accommodate two-way passage.	N/A not designed or managed for dog sleds as primary user.
	Double Lane		Typically not designed for two-lane travel. Employ 6'-8' passing areas in steeper sections.	>8' (or minimum width of grooming equipment) and/or accommodate with passing areas 8'-12' wide.	12'-14'	
Design Surface	Type		Coarse compaction. Occasional or no grooming (may be ski-packed). Snowmobile packing is sufficient. Track layer is optional.	Groomed or compacted using implements and/or tracklayer when packed surface is snow-covered, drifted, melted, or skied out.	Well-groomed with tiller and/or other implements. Groomed frequently, and when groomed surface becomes degraded or buried.	
	Obstacles (Max. Height) Caused by use, lack of grooming, melt or surface/subsurface protrusions)		Dips, bumps, or ruts to 12" common and may be tightly spaced. Surface obstacles may occasionally require off-trail bypass.	Generally smooth, dips bumps, or ruts to 8" uncommon and widely spaced. Surface obstructions not present.	Consistently smooth. Small, rolling bumps, dips and rises. Surface obstructions not present.	
Design Grade	Target Grade (> 90% of trail)		< 15%	0% - 10%	0% - 8%	
	Short Pitch Maximum (Up to 200' lengths)		25%	20%	12%	
	Maximum Pitch Density		< 10% of trail	< 5% of trail	< 5% of trail	
Design Cross Slope	Target Cross Slope		< 10%	< 5%	< 5%	
	Maximum Cross Slope		15%	10%	5%	
Design Clearing	Height (Above normal maximum snow level)		6'-8" or height of grooming machinery, if used.	> 8" or height of grooming machinery	10'	
	Width		4'-6" (or minimum width of grooming equipment, if larger). Light vegetation may encroach slightly into clearing area.	>1' outside of groomed edge. Light vegetation may encroach slightly into clearing area.	>2' outside of groomed edge. Widen clearing at turns or if increased sight distance is needed.	
Design Turns	Radius (Use climbing turn versus switchbacks)		8'-10" if Cat-groomed. OR; minimum based on turning limits of grooming machine.	15' - 20' (Provide sufficient radius for grooming equipment).	> 25'	

Nancy Lakes State Recreation Area Management Plan, 2013

Designed Use Skijoring		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
Design Groomed Width		Typically not designed or actively managed for skijoring, although use may be allowed.	Typically not designed or actively managed for skijoring, although use may be allowed.	8' - 14' May be wider to accommodate width of grooming equipment.	12' -18' May be wider to accommodate width of grooming equipment.	16' -24'
Design Grooming and Surface	Type			May receive occasional machine grooming for snow compaction and track setting.	Smooth compaction using implements designed for creating skate lanes.	Smooth compaction using implements designed for creating skate lanes.
	Protrusions			No protrusions.	No protrusions.	No protrusions.
	Obstacles (Maximum Height)			8" Uncommon (no obstacles if machine groomed).	No obstacles.	No obstacles.
Design Grade	Target Grade			<10%	<8%	6-8%
	Short Pitch Maximum			<20%	15%	12%
	Maximum Pitch Density			<10% of trail	<5% of trail	<5% of trail overall; up to 8% for short stretches (50' max.)
Design Cross Slope	Target Cross Slope			<5%	<5%	<5%
	Maximum Cross Slope (For up to 50')			15%	12%	8% Minimum cross-slope (crowned or one side) should be 2% to promote drainage.
Design Clearing	Height (Above normal maximum snow level)			8' Or height of grooming equipment.	8' - 10' from top of anticipated snowpack or height of grooming equipment.	At least 10' from top of anticipated snowpack or height of grooming equipment.
	Width			>1' outside groomed edge.	Minimum of 1' outside groomed edge.	Minimum 2' outside groomed edge.
	Shoulder Clearance			0" - 12"	0" - 24"	0" - 24"
Design Turn	Radius			50' or the minimum needed to accommodate grooming equipment.	75' or the minimum needed to accommodate grooming equipment.	75' or the minimum needed to accommodate grooming equipment.

Nancy Lakes State Recreation Area Management Plan, 2013

Designed Use NON-MOTORIZED WATERCRAFT*		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
Design Tread Width	Structures	Water route shown on maps and used to access other trails or portages, but with no trail structures, facilities, signs, or recurring maintenance needs along route. Signs and/or parking facilities at initial access points only, and likely associated with other trails or sites.	Few markers or route designators. Low profile structures or facilities occasionally present; primarily to reduce beach and bank impacts. Structures typically consist of native material hardening of portage/water entry points. Signs and/or parking facilities at initial access points only, and likely associated with other trails or sites.	Buoys or markers possible to identify route Typically, facilities provide for improved access and to reduce beach and bank impacts. Well-developed parking and launch facilities at primary access points, but facilities and structures rare along the trail. Interpretive and informational displays typically present at primary access points	Buoys or markers are high profile and may be intervisible and or route is readily followed. Highly developed launch facilities, docks, and amenities typically proved for user convenience. Well-marked approaches to facilities and portages. Interpretive displays, maps, information kiosks and signs typically present at access points and along route	Typically not designed or actively managed for watercraft, although use may be allowed
Design Surface	Protrusions	May be common and continuous	May be common and continuous	May be common, but not continuous	Uncommon and not continuous	
	Obstacles	May be common or placed for increased challenge	May be common or placed for increased challenge	May be common and left for increased challenge	Uncommon	
Design Clearing		In densely vegetated areas, users will commonly need to lift vessels over logs, shoals, or matted vegetation.	Path is typically narrow, shallow, and may occasionally require user to lift over obstacles or break path through some vegetation and duck under overhanging branches	Path is typically cleared wide enough for ready passage and maneuvering of at least one vessel, and usually two-way vessel passage, with only occasional low overhanging vegetation	Path is consistently cleared wide enough for unhindered, easy passage of two or more vessels.	

Chugach State Park Trail Management Plan, 2016

APPENDIX 4

List of Trail Term Definitions

The following is a list of trail term definitions that are used throughout this plan. They parallel terminology used by the U.S. Forest Service, Alaska State Parks, the U.S. Fish and Wildlife Service, the National Park Service, and the Bureau of Land Management.

Definitions and sketches were drawn from a variety of sources, including:

- a) USFS Trail Fundamentals Definitions:

https://www.fs.usda.gov/recreation/programs/trail-management/documents/trailfundamentals/USFS_Trail_Fundamentals_Definitions.pdf

- b) American Trails Trail Terms:

<https://www.americantrails.org/resources/trail-terms>

- c) USFS Trails Construction and Maintenance Handbook:

https://www.fs.usda.gov/sites/default/files/fs_media/fs_document/trail-maintenance-notebook.pdf

- d) USFS Wetland Trail Design and Construction:

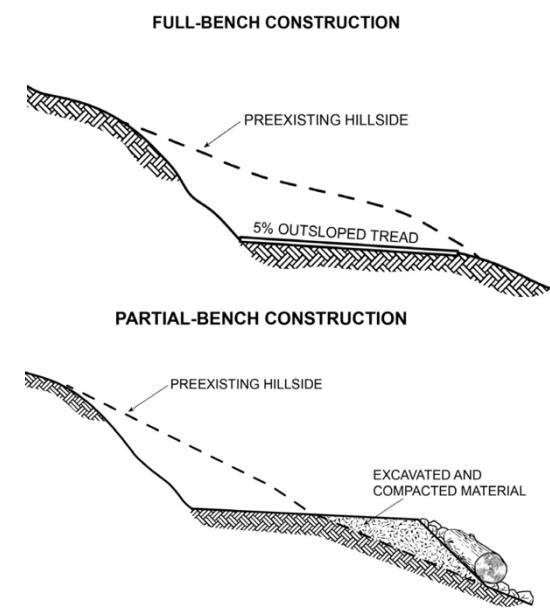
https://2296f903-e219-47d7-a925-87eb3d67b503.filesusr.com/ugd/5679f1_5e0aa1780ba54c17b4fdf1e48c5bfa70.pdf

Access, Public: The right of passage, established by law, over another's property. Can be created by an easement dedicated or reserved for public access. Legal public access exists on public land, public waters, public rights-of-way, and public easements.

Armoring (Hardening, Flag Stoning, Paving, Stone Pitching, Boulder Causeway): Reinforcement of a surface with rock, brick, stone, concrete, or other "paving" material to improve the durability. May be used to prevent soil loss in steep or soft/wet tread and around roots.

Backslope (Backcut, Cutbank, Cutslope): The cut bank along the uphill side of the trail, extending upward from the tread, and transitioning into native hillside by varying degrees, depending on bank composition and slope stability.

Bench (Full, Partial) Cut: The excavation cut into a slope to provide support for the trail tread surface. "Full" refers to the bench being constructed entirely on an excavated surface and is the preferred method of bench construction on trails construction on side slopes >30%. "Partial" refers to the bench being constructed in part on compacted fill. Partial bench cuts are not recommended on side slopes greater than 30% because the filled portion is susceptible to slope failure and/or may require higher levels of maintenance.



Berm: The ridge of material formed on the outer edge of the trail that projects higher than the center of the trail tread. When improperly designed or unintentionally caused by tread compaction and soil displacement during trail use, a berm can trap water on the trail and lead to erosion.

Best Trail Management Practices (BTMPs): A series of management components developed to reflect the current “state-of-the- art” practices for effective and efficient trails management.

Bike Trail Berm: A berm or bermed corner is built up higher on the outside of the corner than on the inside.

Braided Trail: Problem areas along a trail where multiple parallel paths develop, usually around steep, wet, or otherwise degraded areas.

Check (or Check Dam): A small earthen, stone, or log dam placed across deeply eroded or gullied fall line trails or erosion channels to slow the flow of water enough to allow accumulation of fine fill material behind the structure. Recommended primarily for use in trail reclamation or revegetation.

Climbing Turn: A wide, ascending curve that gradually reverses the direction of the trail while gaining elevation. Used in place of Switchbacks on side slopes of less than 22% when possible.

Clinometer: A small, hand-held device used to measure grade (or slope) in terms of degrees or percent. In trails and roads, grade or slope is referred to in percent (%).

Compaction: The compression of aggregate, soil, or fill material by tamping or trail traffic.

Contour Trail (Curvilinear Trail Layout): A concept whereby the trail is designed to rise and/or descend gradually along natural contours. The alignment crosses the contours at a shallow angle so that the natural drainage patterns are easily maintained during the construction process.

Control Point: A specific point, area, or feature that is important in trail layout. Positive Control Points are places you want the trail to go to or near (such as trailheads, scenic points, good water crossings, other trails, etc.). Negative Control Points are places you want to stay away from (such as hazards, sensitive habitat, private property, etc.).

Crib (Retaining Wall): A retaining device used to support the trail tread or backslope, typically composed of wood or rock.

Crown (Crowning): A method of trail construction where the center portion of the tread is raised to allow water to disperse to either side of the trail.

Culvert: A pipe or box-like structure of wood, metal, plastic, concrete, or rock that conveys a water course under a tread.

Cyclometer (Milewheel): Typically a hand-held or pushed wheel that measures linear distance along the ground.

Design Parameters: Specific guidelines for the survey, design, construction, maintenance, and assessment of trails that are based on the intended users, trail class, and difficulty level of the trail.

Clearing Limit: The area over and beside the trail tread that is cleared of trees, limbs, and other obstructions.

- a. *Clearing Height:* The height of the clearing limit measured vertically from the trail tread.
- b. *Clearing Width:* The width of the clearing limit measured perpendicular to the trail.

Cross Slope: The percentage of rise to length when measuring the trail tread from edge to edge perpendicular to the direction of travel.

Design Clearing: The clearing limit determined to be appropriate to accommodate the Managed Uses of a trail.

- a. *Design Clearing Height:* The minimum clearing height determined to be appropriate to accommodate the Managed Uses of a trail.
- b. *Design Clearing Width:* The minimum clearing width determined to be appropriate to accommodate the Managed Uses of a trail.
- c. *Design Shoulder Clearance:* The minimum horizontal and vertical clearance of obstructions (for example, removal of bicycle pedal or motorcycle peg bumpers) immediately adjacent to the trail tread that is determined to be appropriate to accommodate the Managed Uses of a trail.

Design Cross Slope: The cross slope determined to be appropriate to accommodate the Managed Uses of a trail.

- a. *Target Cross Slope:* The cross slope that is determined to be appropriate over most of a trail to accommodate its Managed Uses.
- b. *Maximum Cross Slope:* The steepest cross slope that is determined to be appropriate based on the Managed Uses of a trail and that exceeds the target cross slope of the trail.

Design Grade: The trail grade determined to be appropriate to accommodate the Managed Uses of a trail.

- a. *Target Grade:* The trail grade that is determined to be appropriate over most of a trail to accommodate its Managed Uses.
- b. *Short Pitch Maximum:* The steepest grade that is determined to be appropriate based on the Managed Uses of a trail, that generally occurs for a distance of no more than 200 feet, and that does not exceed the maximum pitch density.
- c. *Maximum Pitch Density:* The maximum percentage of a trail with grades that exceed the Target Grade and that are less than or equal to the short pitch maximum, which is determined to be appropriate based on the Managed Uses of the trail.

Design Turn Radius: The minimum horizontal radius required for a Managed Use to negotiate a curve (for example, a switchback, climbing turn, or horizontal turn) in a single maneuver.

Designed Use: The Managed Use of a trail requires the most demanding design, construction, and maintenance parameters and that determines which design, construction, and maintenance parameters will apply to a trail. While there may be many Managed Uses on a trail, there is only **one** Designed Use per trail or trail segment. For example, if a trail has a Managed Use of both Hiker and Mountain Bike (MTB), then MTB would be the Designed Use since it requires more stringent trail design, construction, and maintenance parameters.

Difficulty Level: The degree of challenge that a trail presents to an average user's physical ability and skill, based on trail condition and route location factors such as alignment, steepness of grades, gain and loss of elevation, and amount and kind of natural barriers that must be crossed.

Drainage, Integrated: Integrate water control in the design and construction of the trail using outslope, grade reversals, and rolling grade dips to maintain the terrain's natural patterns of waterflow.

Easement: Grants the right to use a specific portion of land for a specific purpose or purposes. Easements may be limited to a specific period of time or may be granted in perpetuity; or the termination of the easement may be predicated upon the occurrence of a specific event. An easement agreement survives transfer of land ownership and is generally binding upon future owners until it expires on its own terms.

Easement, Conservation: Places permanent restrictions on property in order to protect ecological or historical resources that an owner passes to a state agency or nonprofit land trust to hold and manage in perpetuity. They are recorded with the deed, so all future owners and lenders learn of the restrictions when they file for title reports.

Easement, Construction: An additional temporary area or corridor needed to construct a trail or facility.

Easement, Recreation: Provides public access to private property while limiting or indemnifying the owner's public liability.

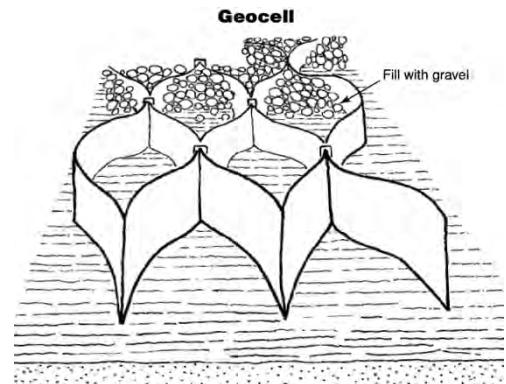
Fall-line: The path water flows down a slope under most circumstances. Trails that approximate the fall-line are prone to erosion and this alignment should be avoided.

Flow Trail: Flow trails create a terrain-induced roller coaster experience for bikers, with little pedaling and braking necessary. Typical features include banked turns, rolling terrain, various types of jumps, and consistent and predictable surfaces. Conspicuously absent are abrupt corners or unforeseen obstacles.

Gabion (Gabion Baskets): Rectangular containers (usually made of heavy galvanized wire) that can be wired together, and then filled with gravel or cobble to make quick retaining walls for erosion control.

Gateway: Where a trail is clearly constrained on two or three sides. The tighter the “squeeze”, the stronger the gateway—a sense of entrance, such as between large rocks, trees at the edge of a meadow, etc.

Geocell (Geogrid, GeoBlock): Polyethylene sheeting configured into an open grid with high tensile strength. They are used for reinforcement and often placed on top of a layer of geotextiles to provide separation. (see Porous Pavement Panel)

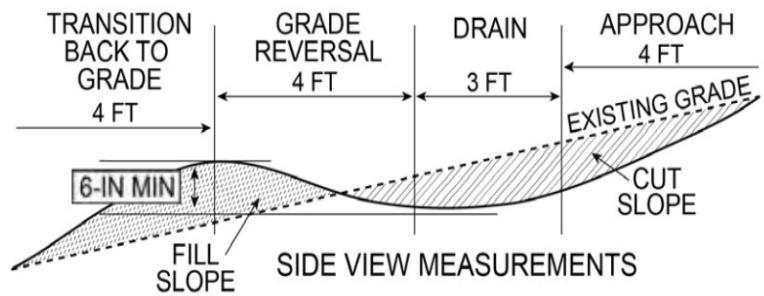


Geotextile (Geofabric, Filter Fabric): A pervious, woven or non-woven, petrochemical fabric that provides a stable base for the application of gravel and excludes smaller sediment from penetrating.

Grade: Relative steepness (rise and fall) of the trail as compared to a flat horizontal plane. Trail steepness is measured in grade as a percentage. Grade is different than angle; angle is measured with a straight vertical as 90° and a straight horizontal as 0°. A grade of 100% would have an angle of 45°.

Grade Control: Fundamental part of Sustainable Trail construction whereby strict trail grade restrictions are placed in the design parameters, primarily to minimize erosion due to natural forces and trail users.

Grade Reversal (Grade Dip): A reverse in the trail grade—usually a short dip followed by a rise—that forces water off the trail. Grade reversals are subtle and typically designed into the alignment of the trail. When designed into the alignment they can prevent the future need for more artificial water diversion structures such as waterbars.



Green Infrastructure: An interconnected network of green space (hubs + corridors) that conserves natural ecosystem values and functions. It provides associated benefits to human populations.

Ground Truthing: Verification and validation of geospatial data through field work.

Half Rule: Laying out a trail so that the prevailing grade is less than half the grade of the side slope. If the trail grade is steeper than half the grade of the side slope, it is considered a fall-line trail and gravity will pull water down the trail instead of across it. This leads to erosion of the trail tread. This rule of thumb works for trails on side slopes below 20 percent; when the side slope is steeper than 20 percent, trails designed using the half rule can be too steep.

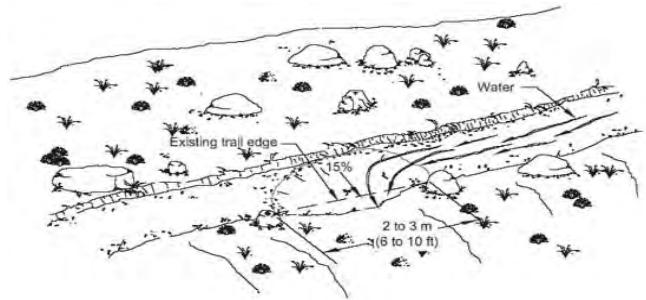
Hardening: Any number of methods of strengthening a tread surface in response to degradation or to better accommodate a particular type of use. Examples include: aggregate capping, boardwalk or puncheon construction, turnpiking, or the use of porous pavement panels.

HLB: Heritage Land Bank, the real estate management arm of the MOA

Integrated Water Control: Instituting water management into basic trail design, usually during construction. Primary components include **Grade Reversals** and **Outslope**.

Inslope: The inward cant of the tread surface, where the outside edge of the trail is higher than the inside edge. Most commonly used on the upper leg of a switchback or to direct water into an inside ditch.

Knicks: A semi-circular, shaved down section of trail, 6-10 feet in length, with an exaggerated outslope. Like a rolling grade dip, a knick is used to shed water off a trail and is a useful remedy for wet spots on relatively flat trails. A knick is smooth and subtle, often an unnoticeable feature to users.



Logging Out: Clearing a trail of fallen trees.

Managed Trail: A trail that has some type or level of actively managed use. To qualify as a managed trail, one or more of the following must apply: 1) The trail is depicted on a map distributed for public use; 2) The trail is maintained on a regular schedule (up to several years interval) for public use purposes; 3) The trail is, or was, constructed for public use; 4) The trail is abandoned or closed to public use but is used for administrative purposes; or 5) The trail is signed or marked for public use.

Managed Use: The type of use that is actively managed and appropriate on a trail considering its design and management intent. There may be more than one managed use per trail or trail segment. For example, a shared-use trail's managed uses could include hiker, bicycle, wheelchair, cross-country ski, pack and saddle.

Maximum Trail Grade (Short Pitch Maximum): A defined value for the steepest allowed section of trail grade that is longer than approximately 10 feet, but less than 50 feet in length. Maximum trail grade is determined by evaluating local environmental conditions such as soil, hydrology, and trail use characteristics.

Memorandum of Understanding/Agreement (MOU/MOA): A signed, written agreement entered into by various governmental agencies and nonprofit groups to facilitate the planning, coordination, development, and maintenance of a trail or trails system.

MOA: Municipality of Anchorage

MTB: Mountain Bike

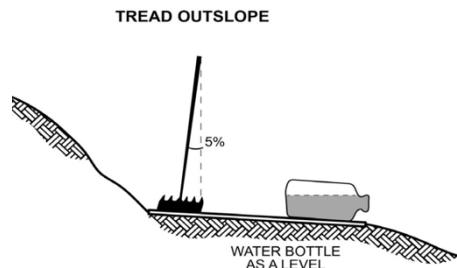
Multi-Use Trail: A trail that is designed to accommodate multiple user groups.

National Historic Trail (NHT): Federally designated extended trails, which closely follow original routes of nationally significant travel (explorers, emigrants, traders, military, etc.). NHTs do not have to be continuous, can be less than 100 miles in length, and can include land and water segments. The **Iditarod**, the Lewis and Clark, the Mormon Pioneer, and the Oregon trails were the first to be designated as NHTs in 1978.

National Recreation Trail (NRT): Existing trails that provide a variety of outdoor recreation uses in or reasonably accessible to urban areas recognized by the federal government (Secretary of Interior or Secretary of Agriculture, not Congressional action) as contributing to the National Trails System. The **Bird-to-Gird** bike trail is a NRT.

Obstacles (Natural): Objects that add challenge by impeding travel. They include: rocks, roots, logs, holes, ledges, drop-offs, etc.

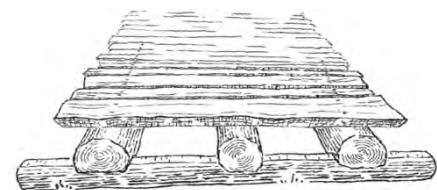
Outslope: A method of tread grading that leaves the outside edge of a hillside trail lower than the inside to shed water. The outslope should be barely noticeable—usually no more than about one inch of outslope for every 18 inches of tread width.



Porous Pavement Panel: A permeable, rigid, multi-pocketed structural geogrid, typically plastic, that is used to harden areas of saturated or unstable soils without the use of gravel infill, bridges, or boardwalks, e.g. GeoBlock and Geogrid.

Pump Track: A continuous loop of berms and smooth bumps (called rollers). Riders gain speed by “pumping” the terrain—absorbing the front side of rollers and compressing the back.

Puncheon: A log or timber structure built directly on the ground or on sills, used for crossing degraded or boggy areas where the soil is wet but does not contain enough water to seriously hamper trail work.



Right-of-Way: A linear corridor of land held in fee simple title, or as an easement over another's land, for use as a public utility (highway, road, railroad, trail, utilities, etc.) for a public purpose. Usually includes a designated amount of land on either side that serves as a buffer for adjacent land uses.

Sheet Flow: The more or less even disbursement of water flowing on low gradient slopes. Controlled grade and integrated water control in sustainable trail design seeks to maintain sheet flow over and across constructed trails to prevent concentrated water flow along the tread that would focus and accelerate erosion.

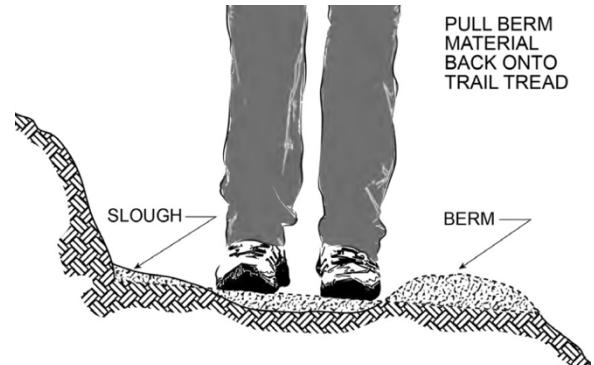
Sill (Sleeper): A crosswise member (stone or timber) that supports the stringers, beams, or trusses of a bridge or boardwalk from contacting the ground. A horizontal log or timber laid in a shallow trench to support a plank or log.

Single-Track Trail: A narrow trail typically requiring passage by users in a single file. Commonly used to describe all-terrain (mountain) bicycle trails.

Single-Use Trail: One that is designed and constructed for only one intended use (i.e. hiking only).

Slope: Rising or falling natural (or created) incline of the land, as shown on contour maps. Generally refers to the hillside (land) and not the trail, as trail “slope” is called the grade. Slope can be calculated by determining the vertical rise over a given horizontal distance, but it is more often directly read from a slope measurement instrument called a Clinometer. Slope can be expressed in degrees, but for trail use, it is more commonly expressed as a percentage. For example, a 10% slope has 10 feet of rise over 100 feet of horizontal distance. A 10 foot rise over a 10 foot distance would be a 100% slope, which is equivalent to a 45° angle.

Slough (pronounced “Sluff”): Material removed from the backslope by erosion or other means that has been deposited on the trail tread. Silt and debris collecting on the uphill (inside) edge of the trail tread. Slough may raise the height of the tread relative to the original level and result in water pooling on the trail or be sufficient to block the trail.



Social Trail – An unplanned, usually unmaintained trail alignment that develops informally as a result of public route pioneering, overuse, or degraded trail avoidance.

Soil, Mineral: A combination of sand, silt, clay, and gravel that is typically found as the undisturbed layer of soil below the surface layer of organic material and debris. Local mineral soil is the most common medium for tread construction.

Soil, Organic: A soil that is made up of decomposed leaves, wood, needles, roots, bark, and other organic material in various stages of decay. A “true” organic soil has an organic surface layer at least 20” thick. The term is also used to refer to the upper most layer of dark surface soil that has a high organic material content. Organic soils have a propensity of readily absorbing and holding water and are poorly suited as a trail-tread material.

Sustainable Trail: A trail that conforms to its terrain and environment, is capable of handling its intended use without serious resource degradation, and requires minimal maintenance.

Swamping: Technical term referring to the physical removal of slash or downed trees on a trail. A swamper usually works in cooperation with a sawyer removing slash and lugging fuel and oil.

Switchback: A sharp turn in the tread alignment, often 180 degrees, used to gain elevation on steep side slopes (typically required on slopes above 22%). Switchbacks are a highly technical trail structure and should be avoided in favor of Climbing Turns located on slopes below 22% when possible. See illustration at right.

Technical Trail Features (TTF): Objects that have been introduced to the trail to add technical challenge. Examples include: rocks, logs, elevated bridges, jumps, and drop-offs.

Ten-Percent Average Grade Guideline: Generally, an average trail grade of 10% or less is most sustainable. This does not mean that all trail grades must be kept under 10%. Many trails will have short sections steeper than 10%, and some unique situations will allow average trail grades of more than 10%.

Trail Class: A rating indicating the level of development of a given trail. It is based on many factors including the land through which it passes, the intended users for whom it is designed and built, the resulting design parameters and its likely level of maintenance. US Forest Service Trail Classes are 1 to 5 with 1 being most primitive, such as a faint wilderness trail, and 5 most developed, such as a paved trail.

Trail Corridor: The full dimensions of the trail, including the area (2 to 3 feet) on either side of the tread and the space overhead (10 to 12 feet) from which brush and obstacles need to be cleared. The area of passage of the trail, including all cleared and managed parts above, below, and adjacent to the tread.

Trail Hardening: A technique to modify the surface characteristics of a tread. Usually applied in wet or boggy ground or to enhance ADA characteristics. This ranges from aggregate capping to boardwalk or planking to turnpike construction to the use of porous pavement.

Trail Management Objective (TMO): Documentation of the intended purpose and management strategies of a trail based on its designed use, design parameters, and special considerations.

Trail Standards: Trail maintenance specifications that define the level of quality and service the trail manager will provide for the trail user.

Trail Type: A category that reflects the predominant trail surface and general mode of travel accommodated by a trail. There are three trail types: terra (standard), water, and snow trails.

- a. *Standard Terra Trail:* A trail that has a surface consisting predominantly of the ground and that is designed and managed to accommodate use on that surface.
- b. *Snow Trail:* A trail that has a surface consisting predominantly of snow or ice and that is designed and managed to accommodate use on that surface.
- c. *Water Trail:* A trail that has a surface consisting predominantly of water (but may include land-based portages) and that is designed and managed to accommodate use on that surface.

Tread: The wear surface of the trail upon which a user travels. The tread, or treadway, is the most fundamental component of a trail.

Tread Creep: Areas along a contour trail where the tread is sliding downslope due to compaction, slope failure, or fill failure of a partial bench cut. May be caused by trailside features such as trees, bushes, roots, or another projection that forces traffic onto the outside edge, compacting it downslope.

Turnpike: An elevated tread feature constructed of mineral material excavated from adjacent ditches. The ditches run the length of the turnpike for water drainage. May have log, timber, or rock curbing. Typically used for crossing degraded or boggy areas. May also be partially backfilled with imported mineral soil or capped aggregate. (A causeway is an elevated tread without side ditches.)

Vehicle, All-Terrain (ATV, Quad, Four-Wheeler): Small four wheeled motorized vehicle 50" or less in width used for off-highway use. ATVs are equipped with gasoline powered engines, handlebars, and a seat designed for one driver only to straddle. ATVs were designed in the late 1960's and first sold in the United States in the early 1970's. This type of vehicle is very popular and is commonly used for recreation, rescue efforts in emergency situations, and agricultural maintenance.

Vehicle, Off-Highway (OHV, Unlicensed Vehicle): Any motorized vehicle used for travel in areas normally considered inaccessible to conventional highway vehicles. OHVs generally include dirt motorcycles, dune buggies, jeeps, 4-wheel drive vehicles, snowmobiles, and ATVs. Used to be referred to as Off-Road Vehicles.

Waterbar: A trail structure typically constructed of wood, rock, or reinforced rubber and soil that is set at an angle across tread to direct water off the treadway. Generally being phased out in favor of Grade Reversals and Outslope integrated into new construction, and Outslope and Rolling Grade Dips retrofit into existing construction.

Width, Clearing: The outer edges of clearing areas (cleared of trees, limbs, and other obstructions) as specified by trail use.

Width, Design: The width specification that a trail was designed to meet, generally considered part of the trail (the beaten path or tread width).

Width, Tread: The width of the surface portion of the trail used for travel.

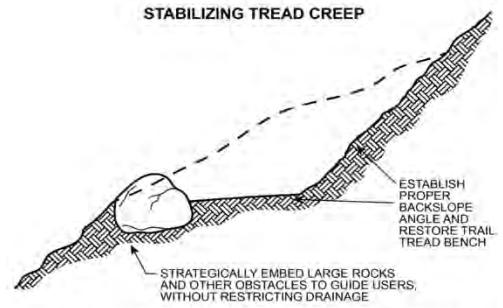
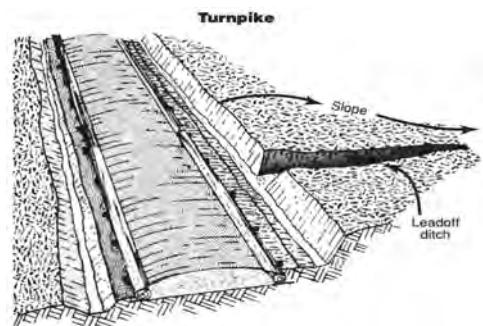


Figure 3-14. A properly installed guide rock or log end can help prevent tread creep. Do not create a continuous barrier that impedes water drainage.



APPENDIX 5

Trail Project Priority List, 2025-2035

Projects are not listed in any order of priority.

Trail numbers correspond to proposed trails in the 2024 Trails Master Plan.

2025-2030

- Reroute of Middle Iditarod near Phase 1 of Holtan Hills
- Continued improvements to Middle Iditarod Trail between the Girdwood School, Crow Creek Road and the boundary of the USFS portion of the trail.
- Easement secured for Middle Iditarod Trail
- Trail T4: Ruane Road Trail Connection to Lower Iditarod. There is a low spot that gets flooded near the trailhead by the AWWU plant. Either the drainage needs to be improved to drain the water away or the trail raised to get the tread above water level.
- Bridge B6: Glacier Creek Trail Bridge – Upper Valley and Interpretive kiosk
- Trail T6: Barren Avenue to Alyeska Highway
- Improvements to Lower Virgin Creek Trail (TH post, establish route to the bench from the TH)
- Easement secured for Lower Virgin Creek Trail
- Improve tread and drainage on the Shortcut Trail from Alyeska Hwy to Davos
- Trail T1: Work with the Alaska RR to get permission to build a trail connection between the Lower Iditarod Trail and the Girdwood RR Depot.

2025-2035

- Trail 2.3: Timberline-Barren Ave Connection
- Trail T5: Beaver Pond Trail to Alyeska Highway Bike Path
- Trail T10: Forest Loop Trail
- Trail T11: Arlberg Connection to Winner Creek Trail
- Trail T12: Canyon Rim Trail
- Trail T14: Snowcat Trail Improvements
- MB2: Bikewood trails with the 5K Nordic Loop zone.
- Trail Head 5: Karolius Trailhead
- Trail Head 11: Arlberg Trailhead Expansion

APPENDIX 6

Adopted Planning Documents that Affect Girdwood Trails

Alyeska Resort Master Plan, 2025

Anchorage Park, Greenbelt and Facility Recreation Plan, Vol. 3: Turnagain Arm, 1987

Assessment of Ecological & Socio-Economic Conditions and Trends for the Chugach National Forest, 2014

Chugach National Forest: Land Management Plan, 2020

Chugach State Park Access Plan, 2010

Chugach State Park Management Plan, 2016

Chugach State Park Trails Management Plan, 2016

Crow Creek Neighborhood Land Use Plan, 2006

Girdwood Commercial Areas and Transportation Master Plan, 2001

Girdwood Comprehensive Plan, 2025

Girdwood Iditarod Trail Route Study, 1997

Girdwood South Townsite Master Plan, 2009, amended 2014

Girdwood Trails Plan, 2024

Iditarod National Historic Trail Comprehensive Management Plan, 1986 (BLM)

MOA Area-wide Trails Plan, 1997

MOA Title 21, Chapter 9 Girdwood Land Use Plan, 2005, amended with MOA Assembly approval on an ongoing basis

Winner Creek Trails Feasibility Study, 2007

APPENDIX 7

Trail Partnerships

Documents outlining partnership agreements for trail work, such as interagency land management agreements, memoranda of understanding, and contracts made through Alaska Trail Volunteers and other organizations are available at the Girdwood Parks and Recreation Office.

Established Partnerships with Government Organizations:

- Alaska Department of Natural Resources
- Alaska State Parks, Chugach State Park
- Girdwood Board of Supervisors
- Municipality of Anchorage, Heritage Land Bank
- US Forest Service, Glacier Ranger District

Grant Organizations:

- Alaska Community Foundation: ACF Trail Care Fund and private donations
- Alaska Trails
- American Hiking Society
- Anchorage Park Foundation
- Kenai Mountain–Turnagain Arm National Heritage Area
- Land and Water Conservation Fund
- National Forest Foundation
- Rasmuson Foundation
- Recreational Trails Program (RTP)

Volunteer Organizations:

- Alaska Trails Volunteers (Adopt-A-Trail)
- Bikewood
- Friends of Girdwood Trails
- Girdwood Nordic Ski Club
- Student Conservation Association (SCA)
- Youth Employment in Parks (YEP)

Other:

- Greatland Trust
- Private donations through Girdwood, Inc.
- Various service organizations assist with work on Girdwood Trails under the supervision of the Girdwood Parks and Recreation office.

APPENDIX 8

Trail Easements and MOA/MOUs

The Girdwood Parks and Recreation Department and the Girdwood Trails Committee work with many different land managers in the Girdwood Valley - the MOA Heritage Land Bank, Alaska State Parks, Alaska Department of Natural Resources, and the US Forest Service. These relationships are governed by Memoranda of Agreement, Memoranda of Understanding, and various easements. One of the Trails Committee's major goals is to protect the Valley's trail system from future encroachment by recording easements.

TRAILS THAT HAVE PROTECTION

Abe's Trail: Trail Easement granted to GBOS for MOA property, 2012-037296-0
Land Use Permit #32093 (2018-2022)

Alyeska Highway Pedestrian Corridor: easement MOA Girdwood Service Area

Arlberg Bike Path: HLB Easement

Beaver Pond Trail: Easement granted to GBOS for HLB property 2012-037296-0 (50')
DNR Land Permit 2018-2022

Bird-to Gird Bike Path: Chugach State Park

California Creek Trail: Easement granted to GBOS for HLB property 2012-037296-0
Land Use Permit #32093 (2018-2022)

Crow Pass Trail: USFS

Earnagain: 25' pending; Bikewood has an easement through HLB?

Hightower/Egloff Bike Path: Intra-government permit for a public use easement is granted to MOA Project Management & Engineering

Iditarod National Historic Trail, Lower: easement MP 0-5 has HLB easement, ADL#24059

Max's Mountain Trail: segment on privately held land is dedicated by plat (2004); other landowners are HLB and DNR

Moose Meadow: HLB dedicated park, managed by Girdwood Parks & Recreation

Nordic 5K Loop: GNSC has an easement through HLB, 2009

North Face—Alyeska Resort/private

Small House: 25' pending; Bikewood has an easement through HLB?

Snowcat Trail—HLB & DNR Revocable Permit to CPG, no easement

Two Cents: 25' pending; Bikewood has an easement through HLB?

Upper Meadows near Arlberg Parking Lot: Conservation Easement #2015-039963-0, 2015, owned by Heritage Land Bank

Virgin Creek Falls: Privately owned segment dedicated by plat (2004); No HLB easement

Winner Creek Extension: Girdwood Parks and Recreation dedicated park land?

Winner Creek Trail: USFS has easement from HLB and maintains the trail through inter-government agreement ADL 228890-L, ADL 230887

Winner Creek Trail Upper: easement in place, ADL 228890-L, ADL 230887.

TRAILS THAT HAVE NO PROTECTION:

Athasbascan Environmental Physics Trail: ASD

Deb's Way: AWWU utility easement and DOT

Eagle Glacier Access: USFS

Iditarod National Historic Trail, Middle and Upper: no easement M5-9

Joe Danich Trail, Upper and Lower: DOT, HLB and Alaska RR

Max's Mountain: no easement on public land (USFS?); Skilling easement to be changed

Ragged Top: USFS and HLB (Chugach State Park?)

Shortcut Davos to Alyeska Bike Path: AWWU utility easement

Stumpy's Summer Trail: HLB and DOT airport land

Stumpy's Winter Trail: HLB

Tiny Creek Trail: ASD and Chugach Electric

Virgin Creek Trail, Lower: HLB

Wagon Trail: HLB, DNR and Alaska RR

Abe's Trail, Beaver Pond trail (up to Chugach State Park boundary) and California Creek Trail (up to Chugach State Park boundary) easement:

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2010
20-037296-0

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7/6/2012 3:13 PM Pages: 1 of 3



Please return to:
Heritage Land Bank
P.O. Box 196650
Anchorage, AK 99519-6650

TRAIL EASEMENT

Anchorage Recording District

The GRANTOR, Municipality of Anchorage, Heritage Land Bank, whose mailing address is P.O. Box 196650, Anchorage, AK 99519-6650, for good and valuable consideration, conveys and warrants to the Municipality of Anchorage, GRANTEE, and to its successors and assigns a perpetual non-exclusive, relocatable easement fifty (50) feet in width, across the following described lands:

Heritage Land Bank Parcels: Parcel 6-010, described as Tract A, Lot 10, Plat 81-149, Sections 4, 5, 7, 8, 17 and 18, Township 10N, Range 2E, Seward Meridian, Parcel 6-040 described as Tract 18A, Section 18, Township 10N, Range 2E, Seward Meridian, and Parcel 6-041 described as Tract 19A, Section 19, Township 10N, Range 2D, Seward Meridian, as illustrated on Exhibit 1,

to construct, reconstruct, maintain, repair, operate, improve, and update upon and over the above-described lands for Abe's Trail and Beaver Pond Trail and that part of California Creek Trail outside the State of Alaska Department of Natural Resources easements as described in State of Alaska Patent 5451 and associated decision documents, together with the right:

1. Of ingress and egress to said lands as may be reasonably necessary for the purposes described above,
2. To cut, trim, remove and control the growth of trees, shrubs, and other vegetation on, above, or adjoining said lands, which is necessary in the sole good faith judgment of GRANTEE, and
3. To move the trail within the easement area for the purposes of improving the trail location with respect to environmental and geologic features of the trail corridor.

All improvements are placed on the property at the GRANTEE's expense and are relocatable at the GRANTOR'S option. The failure of the GRANTEE, its successors or assigns, to exercise any of the rights herein granted shall not be construed as a waiver or abandonment of the right thereafter at any time and from time to time to exercise any or all of such rights.

GRANTEE shall not assign or transfer the rights conveyed under this easement to any other party,

except with the GRANTOR'S express permission, which shall not be unreasonably withheld. The easement area is relocatable upon thirty (30) days notice from the GRANTOR, its successors or assigns, and at GRANTOR'S cost.

This easement is not intended to convey or create any direct or indirect rights or privileges to any entities that are not parties to this document.

Upon written notice to the GRANTEE, which states the purpose of access and entry, the GRANTOR, its successors and assigns, reserves the right of access and entry for any contractor of the Municipality, subcontractors and their respective agents and employees as well as such other persons as may be designated from time to time in writing by the GRANTOR.

GRANTOR shall be entitled to the full and complete non-exclusive use of the easement area in a manner consistent with the grant of easement to GRANTEE. GRANTEE shall not allow any lien to be filed against the lands subject to this Easement by anyone supplying labor or materials for any improvements by or for the benefit of GRANTEE.

GRANTEE shall, at its own expense, and with all due diligence, comply with all of the provisions of local, state, and federal law which are now in effect or may later be adopted by any governmental authority applicable to the Easement Area and GRANTEE's use thereof.

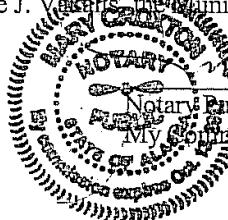
This document is integrated and embodies the full agreement of the parties. Venue is in the Superior Court, State of Alaska, at Anchorage.

GRANTOR: MUNICIPALITY OF ANCHORAGE

George J. Vakalis
Municipal Manager

STATE OF ALASKA)
)
THIRD JUDICIAL DISTRICT)

The foregoing instrument was acknowledged before me this 20th day of June, 2012, by George J. Vassallo, Municipal Manager for Anchorage.



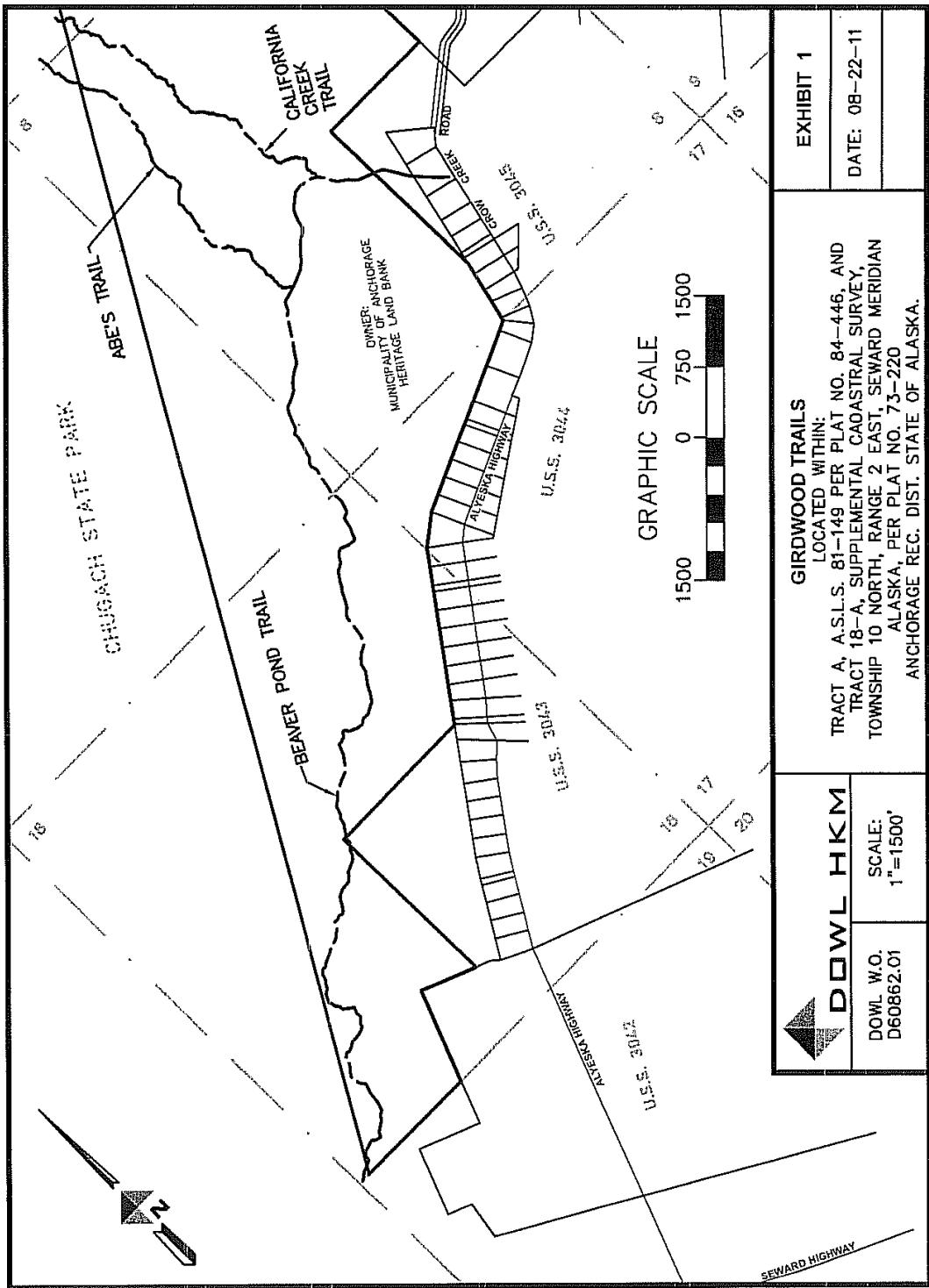
Notary Public in and for Alaska
My Commission Expires: 10-1

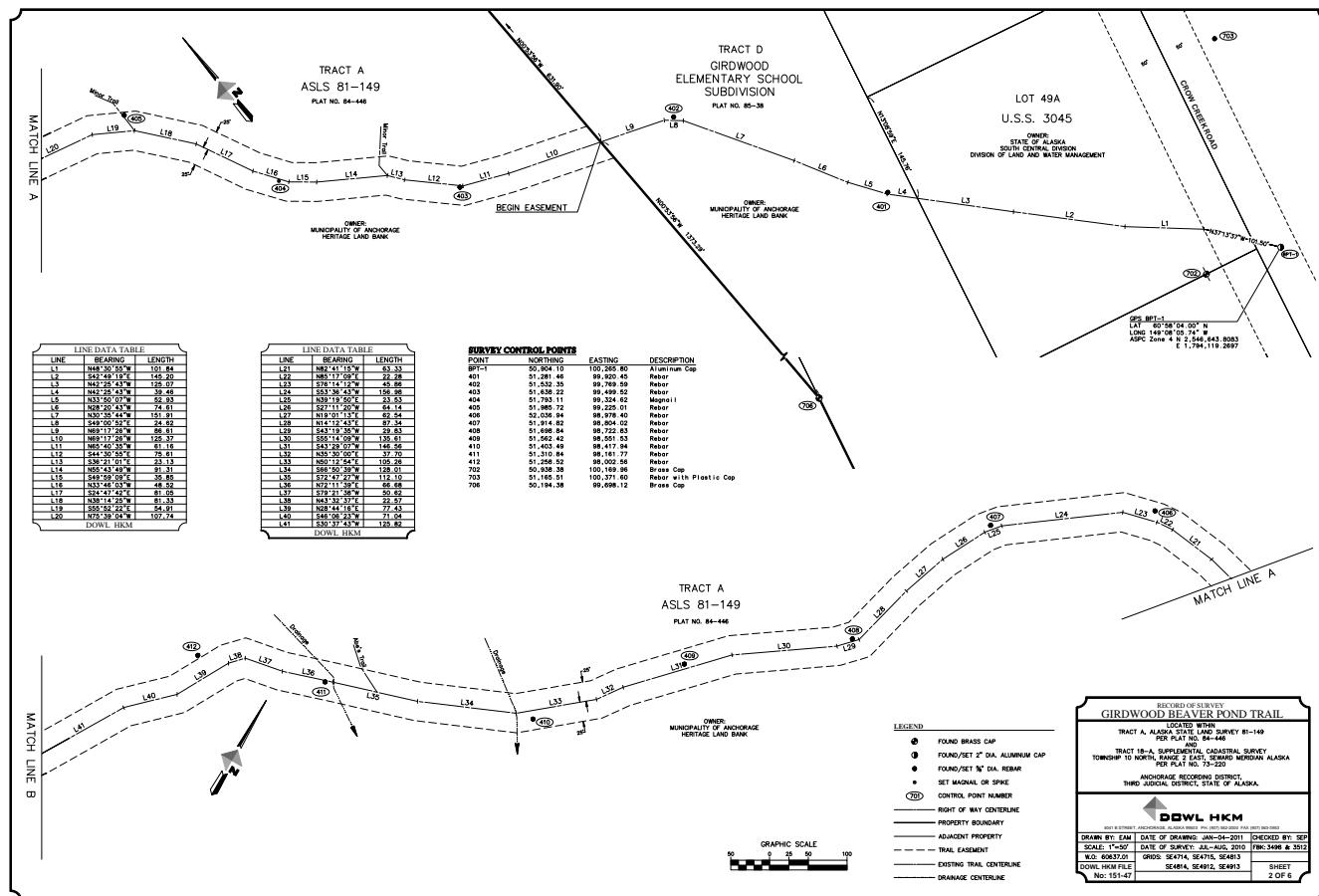
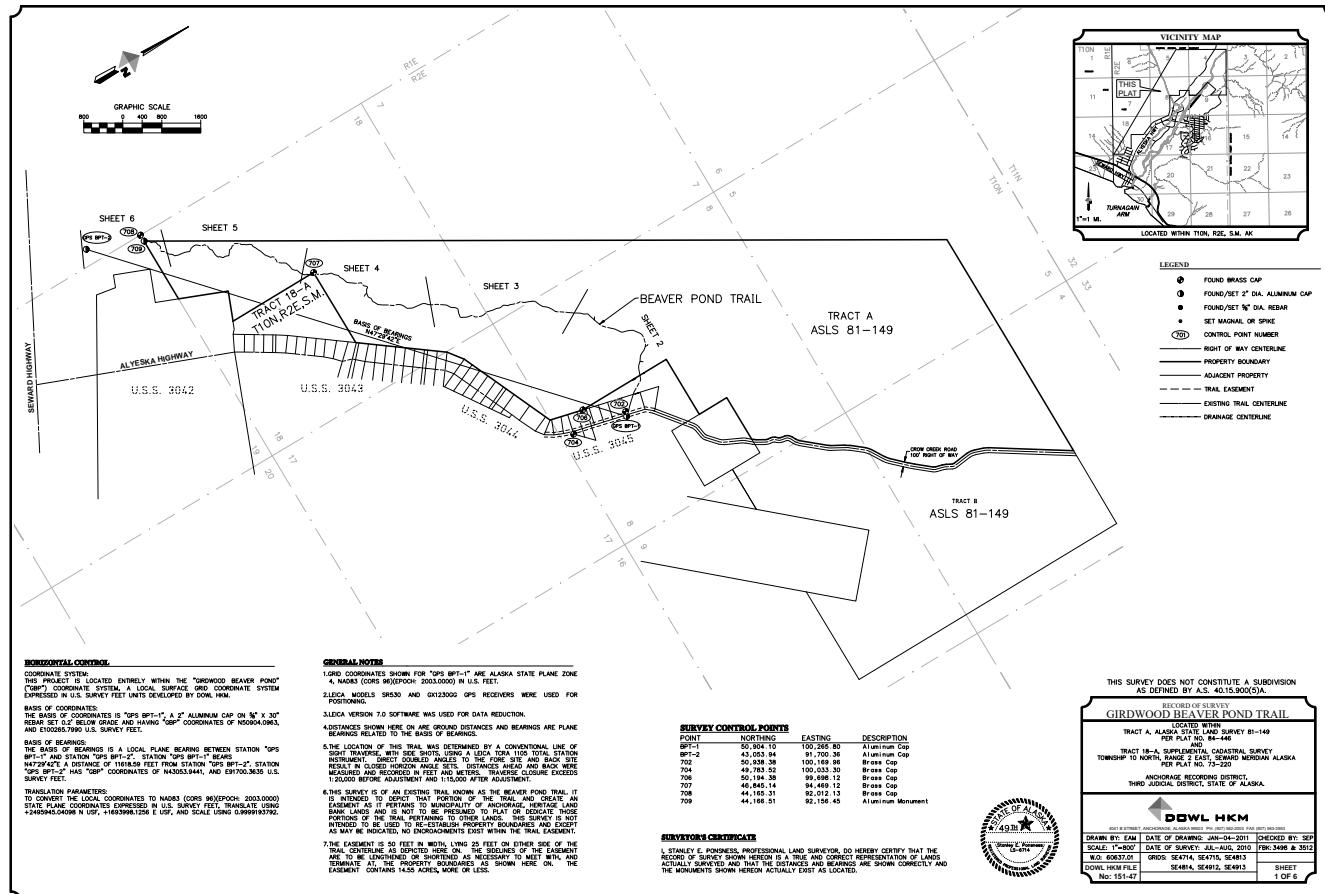
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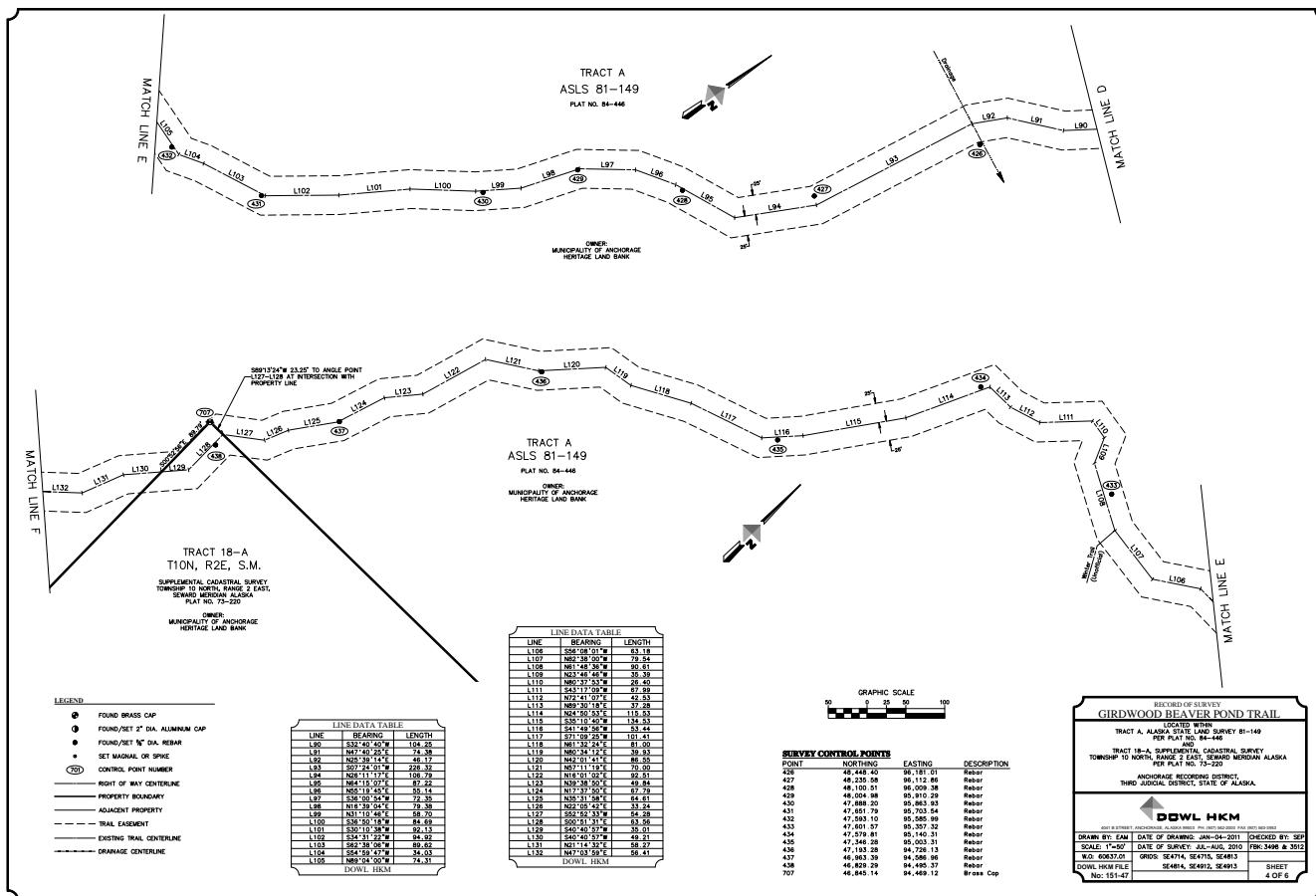
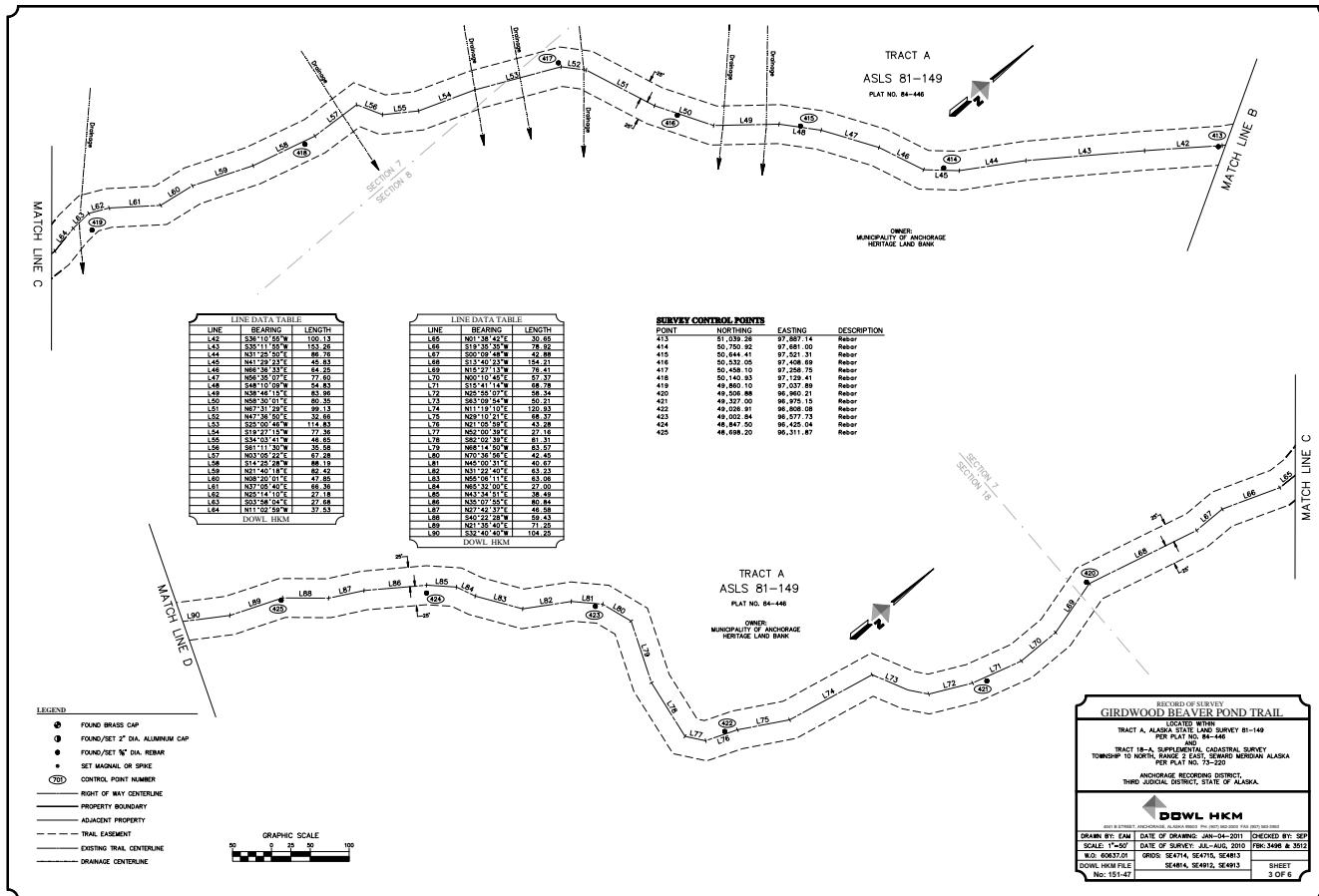


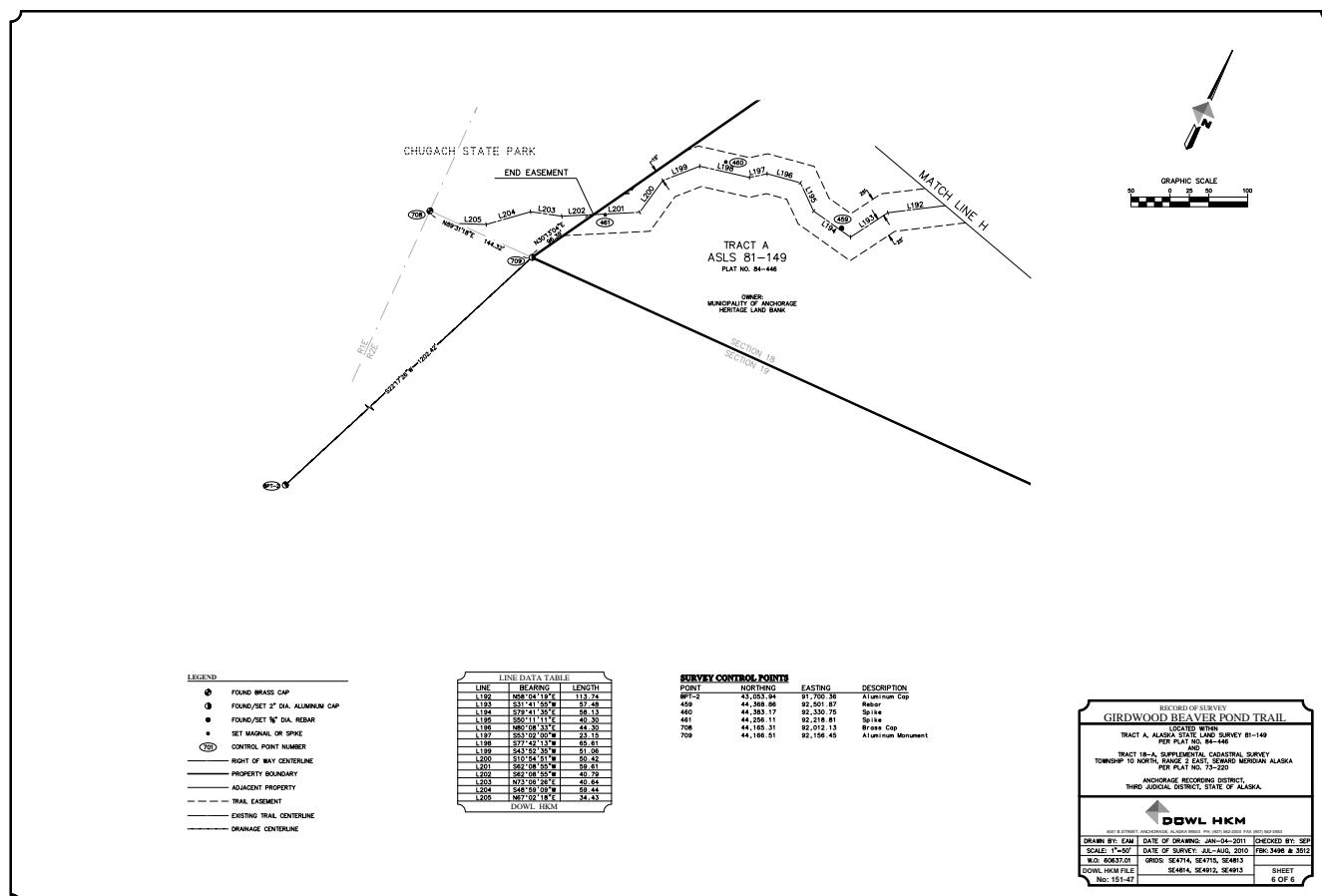
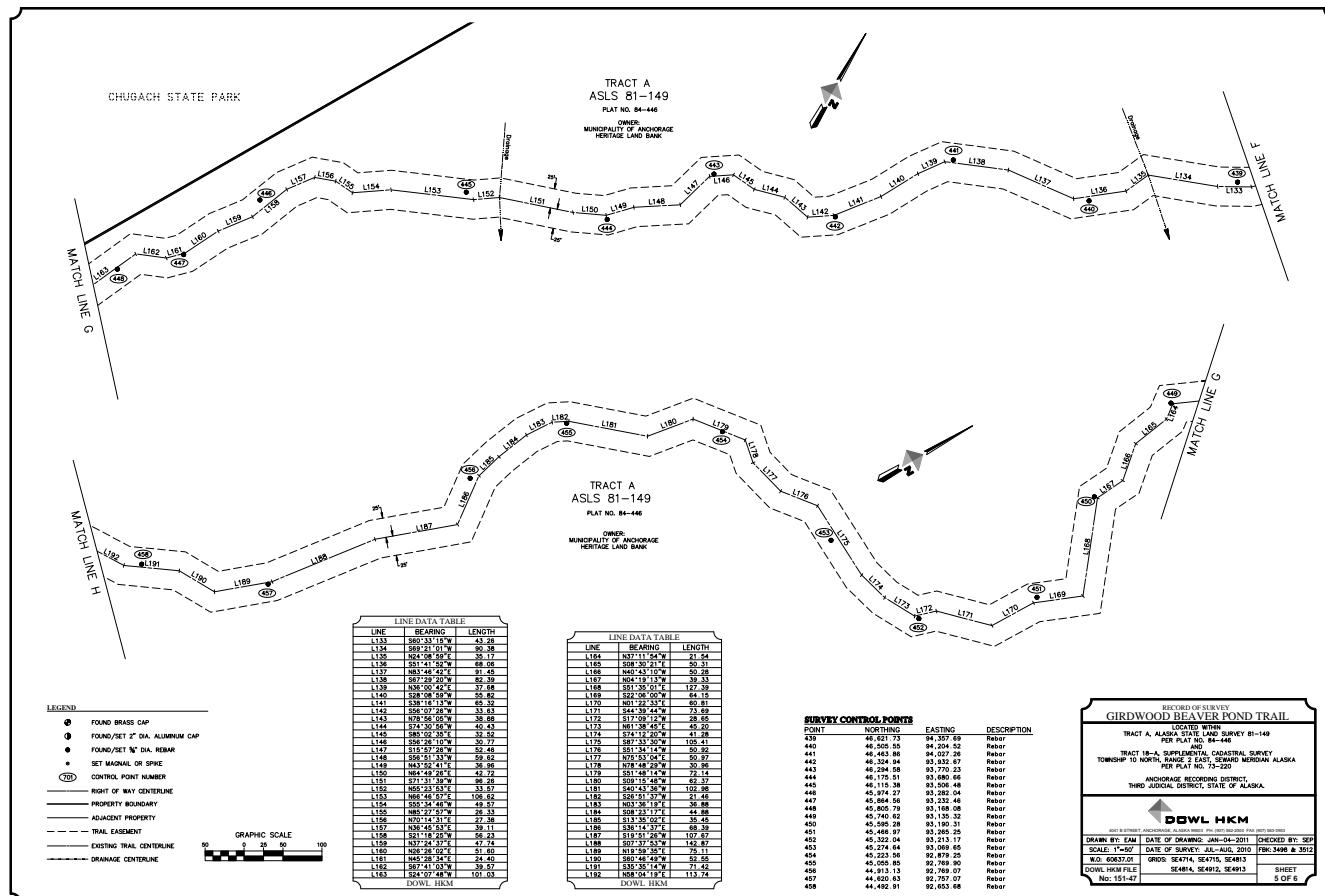
2 of 3

2012-037296-0









Winner Creek Extension Trail:

Docusign Envelope ID: D8EE2FA0-5611-4029-ABA2-0E99804990C6



MUNICIPALITY OF ANCHORAGE

Real Estate Department

Designation of Management Authority

DATE: August 1, 2025
TO: Mayor Suzanne LaFrance
THRU: Rebecca Windt Pearson, Municipal Manager
THRU: Lance Wilber, Director
Planning, Development & Public Works
THRU: Kyle Kelley, Girdwood Valley Service Area Manager
Girdwood Parks & Recreation
FROM: Tiffany Briggs, Director
Real Estate Department
SUBJECT: Withdrawal from HLB Inventory, Placement into Real Estate General Inventory
and Designation of Management Authority to Parks and Recreation
Department

Pursuant to AMC 25.40.015B, and as authorized by Assembly Ordinance 2025-75, the Municipality of Anchorage Real Estate Department may withdrawal from Heritage Land Bank Inventory and place into Real Estate General Inventory, real property known as HLB Parcel 6-075 (PID# 075-041-28), legally described as Tract F, Alyeska Subdivision Prince Addition (Plat 87-131). This transfer is for the purposes of conservation and park use. Pursuant to AMC 25.10.050, the mayor may designate management authority of this property to the Girdwood Parks and Recreation Department.

Authority Conveyed

The above listed agency is given authority and responsibility for day-to-day management of the described parcel(s). This authority includes:

1. The use, development and improvement of the lands to advance the purposes of the agency; and
2. The issuance of revocable land use permits or licenses pursuant to AMC 25.10.060(c), provided that
 - (a) the permit or license can be terminated on thirty (30) days' notice; and
 - (b) the site restored to its prior condition within thirty (30) days after notice to vacate is issued;

Authority Retained by Real Estate Services

The Real Estate Services Division retains authority and responsibility for any action which conveys a permanent interest in the subject property. This authority includes:

1. The disposal of any interest in property by sale, lease, exchange, or other means; and
2. The disposal of natural resources on municipal property including gravel and trees of greater than 6 inches in diameter; and
3. The issuance of any license, permit, sublease, use agreement, grant or other document which commits municipal real property and the resources thereon irrevocably, i.e. which allows activities, alterations and improvements of a permanent nature that cannot be removed and the site restored within thirty days; and
4. The responsibility for all projects, such as utility lines, streets and trails, committing portions of the assigned parcels to alterations and improvements which also involve properties not assigned to the agency.

Approval

In view of the foregoing and in accordance with AMC 25.40.015B and AMC 25.10.050, the real property known as HLB Parcel 6-075 (PID# 075-041-28), and legally described as Tract F, Alyeska Subdivision Prince Addition (Plat 87-131), is withdrawn from HLB Inventory, and placed into Real Estate General Inventory with management authority assigned to the Girdwood Parks and Recreation Department, subject to the conditions stated in AO 2025-75 and herein.

Recommended By:

Tiffany Briggs

Tiffany Briggs, Director
Real Estate Department

Concur:

Lance Wilber

Lance Wilber, Director
Planning, Development & Public Works

Concur:

Kyle Kelley

Kyle Kelley
Girdwood Valley Service Area Manager
Girdwood Parks and Recreation

Concur:

Mark W. Spafford

Rebecca Windt Pearson, Municipal
Manager

Concur:

Suzanne LaFrance

08/04/2025 | 11:07:35 PM AKDT

Suzanne LaFrance, Mayor

Date

INTRAGOVERNMENTAL AUTHORIZATION (IGA)

HERITAGE LAND BANK PERMIT NO. 2008-22

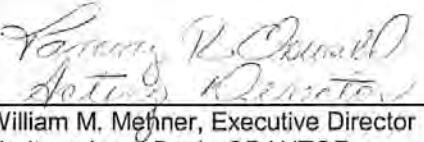
KNOW ALL MEN BY THESE PRESENTS, that the Heritage Land Bank, hereinafter called GRANTOR, whose address is P.O. Box 196650, Anchorage, Alaska, 99519-6650 grants to the Parks and Recreation Department, hereinafter called GRANTEE, whose address is P.O. Box 196650, Anchorage, Alaska, 99519-6650, authorization to design, construct and maintain a portion of the Winner Creek Trail within Tract F, Alyeska Subdivision—Prince Addition (Plat No. 87-131, Anchorage Recording District), HLB Parcel No. 6-075 in Girdwood, Alaska, said parcel depicted on attached EXHIBIT A. This AUTHORIZATION shall commence upon execution and shall not expire.

Only such rights to use the land described above shall be acquired as necessary for the design, construction, and maintenance of the trail, in accordance with applicable trail design and construction standards, and the rights granted by the IGA shall be subordinate to all valid existing rights, including, but not limited to easements that may exist. GRANTEE'S contractors, subcontractors, and assignees shall maintain in good standing the insurance required by the Risk Management Office of the Municipality of Anchorage, including a Comprehensive General Liability policy of insurance in the minimum amount of \$2,000,000. Said policy shall include endorsements for bodily injury, property damage liability, premises and operations, contractual liability, and personal injury.

GRANTEE agrees to

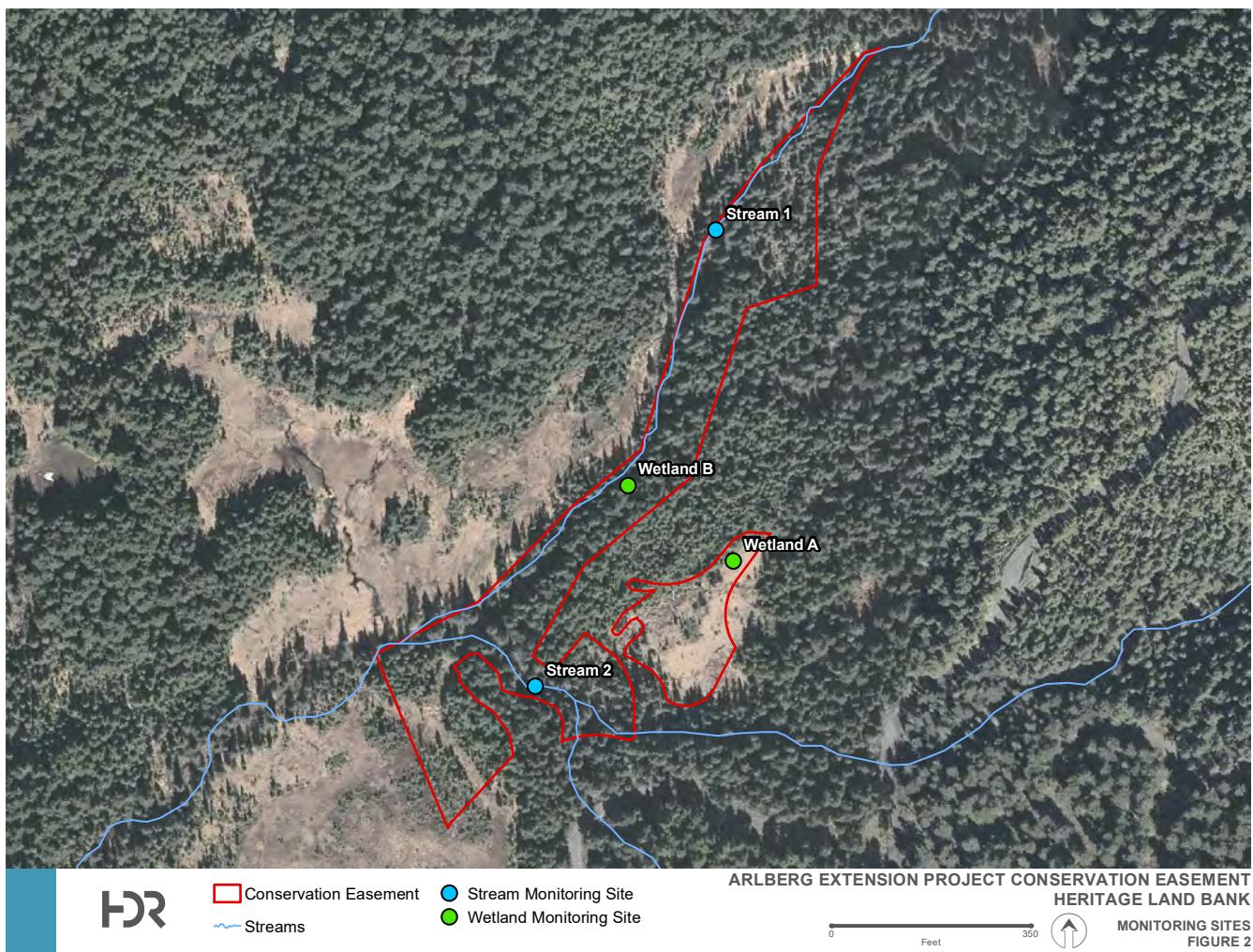
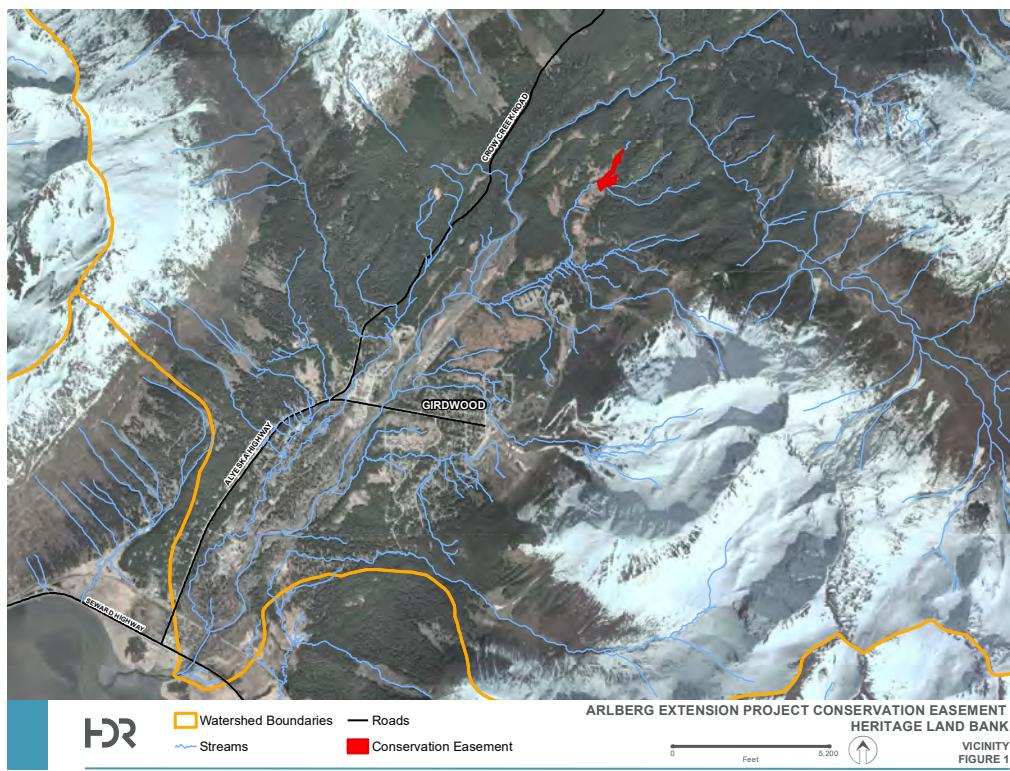
- a) in consultation with the U.S. Forest Service, negotiate in good faith with Alyeska Resort for a survey to establish the final trail alignment and for construction of the trail, including but not limited to planning, design, permitting, materials, and labor;
- b) obtain GRANTOR's concurrence with an agreement so negotiated;
- c) obtain an as-built survey of the trail and provide it to GRANTOR within 6 months of construction; and,
- d) conduct or cooperate in any and all permitting and public noticing necessary to provide for GRANTEE's proposed use of the property.

IN WITNESS WHEREOF, the GRANTOR has hereunto set his hand and seal this 26 day of November, 2008.


William M. Mehner, Executive Director
Heritage Land Bank, GRANTOR


R. Jeff Dillon, Director
Parks and Recreation Department, GRANTEE

Arlberg Extension Upper Meadows Conservation Easement area:



Project Overview

The Municipality of Anchorage (MOA) Arlberg Extension Project (U.S. Army Corps of Engineers [USACE] Permit POA-2012-759) included construction of a 1,400-foot extension of Arlberg Avenue from the intersection with Northface Road. The project also included the installation of utilities (water, sewer, gas, electric, lighting, and communications), a 16-foot wide pedestrian pathway, a 10-foot wide drainage ditch, and parking for approximately 20 vehicles. The project impacted 1.82 acres of high value wetlands and eight streams, three of which are anadromous. Compensatory mitigation was provided by preserving 5.5 acres of wetlands, including four fish streams, under a conservation easement owned by the Heritage Land Bank (HLB) on September 3, 2015 (Easement #2015-039963-0). The conservation easement is located at approximately 60.98175° North latitude and 149.08894° West longitude (Figure 1).

The performance standards and monitoring requirements for the conservation easement are described below and in the Permittee-Responsible Mitigation Plan (DOWL 2014). This report documents the results of the first year of monitoring following the establishment of baseline performance standards at the Arlberg Extension Project Conservation Easement. DOWL HKM (DOWL) completed the baseline assessment of the conservation easement in September 2015 (DOWL 2015). HDR wetland scientists Simon Wigren (PWS #2669) and Lynn Spencer, as well as Shelley Rowton from HLB, conducted the monitoring site visit on July 31, 2020.

Based on the data collected during the monitoring site visit, HDR has determined that the preservation site is meeting performance standards because it does not contain any invasive plant species, there are no signs of illegal use of the property, and wetland functional performance has not changed from baseline conditions. As the site is meeting performance standards, there are no recommendations for corrective or remedial actions at this time.

Performance Standards

The initial monitoring plan is in effect for at least five years. In order to be eligible for transfer to the long-term management plan, the site will have to have completed the five-year monitoring plan, and must meet its performance standard for at least the last two successive years. DOWL conducted a baseline assessment of the conservation easement site on September 4, 2015. Four monitoring locations were established by DOWL (Table 1 and Figure 2) in order to make direct comparisons of wetland functional performance between annual monitoring events. Results from subsequent assessments that are lower than the baseline level, as determined by Anchorage Wetland Assessment Method (AWAM) and Waterway Assessment Method for Anchorage (WAMA) scores, would require remedial actions in consultation with the USACE District Engineer.

In accordance with the Permittee Responsible Mitigation Plan (DOWL 2014), the wetland health and function within the conservation easement was evaluated using the AWAM and WAMA techniques. The AWAM and WAMA evaluate four specific wetland functions: hydrology, habitat, species occurrence, and social function, in order to provide a hierarchy of values for wetland units based upon their functional performance.

Invasive and noxious plant species that appear within Chapter 11 of Alaska Administrative Code (11 AAC 34.020) and are found on the mitigation site will initiate a management plan to control or eliminate their spread. The Alaska Exotic Plant Information Clearinghouse sampling protocol and data sheets are to be used for site surveying if invasives are found.

Table 1. Baseline Monitoring Locations		
Monitoring Site	Latitude (NAD83)	Longitude (NAD83)
Wetland A	60.98223	-149.08699
Wetland B	60.98267	-149.08804
Stream 1	60.98388	-149.08712
Stream 2	60.98175	-149.08894

Summary Data

The objective of the monitoring site visit conducted by HDR was to:

- Collect photos at established locations (Appendix A);
- Assess the health of the wetland and streams using the AWAM and WAMA in relation to the baseline conditions (Appendix B);
- Document the presence and extent of invasive species;
- Document uses of the property that are not consistent with Conservation Easement #2015-039963-0; and
- Ensure that proper signage of the easement boundary is displayed.

The entire conservation easement was covered on foot to search for invasive plant species and signs of illegal uses of the property, neither of which were observed during the field visit. Metal signs are clearly visible along the Nordic ski trails adjacent to the conservation easement to inform trail users of the boundaries of the easement. The results of the AWAM/WAMA evaluations compared to the baseline performance standards are summarized in Table 2.

Table 2. Summary of 2020 Monitoring Scores Compared to Baseline								
Monitoring Site	Assessment Used	2015 Baseline Scores				2020 Monitoring Scores		
		HYD	HAB	SPP	SOC	HYD	HAB	SPP
Wetland A	AWAM	92	81	85	52	92	81	85
Wetland B								54
Stream 1	WAMA	55	88	22	28	55	88	22
Stream 2								29

HYD = Hydrology, HAB = Habitat, SPP = Species Occurrence, SOC = Social

Functional scores for the social function increased slightly because HLB has mapped wetlands in the area surrounding the conservation easement and studied their functional capacity (HDR 2017). Performance of other functions has not changed since the DOWL baseline assessment.



February 2026 Report Girdwood Trails Committee

Updates and other business:

Girdwood Parks Master Plan is now underway. www.girdwoodparksplan.com.

Girdwood Valley Trails Management Plan. Current version is posted on the GTC page. Barb Crews has initiated review of this document with the goal of updating it to match the Girdwood Trails Master Plan.

Girdwood Trails Master Plan. Adopted version is posted on the GTC page. GirdwoodTrailsPlan_February2024.pdf

Girdwood Comprehensive Plan. Final version was formally adopted in early April 2025.

Financial report: \$36,906.29. Does not include specified donations.

Trail Projects: Status of GVSA Trails projects:

- Bridge replacement over California Creek adjacent to Town Square Park/Crow Creek Road funded by private donation. [IN PROGRESS. Delay with permitting, project construction 2026](#)
- Trail work and trailhead signage on the Lower Virgin Creek Trail (a social trail that connects Virgin Creek Road to Danich Trail). [PENDING](#)
- Bidding for Suspension bridge to replace the Hand Tram funded by a variety of sources. Build expected in 2026 to provide time for material acquisition. [PENDING](#)
- Tread and drainage work on the Middle Iditarod National Historic Trail between the school and USFS Boundary co-funded by GVSA and RTP and possible MAP Grant

Grants Status report:

National Forest Foundation MAP Grant: GPR applied for MAP grant for work on Middle INHT. 1:1 Matching grant.

Anchorage Park Foundation Challenge Grant: expect grant cycle to be announced in spring 2026. APF grants open every two years.

Alaska Community Foundation: Girdwood Parks and Rec applied for Trail Care grant and was awarded \$1000 for chainsaw and tools in 2025. Completed reporting and closed grant Dec 2025.

State of Alaska, Capital Budget: Thank you to Alaska Trails for including the suspension bridge to replace the Hand Tram in their requests for funding of the State of Alaska. State has awarded \$1.2M for this project as part of Alaska Long Trail Funding.

Rasmussen Tier II Grant: GVSA has been awarded funding for this project.

Recreational Trails Program Grant (RTP): GTC did not apply for RTP in 2025. 2024 grant was awarded for the Middle INHT. Delays pushed it to 2025, wrapping up project in 2026, ongoing reimbursements.

Dugan Family donation for trails signs on Middle Iditarod Trail and bench at the 5K parking are nearing completion. Remaining is the trail sign that will be produced and placed.

Dugan Family donation for work on MINHT starting in 2026.

Private funder has donated funds for new bridge to connect Crow Creek Road to town center behind ACS building.

Trail Map Project: Summer map project complete and printed. Winter map project is under way.

Trails Commercial Use Permits: 2026 permits are being issued by Girdwood Parks and Recreation. Any business operating commercially on Girdwood public land and trails should have a permit issued locally. Contact for requesting permits is girdwoodpermits@anchorageak.gov 907-343-8373. Report operators without permits to Kyle Kelley: kyle.kelley@anchorageak.gov 907-343-8374. 2025 permit user report and payments are due in Jan 2026.