Marysville
Assessment Report

Butte Field Office
April 2016

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Introduction

This document is a land health assessment report for the public lands administered by the Bureau of Land Management (BLM) in the Marysville Planning Area (PA).

This is the first in a series of documents: the Marysville Assessment Report (AR), the Authorized Officer's Determination of Standards, the appropriate National Environmental Policy Act (NEPA) documentation, and subsequent Decision(s) changing or continuing management where applicable.

The AR also contains initial recommendations developed by the Marysville interdisciplinary team (IDT) for issues encountered during the assessment process. These recommendations were developed during and after the completion of field assessments that were conducted by the IDT in 2013. Follow up visits were made in the summer of 2014. The recommendations in the AR focus primarily on livestock grazing, timber and fuels management, noxious weed control, recreation activities, wildlife and fisheries habitat, travel planning, and road maintenance. Impacts from all uses and programs were assessed and documented as part of this process.

The assessed condition, function, and recommendations contained in the AR and Determination of Standards will subsequently be used as a basis for future management.

Alternative management will be analyzed in future NEPA documents wherever it is determined that:

- specific grazing allotments are not meeting the Standards
- allotments are meeting the Standards but have site specific concerns
- there are unhealthy forest conditions in the PA
- fuels conditions are outside the natural range of variability
- there are other documented resources concerns

Also, if existing grazing management practices or levels of grazing use on public lands are determined to be significant factors in failing to achieve or make significant progress towards meeting one or more of the five Standards, the BLM is required per regulation (43 CFR §4180.1) to make grazing management adjustments.

Implementation of projects initiated by this report may begin in 2016, but full implementation of forest treatments, fuels projects, revised grazing plans, and/or range improvement projects associated with these plans may take several years.

The new projects will be developed in consultation and coordination with the affected lessees, agencies having lands or managing resources within the area, and other interested parties.

The Butte Field Office (BFO) completed a Resource Management Plan (RMP) in April of 2009. This document will provide program guidance in the Butte Field Office for the next 20 years. The RMP replaces The Headwaters Resource Management Plan (1983).

In 2011, the BFO developed a prioritization method and approach for planning and implementing work across most major programs. The key concept behind this was to establish long-term Field Office Planning Areas (PAs) as well as procedures and a schedule of planning and implementation for activities occurring within those PAs. The PAs were defined as units with discrete geographic boundaries and comprised of multiple watersheds with similar vegetation and hydrologic characteristics. Other variables were also used to develop PA boundaries which included; weed management areas, grazing allotment boundaries, travel plan area boundaries, and distinct political boundaries. By working on a planning area basis, a broader landscape is considered and more consistent management can be applied. It is the BLM's intent to implement management cooperatively. Any changes in livestock management will be implemented through grazing decisions that address allotments or groups of allotments with a common permittee. Forest health and fuels management treatments or projects and any other management projects or changes will be implemented through decisions appropriate for the respective programs.

As with all similar BLM decisions, affected parties will have an opportunity to protest and/or appeal these decisions, which will be described in subsequent decision documents.

Process

The field portion of this assessment was done in 2013 in accordance with the BLM regulations regarding Rangeland Health Standards (Standards) and other applicable guidance.

- BLM Manual H-4180-1, Rangeland Health Standards Handbook and Guidance for Conducting Watershed-Based Land Health Assessments.
- Code of Federal Regulation 43 CFR, Subpart 4180
- Record of Decision (ROD) - Standards for Rangeland Health and Guidelines for Livestock Grazing Management (S&Gs) for Montana, North Dakota and South Dakota.
- Healthy Forest Initiative
- Healthy Forests Restoration Act
- National Fire Plan

Rangeland Health Standards are described in detail in the ROD Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Montana, North Dakota, and South Dakota- Western Montana Standards (USDI-BLM Montana State Office. 1997).

The preamble of the Western Montana Standards states: "The purpose of the Standards and Guidelines are to facilitate the achievement and maintenance of healthy, properly functioning ecosystems within the historic and natural range of variability for long-term sustainable use." Standards are statements of physical and biological condition or degree of function required for healthy sustainable lands. Achieving or making significant progress towards these functions and conditions is required of all uses of public lands as stated in 43 CFR §4180.1.

The Butte Resource Advisory Council (BRAC) has developed standards for rangeland health and guidelines for grazing management for use on the Butte District of the Bureau of Land Management (BLM).

This assessment will report condition and/or function for the following five standards:

- Standard #1: Uplands are in proper functioning condition.
- Standard #2: Riparian and wetland areas are in proper functioning condition.
- Standard #3: Water quality meets state standards.
- Standard #4: Air quality meets state standards.
- Standard #5: Provide habitat as necessary, to maintain a viable and diverse population of native plant and animal species, including special status species.

The BRAC determined that the following considerations were very important in adoption of these Standards and Guidelines:

1. For implementation, the BLM should emphasize a watershed approach that incorporates both upland and riparian standards and guidelines.
2. The standards are applicable to rangeland health, regardless of use.
3. The social and cultural heritage of the region and the viability of the local economy, are part of the ecosystem.
4. Wildlife is integral to the proper function of rangeland ecosystems.

Condition/function statements regarding the Standards are made as either meeting (Yes) or not meeting (No). Land Health Standards are met when conditions across an allotment are achieving or making significant progress towards the appropriate physical and biological conditions or degree of function required for healthy sustainable lands. This is dependent on scope and scale and determined by the Authorized Officer.

Available trend monitoring data, existing inventories, historical photographs and standardized methodology are used by an IDT to assess condition and function. Trend monitoring data, riparian assessment data and historic photographs used for this assessment, beyond what is included in this report, are available at the Butte Field Office.

The Existing Condition will be discussed by resource. These discussions will be the background information, baseline data, and analysis for the ID Team's initial Findings and Recommendations. The Upland, Riparian, Air Quality, Water Quality, and Biodiversity Standards will be addressed on the Allotment scale.

Background

The Marysville PA is located in Lewis & Clark County, Montana, approximately 20 miles northwest of the town of Helena. The planning area lies within Townships 11-14 North, Ranges 4-7 West, Principal Meridian Montana (Map 1).

BLM lands within the Marysville PA extend from the Virginia Creek area located on the Stemple Pass Road past the American Gulch area south of Marysville, MT. The elevations on BLM lands within the PA range from approximately 4,500 to 7,300. Average annual precipitation for BLM lands within the PA ranges from approximately 14 to 28 inches. The physical setting is dominated by timber stand with some grassland and minimal shrubland at lower elevations.

Within the Marysville PA there are approximately 155,740 total acres of land, of which approximately 14,170 acres are public lands administered by the BLM. Of these 14,170 acres, approximately 13,613 acres are allotted for livestock grazing. The remaining acres are either not currently leased for livestock grazing, or not available for grazing. This AR addresses only land health conditions on BLM lands within the Marysville PA.

Existing Condition

Authorized Uses

Forest Products-Forests in the Marysville PA have supported and been affected by timber harvests since the late 1800s. Forest harvest activities began in earnest in 1863 with the establishment and development of Lewis and Clark County. Gold and silver mining largely fueled this development as each mine required lumber for communication lines, electric lines, railroad ties and trestles, various buildings and structures, and shoring up adits and tunnels. The national silver panic of 1893 ended the mining boom and accelerated development associated with it. Shortly thereafter, lumbering arose as an important business in the county. Mining continued only as a sporadic activity and was replaced by agriculture as the major industry. Many acres of the Marysville planning area were historically “lumbered” to support these industries. Old skid trails, logging roads, stumps, and debris piles are still commonly found in forest stands.

Numerous timber sales have occurred more recently. The most common product of these is commercial sawlogs. Usually ground based operations are employed to extract commercial sawlogs. Additional products include posts, poles, and firewood. Some recent projects include roadside salvage of dead sawlogs in 2013 to improve egress and firefighter safety, a sanitation cut in 2009 to remove dead and hazardous trees related to mountain pine beetle mortality within the Great Divide Ski Area, and a small (6 acre) fence line clear cut in 2014. Numerous other projects have occurred in the last 20 years.

The majority of the historic forest product use on the BLM is through small sales such as firewood, small sawlogs, and post and poles.

Livestock Grazing- Of the 14,170 acres of BLM administered in the PA, thirteen (13) individual operators have active grazing leases on approximately 13,613 acres (14 allotments) of public lands administered by the BLM. This accounts for approximately 9% of the total land within the Marysville PA. BLM administered lands within the PA provide an important source of livestock forage. The BLM currently permits 1847 Active AUMs on the allotments included in this AR.

Table 1. Current Grazing Management within Marysville PA Allotments

Allotment Name	Allotment Number	Livestock Kind	Season of Use	Current Grazing System
Beartrap Gulch	07807	Cattle	6/16-9/30	n/a
Canyon Creek	07833	Cattle	6/15-10-24	Deferred
Cemetary	07813	Cattle	6/15-10/15	n/a
Deadman	07803	Cattle	7/1-10/1	n/a
Deer Creek	07801	Cattle	6/1-9/30	n/a
Drumlummon-Skelly	07811	Cattle	6/15-9/30	4 Pasture Rest Rotation with Forest Service
Edwards Mountain	07810	Cattle	6/1-12/31	Deferred
Empire Creek	07804	Cattle	7/1-9/30	5 Pasture Rest Rotation
Lost Horse Creek	07808	Cattle	7/1-10/15	n/a
Missouri Gulch	07800	Cattle	4/15-11/14	n/a
Ogilvie Gulch	07806	Cattle	7/1-9/28	n/a
School	11027	Cattle	6/1-9/30	n/a
Talseth	00936	Cattle	7/1-10/15	n/a
Virginia Creek	07802	Cattle	6/1-10/15	Deferred

Current authorized stocking rates on BLM lands within the project area averages approximately 8.9 acres/Animal Unit Month (AUM) and varies from 2.4 to 15.3 acres/AUM (Table 2). An AUM is the amount of forage needed to sustain one animal unit for one month. An animal unit is one mature cow of approximately 1,000 pounds and her calf up to 6 months of age, or their equivalent. The wide variation in stocking rate is directly related to the difference in vegetation type and productivity influenced by average annual precipitation, soils, topography (aspect, elevation, and slope), and distance from water throughout the project area.

Table 2. Grazing Allocation and Stocking Rates within Marysville PA Allotments

Allotment Name	BLM Acres	BLM AUMs	BLM Stocking Rate (acres/AUM)
Beartrap Gulch	80	11	7.3
Canyon Creek	222	17	13.1
Cemetary	39	16	2.4
Deadman	241	18	13.4
Deer Creek	172	50	3.4
Drumlummon-Skelly	2604	630	4.1
Edwards Mountain	1379	322	4.3
Empire Creek	6518	602	10.8
Lost Horse Creek	153	10	15.3
Missouri Gulch	40	7	5.7
Ogilvie Gulch	235	21	11.2
School	62	7	8.9
Talseth	41	4	10.3
Virginia Creek	1827	132	13.8
Totals	***13613***	***1847***	

The following is a description of the livestock grazing allotments in the Marysville PA, including the standard Authorized Officer's Determination of pre-2013 Land Health Assessments:

Beartrap Gulch Allotment: The allotment met all applicable land health standards in 2008. The allotment consists of 80 public land acres, held in 2 separate parcels located in T12N R7W section 23. Both parcels are included in one pasture that includes 240 acres of private land. This allotment is used in conjunction with the permittee's normal livestock operation during the allotted period, 6/16-9/30, so long as use is not detrimental to public lands. Neither of these of BLM parcels have livestock watering sources or riparian resources. (Map 3)

Canyon Creek Allotment: The allotment met all applicable land health standards in 2008. The Canyon Creek Allotment is located in Township 12 North, Range 5 West, Sections 31 and 18. The BLM within this allotment is 222 acres in size and fenced in with an unknown amount of private property. The BLM lands receive minimal grazing as they are on a steep hillside adjacent to a private drainage. This parcel does not have any livestock watering sources or riparian resources. (Map 4)

Cemetery Allotment: The allotment met all applicable land health standards in 2003. The Cemetery Allotment is located in Township 12 North, Range 6 West, Section 36 and Township 12 North Range 5 West, Section 31. The BLM within this allotment is 39 acres in size and fenced in with approximately 50 acres of private property. This allotment has received sporadic use in the recent past. The BLM lands will receive minimal grazing as the area becomes more developed and access becomes limited. (Map 5)

Deadman Allotment: The allotment met all land health standards in 2008. The Deadman Allotment is located in Township 12 North, Range 7 West, Sections 24 and 25. The BLM within this allotment is 241 acres in size and fenced in with an adjacent Forest Service Allotment. The allotment receives use in a herding distribution system designated by the Helena National Forest. (Map 3)

Deer Creek Allotment: The allotment met all applicable land health standards in 2008. The Deer Creek Allotment is comprised of four separate parcels. The BLM within this allotment totals 172 acres and is fenced in with an unknown amount of private property. The BLM lands in the parcel closest to Marysville receive the heaviest amount of grazing due to its relation to a small developed spring. (Map 6)

Drumlummon-Skelly Allotment: The allotment met four out of the five land health standards in 2005. It did not meet the Riparian Land Health Standard due to recreational OHV use and livestock trampling. The Butte RMP addressed the OHV use and increased coordination with the Helena National Forest was implemented to reduce livestock impacts to riparian areas. The allotment is located in Township 11 North, Range 5 West, Sections 5 and 6, Township 11 North Range 6 West Sections 1, 2, 3, 4, 10, and 11. The BLM within this allotment is 2604 acres in size and is part of a four pasture rest rotation in conjunction with Forest Service and private lands. Use is outlined in a cooperative AMP that has been in place since 1984. (Map 7)

Edwards Mountain: The allotment met all applicable land health standards in 2003. The Edwards Mountain Allotment is located in Township 12 North, Range 5 West, Sections 20, 29, 30, and 31, Township 12 North Range 6 West Sections 25, 26, 35, and 36. The BLM within this allotment is 1379 acres in size and fenced in with approximately 3480 acres of private property in two different pastures. Cattle are moved around the pastures utilizing water sources on private land in an attempt to reduce fencing requirements and stress to livestock. (Map 5)

Empire Creek Allotment: The allotment met four out of the five land health standards in 2001. It did not meet the Riparian Land Health Standard due to historical mining, a road, and livestock that created over widened and trampled areas. A culvert, fencing of springs, and development of off-site water were implemented in an attempt to remedy these issues. The Empire Creek Allotment is located in Township 11 North, Range 6 West, Section 4, Township 11 North Range 6 West, Sections 18, 19, 20, 21, 22, 26, 27, 28, 29, 30, 32, 33, 34, and 35, and Township 12 North, Range 7 West, Section 24. The BLM within this allotment is 6518 acres in size and fenced in with approximately 3745 acres of private property. This allotment is utilized in a 5 pasture rest rotation. (Map 8)

Lost Horse Creek Allotment: The allotment met all applicable land health standards in 2008. The Lost Horse Creek Allotment is located in Township 12 North, Range 6 West, Section 30 and Township 12 North, Range 7 West, Section 25. The BLM within this allotment is 153 acres in size and fenced in with an unknown amount of private property. The BLM lands receive minimal grazing as they are on a steep hillside adjacent to a private drainage. These parcels do not have any livestock watering sources or riparian resources. (Map 3)

Missouri Gulch: The allotment met all applicable land health standards in 2008. The Missouri Gulch Allotment is located in Township 12 North, Range 6 West, Section 15. The BLM within this allotment is 40 acres in size and fenced in with approximately 820 acres of private property. The BLM lands receive minimal grazing as they are on a timbered slope. This parcel does not have any livestock watering sources or riparian resources. (Map 9)

Ogilvie Gulch Allotment: The allotment met all applicable land health standards in 2008. The Ogilvie Gulch Allotment is located in Township 12 North, Range 6 West, Section 18. The BLM within this allotment is 235 acres in size and fenced in with an unknown amount of private property. This parcel does not have any livestock watering sources or riparian resources and is utilized for a couple days in the spring or fall as cattle are moved on and off the forest. (Map 10)

School Allotment: The allotment met all applicable land health standards in 2008. The School Allotment is located in Township 11 North, Range 5 West, Section 16. The BLM within this allotment is 62 acres in size and fenced in 613 acres of state property. This parcel is grazed in conjunction with the state land and the grazing lease is tied to the state property. (Map 11)

Talseth Allotment: The allotment met all applicable land health standards in 2008. The Talseth Allotment is located in Township 11 North, Range 5 West, Section 4. The BLM within this allotment is 41 acres in size and fenced in with approximately 988 acres of private property. The BLM lands receive minimal grazing as they are on a timbered knob. This parcel does not have any livestock watering sources or riparian resources. (Map 11)

Virginia Creek Allotment: The allotment met one of five land health standards in 2010. The Upland, Riparian, Water Quality, and Biodiversity standards were not met. An upland willow treatment and a riparian treatment were implemented in 2012 to address the decadence and livestock trailing respectively. The Virginia Creek Allotment is located in Township 13 North, Range 6 West, Sections 4, 7, 8, 9, 16, 17, and 18. The BLM within this allotment is 1827 acres in size and fenced in with approximately 1160 acres of private property. (Map 4)

Minerals and Abandoned Mine Lands: Numerous abandoned mines are present throughout Marysville because it was such a high producing district. Reclamation of mine sites was not required until Federal Land Policy and Management Act (FLPMA) was established. As the miners considered open adits and shafts as valuable exposures in the search for mineralization, it was standard practice to leave these features open for future work. Therefore many abandoned historic mine sites with either environmental issues or physical safety concerns, most of which have no responsible owner to clean them up, are present throughout the West. In response to these concerns the BLM and Department of Environmental Quality (DEQ) developed Abandoned Mine Lands (AML) programs. The initial focus of this work was to improve water quality, therefore sites with mill tailings in creeks were the initially addressed. The state has cleaned up the Empire Mine and Mill, located on Empire Creek and the Penobscot Mine along Dog Creek. The BLM completed the cleanup of mill tailings located on the Great Divide Ski area above Tenmile Creek in 2014. Smaller abandoned mines which present physical safety hazards were and are being addressed by the BLM on a case-by-case basis.

As noted below in the Mineral Resources section, the Marysville area has high mineral potential and has seen active mining as recently as 2013 when the Drumlummon Mine closed. Exploration activities connected with the mine ended that year as well. There are currently two notice level activities permitted in the Marysville area. Both are small, cumulative disturbance being less than .5 acres.

The BLM has coordinated with Montana Department of Environmental Quality's Mine Waste Cleanup Bureau on a major abandoned mine lands program that remediated several sites in the Marysville area, including waste located at the Great Divide Ski Area. A repository was constructed on BLM lands south of Mt. Belmont. Other mine features including both minor environmental sites and hazardous mine sites/openings are remediated on a case by case basis as time/risk/budget allow.

Recreational Uses- Developed and dispersed recreation encompasses a broad and diverse range of activities. Recreation activities within the Marysville PA are predominately driving for pleasure, hunting, hiking, horseback riding, snowmobiling, down-hill skiing, and mountain bike riding. The Great Divide Ski Area operates through a commercial occupancy lease on BLM lands .6 miles west of Marysville. A snowmobile trailhead and trails are also located with the planning area near Marysville. There are opportunities for non-motorized recreation such as cross-country ski trails to be developed in the area There are approximately 40 miles of the Continental Divide National Scenic Trail (CDNST) located within the planning area, of which, approximately 1.7 miles of the CDNST located on BLM administered lands. This stretch of trail traverses across private land, BLM administered lands and the county road. To enhance non-motorized opportunities this stretch of trail will need to be rerouted to an alternate location to reduce conflict between motorized and non-motorized users.

The Record of Decision and Approved Butte Resource Management Plan (2009) identified the BLM lands within the Marysville PA to be managed under the Extensive Recreation Management Area (ERMA). Under this definition, the primary focus of an ERMA is to provide for resource protection, public safety, and user satisfaction. Public services, monitoring, improvements, and facility maintenance are generally conducted at a lower scale, but can still be present.

Air Quality

The state of Montana is divided into ten airsheds by the Montana Department of Environmental Quality – Air Bureau (MTDEQ-AB) and monitored by the Idaho/Montana Airshed Group. Each airshed in Montana is designated as "Class 1" or "Class 2", with "Class 1" having the strictest standards. Air Quality Standards are set by the state. The project area lies within Airshed 6 and has not been designated as a Class 1 air quality area. A Class 1 air quality area allows for the deterioration of air quality to a small degree. The nearest Class 1 airshed to the PA is the Gates of the Mountains Wilderness, which is approximately 25 miles east.

Site specific air quality within the Marysville PA is unknown due to the lack of monitoring that occurs in the area and the transient nature of air pollutants. Air quality within the Marysville PA may be affected by wildland fires, intentional burning, fugitive dust, and from exhaust emissions

from the use of machines, equipment, or vehicles. Smoke from wildland fires is monitored by the Idaho/Montana State Airshed Group while burning is managed by the MTDEQ-AB.

Fugitive dust is a source of PM 10, and to a lesser extent PM 2.5. These soil particles are very small, can remain suspended in the air for long periods of time, and are easily inhaled into the deep lungs (NRCS 2014). Table 3 summarizes the resistance of the soils on BLM managed lands within the Marysville PA to producing fugitive dust.

Table 3: Summary of fugitive dust resistance of the soils on BLM managed public lands within the Marysville PA. Ratings are based upon surface textures, rock fragment content, and carbonate content of the dominant soil component of each soil map unit.

Fugitive Dust Resistance	**% of total area**
Low resistance to dust propagation	0.5%
Moderate resistance to dust propagation	99.4%
High resistance to dust propagation	0.0%
Not Rated	0.1%

Currently there are no procedures or monitoring stations in place to assess the effects of emissions from machines, equipment, or vehicles in the Marysville PA. There is minimal development within the Marysville PA and it is assumed that emissions from these activities are causing little or no degradation to the air quality.

Forest Health

Allotment Name: Virginia Creek

Summary -The Virginia Creek Allotment is comprised of 2,987 acres. Of this ~80 % are forested. Elevations range from 4,596 to 6,686 feet. Major drainages in this allotment are Virginia Creek, Tar Head Creek, and Trout Creek. The Stemple Pass Road bisects the allotment. Private land and houses occur along and adjacent to this road, and a small (~25 acres) potential WUI treatment is located along the west boundary of the allotment on the north side of Stemple Pass Road. Slopes are conducive to ground based operations in this potential WUI area.

Forest habitat types are dominated by mixed conifer stands commonly comprised of Douglas fir and lodgepole pine. Pfister habitat types include subalpine fir/pinegrass, subalpine fir/twinflower/pinegrass , Douglas-fir/dwarf huckleberry , Douglas-fir/twinflower and Douglas fir/pinegrass . Forest conditions vary with elevation and aspect; drier stands that are more open occur at lower elevations and on southern and western slopes. Higher elevations and northern and eastern slopes are cooler and hold moisture better; forests here are denser and tend to exhibit better growth capability. Sites are dry to mesic with strong north aspects being very cold. Forested stands typically show uniform structure and coverage across the landscape. Few openings or variation in age and structure class are found. Stand structure is strongly 1- 2 layered.

In some stands, fire seems to have been absent for some time. Numerous small diameter trees per acre persist in a stagnant state (growth is suppressed by stand conditions over a long period of time). Other stands show some evidence of fire within the past 50 years or so, as some charcoal was found and there was absolutely no downed wood in the understories. However, many stands seem to have lacked recent moderate fire activity within the expected return interval as indicated by overstories that are susceptible to insect infestations, understories that lack plant species diversity, and forest structure that lacks horizontal and vertical complexity across entire slopes.

Lower slopes on the south side of the Stemple Pass Rd were cold and stagnant; exhibiting small (average about 6" DBH and 50 feet tall) numerous trees per acre. Mosses and lichens were common in the understory, with a diverse composition of shrub species present, but not vigorous. Approximately 30% of the canopy was dead lodgepole, 20% was Douglas-fir, the remaining 50% was live lodgepole.

Recent epidemic levels of mountain pine beetle activity have left much of the lodgepole pine in this allotment dead. Up to 60% of the existing standing canopy was dead and only 30% was live across the allotment in various lodgepole and mixed conifer stands. Trees in the dead overstories of these stands are just beginning to fall to the ground; significant fuel accumulation is occurring in some locations as a result. Douglas-fir regeneration is likely to establish and dominate many such stands at the expense of lodgepole without fire to prepare the site for lodgepole regeneration.

Unique/Important features:
Much of this allotment is unroaded in nature and motorized access is limited.
Large upland willow patch on the upper ridge, north side of Stemple Pass Rd.
Small potential WUI treatment on west boundary of allotment, north of the road.
Compared to much of the rest of the Marysville area, little evidence of historical mining activity exists in this allotment.

Allotment Name: Empire Creek
Summary - The Empire Creek Allotment is located in the central portion of the Marysville Planning Area. It is the largest allotment at 10,262 acres. Of this, ~ 80 % are forested. Numerous main roads are located within this allotment including the Empire Creek Road, Ottawa Gulch Road, Lost Horse Creek Road, Ophir Creek Road, and Little Prickly Pear Road. In addition to these main roads, numerous access routes, old 2 track roads, and trails cross BLM lands. Elevations range from 4,695-7,336 feet, with the highest elevations in the planning area occurring in this allotment (Mt. Belmont peak). No dominant aspect prevails here; topography is comprised of various broken mountain slopes.

Forest habitat types are dominated by mixed conifer stands commonly comprised of Douglas-fir and lodgepole pine, and somewhat less commonly are dominated by subalpine fir. Pfister habitat types include Douglas-fir/pinegrass , Douglas-fir/twinflower , Douglas-fir /snowberry , Douglas-fir/ dwarf huckleberry , subalpine fir/ twinflower , subalpine fir /dwarf huckleberry , and subalpine fir/ false huckleberry . Forest conditions vary widely across this very large allotment. Sites are generally more mesic here as elevations are higher, but some dry to mesic sites still occur at lower, hotter aspects; strong north aspects are very cold. Forested stands typically show uniform structure and coverage across the landscape. Some stand openings exist, but these are relatively small and somewhat infrequent when compared to the majority of the uniform age and structure class. Stand structure is strongly 1- 2 layered. However, these pocket openings are expected to increase in size and frequency in the near future as many overstories now have high mortality from recent mountain pine beetle activity.

True subalpine fir types occur here, with some patches exhibiting un-even-aged, multi-storied conditions (poles, saplings, and mature size classes). These patches occur rather infrequently to somewhat frequently across vast stands of uniform structure and age class.

Mature lodgepole pine is commonly affected by epidemic mountain pine beetle activity; in addition, there appears to be rust infecting lodgepole as well (dead pole and sapling sized lodgepole). Western spruce budworm activity is on the increase in 2015 after waning slightly in 2014, many stands of Douglas-fir show light to moderate levels of defoliation. From 2011-2013 high levels of western spruce budworm infestations with significant widespread defoliation, including back feeding onto buds occurred on Douglas-fir. In stands such as these reproductive capability is significantly lowered as it takes several years to recover and produce cones.

In some stands, small patches of downfall are beginning to create openings in the uniform overstory. In most cases, this downfall results from mountain pine beetle killed lodgepole. Stands where downed subalpine fir occurred were infrequent.

Stands with 30-50% standing dead overstory are experiencing a flush of new growth and vigor in herbaceous and shrubby understory plants.

Thickets of Douglas fir regeneration occur in some stands. More than half of these are defoliated by western spruce budworm.

Many stands have significant downed woody material, uniform, even-aged stand structure, little understory vegetation, and show no evidence of recent moderate fire activity. In addition to these understory characteristics, infrequent charcoal and fire scars indicates isolated patchy fire events.

Sizeable upland willow patch (40 acres) lacks vigor, has been colonized and overtopped by conifers. Many of these willows and aspen are decadent and dying.

Past timber sales:
Belmont – Great Divide (ski area) – several entries between 1988 and 2009.
Empire Creek TS – 1970s
Powerline Post and Pole Salvage Area – established as a commercial post and pole area in the late 1980s. Several small sales with various members of the public for post and poles (dead lodgepole under 8 " DBH) and firewood. Most recently used in 2004.

Unique/Important features:
Much of this allotment is crossed by roads and trails.
Great Divide Ski Area occurs here.
Large upland willow patch (~40 acres) on the upper north slopes of Mt Belmont.
Potential WUI treatments.
Evidence of historical mining activity occurs frequently and is common in this allotment.
In Upper Empire and Central Empire Units there is an extensive network of mining era roads, well used and kept free of downfall and debris by recreationists.
Seeps, springs, and wet areas occur regularly on some slopes.

Allotment Name: Deadman/Lost Horse
Summary - The Deadman Allotment is small at 241 acres. Of this ~89% is forested. Elevations range from 4,925 – 5,623 feet. This area is easily accessed by main roads (Lost Horse/Little Prickly Pear roads), and has some existing 2 tracks and old skid and logging roads intact. These appear to be from modern treatments likely within the last 50 years. Slopes are mostly gentle here ranging up to ~40 % at maximum with between 20 - 30% common. Some of the lowest forested stands in the planning area occur here. Stands here are true dry mixed conifer habitats and while typically dominated by Douglas-fir and lodgepole, they contain Ponderosa pine and limber pine as well. Much of the mature lodgepole pine is dead from successful mountain pine beetle infestations. Ponderosa pine is a regular stand component on the lower slope.

Forest habitat types noted here include Douglas-fir/pinegrass , Douglas-fir/dwarf huckleberry , and Douglas-fir/snowberry/pinegrass .

Stand conditions outside the cut units (circa 1960s, 1970s) are even-aged with dead bug killed lodgepole in the overstory. Very little regeneration occurred in these stands outside of some infrequent small patches of Douglas-fir.

Old cut units exhibit regeneration at several stages; seedlings, saplings, and poles. Douglas-fir regeneration is successfully colonizing openings at upper elevation cut units.

A 106-acre timber sale occurred on BLM land here in 1969-1972. Four small clear cut units were implemented and ranged in size from 14-46 acres. These were planted years later in 1997. Harvest activities have also occurred on adjacent private lands in 2013 and 2014.

Allotment Name: Drumlummon-Skelley

Summary - The Drumlummon-Skelley Allotment is located in the south central portion of the Marysville Planning Area. It is the second largest allotment at 6,911 acres. Of this, ~ 81 % are forested. Numerous main roads are located within this allotment including the Ottawa Gulch Road, LaSalle Gulch Road, and Sawmill Gulch Road. In addition to these main roads, numerous access routes, old 2 track roads, and trails cross BLM lands. Elevations range from 4,961-7,257 feet, with some of the highest elevations in the planning area occurring in this allotment. No dominant aspect prevails here; topography is comprised of various broken mountain slopes. Much of this allotment is directly adjacent to the Helena National Forest Boundary. Forests here provide habitat connectivity for Lynx.

Forest habitat types are dominated by mixed conifer stands commonly comprised of Douglas fir and lodgepole pine, and somewhat less commonly are dominated by subalpine fir. Pfister habitat types include Douglas-fir/pinegrass , Douglas-fir/twinflower , Douglas-fir/snowberry , Douglas-fir /dwarf huckleberry , Douglas-fir/twinflower , subalpine fir/dwarf huckleberry, and subalpine fir /false huckleberry . Forest conditions vary widely across this very large allotment. Sites are generally more mesic here as elevations are higher, but some dry to mesic sites still occur at lower, hotter aspects; strong north aspects are very cold. Forested stands typically show uniform structure and coverage across the landscape. Some stand openings exist, but these are relatively small and somewhat infrequent when compared to the majority of the uniform age and structure class. Stand structure is strongly 1- 2 layered. However, these pocket openings are expected to increase in size and frequency in the near future as many overstories now have high mortality from recent mountain pine beetle activity.

Mixed conifer stands (subalpine fir/lodgepole pine/Douglas-fir lodgepole pine/Douglas-fir) are common here. Dominance alternates between Douglas-fir and lodgepole pine on some slopes. True subalpine fir types occur here, with some patches exhibiting un-even-aged, multi-storied conditions (poles, saplings, and mature size classes). These patches occur rather infrequently to somewhat frequently across vast stands of uniform structure and age class. There is a significant amount of downfall in subalpine fir/lodgepole pine stands on the southwestern allotment boundary.

Mature lodgepole pine is commonly affected by epidemic mountain pine beetle activity; in addition, there appears to be rust infecting lodgepole (dead pole and sapling sized lodgepole).

Western spruce budworm activity is on the increase in 2015 after waning slightly in 2014, many stands of Douglas fir show light to moderate levels of defoliation. From 2011-2013 high levels of western spruce budworm infestations with significant widespread defoliation, including back feeding onto buds occurred on Douglas fir. In stands such as these reproductive capability is significantly lowered as it takes several years to recover and produce cones. An old lodgepole clear cut with thick, well established pole sized lodgepole regeneration occurs near American Gulch.

Unique/Important features:
Much of this allotment is crossed by roads and trails.
Drumlummon Mine and the Bald Butte Repository occur here on private lands.
Large aspen stand occurs on Sawmill Gulch.
Potential WUI treatments.
Evidence of historical mining activity occurs frequently and is common in this allotment.
An old lodgepole clear cut with thick well established pole sized lodgepole regeneration occurs near American Gulch.

Allotment Name: Edwards Mountain
Summary - The Edwards Mountain Allotment is comprised of 4,858 acres; of this, 54% are forested. Elevations range from 4,400 – 6,713 feet. Major drainages in this allotment are Deer Creek, Trinity Creek, and Demi-John Gulch. Trinity Hill and Edwards Mountain occur here. Long Gulch Road is the only major open road in the allotment. There are some isolated units of BLM land surrounded by private land. Some forested stands are accessible only through access provided by adjoining private land.

Forest habitat types dominated by xeric Douglas-fir savannahs and dry to mesic mixed conifer forests are common in this allotment. Douglas-fir is the most commonly found species; ranging across the driest xeric to the more moderate mesic sites. Ponderosa pine, limber pine, and lodgepole pine are present and may occur as co-dominants or infrequently in these stands. Pfister types represented here include Douglas-fir/pinegrass, Douglas fir /dwarf huckleberry and, Douglas-fir/snowberry.

Some small aspen stands are located on the upper slopes.

Forest conditions and types vary with elevation and aspect. Low elevation forested sites are occupied by xeric mixed conifer and savannah types. These hot, dry, locations are poor growing sites and are generally occupied by Douglas-fir /snowberry communities. Trees are small and short; soils are less developed. At higher elevations and on north and east facing slopes, more mesic forest communities are established. These include the Douglas-fir/pinegrass and Douglas-fir/dwarf huckleberry types.

In some stands, fire seems to have been absent for some time. Numerous small diameter trees per acre persist in a stagnant state, lower tree branches commonly persist, and is charcoal largely absent . Few stands show some evidence of fire within the past 50 years or so, as some charcoal was found, there was absolutely no downed wood present, ad understories seemed more vibrant. However, many stands seem to have lacked recent moderate fire activity within the expected return interval as overstories are susceptible to recent insect infestations (spruce budworm), understories lack diversity, and structure lacks complexity across entire slopes.

Edwards NE: Uneven aged Douglas fir stand (90% Douglas fir, 10% lodgepole pine) with small to very small pocket openings in the forest canopy. Groups of 8-20 inch diameter trees are interspersed with openings. Many of trees have stem decay. Defoliation from spruce budworm is heavy to moderate with dead tops common. Some heavily defoliated branches lack buds and indicate back feeding. Thickets of small dead trees 2-4 inches in diameter are common; they are falling over and blocking game trails. Slopes are moderate over much of the area (35%) with small areas of steep breaks.

The understory is lush and vibrant with mostly continuous cover of pinegrass, sweet cicely, meadow rue, arnica, and spirea. A well-established network of game trails occurs on the contour. Evidence of old mining activity includes old rotten hand cut stumps and old roads. Stumps are commonly 1-2.5 feet tall. Some are charred. Persistent stumps are the same size class (7-10" DBH) as mature trees. Evidence of past fires includes charcoal on downed wood and fire scars on standing trees.

Edwards Central: Uneven aged Douglas-fir with moderate to heavy spruce budworm damage. Scattered thickets of young dead Douglas-fir occur in between mature live trees. The understory is predominantly pinegrass. Numerous stems per acre common, low branches persist on large trees indicating lack of fire.

Edwards West: The eastern portion of the stand is more of continuous, dense Douglas-fir forest type with potential for commercial thinning operations. The western and northern portion of the unit is more of an open grown Douglas-fir savannah type with larger old growth Douglas-fir occurring interspersed with opening in the canopy. Regeneration is sparse throughout the stand. Spruce budworm damage is light to moderate. Douglas-fir/pinegrass and Douglas-fir /dwarf huckleberry are the predominant Pfister types.

Edwards Triangle and Demi-John: Lower elevation. regeneration lacking throughout the stand. light to moderate spruce budworm activity, still have cone production. Ponderosa pine is a regular component of the stand. Stand structure is uniform and even (not

clumpy). Charcoal regularly observed, some small diameter stumps occur, but no large stumps persist in the stand.
Good merchantable timber occurs along east and south boundaries. Smaller undesirable trees occur within the center of the unit. Northwest sites are hot and dry and contain Ponderosa pine and limber pine. North facing sites are dominated by Douglas-fir forests.

Unique/Important features:
Much of this allotment is unroaded in nature and motorized access is limited.
A few old (mining era) roads persist, especially in Edwards NE/Central/ and West areas.
However, little evidence of historical mining activity was found here.
Some of the hottest, driest, poorest forest sites in planning area found at lower elevations.
Plant community diversity lacking where expected, especially lacking understory species.
Recovery mechanisms such as presence of viable regeneration and cone structures lacking.
Stands lacking structural diversity in age and /or seral classes.
Stands lack a diversity of understory species where expected.

Long Gulch (Deer Creek Allotment): This low productivity site is uniform with most diameters in the 8-14" DBH range and heights from 35-50 feet. Habitat types range from Douglas-fir /snowberry on the dry sites to Douglas-fir/pinegrass on the more mesic sites. Slopes are moderate and conducive to ground based operations. A main road, Long Gulch Road bisects the site.

Fire and Fuels Management including Wildland Urban Interface (WUI)

Fire History

The presence or absence of fire plays an integral role in the composition and structure of the vegetation that occurs in the Marysville PA. Fire has shaped western landscapes for the past 10,000 years, but more than a century of settlement activities have seriously disrupted that crucial role (Arno 1980, Pyne 1982, Quigley et.al 1996). An abrupt decline in fire frequency around 1900 was much more greater than any regional or local variation in the previous several centuries and indicates that 20th-century fire regimes in these watersheds were dramatically affected by additional controls such as livestock grazing and fire (Heyerdahl et al. 2001). Ignitions were primarily due to lightning and Native Americans, who used fire to signal, drive game, rout enemies, and green up pastures to ensure the return of game from year to year. Throughout the assessment area, signs of past fires are evident in the form of fire scars on trees and charred pieces of wood. Long-term fire history is difficult to determine in the sagebrush/grassland communities due to fire generally killing and completely consuming the vegetation.

Wildfire activity has been moderate in the project area in recent decades. According to the Wildland-Urban Interphase Community-At-Risk Hazard Assessment of 2004, from 1992-2002 4 fires occurred in the planning area that accounted for 317 acres. According to the Helena Interagency Dispatch Center, 25 fires occurred in the planning area that accounted for 2,040 acres from 2003-2015, most wildfires in the planning area have been relatively small in size (less

than 5 acres) due in large part to fire suppression activities. The largest fire that has occurred in the Marysville Planning Area since 1992 was the Davis fire in 2010 that burned 2,015acres. Twenty-four separate fires that average around 1 acre in size consumed the remaining 25 acres across the planning area.

Fire Regime

The term "natural fire regime" describes the role fire would play across a landscape in the absence of modern human mechanical intervention (Agee 1993). The five natural (historic) fire regimes are classified based on average number of years between fires (fire frequency) combined with the severity (amount of stand replacement) of the fire on the dominant overstory vegetation (Schmidt et al. 2002). These five regimes include:

I – 0 to 35 year frequency and low to mixed severity * (non-lethal surface fires most common; less than 70 percent of the dominant overstory vegetation replaced);
II – 0 to 35 year frequency and high severity (stand replacement fires);
III – 35 to 100+ year frequency and mixed severity;
IV – 35 to 100+ year frequency and high severity (stand replacement fires); and
V – 200+ year frequency and high severity (stand replacement fires).

*Fire severity is what happens to the dominant vegetation (in this case trees) during a fire event. If most of the overstory trees die in most fires, (i.e., greater than 75 percent of the dominant overstory vegetation) then that area is said to be characterized by a "stand replacement fire regime." Conversely, if most trees survive most fires, it is called a "non-lethal fire regime." If severity is generally intermediate (many trees dying and many surviving), it is a mixed severity fire regime (Arno et al. 2000).

With the use of the LANDFIRE FRCC Software Application, 3.0, it was determined that the dominant natural fire regimes in the Marysville landscape are represented by 54% Savannah/Xeric Douglas-fir as Regime I and 17% Grasslands as regime II. These two strata account for 71% of the vegetation in the planning area; the remaining fire regimes are represented by Dry Mesic Mixed Conifer and Sagebrush, Regime I, Shrubs, Regime II, Riparian Systems, Regime III , Sub Alpine Mixed Conifer, Regime IV, and Lodgepole Pine, Regime V.

Due to fire suppression, natural fire regimes for the planning area have been altered since pre-settlement conditions. Current forest structure and abundant ladder fuels have created forest conditions that are susceptible to stand replacement fire in the planning area rather than what would have occurred naturally. Table 5 and 6 shows a comparison of the existing vegetation conditions compared to what the historic reference conditions are for the planning area as well as site specific for the BLM administered lands in the Marysville Planning area.

Fuels Management

The 2009 Butte Resource Management Plan states that all fire management activities will use Fire Regime Condition Class (FRCC) to determine levels of fuel treatment. FRCC assessments determine how similar a landscape's fire regime is to its natural or historical state. Fire regime condition classes are broken down into three categories: 1, 2, and 3. Landscapes determined to fall within the category of FRCC 1 contain vegetation, fuels, and disturbances characteristic of the natural regime; FRCC 2 landscapes are those that are moderately departed from the natural regime; and FRCC 3 landscapes reflect vegetation, fuels, and disturbances that are uncharacteristic of the natural regime. A landscape in FRCC 1 has key ecosystem components,

such as large old trees and soil characteristics that would naturally be found on that site, intact. A landscape with an FRCC rating of 3 indicates that the land is not very similar to its natural regime in terms of its vegetation or disturbance or both.

Table 4. A Simplified Description of the FRCC Classes (Hann and Bunnell 2001).

FRCC	DESCRIPTION
Condition Class 1	Less than 33 percent departure from the central tendency of the historical range of variation. Fire regimes are within the natural or historical range, and the risk of losing key ecosystems components is low. Vegetation attributes are well intact and functioning.
Condition Class 2	33-66 percent departure. Fire regimes have been moderately altered. Risk of losing key ecosystems components may have departed by one or more return intervals (either increased or decreased). This departure may result in moderate changes in fire and vegetation attributes.
Condition Class 3	Greater than 66 percent departure. Fire regimes have been substantially altered. Risk of losing key economical components is high. Fire frequency may have departed by multiple return intervals. This may result in dramatic changes in fire size, fire intensity and severity and landscape patterns. Vegetation attributes have been substantially altered.

To determine the existing vegetation, 155,741 acres were classified using both BLM and Forest Service stand data across three - 4th code hydrological unit's code (HUC) watersheds. Through image classification, 792 acres were identified as water, barren, agriculture and/or developed and were removed from the FRCC analysis. The planning area includes 14,168 acres of BLM-administered lands. The historical reference condition was determined for the landscape by using the LANDFIRE Biophysical Setting Model (USGS 2007).

For the analysis of FRCC, eight (8) major Biophysical Settings (BpS) were distributed across the landscape. BpS is described as a way of grouping ecologically similar vegetation types modeled with characteristic disturbance inputs and uses for FRCC assessments. The eight BpS for the Marysville area were selected through a GIS exercise that allowed evaluation of all the BpS habitat types on the landscape. The smaller BpS polygons were grouped into one of the eight BpS that closely represents the habitat type through referencing the vegetation descriptions of the BpS.

Table 5. Existing Vegetation Conditions Compared to Historic Reference Condition for Marysville PA.

Biophysical Settings (Bps)	Seral Stage	Existing Condition (Acres)	Historic Reference Condition (Acres)	Departure (Acres) -shortage + abundance
Dry-Mesic Montane Mixed Conifer Forest	Early	355.8	2181.9	-1826.1
	Mid Open	6186.6	3272.9	+2913.8
	Mid Closed	620.1	6545.7	-5925.6
	Late Open	1331	7636.7	-6305.7
	Late Closed	4407.6	2181.9	+2225.7
	Uncharacteristic	**298.1**	**0**	+298.1
	Total	**13199.2**	**21819.1**	-8619.9
Subalpine Mixed Conifer	Early	10777.6	2799.4	+7978.2
	Mid Open	18532.8	8398.3	+10134.5
	Mid Closed	7589.5	2799.4	+4790.1
	Late Open	1285.7	9333.1	-8045.8
	Late Closed	31264.1	3732.7	+27531.5
	Uncharacteristic	**0**	**0**	0
	Total	**69449.8**	**18662.9**	+50786.9
Sagebrush	Low Cover	434.8	2478.4	-2043.6
	Mod. Cover	3263.1	1859.8	+1404.3
	High Cover	22.2	8055.8	-8032.6
	Uncharacteristic	**536.8**	**0**	+536.8
	Total	**4257**	**12392**	-8135
Grassland	Early	0	13159.9	-1315.9
	Mid	157.3	6579.5	-6440.7
	Late	41300.1	18422.5	+22825.7
	Uncharacteristic	900.5	0	+900.5
	Total	**42357.9**	**26317.9**	+16040
Lodgepole	Early	1756.4	5.5	+1751
	Mid Open	1475.3	9.1	+1464.3
	Mid. Closed	435.3	5.5	+429.9
	Late Closed	3241.7	16.4	+3225.5
	Uncharacteristic	**0**	0	0
	Total	**6908.7**	**36.5**	+6872.7
Riparian Systems	Early Development	1536.8	3352.3	-1815.4
	Mid Development	2043.6	5587.1	-3543.4
	Late Development	607.1	2234.8	-1627.7
	Uncharacteristic	**260.1**	0	+260.1
	Total	**4187.6**	**11174.2**	-6986.6
Shrub	Low Cover	98.7	385.7	-287
	Mod. Cover	88.4	3470.8	-3382.5
	High Cover	365.40	3856.5	-3491.1
	Uncharacteristic	**12.5**	0	+12.5
	Total	**565.0**	**7713**	-7148
Savannah/Xeric Douglas fir	Early	87.6	11466.5	-11378.9
	Mid Open	6175.9	8599.9	-2424
	Mid Closed	225.6	17199.9	-16974.2
	Late Open	6003.1	11466.5	-5463.4
	Late Closed	1532.4	8599.9	-7067.5
	Uncharacteristic	0	0	**0**
	Total	**14024.7**	**57332.7**	-43308
Other**		**792.1**	**294**	
FRCC Calculation		**155742**	**155741**	

Table 6. Existing Vegetation Conditions Compared to Historic Reference Condition for BLM lands only in Marysville PA

Biophysical Settings (Bps)	Seral Stage	Existing Condition (Acres)	Historic Reference Condition (Acres)	Departure (Acres) -shortage + abundance
Dry-Mesic Montane Mixed Conifer Forest	Early	10	247.1	- 237.9
	Mid Open	157	370.6	-213.6
	Mid Closed	53.5	741.2	-687.7
	Late Open	41.4	864.7	-8223.3
	Late Closed	712.4	247.1	+464.9
	Uncharacteristic	66.5	0	+66.5
	Total	**1040.7**	**2497.5**	-1356.8
Subalpine Mixed Conifer	Early	1259.4	119.3	+1140.1
	Mid Open	924.0	357.9	+566.1
	Mid Closed	530.4	119.3	+410.7
	Late Open		397.7	-397.7
	Late Closed	5062.2	159.1	+4903.1
	Uncharacteristic	0	0	0
	Total	**7775.9**	**795.3**	+6980.6
Sagebrush	Low Cover	62	149.5	-87.5
	Mod. Cover	192.7	112.2	+80.2
	High Cover	.1	486	-485.9
	Uncharacteristic	0	0	0
	Total	**254.8**	**747.7**	-492.9
Grassland	Early	0	48.7	-48.7
	Mid	0	243.4	-243.4
	Late	2906.4	681.5	+2224.9
	Uncharacteristic	89.5	0	+89.5
	Total	**2995.9**	**973.6**	+2022.3
Lodgepole	Early	66.5	2.2	+64.3
	Mid Open	5.4	3.7	+1.7
	Mid. Closed	0	2.2	-2.2
	Late Closed	13.9	6.6	+7.3
	Uncharacteristic	0	0	0
	Total	**85.8**	**14.7**	+71.1
Riparian Systems	Early Development	17.6	162.9	-145.3
	Mid Development	85.1	271.5	-186.4
	Late Development	2.5	108.5	-106.1
	Uncharacteristic	0	0	0
	Total	**105.2**	**542.9**	-437.7
Shrub	Low Cover	0	44.6	-44.6
	Mod. Cover	0	401.4	-401.4
	High Cover	17.2	446	-428.8
	Uncharacteristic	12.5	0	+12.5
	Total	**17.2**	**892**	-874.8
Savannah/Xeric Douglas fir	Early	25.9	1536.8	-1510.9
	Mid Open	564.4	1152.6	-588.2
	Mid Closed	0	2305.1	-2305.2
	Late Open	764.8	1536.8	-772
	Late Closed	484.5	1152.6	-668.1
	Uncharacteristic	0	0	0
	Total	**1839.7**	**7683.9**	-5844.2
Other**		53.4	21.3	
FRCC Calculation		**14168.6**	**14168.9**	

With the use of the LANDFIRE FRCC Software Application, 3.0, the current vegetation condition was compared to the reference condition of the landscape. The Fire Regime Groups for

the BpS and acres of the BpS breakdown in regards to Condition Class are included in the administrative record.

The Marysville planning area (155,741 acres) was calculated to have an overall departure of 30%, which equates to a rating of Condition Class 1, a condition that is within the natural range of variability compared with historic reference values. The BLM administered acres within the planning area (14,168 acres), were calculated to have an overall departure of 37%, which equates to a rating of Condition Class 2, a condition that suggests fire regimes have been moderately altered and the risk of losing key ecosystems components may have departed by one or more return intervals. A complete FRCC report can be found in the Project Administration Record.

Wildland Urban Interface (WUI)

The town of Marysville is considered to be within the Wildland Urban Interface area. Tri-County Fire Working Group identified a 4 mile buffer around the town as being High hazard and risk of wildland fire based on the finding in the Regional Community Wildfire Protection Plan update in (2005). The Wildland Urban interface Communities at risk Hazard Assessment (2004) (WUICRHA) identified similar findings. The WUICRHA results for the assessment of the fire hazard on BLM administered lands in the Marysville area shows that 74% (78 / 106) Table 7, of the polygons in the Marysville area were rated as either moderate or high hazard.

Table 7. Summary of Hazard Index Results.

Area	No. of Low Hazard Polygons	No. of Moderate Hazard Polygons	No. of High Hazard Polygons
Marysville	28	43	35

Mineral Resources

The Marysville Mining District, historically known as the Ottawa District, is located around the town of Marysville. Geologically this area consists of the Marysville batholith, a quartz monozonite intrusion which is surrounded by steeply dipping metamorphosed slates and limestones. Numerous ore deposits are located in and along the margins the batholith. Deposits include gold, silver, copper, lead, zinc, and molybdenum.

Placer and lode mining took place from the late 1800s to the early 1900s. Process methods included gravity separation (placer mining) stamp mills and cyanide leaching. The Bureau of Mines and Geology (incomplete Open File Report, no number, 2009) concluded that the Marysville District is a zone with high mineral potential. The numerous historic mines, mining claims being held in the area and physical exposures of mineralization substantiate the high mineral potential of this area. In the early 2000's Bolero made an attempt to open up molybdenum mine on Bald Butte and Drumlummon Gold Corporation reopened the Drumlummon Mine, both attempts failed due to economics. It is likely that the area will experience periods when attempts are made to develop new or existing mines, however it is

difficult to predict if any of these will become large mines. Many homes have been developed on old patented mining claims in the area; it is likely these homes will make development of mining properties difficult.

The Marysville Mining district has been one of the most economical in Montana producing gold, silver, copper, lead and zinc since the late 1800's. Molybdenum is also present, however recent attempts at production failed. Most of the production came from the late 1800s to early 1900s, and most of these mines have been reclaimed in the early 2000's. This district has been rated by the Montana Bureau of Mines and Geology as having high mineral potential. Numerous mining claims and private properties are still held for mining purposes and there is some potential for future production.

Noxious Weeds and Cheatgrass Infestations

Invasive and noxious plants were present in portions of the PA and depending on abundance, did contribute to a slight-moderate departure during LHAs in some allotments. In the Marysville Planning Area there are a number of Montana Noxious Weeds and several undesirable plants. Three of the main weeds species in the planning area are spotted knapweed, houndstongue, and Canada thistle. Musk thistle, which is not listed on the Montana State Noxious Weed List is still considered an aggressive invader in the planning area. Cheatgrass, which is on the Montana State Noxious Weed List as a regulated plant is found in scattered locations in the planning area. Spotted knapweed is the most prevalent noxious weed in the planning area. It is found in large patches on private lands, Forest Service and BLM lands, but is also widely dispersed along right-of-ways on many of the numerous roads found within the planning area. Musk thistle, Canada thistle and houndstongue are found in small patches (0-1.5 acres) along 9.98 miles of riparian reaches. Some musk thistle patches are found in larger patches (1.5-3 acres) patches in open meadows and around watering areas.

There are some allotments that have more noxious weeds present than most. The Drumlummon-Skelly allotment has a problem with houndstongue and musk thistle in the area. Many of the exclosures have weeds located inside the fenced areas such as the American Gulch exclosure. Spotted knapweed is also found along the roadways, trails, and in open parks and hillsides.

Noxious weeds are a serious concern on both the public and private lands in the Empire Creek Allotment. Spotted knapweed, houndstongue, and musk thistle are present and scattered about the allotment. There are five main roads located within this allotment which include Empire Creek Road, Ottawa Gulch Road, Lost Horse Creek Road, Ophir Creek Road, and Little Prickly Pear Road. In addition to these main roads, numerous access routes, old 2 track roads, and trails cross BLM lands in this allotment which only exacerbates the weed problem already found in the allotment by road grading, and distribution of weed seeds by vehicles.

Spotted knapweed is a serious concern in the Virginia Creek Allotment. Some houndstongue is found along the drainages along with musk thistle, but the most dominant weed problem is spotted knapweed.

Prehistory and History

Cultural resources in the Marysville area are overwhelmingly represented by 19th century mining operations. The largest of these is the Drumlummon, named after the parish in Ireland where Thomas Cruse, the mine's original owner, grew up. A number of other mines operated successfully enough to warrant their own camps during the same period. Silver Creek mining camp, located at the mouth of Silver Creek, boasted a population of 108 in 1864, enough to house county records for a short time. Bald Butte, another small mining town on the south side of the Continental Divide from Marysville, sprang up in 1882 as a result of the success of the Dog Creek mine, farther down the gulch. On the west side of Mt. Belmont, the mine, mill and town of Empire sprang up to support local operations not only in Empire Gulch, but those at the Piegan-Glouster mine on Mt. Belmont's north slope, as well. Other large mines, including the Penobscot, the Belmont, the Shamrock, the Strawberry and several others, supported small settlements and outbuildings to house miners and facilitate mining operations. But outside of the aforementioned camps, most of the support for mining on what is now Mt. Belmont and Drumlummon Hill was located in Marysville.

The town began losing population as the mines played out. Largely influenced by the short lifespan of the Drumlummon, miners began leaving for more productive areas in Butte and Helena, closing most of the large mines by 1920. Sporadic re-openings were common. The Thomas Cruse Mining Company tried to re-open the Belmont around 1912, with little success. During the 1930's, some mines were profitable for a short time, but closed before WWII.

The price of gold began a steep uphill run after the turn of the 21st century. In 2009, exploratory drilling on Drumlummon Hill lead to reopening the mine for a short time. It closed again four years later.

Due to the intensity of mining activity, prehistoric cultural resources are very sparse and most subsistence activity must be inferred from areas near Marysville. South of Helena, the McAffie Archeological District exhibits site types of all sorts, from hunting and processing to small camps. The most frequently occurring site type has to do with locating and sampling suitable materials for making stone tools. Higher elevations tend to have site types associated with daily living; stone circles are a common occurrence. Gathering wildflowers in and around the lower foothills for food and medicine is still an important activity for traditional Native Americans. Water resources, a key element in prehistoric site location, is plentiful in the Marysville area, as Mt. Belmont itself has plenty of seeps and springs where wildlife would congregate. Along with the readily available ground water, Prickly Pear Creek is also very easily accessible water sources. Various sites in the lower terraces of the Missouri exhibit animal traps and impounds for larger game. It is reasonable to assume that those same features were also once common in the hills at the mouth of Silver Creek.

Riparian and Wetland Areas

There were approximately 13.25 miles of perennial, intermittent and ephemeral stream reaches identified and inventoried during the 2013 land health assessments. These reaches are identified in Table 8, below. In addition to the name and identification number, the table includes the approximate length of each reach, whether the reach was classified as perennial, intermittent or ephemeral by the ID team, and Rosgen channel type. Of these reaches a total of 3.37 miles were found to be non-riparian or not on BLM lands.

Table 8. Riparian Resources in the Marysville Planning Area.

Reach #	Reach Name	Approximate Length (miles)	Perennial (P), Intermittent (I) or Ephemeral (E)	Rosgen Channel Type
BKLT-1	American Gulch	0.56	P	B/E
BKLT-2	E. Fork American Gulch	0.33	P	A/B
PPUL-10	Empire Creek	0.54	I	C
PPUL-11	Towsley Gulch	0.34	P	A
PPUL-12	Friday Gulch	0.45	I	A
PPUL-13	Virginia Creek	1.84	P	B/C
PPUL-14	Trout Creek	0.20	P	C
PPUL-15	Trout Creek	0.49	P	C
PPUL-15-1	Trout Creek Trib.	0.27	P	B
PPUL-15-2	Trout Creek Trib.	0.16	P	A/B
PPUL-3	Drinkwater Gulch	0.50	P	B
PPUL-8	Lost Horse Cr. Trib.	0.28	P	A/B
PPUL-9	Empire Creek	0.83	P	C/E
SILV-10	S. Fork Sawmill Gulch	0.27	P	B
SILV-11	Sawmill Gulch	0.31	P	A
SILV-13	Ottawa Gulch	0.37	P	A
SILV-14	Ottawa Gulch	0.28	P	A
SILV-15	Woodchopper Gulch	0.35	P	A
SILV-7	Sawmill Gulch	0.29	P	B
SILV-8	Sawmill Gulch	1.03	P	B
SILV-9	N. Fork Sawmill Gulch	0.19	P	B
	Total Stream Miles	**9.88**		

Many of the resources within the BFO stream and wetland database have been identified based upon mapped information, aerial photos, and USGS Quads. As part of the Marysville PA assessment process, the resource inventory has been updated based upon field notes, photographs and ground surveys.

Developed Springs

Federal protection of wetlands and riparian systems became official policy under the authority of two Executive Orders issued in 1977. The majority of developed springs in the Marysville PA were developed prior to the issuance of these orders, other federal laws, directives, or regulations for the management and protection of wetlands. Current management direction requires minimization of wetland loss or degradation as well as preservation and enhancement of natural and beneficial values. This includes maintenance of hydrology.

The developed springs within the Marysville PA work to various degrees of efficiency and success. Much of this depends upon the amount of water the spring supplies that particular year, which is often directly related to the amount of annual precipitation that is received. Developed spring sources typically improve livestock management. In most cases, livestock will use developed water and stock tanks over undeveloped water such as streams, springs, or seeps.

However, when spring sources are not properly developed or regularly maintained, they can result in reduced wetland function due to soil compaction, the loss of desirable vegetation, and the loss of the potential for diversity of life forms.

Riparian condition of streams, springs, ponds, potholes and wet meadows were placed into one of six categories: Proper Functioning Condition (PFC), Functioning At Risk with an Upward trend (FAR Up), Functioning At Risk with a static trend (FAR-Static) or no apparent trend (FAR-NA), Functioning At Risk with a Downward Trend (FAR Down), or Non Functional (NF) using the lentic and lotic methods described above. The functional ratings of riparian (lotic) and wetland (lentic) areas are shown in Table 9.

Table 9. Current PFC Ratings of Riparian Resources in the Marysville PA.

Reach #	Reach Name	Grazing Allotment	Previous Rating (Year)	2013 Rating
BKLT-1	American Gulch	Drumlummon-Skelly	FAR (2005)	PFC
BKLT-2	E. Fork American Gulch	Drumlummon-Skelly	FAR (2005)	PFC
PPUL-3	Drinkwater Gulch	Empire Creek	PFC (2001)	PFC
PPUL-8	Lost Horse Cr. Trib.	Deadman	PFC (2008)	PFC
PPUL-9	Empire Creek	Empire Creek	PFC (2001)	PFC
PPUL-10	Empire Creek	Empire Creek	FAR (2001)	PFC
PPUL-11	Towsley Gulch	Empire Creek	PFC (2001)	PFC
PPUL-12	Friday Gulch	Empire Creek	PFC (2001)	PFC
PPUL-13	Virginia Creek	Virginia Creek	PFC (2001)	PFC
PPUL-14	Trout Creek	Virginia Creek	NFU (2009)	FAR-Static
PPUL-15	Trout Creek	Virginia Creek	FAR (2009)	PFC
PPUL-15-1	Trout Creek Trib.	Virginia Creek	n/a	FAR-NA
PPUL-15-2	Trout Creek Trib.	Virginia Creek	n/a	PFC
SILV-7	Sawmill Gulch	Drumlummon-Skelly	PFC (2005)	PFC

SILV-8	Sawmill Gulch	Drumlummon-Skelly	PFC (2005)	PFC
SILV-9	N. Fork Sawmill Gulch	Drumlummon-Skelly	FAR (2005)	PFC
SILV-10	S. Fork Sawmill Gulch	Drumlummon-Skelly	PFC (2005)	PFC
SILV-11	Sawmill Gulch	Drumlummon-Skelly	FAR (2005)	PFC
SILV-13	Ottawa Gulch	Drumlummon-Skelly	PFC (2005)	PFC
SILV-14	Ottawa Gulch	Drumlummon-Skelly	PFC (2005)	PFC
SILV-15	Woodchopper Gulch	Drumlummon-Skelly	NFU (2005)	PFC

Across the Marysville PA, 95% (9.41 miles) of the lotic resources were rated PFC and 5% (0.47 miles) were rated FAR.

PPUL-14 was rated as FAR Static by the IDT. The reach is bound on both ends by private land. A treatment where adjacent conifers were cut and placed adjacent to the stream was conducted in 2012. This was meant to both reduce shading of the riparian species and reduce livestock trampling of the stream. The treatment appeared to stop degradation but no improvement was observed, possibly due to improper implementation and lack of time for regeneration and stream narrowing processes.

PPUL-15-1 was rated as FAR with no apparent trend. This reach was broken out from PPUL-15 and PPUL-15-2 because of a fence that crosses the channel and terrain. This segment of the reach received heavier livestock use that had degraded the stream. The IDT was unable to assign a trend to this reach because there was little data on any past BLM encounters with this portion of the reach.

Riparian Monitoring Summaries

BKLT-1: Photopoint shows increased vegetation from 2009 to 2012
PPUL-3: Coverboard study shows significant increase of alder (Alnus spp.) and maple (Acer glabrum) with an apparent increase in aspen (Populus tremuloides) and currant (Ribes spp.)
PPUL-9: Coverboard study shows an increase in willow spp. (Salix boothii, lemmonnii, lutea, and bebbiana) Cross-Section study shows a steady trend
PPUL-10: Greenline study shows an increase in the grass/forb category and a reduction in the bare soil category
PPUL-11: Coverboard study shows a steady trend
PPUL-13: Greenline study shows a heavy presence of riparian shrub and grass/forb mix
PPUL-14: Greenline study shows reach covered mostly with grass/forb mix, bare soil, and riparian shrub
PPUL-15: Greenline study shows a heavy presence of riparian shrub followed by bare soil
SILV-14: Coverboard study shows a steady trend

Recreation Opportunity Spectrum Marysville PA

Seven classes in the Recreation Opportunity Spectrum (ROS) are used to characterize recreation opportunities in terms of setting, activity, and experience. The seven classes are as follows: primitive, semi-primitive, non-motorized, semi-primitive motorized, roaded natural, roaded modified, rural, and urban.

Utilizing the ROS classification system, the Butte Field Office Resource Management Plan (RMP) identified the Marysville Planning area as Semi-Primitive Motorized, Road-Natural, and Rural. Definitions for the three ROS classifications within the Marysville PA are listed below.

Semi-Primitive Motorized - allows for some opportunity for isolation from man-made sights, sounds, and management controls in a predominately unmodified environment. Opportunity to have a high degree of interaction with the natural environment, to have moderate challenge and risk and to use outdoor skills. Concentration of visitors is low, but evidence of users is often present. On-site managerial controls are subtle. Facilities are provided for resource protection and the safety of users. Motorized use is prohibited.

Roaded Natural – mostly equal opportunities to affiliate with the other groups or be isolated from sights and sounds of man. The landscape is generally natural with modifications moderately evident. Concentration of users is low to moderate, but facilities for group activities may be present. Challenge and risk opportunities are generally not important in this class. Opportunities for both motorized and non-motorized activities are present. Construction standards and facility design incorporate conventional motorized uses.

Rural – is characterized by a substantially modified natural environment. Opportunities to affiliate with others are prevalent. The convenience of recreation sites and opportunities are more important than a natural landscape or setting. Sights and sounds of man are readily evident, and the concentration of users is often moderate to high. Developed sites, roads, and trails are designed for moderate to high uses.

The Helena National Forest also has ROS acreage identified for the lands they administer. This is currently being reviewed under the Helena and Lewis & Clark National Forest Plan revision.

The table below reflects the ROS classification on BLM administered lands for each allotment within the Marysville Planning Area.

Table 10:

Allotment Name	BLM ACRES BY ROS	Total

	CLASSIFICATIONS			Acres
	Semi-Primitive Motorized	Roaded Natural	Rural	
Beartrap Gulch		80.1		80.1
Canyon Creek		221.5		221.5
Cemetary		39.1		39.1
Deadman		241.2		241.2
Deer Creek		172.4		172.4
Drumlummon-Skelly		2,603.8		2,603.8
Edwards Mountain		1,379.3		1,379.3
Empire Creek	2,536.3	3,981.6		6,517.9
Lost Horse Creek	58.9	94.5		153.4
Missouri Gulch		40.0		40.0
Ogilvie Gulch		235.0		235.0
School		0.0	61.8	61.8
Talseth		0.6	40.5	41.1
Virginia Creek	348.1	1,479.2		1,827.3
(blank)	0.0	457.1	98.4	555.5
TOTAL ACRES	**2,943.3**	**11,025.4**	**200.7**	**14,169.4**

Special Status Plant Species

There are only three BLM sensitive species in the Butte Field Office; Idaho sedge, Sapphire rockcress, and White-bark pine. No known occurrences of Special Status Plants occur on BLM lands within the Marysville PA.

Soils

Soil development, formation, and stability are influenced by parent material, topography, local climate, plant cover and species composition, as well as historic and current uses. Information for the soils within the Marysville PA was obtained from Lewis and Clark County Area, Montana, Soil Survey (NRCS 2014). Soils on BLM managed public lands in the Marysville PA are formed primarily from colluvium derived from argillite and colluvium and gravelly colluvium derived from limestone. These soils occur on mountain slopes, ridge tops, hill slopes, and drainage bottoms. Slopes generally range from 15-45%, though there are isolated areas that are relatively flat and areas with slopes ranging from 45-60%. As a result of the underlying geology, parent material and topography soils within the Marysville PA range from shallow to very deep. Surface texture of the soil map units are dominantly channery loam, but also include stony sandy loam, stony loam, loam, cobbly loam, sandy loam, gravelly loam, and a very minor component of silt loam.

Table 11 summarizes the vulnerability of soils within the Marysville PA to different types of disturbance.

Table 11: Summary of susceptibility of soils on BLM managed public lands within the Marysville PA to different types of erosion, compaction, and damage by fire as a result of disturbances (NRCS 2014). Different disturbance classes are reported as a percent of the total acres of BLM managed public lands within the Marysville PA.

Erosion Hazard (off-road)[1]		Erosion Hazard (road)		Soil Compaction Resistance		Fire Damage Susceptibility	
Slight	1.1%	Slight	0.8%	Low Resistance	29.9%	Slightly susceptible	0.2%
Moderate	45.2%	Moderate	19.1%	Moderate Resistance	70.0%	Moderately Susceptible	33.0%
Severe	53.6%	Severe	80.0%	High Resistance	0.0%	Highly Susceptible	66.8%
Not Rated	0.1%	Not Rated	0.1%	Not Rated	0.1%	Not Rated	0.0%

Upland Health

Members of the IDT visited all of the grazing allotments, as well as the unallotted public land in the Marysville PA during 2013 and completed 8 *Rangeland Health Indicator Evaluation Matrices* (Pellant et al. 2005) on various ecological sites. In addition, Daubenmire trend studies and permanent photo plots were evaluated to determine vegetative trend. The data collected were summarized and compared to baseline and interim data providing supporting information for interpreting the upland indicators.

The majority of the uplands in the watershed were found to be meeting the Standard for Upland Health. Forest health and tree mortality were found to be affecting overall Upland Health, and is discussed under the Forest Health and Fuels Management section. Table 12 outlines the findings at sites throughout the watershed where the IDT completed the Indicators of Rangeland Health evaluation matrix.

Table 12. Upland Qualitative Assessment Summary for the Marysville PA.

ALLOTMENT NAME, NUMBER,	DOMINANT ECOLOGICAL SITE	PLANT ASSOCIATION	DEGREE OF DEPARTURE FROM EXPECTED		
			SOIL SITE STABILITY	HYDROLOGIC FUNCTION	BIOTIC INTEGRITY
Deadman, 07803		PK312 Douglas fir/snowberry-pinegrass phase	None - Slight	None - Slight	Slight - Moderate
Drumlummon-Skelly, 07811	R043XC440MT Silty 20”+		None - Slight	None - Slight	Slight - Moderate
Drumlummon-Skelly, 07811	R044XC455MT Silty 10-14”		None - Slight	None - Slight	Slight - Moderate
Drumlummon-Skelly, 07811	R044XC455MT Silty 10-14”		None - Slight	None - Slight	None - Slight

ALLOTMENT NAME, NUMBER,	DOMINANT ECOLOGICAL SITE	PLANT ASSOCIATION	DEGREE OF DEPARTURE FROM EXPECTED		
			SOIL SITE STABILITY	HYDROLOGIC FUNCTION	BIOTIC INTEGRITY
Edwards Mountain, 07810	R044XC455MT Silty 10-14”		None - Slight	None - Slight	None - Slight
Empire Creek, 07804	R044XC455MT Silty 10-14”		None - Slight	None - Slight	None - Slight
Empire Creek, 07804	R043XC440MT Silty 20”+		None - Slight	None - Slight	None - Slight
Virginia Creek, 07802	R043XC626MT Silty-Droughty 15-19”		None - Slight	None - Slight	Slight - Moderate

Upland Monitoring Summaries

Drumlummon-Skelly: Three Daubenmire transects show a generally static trend with a slight increase of rough fescue (Festuca campestris)
Edwards Mountain: Four Daubenmire transects show a generally static trend with fluctuations in large bunchgrasses and forbs
Empire Creek: Five Daubenmire transects show a generally static trend, although two show an increase in rough fescue and one shows a decrease in bluebunch wheatgrass (Pseudoroegneria spicata)
Virginia Creek: One Daubenmire transect shows a generally static trend with an increase in spotted knapweed (Centaurea maculosa)

Vegetation

Shrubland and grassland areas are considered uplands for purposes of this report. According to satellite imagery, 30% of the planning area is classified as sagebrush-steppe and grassland uplands (3% shrubland, 27% grasslands). Forest and woodland habitats are discussed under Forest Health and Fuels Management.

The variety and distribution of plant communities and seral stages in the watershed area is a function of climate, geology, and soil combined with:

- Historic uses (e.g., grazing, mining, etc.)
- Short term weather patterns
- Disturbance regimes (e.g., drought, fire, floods, and herbivory)

Current vegetative cover was calculated using satellite imagery. 26 initial Biophysical Settings (BpS) were condensed to the nine (9) shown below. Acres are approximate and minor discrepancies may exist due to mapping errors (Table 13).

Table 13. Summary of Acres by General Cover Type within the Marysville PA.

Cover Type	BLM Acreage	% of BLM Acreage	Total Watershed Acreage	% of Total Acreage
Dry Mesic Mixed Conifer	1,041	7%	13,199	9%
Subalpine Mixed Conifer	7,776	55%	69,450	44%
Savannah/Xeric DF	1,840	13%	14,025	9%
Lodgepole Pine	86	<1%	6,909	4%
Riparian Systems	105	<1%	4,188	2%
Shrubs	17	<1%	565	<1%
Sagebrush	255	2%	4,257	3%
Grassland	2,996	21%	42,358	27%
Other	53	<1%	792	<1%
Totals	**14,169**	**100%**	**155,743**	**100%**

Forested habitats occupy 75% of BLM administered land in the Marysville PA. A wide elevation variance promotes a diverse mixed conifer forest. The majority (55%), are Subalpine Mixed Conifer types which are dominated by Douglas-fir and lodgepole pine (Pinus contorta) with small isolated patches of subalpine fir (Abies lasiocarpa) and Engelmann spruce (Picea engelmannii).The Savannah/Xeric DF (13%) are mainly composed of Douglas-fir (Pseudotsuga menziesii), ponderosa pine (Pinus ponderosa), limber pine (Pinus flexilis), and Rocky Mountain juniper (Juniperus scopulorum). The Dry Mesic Mixed Conifer (7%) type consists of (Pseudotsuga menziesii), ponderosa pine (Pinus ponderosa), and limber pine (Pinus flexilis). Throughout the PA small pockets of quaking aspen (*Populus tremuloides*) and two species of cottonwoods, black cottonwood (*Populus trichocarpa*) and narrowleaf cottonwood (*Populus angustifolia*) contribute to structural diversity and canopy cover.

The upland habitats found on BLM administered land within the Marysville PA are dominated by either grasslands (21%) with shrubland (2%), including mountain big sagebrush (*Artemisia tridentata ssp. Vaseyana*) and mountain mahogany (*Cercocarpus ledifolius)* a minor component. Some of the prominent herbaceous species included in the grasslands are rough fescue (*Festuca campestris),* Idaho fescue (*Festuca idahoensis*), bluebunch wheatgrass (*Pseudoroegneria spicata*), western wheatgrass (*Pascopyrum smithii*), Sandberg's bluegrass (*Poa secunda*), needle and thread (Hesperostipa comate), and prairie junegrass (*Koeleria macrantha*). These same cool season grasses are prominent understory vegetation in the shrubland cover types. Rubber rabbitbrush (*Ericameria nauseosa*), and green rabbitbrush (*Chrysothamnus viscidiflorus*) are common native shrubs found on numerous ecological sites throughout the watershed.

Water Quality

Within the Marysville PA there are 8 streams that have been assessed by Montana Department of Environmental Quality (MTDEQ) as being impaired in some way. Of these 8 streams 4 of the streams occur to some extent on BLM managed public lands within the Marysville PA. Table 14 summarizes information of the four streams that occur on BLM managed lands. All four streams have been identified as being in Use Class B-1 by MTDEQ. Use Class B-1 are "suitable for

drinking, culinary, and food processing purposes after conventional treatment; bathing, swimming, and recreation; growth and propagation of salmonid fishes and associated aquatic life, waterfowl, and furbearers; agricultural/industrial water supply" (MTDEQ 2014).

Table 14: Summary of Montana Department of Environmental Quality water quality determinations (MTDEQ 2014) of streams on BLM managed public lands within the Marysville PA.

Stream	Miles on BLM[1]	Water Quality Category[1]	Impairment	Source
American Gulch	0.7	3	None	Not Applicable
Jennies Fork	0.1	5	Lead, total phosphorous, nitrate/nitrite, sedimentation/siltation	Grazing in riparian areas, forested roads, natural sources, subsurface mining, unknown sources
Silver Creek	0.9	5	Arsenic, DDE, low flow alterations, mercury, other anthropogenic substrate alterations	Irrigated crop production, agriculture, subsurface mining, dredge mining, mill tailings
Virginia Creek	2.2	5	Lead	Impacts from abandoned mines.

1 – Water Quality Category Definitions (MTDEQ 2014)

Category 3 – waters for which there is insufficient data to assess the use support of any applicable beneficial use; no use-supported determinations have been made.

Category 5 – waters where one or more applicable beneficial uses are impaired or threatened, and a TMDL is required to address the factors causing the impairment or threat.

Field inventories show numerous locations where active sedimentation is occurring in live water at road – stream crossings. In most cases, the causes of erosion and stream channel diversion are undersized or unmaintained culverts. Where the funds and opportunities allow, the Butte Field Office would prioritize road maintenance in areas of greatest impact to water resources. Road maintenance may include replacing worn and/or undersized culverts, cleaning culverts, and cleaning ditches.

Wildlife

Wildlife in the PA is typical of southwestern Montana. Basic life history and habitat requirement information on all species mentioned in this document can be found in the Montana Field Guide (http://fieldguide.mt.gov/), and numerous other sources. Species location information is largely obtained from Montana Fish, Wildlife, and Parks GIS layers and Montana Natural Heritage Program information provided to BLM.

Mammals

The PA provides important big game habitat. The most commonly found big game species in the PA are elk and mule deer. The most important habitat areas for these species are those used for winter range, security, and calving. Most of the Marysville PA is winter range for these species. A total of approximately 122,277 acres (79.4%) of the PA is considered winter range for elk and mule deer. All BLM land within the PA is included in this winter range. Security habitat, as defined by Hillis et al. (1991), must be a nonlinear block of hiding cover ≥ 250 acres in size and ≥ ½ mile from any open road. Approximately 9719 acres of the PA are within this classification, though none of it is on BLM land. No recognized calving areas are within the PA. Summer habitat for elk and mule deer includes the entire PA.

Less wide-ranging big game species include white-tailed deer, which mostly occur in and near riparian corridors. Pronghorn antelope range extends only into the southeast portion of the PA, and includes the School, Talseth, and part of the Edwards Mountain allotments. Moose can be found throughout the PA, but in low numbers. Bighorn sheep and mountain goats are not present in the PA.

Predators in the PA include mountain lions, bobcats, coyotes, black bears, and infrequent grizzly bear and lynx. The gray wolf has moved into the PA in recent years.

Numerous small mammals are present in the area as well, including shrew species, rabbit species, many rodent species, and several bat species.

Birds

Many species of migratory and non-migratory birds are found in the PA. Species commonly seen in the lower elevation grassy habitats include the horned lark, vesper sparrow, and western meadowlark. Examples of species associated with mature closed-canopied forested areas include golden-crowned kinglet, brown creeper, pine grosbeak, northern goshawk, boreal owl, hermit thrush, and Townsend's warbler. Many birds are more general in habitat preferences and may be found in shrub and coniferous habitats including the American robin, chipping sparrow, dark-eyed junco, mountain chickadee, pine siskin, Clark's nutcracker, and quite a few others. Raptors expected in the area include kestrel, red-tailed hawk, northern harrier, flammulated owl, great horned owl.

Reptiles and Amphibians

Reptiles that could occur in the project area include the gopher snake, terrestrial and common garter snakes, eastern racer, rubber boa, and western rattlesnake, painted turtle. Amphibians that could occur in the project area are the long-toed salamander, Columbia spotted frog, western toad, and plains spadefoot toad. Other reptiles and amphibians are unlikely to occupy the area.

Fish

Trout species and sculpin are fish species that can be expected in the PA. Fish status in stream segments on BLM lands are listed in the table below (Montana Fisheries Information System 2015). Streams in the PA but not on BLM land are not included here.

Table 15:

Stream Segment Fish Species Presence on BLM land		
Waterbody name	**Allotment**	**Fish species present and abundance level**
Trinity Creek	Edwards Mountain	No data/does not support fish.
Demijohn Gulch	Edwards Mountain	No data/does not support fish.
Missouri Gulch	Missouri Gulch	No data/does not support fish.
Deer Creek	Deer Creek	No data/does not support fish.
Friday Gulch	Empire Creek	No data/does not support fish.
Towsley Gulch	Empire Creek	No data/does not support fish.
Empire Creek	Empire Creek	No data/does not support fish.
Piegan Creek	Empire Creek	No data/does not support fish.
Lost Horse Creek	Lost Horse Creek, Empire Creek	No data/does not support fish.
Ogilvie Gulch	Ogilvie Gulch	No data/does not support fish.
Stemple Creek	Virginia Creek	Westslope cutthroat trout – common. (Only about the lower 200' of this creek is on BLM.)
Trout Creek	Virginia Creek	Brook trout – rare Rainbow trout – unknown Westslope cutthroat trout – rare Hybridized trout – unknown
Virginia Creek	Virginia Creek	Brook trout – common Brown trout – unknown Mottled sculpin – common Rainbow trout – unknown Westslope cutthroat trout – rare (potentially hybridized)
American Gulch	Drumlummon-Skelly	Westslope cutthroat trout – common (potentially hybridized)
Woodchopper Gulch	Drumlummon-Skelly	No data/does not support fish.
Sawmill Gulch	Drumlummon-Skelly	Brook trout – unknown Westslope cutthroat trout – rare
Eldorado Gulch	Drumlummon-Skelly	No data/does not support fish. (Only about the lower 230' of this creek is on BLM.)

<u>Species Listed under the Endangered Species Act</u>

Three species listed under the Endangered Species Act have the potential to occur in the planning area:

Table 16:

Endangered Species Act Listed Species With Potential to Occur in the PA.		
Species	**Status**	**Notes**
Canada lynx	Threatened	Lynx occur within the PA, although use of BLM land by lynx is likely to be sporadic. Presence of lynx has been confirmed on BLM land. BLM land is adjacent to designated Critical Habitat for this species and is within a "core area" as defined by the Lynx Recovery Outline (USDI-FWS. 2005).
Grizzly bear	Threatened	Grizzly bears occur within the PA but there are likely no permanent resident grizzlies on BLM land. Grizzly bear presence has been confirmed on BLM land, however. The PA spans Grizzly Management Zones 1 and 2 as defined in the Draft NCDE Grizzly Bear Conservation Strategy (2013).

Sprague's Pipit	Candidate	Unlikely to occur in the PA. Sprague's pipit is a prairie grassland species and the PA is at the far western edge of its' range.

Sensitive Species

Species designated "sensitive" by the BLM occur in the PA. Species requiring special management consideration to promote their conservation and reduce the likelihood of future Endangered Species Act listings are designated "sensitive" by BLM State Directors(USDI-BLM. 2008). Species with this designation for the BFO are included in the table below.

Table 17:

BLM-listed Sensitive Species With Potential to Occur in the PA.		
Species	**Documented in Plan Area?**	**Notes**
Mammals		
Black-tailed prairie dog	No	Could occur on private land but does not occur on BLM land in the PA.
Fisher	Yes	Documented locations are near or within the PA; the wide-ranging nature and habitat preferences of this species basically assures that it does occur in the PA, but is not common.
Fringed myotis	No	Not documented in PA but likely to occur. Has been documented several miles east of the PA. Roosts in caves, mines and rock crevices.
Gray wolf	Yes	Wolves now occur throughout western Montana.
Pygmy rabbit	No	PA is north of this species' range.
Spotted bat	No	Has been documented to the east and south of the PA. This is a relatively solitary species and likely occurs in low numbers in the PA in lower elevations.
Townsend's big-eared bat	No	Not documented in PA but likely to occur. Has been documented southwest of the PA. Prefers caves and abandoned mines for roosting.
Wolverine	Yes	Prefers coniferous forest and alpine tundra but is wide-ranging and will use a variety of habitat types.
Birds		
American bittern	No	Could occur in the PA but are not common in MT. Prefers wetland habitat with emergent vegetation.
Baird's sparrow	No	Unlikely to occur. The PA is west of the species' normal range. Prefers prairie habitat.
Bald eagle	Yes	Has been documented on the eastern edge of the PA. Prefers forested areas along rivers or lakes. Likely to use PA lands for foraging.
Black tern	No	Unlikely to occur. Preferred wetland habitat is not present on BLM land.
Black-backed woodpecker	No	Unlikely to occur in the PA at present. Prefers recently burned forests. Would likely move into the PA following a fire.
Brewer's sparrow	Yes	Documented on private land on the east side of the PA. Prefers sagebrush habitat.
Burrowing owl	No	Prefers open grasslands and prairie dog towns. This species has been documented to occur approximately ½ mile east of the PA. Could occur on private land in the PA but very unlikely on BLM land.
Caspian tern	No	Unlikely to occur in the PA. Mostly migrates through MT but will nest on lake islands.

Chestnut-collared longspur	No	Unlikely to occur; the PA is west of the known range for this species.
Common tern	No	Unlikely to occur. Prefers lake islands for nesting.
Ferruginous hawk	No	Likely to occur in the PA outside of BLM lands. Hunts in open grassland habitats.
Flammulated owl	Yes	Has been found on USFS land in the PA. Nests in cavities excavated by woodpeckers. Occurs in mature forest habitat.
Forster's tern	No	Unlikely to occur in the PA. Prefers marshy areas.
Franklin's gull	No	PA is at the outer limits of the species' range. Unlikely to occur other than during migration.
Golden eagle	No	Undocumented in the PA but is almost certain to occur. Hunts over open country.
Great gray owl	No	Has not been documented but likely to occur in the PA. Prefers dense forest and has a large home range.
Lewis's woodpecker	No	Uncommon in this area but could occur. Uses a variety of woodland habitats.
Loggerhead shrike	No	Could occur in shrubland areas of the PA.
Long-billed curlew	Yes	Documented on private land on the east side of the PA. Prefers grassland habitat.
McCown's longspur	No	Unlikely to occur in the PA. Prefers short grass habitat. PA is at the western edge of this species' range.
Mountain plover	No	Unlikely to occur in the PA. Usually associated with prairie dog towns.
Peregrine falcon	No	Unlikely to occur in the PA due to lack of cliff habitat. Nests on cliffs.
Sagebrush sparrow	No	Unlikely to occur. The PA is slightly north of this species' normal range.
Sage thrasher	Yes	Documented on private land on the east side of the PA. Prefers sagebrush habitat.
Trumpeter swan	No	Unlikely to occur in the PA other than during migration.
Veery	Yes	Documented on private land on the east side of the PA. Prefers deciduous riparian habitat.
White-faced ibis	No	Preferred wetland habitat does not occur on BLM land in the PA.
Amphibians (no sensitive reptiles occur within the PA)		
Northern leopard frog	No	PA is west of this species' known range in MT.
Western toad	Yes	Documented on private and USFS land. Likely to occur in or near riparian areas.
Fish		
Westslope cutthroat trout	Yes	Occur as listed in table above. Genetically pure individuals may not exist in the PA.

Standards for Rangeland Health

Western Montana Standard #1: "Uplands are in Proper Functioning Condition."

Procedure to determine conformance with Standard:

The uplands were assessed on an allotment basis according to Interagency Technical Reference 1734-6 "Interpreting Indicators of Rangeland Health." This qualitative process evaluates 17 "indicators" (e.g., soil compaction, water flow patterns, plant community composition) to assess three interrelated components or "attributes" of rangeland health: soil/site stability, hydrological function, and biotic integrity. The IDT refers to Range Site descriptions, draft Ecological Site Description Data, and the SSURGO Soil Survey for Lewis and Clark County (NRCS 2014) while completing the upland evaluation matrix.

The IDT reviewed the long term trend study data, conducted extensive field surveys, and used the Indicators of Upland Health assessment process to assess the functionality of the upland habitat in the Marysville PA.

Visits by members of the ID Team to the other 9 allotments, Beartrap Gulch, Canyon Creek, Cemetery, Deer Creek, Lost Horse Creek, Missouri Gulch, Ogilvie Gulch, School, and Talseth confirmed that existing upland conditions had not changed considerably from past assessments. Below is a table summarizing Upland Standard for all 14 allotments inclusive of all contributing factors (Soils, Fuels Management, Forest Health, and Upland Health).

Table 18. Upland Standard Conformance Summary for the Marysville PA.

Allotment Name	Allotment Number	Meeting Upland Standard (Y/N)	Preliminary Causal Factor
Beartrap Gulch	07807	Y	
Canyon Creek	07833	Y	
Cemetery	07813	Y	
Deadman	07803	N	Forest health
Deer Creek	07801	N	Forest Health
Drumlummon-Skelly	07811	N	Forest Health
Edwards Mountain	07810	N	Forest Health
Empire Creek	07804	N	Forest Health
Lost Horse Creek	07808	Y	
Missouri Gulch	07800	Y	
Ogilvie Gulch	07806	Y	
School	11027	Y	
Talseth	00936	Y	
Virginia Creek	07802	N	Forest Health

On the allotments rated as meeting the Upland Standard (Y), the quantitative monitoring data supports the findings of the IDT (Table 12). The ecological condition at these upland sites is stable or improving. Evidence of erosion appears to be remnant of historical impacts associated with grazing and mining activities. Active erosion was observed but was within the expectations for that ecological site. Tall cool season bunchgrasses, specifically rough fescue, are moderately reduced in a few of the sites throughout the PA in comparison to the Ecological Site Guides. Conifer encroachment was also observed throughout the PA and was present to some degree in many of the allotments. Invasive and noxious plants were present in portions of the PA and depending on abundance, did contribute to a slight-moderate departure in some allotments.

Recommendations for Upland Health

- Continue treating weed infestations throughout the PA.
- Treat forested and woodland habitats in order to improve forest health.
- Reduce Douglas-fir and Rocky Mountain Juniper colonization into sagebrush and grassland upland sites to mimic historic disturbances to move vegetation towards a reference condition as identified in BpS descriptions.
- Assess past treatments for completion or follow-up treatments.

Western Montana Standard #2: *"Riparian and wetland areas are in proper functioning condition."*

Procedure to determine conformance with Standard:

Lotic and Lentic Riparian Area Management Assessment Methodologies (TR 1737-15 and TR 1737-16), also known as PFC Assessment Methodologies, were used to evaluate riparian systems.

PFC is a method for assessing the physical functioning of riparian (lotic)-wetland (lentic) areas. The term PFC is used to describe both the assessment process, and a defined, on the ground condition of the riparian-wetland area. In either case, PFC defines a minimum level or starting point for assessing riparian-wetland areas.

The PFC assessment provides a consistent approach for assessing the physical functioning of riparian-wetland areas through consideration of hydrology, vegetation, and soil/landform attributes. The PFC assessment synthesizes information that is foundational to determining the overall health of a riparian-wetland area.

Riparian Vegetation Goal 1 in the Butte RMP states "Manage riparian and wetland communities to move toward or remain in proper functioning condition (appropriate vegetative species composition, density, and age structure for their specific area) (BLM 2009)." The on the ground condition term PFC refers to how well the physical processes are functioning. PFC is a state of resiliency that will allow a riparian-wetland area to hold together during a high, 25-30 year flow event, sustaining that system's ability to produce values related to both physical and biological attributes. Functional at Risk (FAR) is described as riparian-wetland areas that are in functional condition, but an existing soil, water, or vegetation attribute makes them susceptible to degradation. Non Function Condition is describes as Riparian-wetland areas that clearly are NOT providing adequate vegetation, landform, or large woody debris to dissipate stream energy associated with high flows, and thus are not reducing erosion, improving water quality, etc."

Trend may be assigned to FAR calls and is defined as Trend is a determination of the direction the riparian area is moving toward PFC or toward nonfunctional. NOTE: Trend is used only with FAR. Trend is determined by data or photos that provide a clear direction. This is real trend. Apparent trend is using indicators such as improved vigor of riparian species, increase in number of woody species, to estimate the direction of movement. (Prichard et al. 2003)

BLM personnel reviewed existing data; re-read established transects and established monitoring in several areas that were identified by the ID team prior to and during the 2013 evaluations. All available data were evaluated and considered by the ID team prior to a functionality call being made on each reach. This qualitative summary can be found in Table 9.

Table 19. Riparian and Wetland Standard Conformance Summary for the Marysville PA.

Allotment Name	Allotment Number	Meeting Riparian Standard (Y/N)	Preliminary Causal Factors
Beartrap Gulch	07807	n/a	
Canyon Creek	07833	n/a	
Cemetery	07813	n/a	
Deadman	07803	Y	
Deer Creek	07801	n/a	
Drumlummon-Skelly	07811	Y	
Edwards Mountain	07810	n/a	
Empire Creek	07804	Y	
Lost Horse Creek	07808	n/a	
Missouri Gulch	07800	n/a	
Ogilvie Gulch	07806	n/a	
School	11027	n/a	
Talseth	00936	n/a	
Virginia Creek	07802	N	Livestock

Recommendations for Riparian Health

- Decrease grazing degradation to riparian areas both lentic and lotic.
- Continue treating weed infestations throughout the PA.
- Restore non or poorly functioning developed springs.
- Improve livestock management by addressing function and location of fences.

Western Montana Standard #3: *"Water quality meets State standards"*

Procedure to determine conformance with Standard:

Montana DEQ is responsible for assessing the condition of streams, establishing reference sites, setting standards, and developing water quality restoration plans. The Butte Field Office shares assessment findings with DEQ to support their efforts.

The foundation for Montana Water Quality Law is the Federal Clean Water Act. The goal of the Clean Water Act is to "restore and maintain the chemical, physical and biological integrity of the Nation's waters." To meet that goal, waters of Montana are required to support beneficial uses.

Table 20. Water Quality Standard Conformance Summary for the Marysville PA.

Allotment Name	Allotment Number	Meeting Water Quality Standard (Y/N)	Preliminary Causal Factors
Beartrap Gulch	07807	Not Applicable	
Canyon Creek	07833	Not Applicable	
Cemetery	07813	Not Applicable	
Deadman	07803	Not Applicable	
Deer Creek	07801	Not Applicable	
Drumlummon-Skelly	07811	Yes	
Edwards Mountain	07810	Not Applicable	
Empire Creek	07804	No	Jennies Fork is a DEQ 303d listed stream. Jennies Fork is meeting PFC; livestock grazing is not a contributing factor.
Lost Horse Creek	07808	Not Applicable	
Missouri Gulch	07800	Not Applicable	
Ogilvie Gulch	07806	Not Applicable	
School	11027	Not Applicable	
Talseth	00936	Not Applicable	
Virginia Creek	07802	No	Virginia Creek is a 303d listed stream. Virginia Creek is meeting PFC; livestock grazing is not a contributing factor.

Recommendations for Water Quality

- Continue working with Montana DEQ and local Watershed Committees as applicable in the development and implementation of water quality restoration plans
- Monitor BMP implementation and effectiveness monitoring to address nonpoint source pollution.
- Continue to share Watershed Assessment finding with DEQ.

Western Montana Standard #4: *"Air quality meets State standards"*

Procedure to determine conformance with Standard:

The Clean Air Act of 1990 as amended (42 U.S.C. 7401 et seq) requires the BLM to protect air quality, maintain Federal and State designated air quality standards, and abide by the requirements of State Implementation Plans.

The Environmental Protection Agency has delegated the authority to implement the provisions of the Clean Air Act to the State of Montana. Determination of compliance with air quality standards is the responsibility of the State of Montana. All of southwest Montana is in attainment, meaning that the air resource meets or exceeds all National Ambient Air Quality Standards.

Table 21. Air Quality Standard Conformance Summary for the Marysville PA.

Allotment Name	Allotment Number	Meeting Air Quality Standard (Y/N)
Beartrap Gulch	07807	Yes
Canyon Creek	07833	Yes
Cemetery	07813	Yes
Deadman	07803	Yes
Deer Creek	07801	Yes
Drumlummon-Skelly	07811	Yes
Edwards Mountain	07810	Yes
Empire Creek	07804	Yes
Lost Horse Creek	07808	Yes
Missouri Gulch	07800	Yes
Ogilvie Gulch	07806	Yes
School	11027	Yes
Talseth	00936	Yes
Virginia Creek	07802	Yes

Recommendations for Air Quality

- Continue to follow burn plans and to coordinate with the Smoke Monitoring Unit.

Western Montana Standard #5: *"Provide habitat as necessary, to maintain a viable and diverse population of native plant and animal species, including special status species."*

Procedure to determine conformance with standard:

This Standard is an overall assessment of biodiversity and wildlife habitat. The present state of each allotment and habitat type was compared to the natural and historic condition. The indicators described under the definition of Standard #5, as well as condition/function of the

other standards, specifically uplands and riparian, were considered to determine whether or not the Biodiversity Standard was met. Indicators for this standard include:

- Plants and animals are diverse, vigorous and reproducing satisfactorily, noxious weeds are absent or insignificant in the overall plant community;
- Spatial distribution of species is suitable to ensure reproductive capability and recovery;
- A variety of age classes are present;
- Connectivity of habitat or presence of corridors prevents habitat fragmentation;
- Diversity of species (including plants, animals, insects and microbes) are represented; and
- Plant communities in a variety of successional stages are represented across the landscape.

The IDT considered the range of natural variation within this ecosystem as well as the species composition, condition of available habitat, and forest health to determine the condition/function of biodiversity. The wildlife habitat types expected are: grasslands, small streams, riparian/wetlands, sagebrush/shrub/grassland, conifer forests, aspen/cottonwood stands, and transition areas of these components. Providing habitat for special status plant and animal species is key to meeting the biodiversity standard.

Table 22. Biodiversity Standard Conformance Summary for the Marysville PA.

Allotment Name	Allotment Number	Meeting Biodiversity Standard (Y/N)	Preliminary Causal Factor
Beartrap Gulch	07807	Y	
Canyon Creek	07833	Y	
Cemetery	07813	Y	
Deadman	07803	Y	
Deer Creek	07801	N	Forest Health
Drumlummon-Skelly	07811	N	Forest Health, Weeds
Edwards Mountain	07810	N	Forest Health
Empire Creek	07804	N	Forest Health, Weeds
Lost Horse Creek	07808	Y	
Missouri Gulch	07800	Y	
Oglivie Gulch	07806	Y	
School	11027	Y	
Talseth	00936	Y	
Virginia Creek	07802	N	Forest Health, Weeds

Recommendations for Biodiversity

- Noxious and invasive weeds are prevalent across the PA. Treat weeds to restore those areas to native vegetation.
- Maintain or improve livestock management and exclosures where needed.
- Conduct treatments to restore vegetation conditions that would be expected to exist in the absence of human activity.
- Keep all fences maintained to wildlife-friendly specifications to allow for movement of wildlife, prevent entanglement of wildlife in fences, and be sufficient to restrict livestock movement.
- In keeping with the 2009 RMP, develop and implement food storage regulations and guidelines in the PA since it spans grizzly bear management and distribution zones.

Interdisciplinary Team Composition

Core IDT members for the Marysville PA Assessment include:

Charles Tuss, Fire Management Specialist – (IDT Lead)
Roger Olsen, Rangeland Management Specialist - (Rangeland Resources, Riparian)
Erik Broeder, Rangeland Management Specialist – (Riparian)
Greg Campbell, Fire Management Specialist - (Fuels)
Lacy Decker, Range Technician - (Weeds, Sensitive Plants)
Scot Franklin, Wildlife Biologist - (Wildlife Resources)
Brandy Janzen, Soil Scientist – (Soils, Water, Air)
Sarah LaMarr, Wildlife Biologist – (Wildlife Resources)
Tanya Thrift, Assistant Field Manager
Jaime Tompkins, Supervisory Outdoor Recreation Planner - (Recreation, Travel Management, Wilderness and Visual Resources)
Marylou Zimmerman, Forester - (Forest Resources)

Support IDT members include:

Kelly Acree, Realty Specialist – (Realty)
Vickie Anderson, Range Technician - (Rangeland Resources)
Joan Gabelman, Geologist – (Mineral Resources, AML)
Brenda Geesey, GIS Specialist - (GIS)
Carrie Kiely, Archeologist - (Cultural Resources)
Dave Williams, Geologist - (Mineral Resources)

Others Involved:

Anna Courtney, Soils Technician
Jessica French, Wildlife Technician
Jacob Greenwood, Range Technician
Christopher Robinson, Hydrologic Technician
Adam Sieges, Range/Riparian Technician
Erin Smith, Range/Riparian Technician

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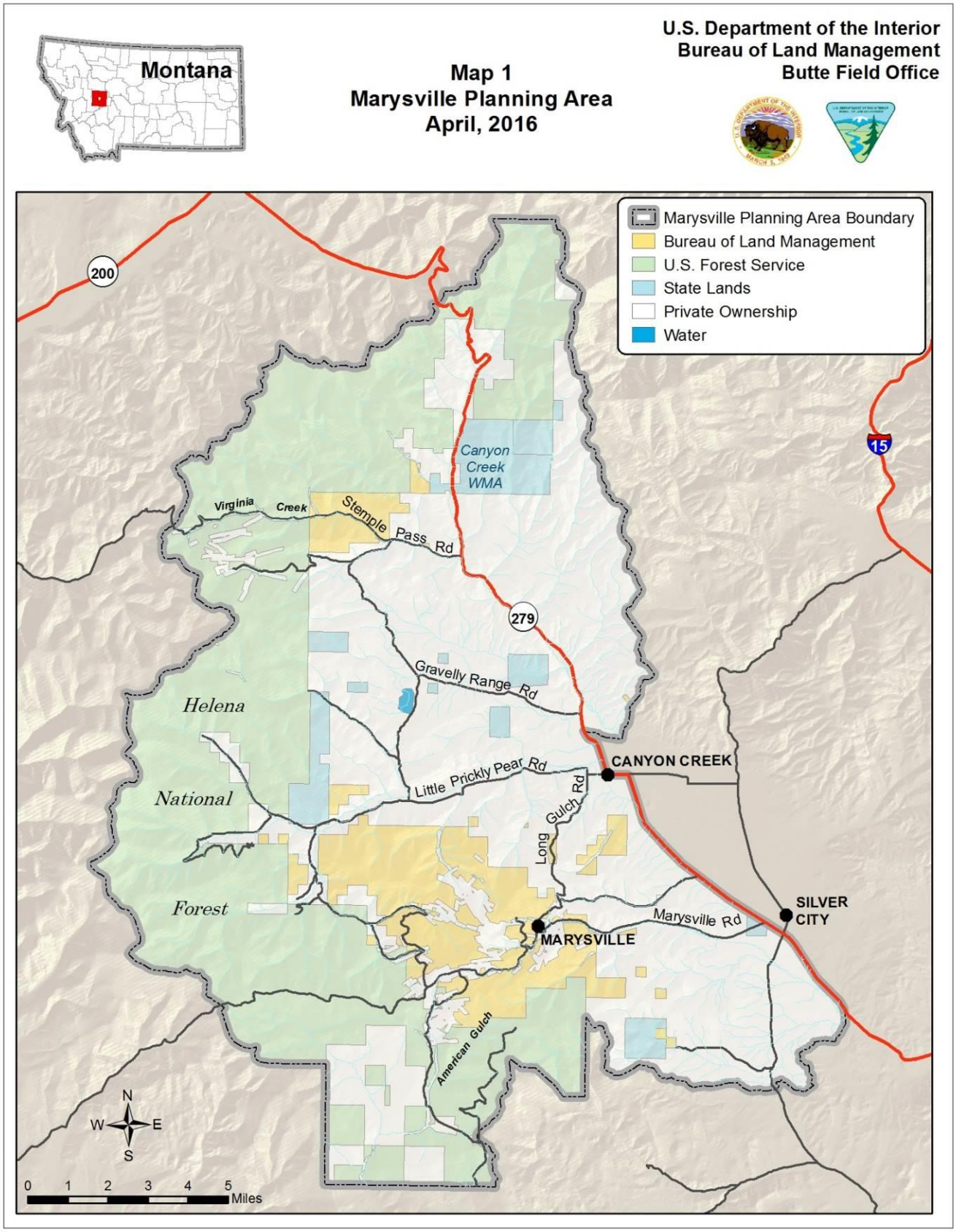
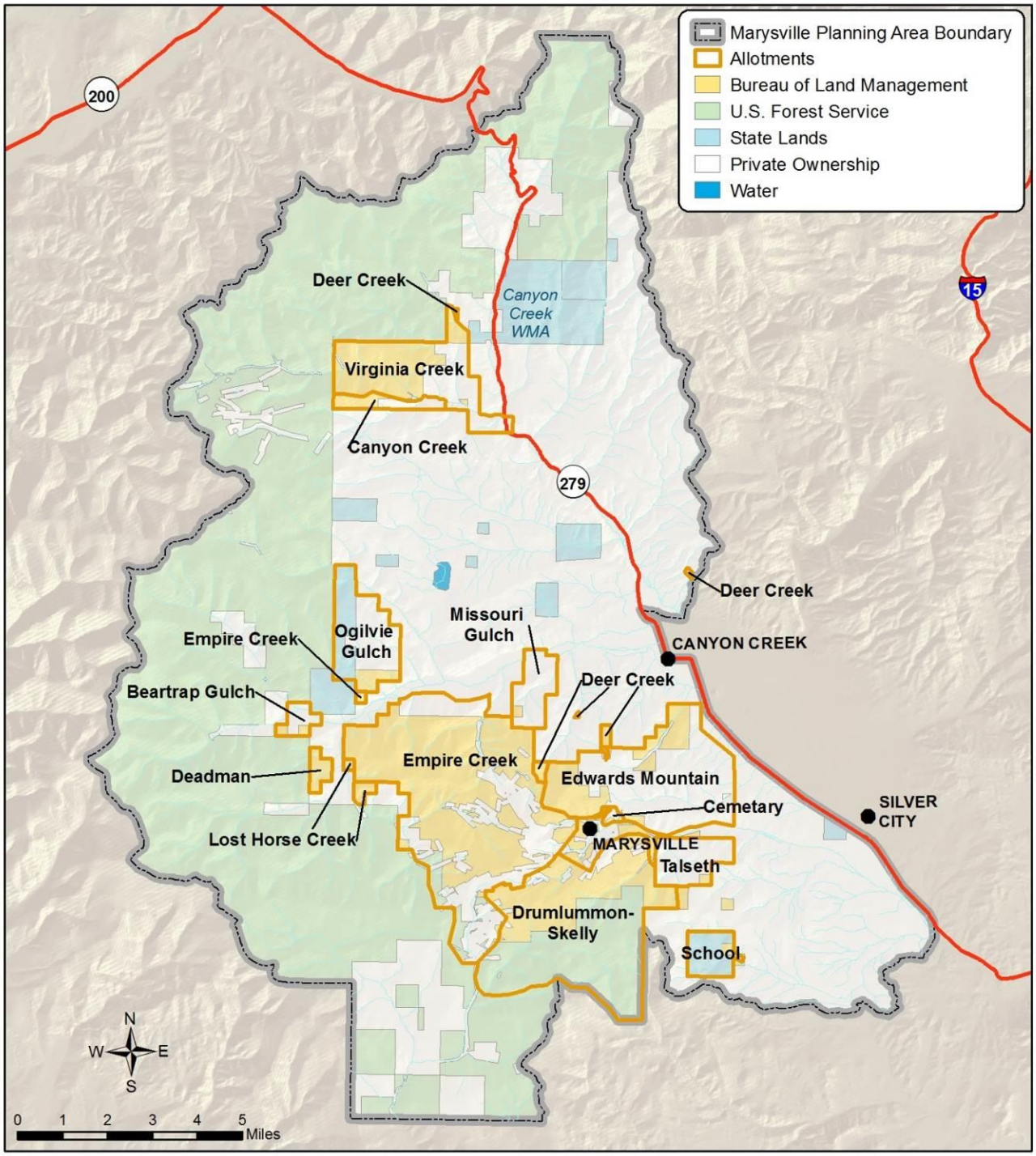
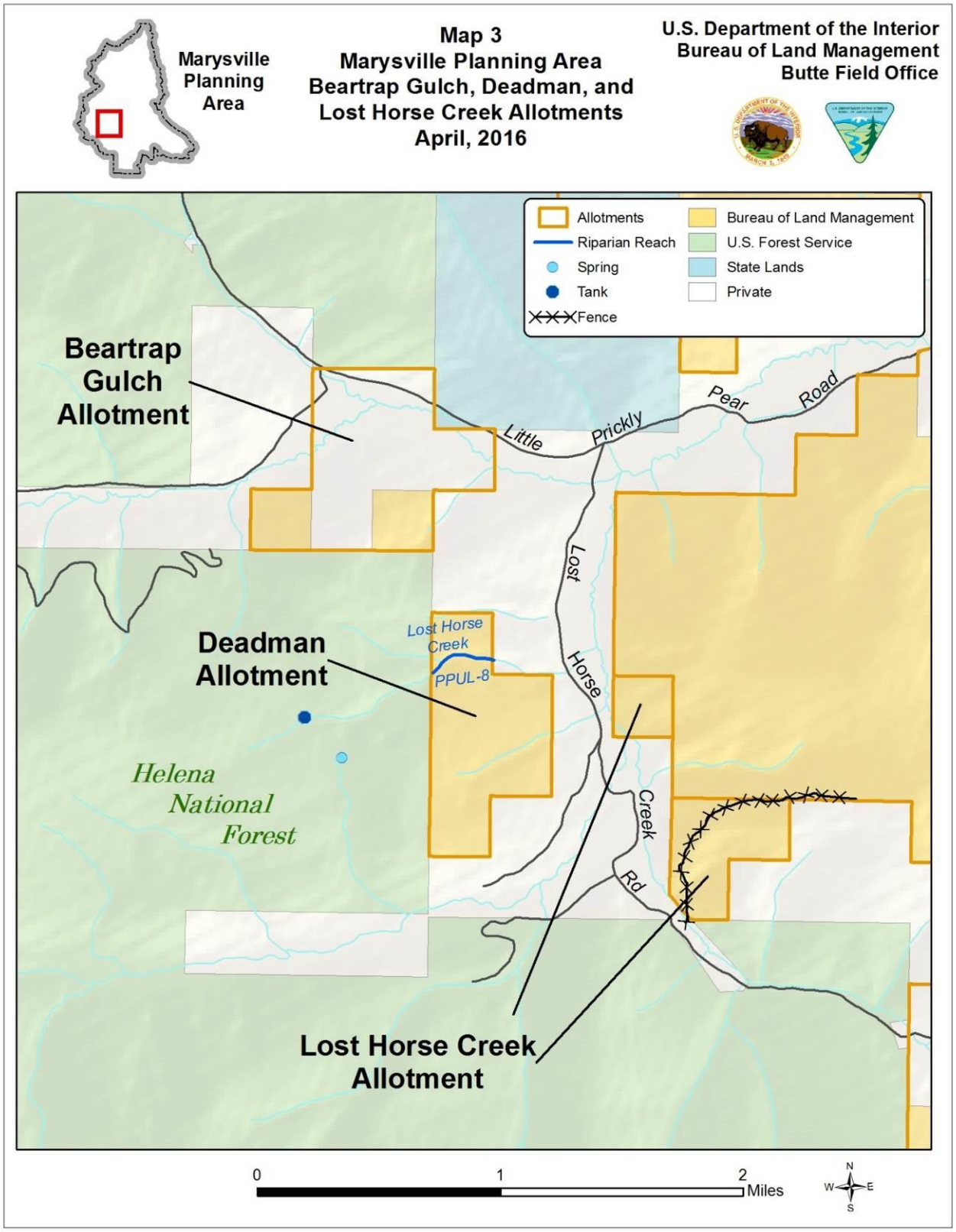

Montana
Map 1
Marysville Planning Area
April, 2016
U.S. Department of the Interior
Bureau of Land Management
Butte Field Office
Marysville Planning Area Boundary
Bureau of Land Management
U.S. Forest Service
State Lands
Private Ownership
Water
200
15
279
Canyon Creek WMA
Virginia Creek
Stemple Pass Rd
Gravelly Range Rd
Helena
National
Forest
Little Prickly Pear Rd
Long Gulch Rd
CANYON CREEK
SILVER CITY
MARYSVILLE
Marysville Rd
American Gulch
N
W
E
S
0 1 2 3 4 5 Miles

Map 2
Marysville Planning Area
Livestock Grazing Allotments
April, 2016

U.S. Department of the Interior
Bureau of Land Management
Butte Field Office




Marysville Planning Area
Map 3
Marysville Planning Area
Beartrap Gulch, Deadman, and
Lost Horse Creek Allotments
April, 2016
U.S. Department of the Interior
Bureau of Land Management
Butte Field Office
Allotments
Riparian Reach
Spring
Tank
Fence
Bureau of Land Management
U.S. Forest Service
State Lands
Private
Beartrap Gulch Allotment
Deadman Allotment
Lost Horse Creek Allotment
Little Prickly Pear Road
Lost Horse Creek Rd
Lost Horse Creek
PPUL-8
Helena National Forest
0
1
2
Miles
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W
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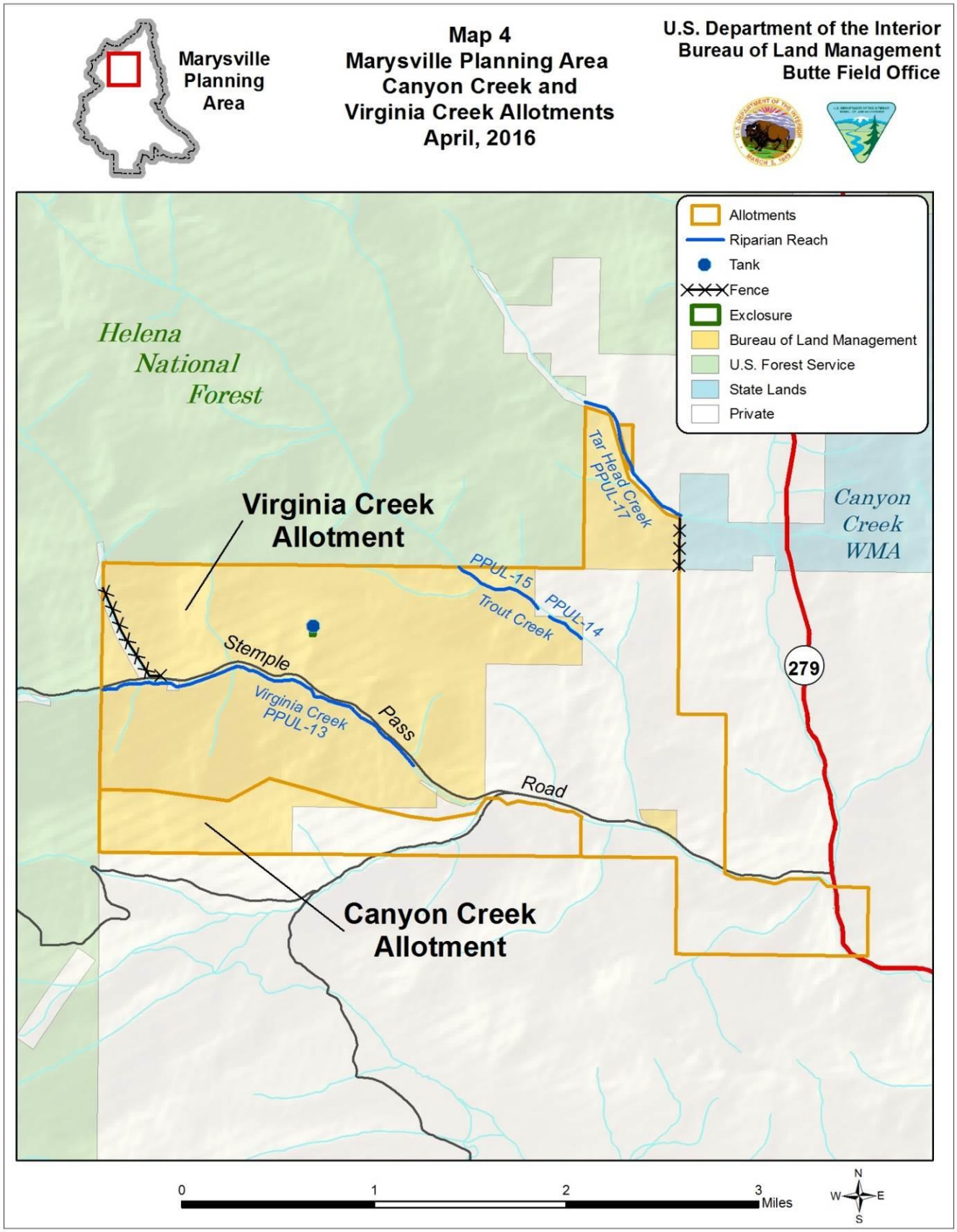
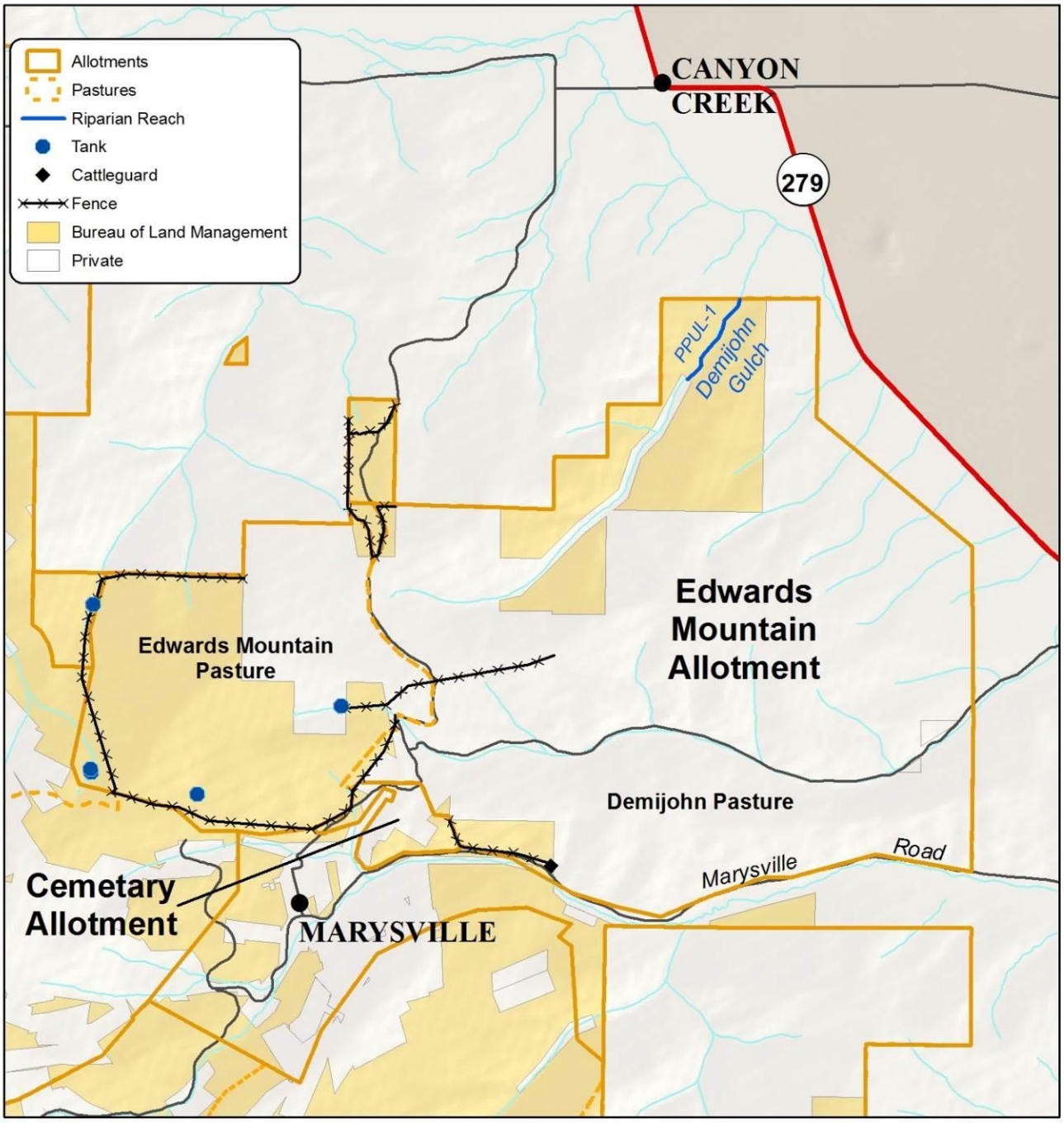
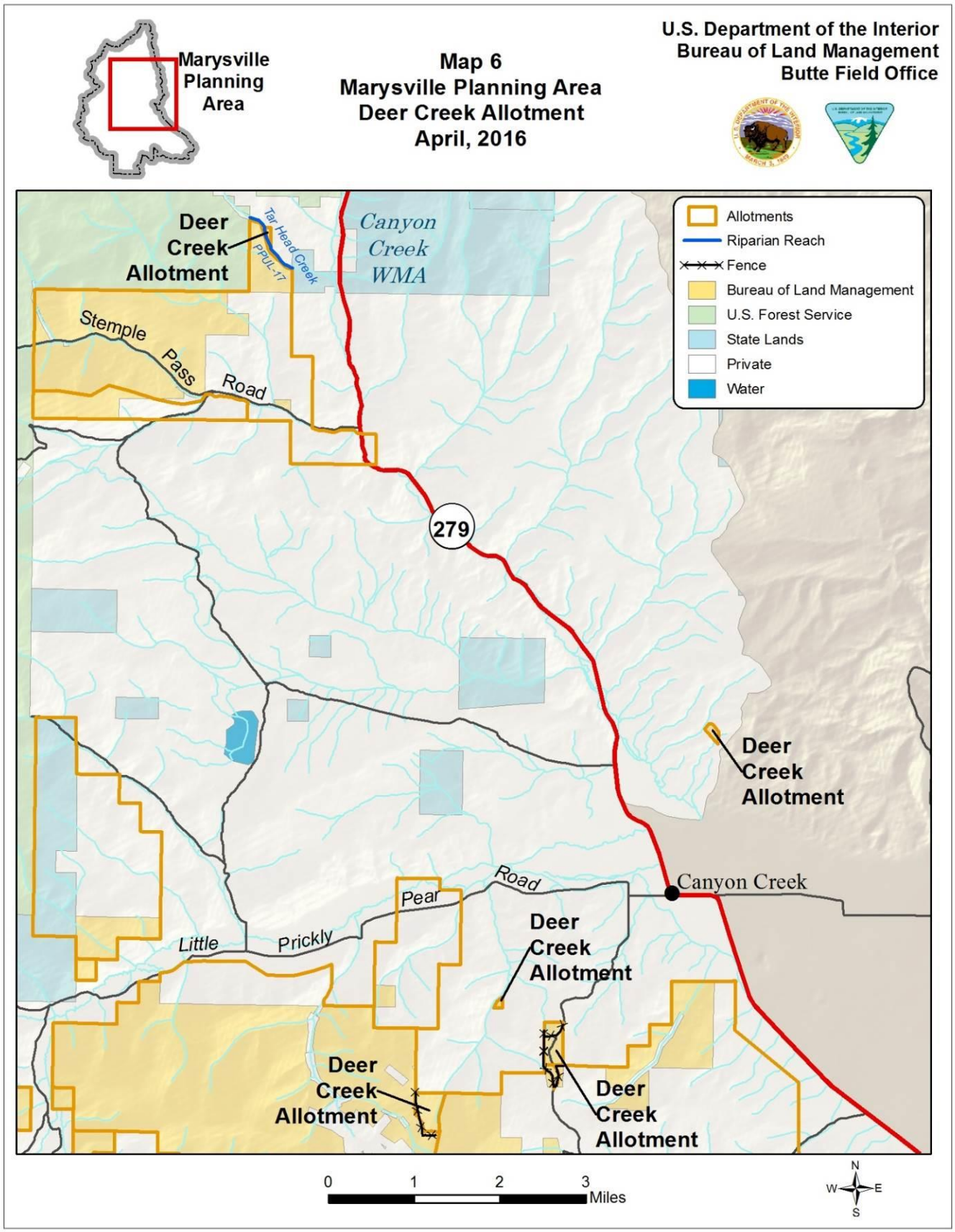
S

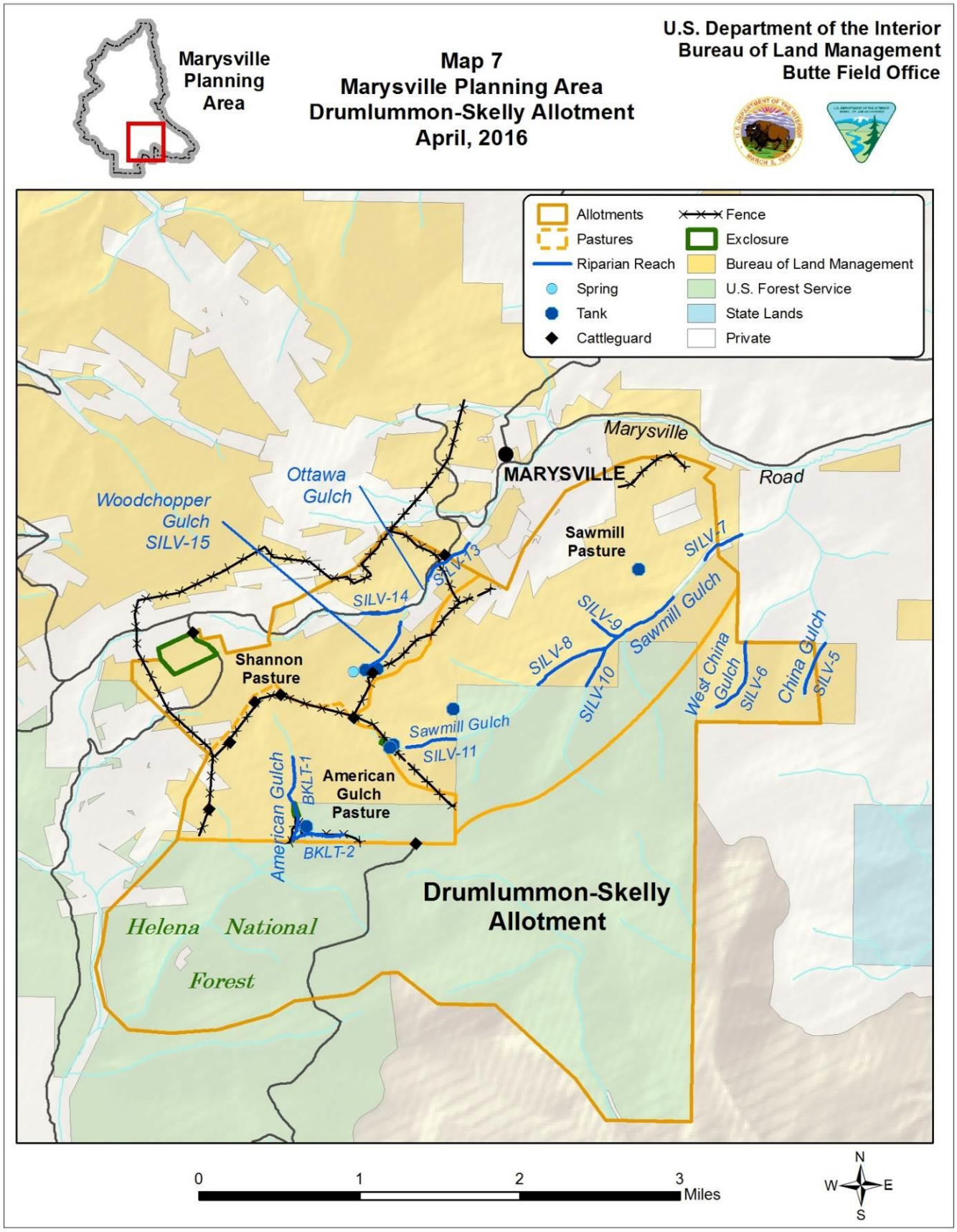

Marysville Planning Area
Map 4
Marysville Planning Area
Canyon Creek and
Virginia Creek Allotments
April, 2016
U.S. Department of the Interior
Bureau of Land Management
Butte Field Office
Allotments
Riparian Reach
Tank
Fence
Exclosure
Bureau of Land Management
U.S. Forest Service
State Lands
Private
Helena National Forest
Virginia Creek Allotment
Canyon Creek Allotment
Canyon Creek WMA
Tar Head Creek PPUL-17
PPUL-15
PPUL-14
Trout Creek
Stemple Pass Road
Virginia Creek PPUL-13
279
0
1
2
3
Miles
N
W
E
S

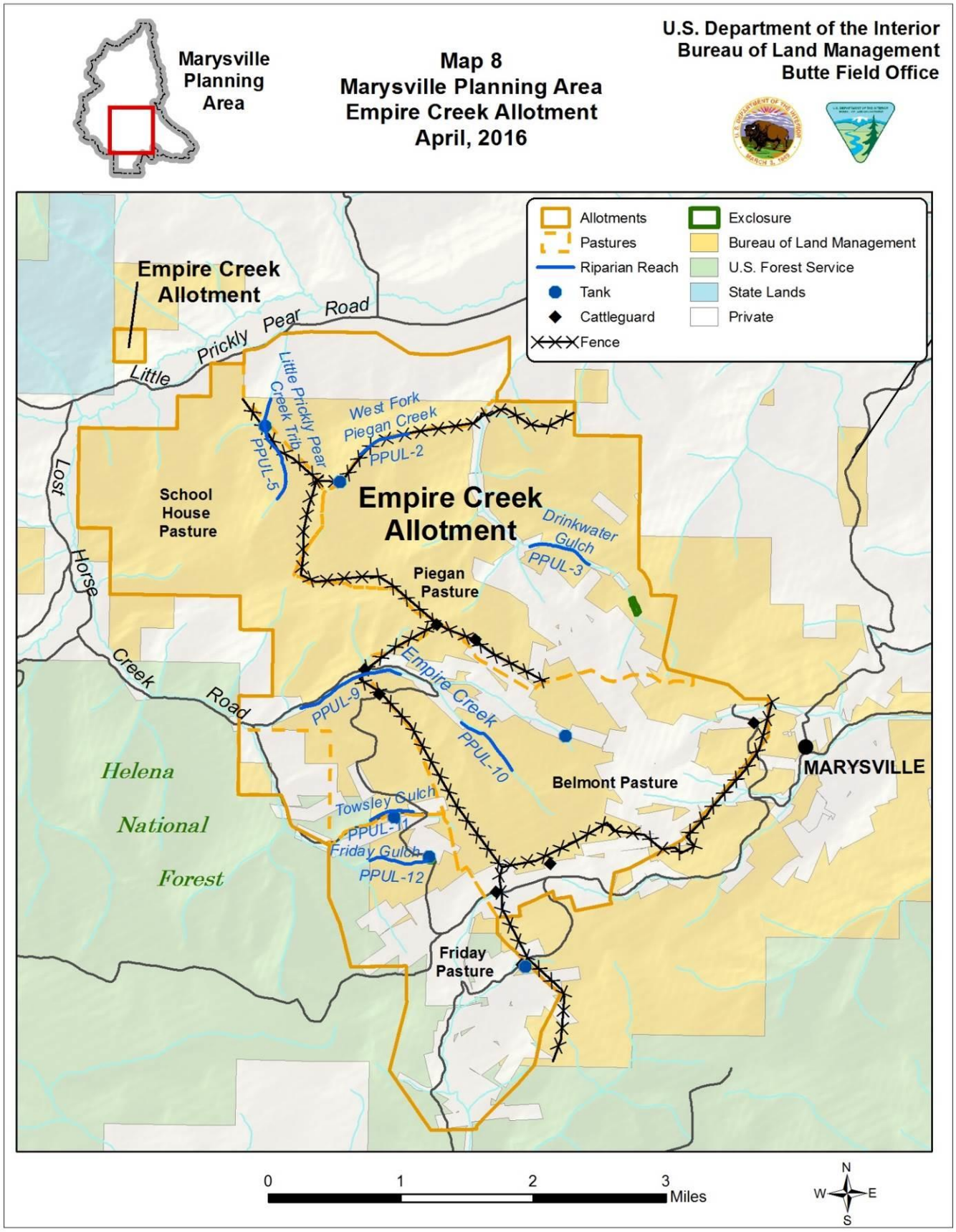
Map 5
Marysville Planning Area
Cemetary and
Edwards Mountain Allotments
April, 2016

U.S. Department of the Interior
Bureau of Land Management
Butte Field Office



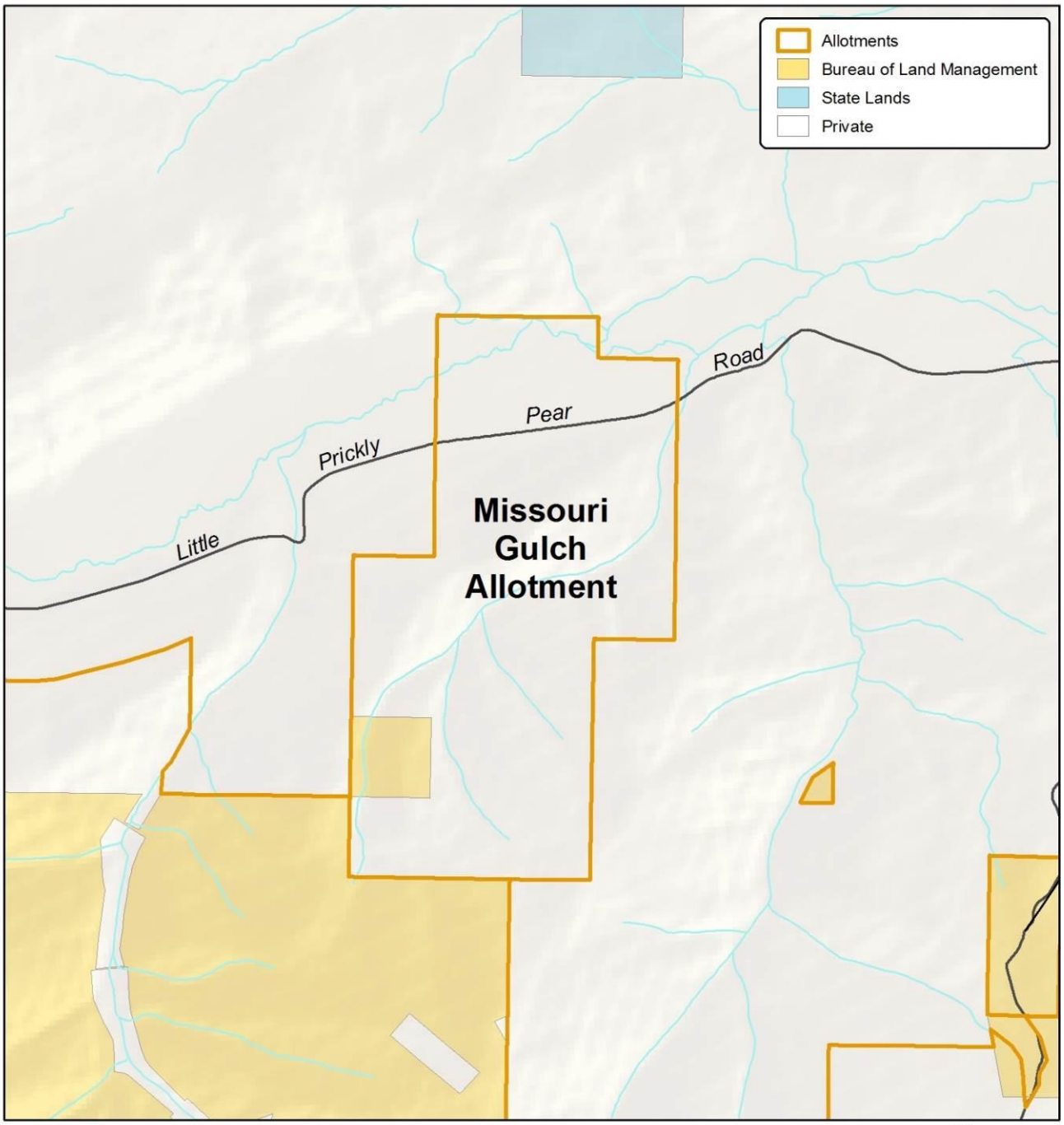

Marysville Planning Area
Map 6
Marysville Planning Area
Deer Creek Allotment
April, 2016
U.S. Department of the Interior
Bureau of Land Management
Butte Field Office
Allotments
Riparian Reach
Fence
Bureau of Land Management
U.S. Forest Service
State Lands
Private
Water
Deer Creek Allotment
Tar Head Creek
PPUL-17
Canyon Creek WMA
Stemple Pass Road
279
Deer Creek Allotment
Canyon Creek
Pear Road
Little Prickly
Deer Creek Allotment
Deer Creek Allotment
Deer Creek Allotment
0 1 2 3 Miles
N
W
E
S

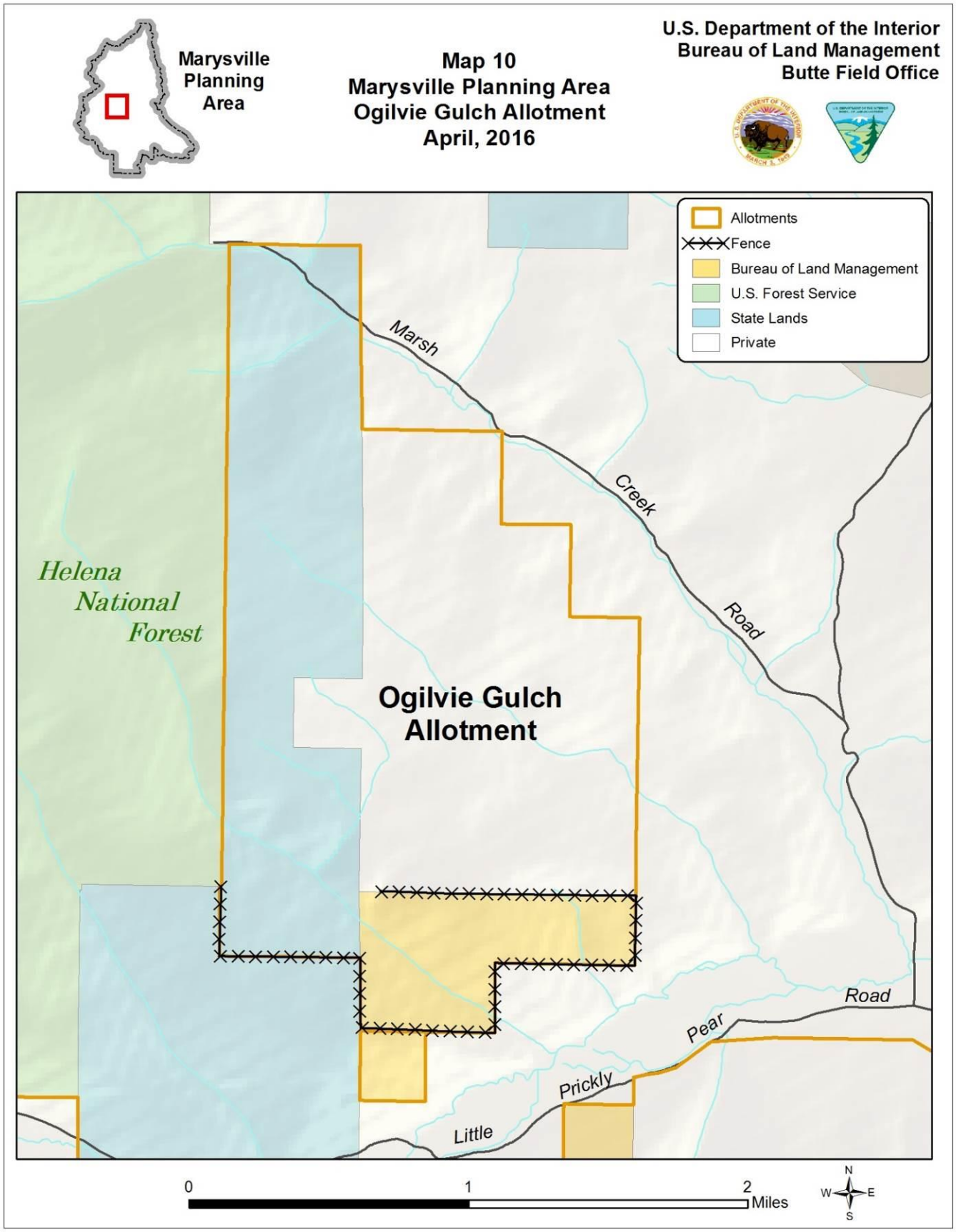

Marysville Planning Area
Map 7
Marysville Planning Area
Drumlummon-Skelly Allotment
April, 2016
U.S. Department of the Interior
Bureau of Land Management
Butte Field Office
Allotments
Pastures
Riparian Reach
Spring
Tank
Cattleguard
Fence
Exclosure
Bureau of Land Management
U.S. Forest Service
State Lands
Private
Marysville Road
MARYSVILLE
Ottawa Gulch
Woodchopper Gulch SILV-15
SILV-13
SILV-14
Sawmill Pasture
SILV-7
SILV-9
Sawmill Gulch
SILV-8
SILV-10
West China Gulch
SILV-6
China Gulch
SILV-5
Shannon Pasture
Sawmill Gulch
SILV-11
American Gulch
BKLT-1
American Gulch Pasture
BKLT-2
Drumlummon-Skelly Allotment
Helena National Forest
0
1
2
3
Miles
N
W
E
S

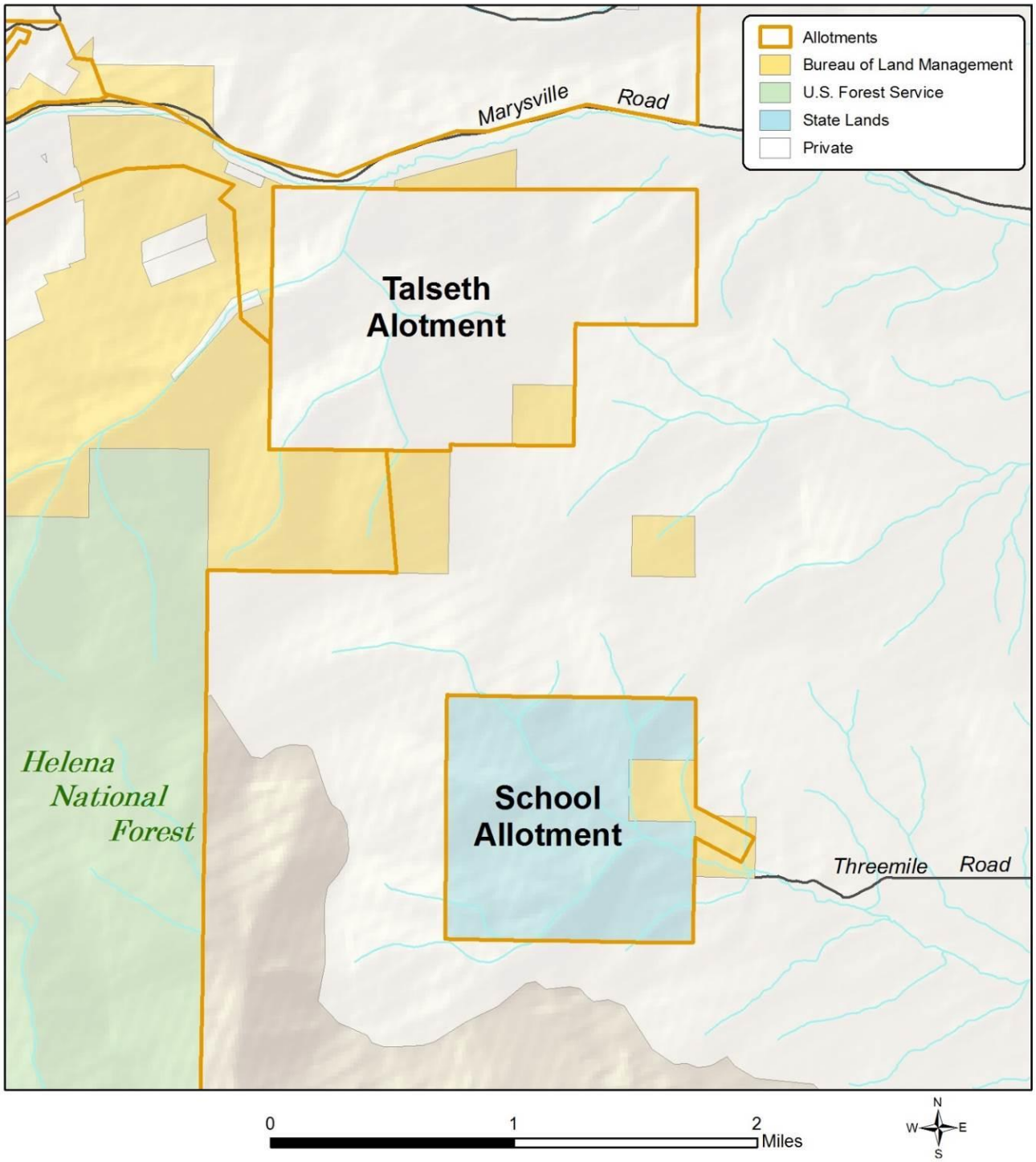

Marysville Planning Area
Map 8
Marysville Planning Area
Empire Creek Allotment
April, 2016
U.S. Department of the Interior
Bureau of Land Management
Butte Field Office
Allotments
Pastures
Riparian Reach
Tank
Cattleguard
Fence
Exclosure
Bureau of Land Management
U.S. Forest Service
State Lands
Private
Empire Creek Allotment
Little Prickly Pear Road
Lost Horse Creek Road
Little Prickly Pear Creek Trib
PPUL-5
West Fork Piegan Creek
PPUL-2
School House Pasture
Empire Creek Allotment
Drinkwater Gulch
PPUL-3
Piegan Pasture
Empire Creek
PPUL-9
PPUL-10
Belmont Pasture
MARYSVILLE
Helena National Forest
Towsley Gulch
PPUL-11
Friday Gulch
PPUL-12
Friday Pasture
0
1
2
3
Miles
N
W
E
S

Map 9
Marysville Planning Area
Missouri Gulch Allotment
April, 2016

U.S. Department of the Interior
Bureau of Land Management
Butte Field Office




Marysville Planning Area
Map 10
Marysville Planning Area
Ogilvie Gulch Allotment
April, 2016
U.S. Department of the Interior
Bureau of Land Management
Butte Field Office
Allotments
Fence
Bureau of Land Management
U.S. Forest Service
State Lands
Private
Marsh
Creek
Road
Helena National Forest
Ogilvie Gulch Allotment
Road
Pear
Prickly
Little
0
1
2
Miles
N
W
E
S

Map 11
Marysville Planning Area
School and Talseth Allotments
April, 2016

U.S. Department of the Interior
Bureau of Land Management
Butte Field Office