

**AGENDA**  
**REGULAR MEETING OF THE BOARD OF LAND COMMISSIONERS**  
July 20, 2020, at 9:00 a.m.  
State Capitol, Room 303  
Helena, MT

**ACTION ITEMS**

- 0720-1    FWP: Garrity Mountain WMA Stumptown Addition/Fee Acquisition:**  
*Benefits: N/A (non-trust land)*  
*Location: Deer Lodge County*
- 0720-2    FWP: Fishing Access Site Purchase**  
**A. Confluentus Corner Fishing Access Site**  
*Benefits: N/A (non-trust land)*  
*Location: Sanders County*  
**B. C. Ben White Memorial Fishing Access Site**  
*Benefits: N/A (non-trust land)*  
*Location: Ravalli County*
- 0720-3    Timber Sale: Schmidt Creek Salvage**  
*Benefits: Eastern College- MSU/ Western College- U of M*  
*Location: Lake County*
- 0720-4    Forest Management Bureau: Implementing the 2020 Sustainable Yield Calculation (SYC)**  
*Benefits: N/A*  
*Location: N/A*
- 0720-5    Land Exchange: Preliminary Approval for MDC Boulder Land Exchange**  
*Benefits: School for the Deaf and Blind*  
*Location: Jefferson County*
- 0720-6    Cabin and Home Sites: Final Approval for Sale**  
**A. Chouteau County**  
*Benefits: Common Schools*  
*Location: Chouteau County*  
**B. Flathead County**  
*Benefits: School for the Deaf & Blind*  
*Location: Flathead County*
- 0720-7    Easements**  
*Benefits: Common Schools, Public Land Trust- Nav. River*  
*Location: Blaine, Cascade, Madison, Phillips, Powell, Stillwater, Sweet Grass, and Valley Counties*

**PUBLIC COMMENT**



# 0720-1

FWP: Garrity Mountain WMA  
Stumptown Addition/Fee Acquisition:





**Land Board Agenda Item  
July 20<sup>th</sup>, 2020**

**0720-1 FWP: Garrity Mountain WMA Stumptown Addition/Fee Acquisition**

**Location:** Deer Lodge County, Montana

**Trust Benefits:** n/a

**Trust Revenue:** n/a

**Item Summary**

The Department of Fish, Wildlife & Parks (FWP) is proposing to purchase 600 acres near the west end of the town of Anaconda. The land borders Garrity Mountain Wildlife Management Area (GMWMA), on two sides and provides exceptional public access to the WMA. The land is split by Stumptown Road, a public road approximately 5 minutes from downtown Anaconda. On the north side of the road are grassy meadows and cottonwood bottoms with nearly  $\frac{3}{4}$  of a mile of Warm Springs Creek running through it. On the south side of the road the property rises up into mixed forest and classic elk winter range with an old road that brings you directly into the heart of the WMA.

The current out-of-state owner bought it as recreational property after the Anaconda Company and later Y-T Timber divested area lands. There has been no public access to the land for years. In 2019 this owner subdivided a portion of the property and Rocky Mountain Elk Foundation stepped in to secure a purchase option on the subdivided portion and the remainder. Together FWP and the community came up with a plan to open the land to public access. The Anaconda - Deer Lodge County Commissioners expressed support in a letter (attached).

Appraised value - \$1,740,600

Contributions - Habitat Montana \$100,000

Rocky Mountain Elk Foundation \$100,000

Fish and Wildlife Conservation Trust \$75,000

MT DOJ Natural Resource Damage Program \$1,465,600

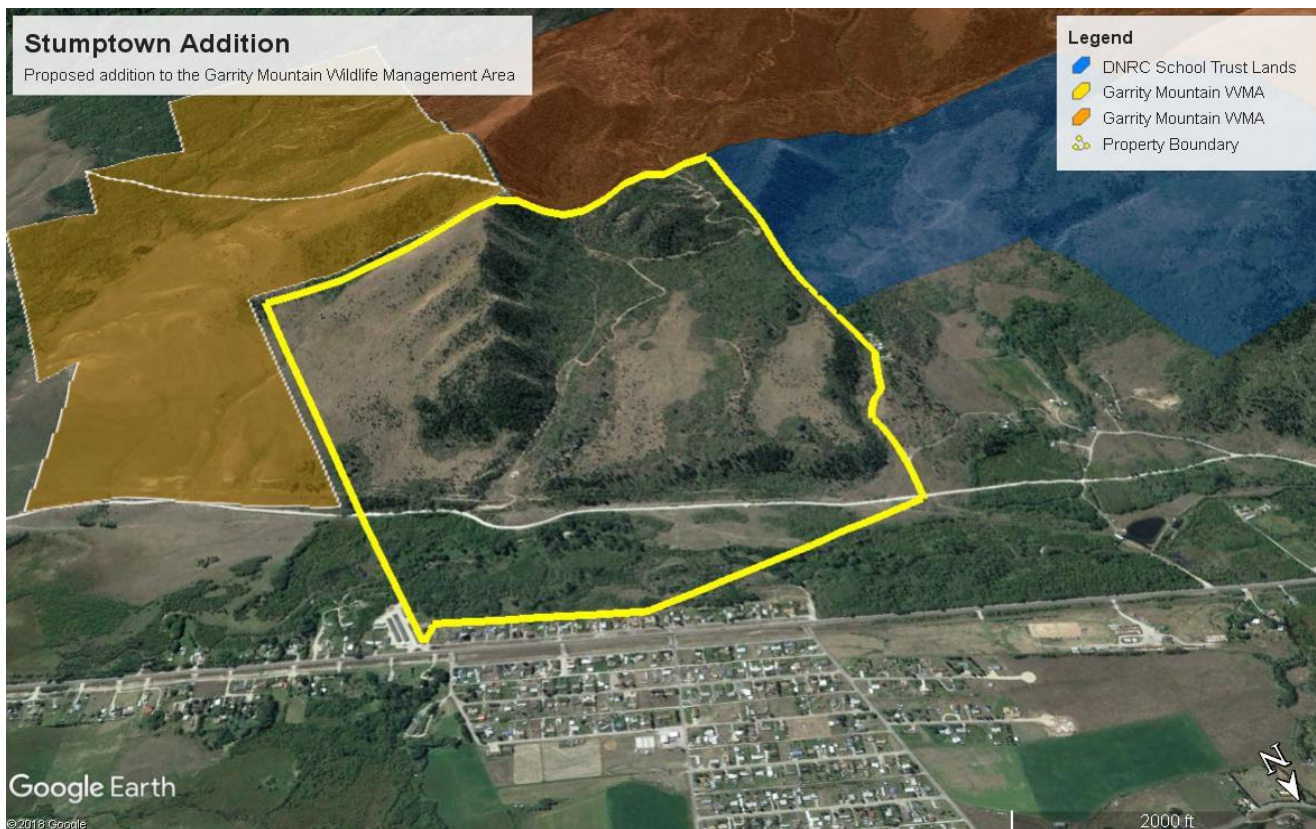
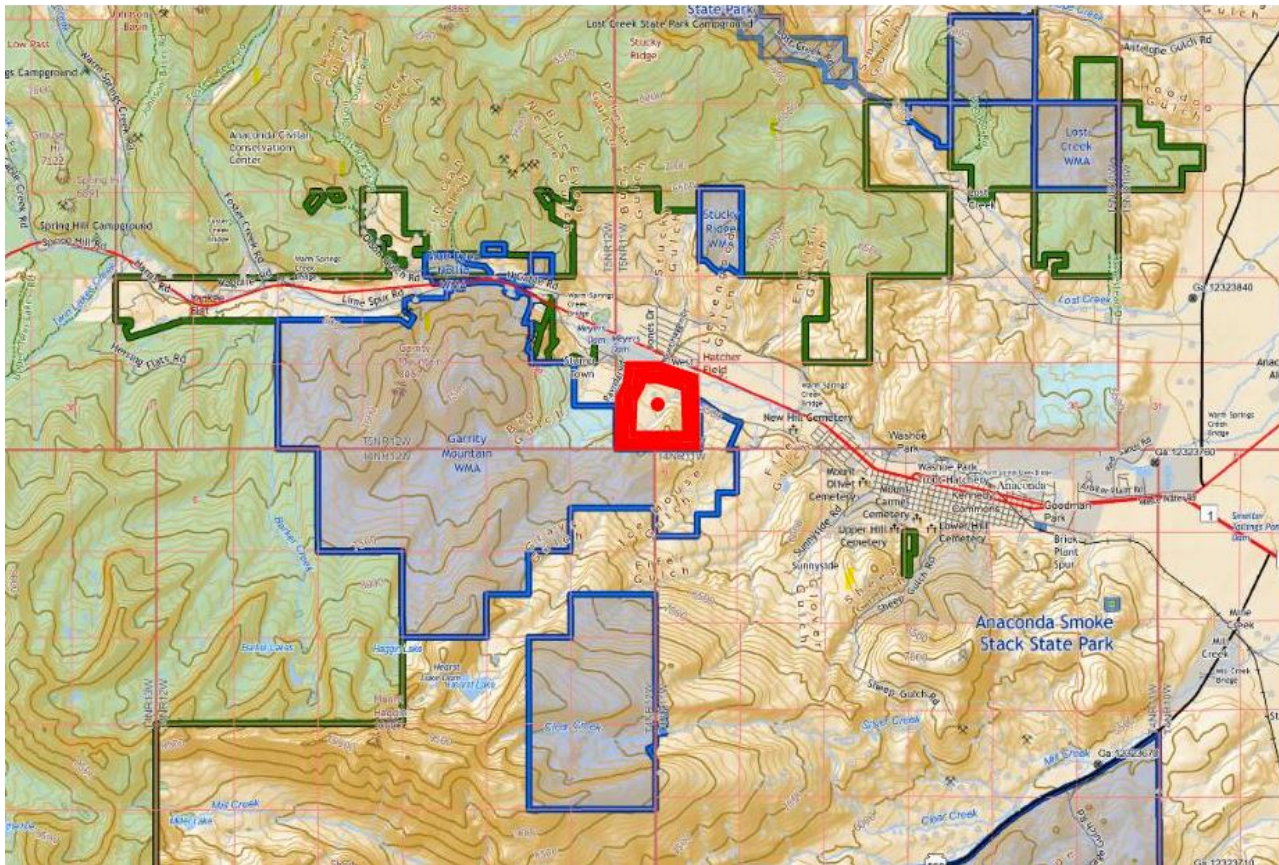
**Public Involvement Process & Results:**

FWP presented the proposed acquisition to the Anaconda-Deer Lodge County Commission and Commissioners signed a letter of support October 1, 2019 (attached). FWP completed an Environmental Assessment (EA) for the proposed action, and solicited public involvement including an open house in Anaconda, notices in the *Butte Montana Standard*, the *Anaconda Leader*, and *Helena Independent Record*, the *Missoulian*, and the *Silver State Post*, and copies of its availability were emailed to neighboring landowners and interested parties. In all, 18 comments were received; 14 were in support of the proposed action, 3 opposed the action, and one was unclear. A Decision Notice was released on April 21, 2020 that recommended proceeding with the acquisition.

**FWP Recommendation**

FWP recommends the members of the Land Board approve FWP's acquisition of the 600-acre Stumptown Addition to the Garrity Mountain WMA.

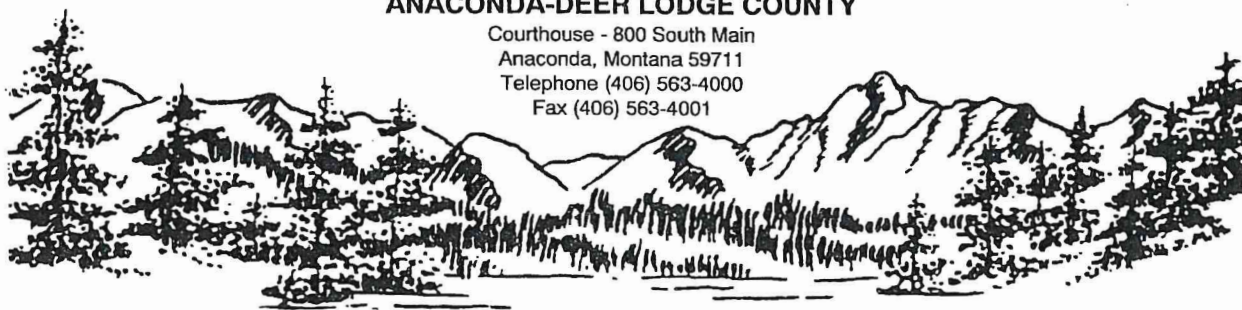
## STUMPTOWN ADDITION VICINTY AND DETAIL MAPS





**ANACONDA-DEER LODGE COUNTY**

Courthouse - 800 South Main  
 Anaconda, Montana 59711  
 Telephone (406) 563-4000  
 Fax (406) 563-4001



October 1, 2019

Martin Balukas  
 Lands Section  
 MTFWP  
 P.O. Box 200701  
 Helena, MT 59620-0701

Dear Montana Department of Fish, Wildlife and Parks:

The County Commission of Anaconda-Deer Lodge County would like to express its support for the proposed Stumptown Addition to the Garrity Mountain Wildlife Management Area (WMA). The Montana Department of Fish, Wildlife and Parks (FWP) has proposed purchasing approximately 598 acres of private property that borders the WMA. Upon purchase, the property would be incorporated into the existing WMA to be managed and maintained by FWP. The Stumptown Addition will protect important fish and wildlife habitat and provide diverse recreational opportunities to the public in perpetuity. The citizens of Anaconda-Deer Lodge County would benefit from the hunting, fishing, wildlife-watching, and hiking opportunities this property provides, and the close proximity to Anaconda represents easy access to this property for many of our constituents to enjoy.

Respectfully,

Terry Vermeire  
 Commission Chair

Kevin Hart  
 Commission Vice-Chair

Steve Gates  
 Commissioner

Paul Smith  
 Commissioner

Mike Huotte  
 Commissioner



# 0720-2

FWP: Fishing Access Site Purchase

A. Confluentus Corner

B. C. Ben White Memorial



**Land Board Agenda Item  
July 20, 2020**

**0720-2A Department of Fish, Wildlife & Parks, Confluentus Corner Fishing Access Site Purchase**

<b>Location:</b>	<b>Sanders County</b>
<b>Trust Benefits:</b>	<b>N/A (non-trust land)</b>
<b>Trust Revenue:</b>	<b>N/A</b>

**Item Summary:** The Department of Fish, Wildlife, & Parks (FWP) proposes to purchase a fee simple interest in a 40-acre private property for a Fishing Access Site (FAS) in Sanders County, Montana. The proposed FAS straddles the lower Thompson River (see attached map). The private landowner wishes to sell this parcel to FWP at a bargain sale price to create a perpetual, walk-in fishing access site for the neighboring residents, Sanders County residents and visiting trout fishermen to enjoy forever.

The proposed FAS is located just north of the junction of Montana Highway 200 and Thompson River Road, roughly 4 miles east of Thompson Falls. This area is used primarily for rural residential and recreational purposes. The proposed FAS shares a boundary to the north with Lolo National Forest. The site is heavily forested and sits partially within a designated floodplain. Vehicular access exists on the west side of the river from Thompson River Road.

The acquisition will create a new, undeveloped, day-use public fishing access site on the Thompson River, which is the lower Clark Fork valley's *most important* trout fishery. This FAS would be the first river access point on the lower Thompson River. The land contains intact riparian habitat that is threatened with imminent development, despite its marginal suitability.

The lower seven miles of the Thompson River possess the coldest water and provide the best habitat for native fish, including bull trout. FWP fish biologists commonly observe dozens of tagged trout seeking thermal refuge in this particular stretch of the lower Thompson River during summer months.

The appraised value of the property is \$ 320,000, but the landowner wishes to sell it to FWP for the bargain price of \$ 295,000.00. The landowner also paid for the appraisal and other due diligence. FWP has funding commitments from Avista Clark Fork Settlement Funds and NorthWest Energy Adaptive Mitigation Fund, with contributions from the local Trout Unlimited Chapter and Habitat Montana to pay the purchase price. FWP will pay property taxes to Sanders County pursuant to MCA 87-6-103.

The Sanders County Commissioners unanimously support this acquisition (attached letter). FWP published an Environmental Assessment (EA, attached) and invited public comment for 30 days, ending April 13, 2020. FWP issued a Decision Notice on April 14, 2020 (attached), supporting approval of the proposed fee simple acquisition. One local person had this to say during the public comment period: "The lower canyon between the ACM Road Bridge and the Hwy 200 Bridge is a nice secluded stretch of water and the fishing can be pretty good there too. This access point would provide an alternative to the more heavily used and very easy to access stretches of the lower Thompson River."

**Rationale for Land Board Action:** The community would benefit from this acquisition as the sole FAS owned by FWP on the lower Thompson River, the most visible from Highway 200, and one that is vital to the local trout fishery to protect from development.

**FWP Recommendation:** FWP recommends the Land Board approve Fish, Wildlife & Parks' fee simple acquisition of Thompson River Fishing Access Site.





**Sanders County - Twn. 21 N, Rng. 28 W, Section 18**

Proposed FAS is located approximately 5-Miles East of the town of Thompson Falls

**SANDERS COUNTY  
BOARD OF COUNTY COMMISSIONERS**

1111 Main Street • P.O. Box 519 • Thompson Falls, Montana 59873

**Anthony B. Cox**, Presiding Officer  
**Glen E. Magera**, Commissioner  
**Carol Brooker**, Commissioner



Telephone (406) 827-6942  
Fax (406) 827-4388  
co.sanders.mt.us

March 5, 2020

Montana Board of Land Commissioners  
and  
Montana Fish & Wildlife Commission

**RE: Support for proposed FWP Thompson River Fishing Access Site**

Dear Land Commissioners and Fish & Wildlife Commissioners:

As the Sanders County Commissioners representing each of its three districts, we support the acquisition of the proposed 40-acre fishing access site along the lower Thompson River by the Montana Department of Fish, Wildlife & Parks (FWP).

FWP's proposed acquisition is entirely consistent with community interests in Sanders County. Specifically, county residents will greatly benefit from a new walk-in fishing access to our premiere trout fishery. The property will also protect important wildlife species like Bighorn Sheep. It is also important to our constituents that FWP will be paying property taxes after it acquires the property and will permanently manage the site for current and future generations of Sanders County residents to enjoy.

Thank you for considering this important project.

Sincerely,

Anthony B. Cox, Presiding Officer  
District No. 3

Glen E. Magera, Commissioner  
District No. 2

Carol Brooker, Commissioner  
District No. 1

P.O. Box 519, 1111 Main St., Thompson Falls, Mt. 59873 • (406) 827-6966, Fax: (406) 827-4388



# DRAFT ENVIRONMENTAL ASSESSMENT

## Property Acquisition Thompson River Fishing Access Site



March 2020



## Thompson River Fishing Access Site Draft Environmental Assessment MEPA, NEPA, MCA 23-1-110 CHECKLIST

### **PART I. PROPOSED ACTION DESCRIPTION**

**1. Type of proposed state action:**

Montana Fish, Wildlife and Parks (FWP) proposes to purchase 40-acres on the Thompson River to be managed as an undeveloped, walk-in Fishing Access Site (FAS) approximately five miles east of the city of Thompson Falls. This proposal would preserve intact habitat for critical fish and wildlife species, while allowing public access.

**2. Agency authority for the proposed action:**

The 1977 Montana Legislature enacted Section 87-1-605, Montana Code Annotated (MCA), which directs Montana Fish Wildlife and Parks (FWP) to acquire, develop and operate a system of fishing accesses. The legislature earmarked a funding account to ensure that the fishing access site program would be implemented. Sections 23-1-105, 23-1-106, 15-1-122, 61-3-321, and 87-1-303, MCA, authorize the collection fees and charges for the use of state park system units and fishing access sites, and contain rule-making authority for their use, occupancy, and protection. Furthermore, Section 23-1-110, MCA, and Administrative Rules of Montana (ARM) 12.2.433 guides public involvement and comment for the improvements at state parks and fishing access sites, which this document provides.

ARM 12.8.602 requires the Department to consider the wishes of users and the public, the capacity of the site for development, environmental impacts, long-range maintenance, protection of natural features and impacts on tourism as these elements relate to development or improvement to fishing access sites or state parks. This document will illuminate the facets of the proposed project in relation to this rule. See Appendix A for HB 495 qualification.

**3. Name of project:**

Property Acquisition  
Thompson River Fishing Access Site

**4. Project sponsor:**

Montana Fish, Wildlife and Parks, Region 1  
5427 Highway 200  
Thompson Falls, MT 59873  
(406) 382-3032

**5. Anticipated Schedule:**

Estimated Public Comment Period: April 2020  
Estimated Decision Notice: May 2020  
FWP Commission and Land Board Consideration: June/July 2020

**6. Location:**

The Thompson River enters the upper end of Thompson Falls Reservoir on the Clark Fork River approximately five miles east of Thompson Falls, Montana. The proposed FAS is located on the lower mile of the Thompson River. The lower boundary of the property is about 1/3 mile upstream of Highway 200. The land is in Section 18, Township 21 North, Range 28 West (Figures 2 and 3).

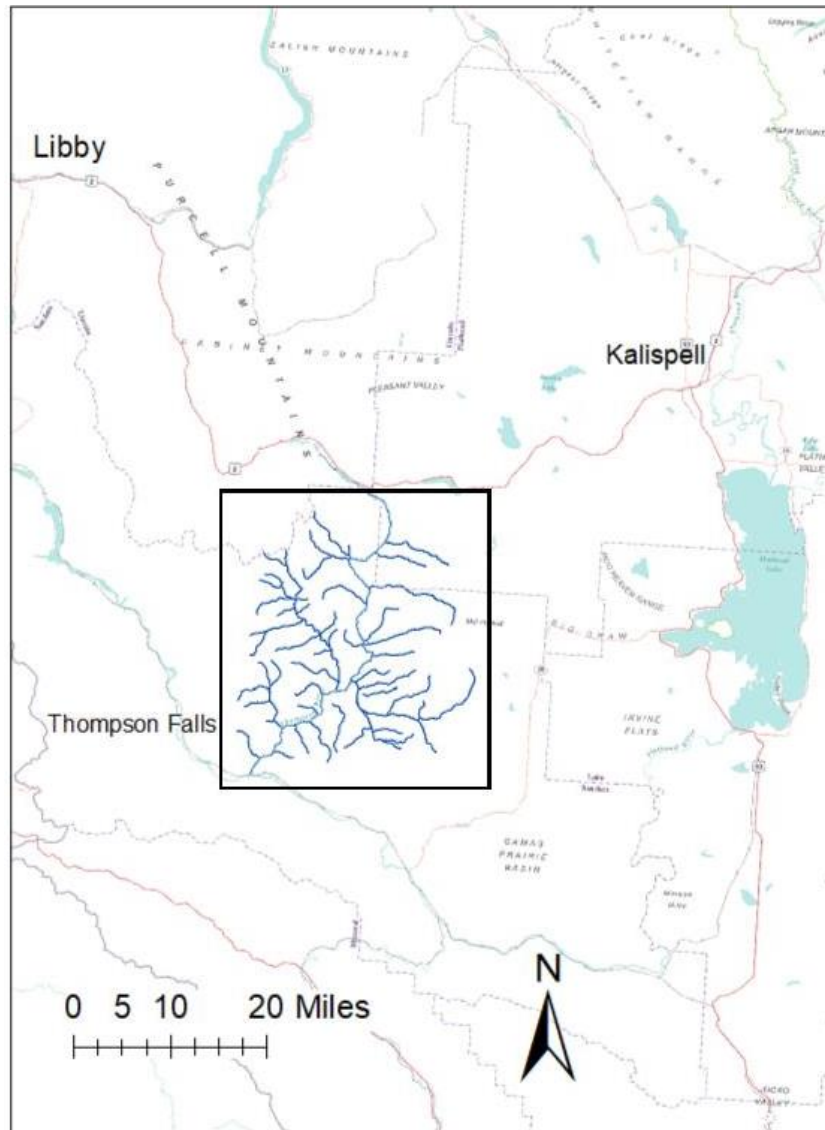


Figure 1. The Thompson River drainage in Northwest Montana.



Figure 2. Lots proposed for purchase on the lower Thompson River near Thompson Falls, Montana, with proximity to Thompson Falls Reservoir on the Clark Fork River.

**Project size:**

	<u>Acres</u>		<u>Acres</u>
(a) Developed:		(d) Floodplain	<u>2.0</u>
Residential	<u>0</u>		
Industrial	<u>0</u>	(e) Productive:	
(b) Open Space/ Woodlands/Recreation	<u>33.5*</u>	Irrigated cropland	<u>0</u>
(c) Riparian/Wetland Areas	<u>6.5*</u>	Dry cropland	<u>0</u>
		Forestry	<u>0</u>
		Rangeland	<u>0</u>
		Other	<u>0</u>

\* Approximate acreages.



**8. Local, State or Federal agencies with overlapping or additional jurisdiction:**

(a) **Permits:** No permits required.

**(b) Funding:**

<b>Agency Name</b>	<b>Funding Amount</b>
Avista Clark Fork Settlement Agreement	\$ 150,000
NorthWestern Energy Adaptive Mitigation Fund	\$ 100,000
Montana Fish, Wildlife & Parks Acquisition Fund	\$ 40,000
Trout Unlimited Westslope Chapter	\$ 5,000
<b>TOTAL</b>	<b>\$ 295,000</b>

**(c) Other Overlapping or Additional Jurisdictional Responsibilities**

<b>Agency Name</b>	<b>Type of Responsibility</b>
Montana Natural Heritage Program	Species of Concern (Appendix B)
Sanders County Weed District	Weed Management Coordination (Appendix C)

Section 7-22-2154 (2), MCA requires a weed inspection by the county weed district before acquiring new land. The weed inspection has been completed by Sanders County Weed District (Appendix D Weed Inventory).

**9. Narrative summary of the proposed action:**

Montana Fish, Wildlife and Parks proposes to purchase 40-acres on the Thompson River from The Conservation Fund to be managed as an undeveloped, walk-in Fishing Access Site (FAS) approximately five miles east of the city of Thompson Falls. The property contains intact upland and riparian habitat and would provide access to approximately 2,500 feet of river frontage along both banks of the Thompson River. Since 1982, the Thompson River has averaged over 8,000 annual angler days with a maximum of over 13,000 in 2015. The mainstem fishery primarily consists of rainbow and brown trout, but many of the river's intact tributaries provide excellent spawning and rearing habitat for native salmonids. A recent study conducted on the Thompson River verified that bull trout which originate in its tributaries spend a considerable amount of time in the mainstem Thompson River (Glaide 2017). The lower seven miles of the Thompson River possess the coldest water and provide the best habitat for native fish. A PIT tag antenna near the confluence with the Clark Fork River recently documented bull trout usage of the lower Thompson River during every calendar month of the year. The property is also located close to the Mount Silcox Wildlife Management Area, and adjacent to United States Forest Service administered land. It provides excellent wildlife habitat for bighorn sheep, elk, deer and other game and non-game species (Figure 3).

Based on observational data provided by the Montana Natural History Program, 12 sensitive species are found in the vicinity of the proposed property acquisition including westslope cutthroat trout and bull trout (Table 1). Purchase of this property would prevent residential development, which would preserve sensitive fish and wildlife habitat and allow for continued terrestrial wildlife movement (Appendix B).

Other native fish species that occur within the property include mountain whitefish, longnose suckers, largescale suckers, northern pikeminnow, various sculpin species, and longnose dace. Non-native fish species include rainbow trout, brown trout, and brook trout. Terrestrial wildlife species that occur within the proposed acquisition area include white-tailed deer, elk, bighorn

sheep, coyote, red fox, mountain lion, moose, black bear, beaver, river otter, muskrats, small mammals, bald eagles, osprey, other raptors, waterfowl, and migratory and neotropical song birds.

**Table 1.** Montana State Species of Concern (SOC) or other sensitive species found near the property.

<b>Common Name</b>	<b>Scientific Name</b>
Bull Trout	<i>Salvelinus confluentus</i>
Westslope Cutthroat Trout	<i>Oncorhynchus clarkii lewisi</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>
Townsend's Big-eared Bat	<i>Corynorhinus townsendii</i>
Golden Eagle	<i>Aquila chrysaetos</i>
Hoary Bat	<i>Lasiurus cinereus</i>
Grizzly Bear	<i>Ursus arctos</i>
Pygmy Shrew	<i>Sorex hoyi</i>
Varied Thrush	<i>Ixoreus naevius</i>
Fisher	<i>Pekania pennanti</i>
Wolverine	<i>Gulo gulo</i>
Peregrine Falcon	<i>Falco peregrinus</i>



Figure 3. Bighorn Sheep on the Thompson River Road immediately adjacent to the property (left), and large bull trout sampled by FWP crews in the mainstem Thompson River which was documented within the property (right).

The vegetation found on the proposed acquisition consists of upland grassland, riparian shrub, and woodland. Noxious weeds found on the property include spotted knapweed, St. John's Wort, and common mullein. Noxious weeds are primarily limited to the old roadbed and existing power-line corridor and occur in low abundance.

The acquisition would maintain the habitat in its current primitive state and would allow for walk-in access only. The site would be managed by FWP as a Fishing Access Site (FAS) for day-use only, angling and other appropriate recreational access such as wildlife viewing, picnicking, walking, and hunting. An existing 240-foot pull-out (parking area) already exists on a county road easement less than 200 feet upstream of the proposed acquisition and adjacent to land administered by the Lolo National Forest (Figure 4). This parking area will accommodate greater than ten vehicles and already contains FWP signage with fishing regulations (Figure 5). An existing roadbed on the property will be blocked off to vehicle access. If the current parking area is found to be insufficient, a new EA would be released for the development of the existing roadbed into a parking area.



Montana Fish, Wildlife and Parks personnel would periodically monitor and patrol the site for violations, and FWP Game Wardens would enforce FWP rules and regulations at the site as needed. This would provide a unique access point to the lower Thompson River, as anglers would be able to walk in and separate themselves from the abundant roads present in the Thompson River drainage. Currently, most access to the lower Thompson River is within sight of at least one road. Noxious weeds would be controlled using the [Statewide Integrated Weed Management Plan](#). If acquired, additional regulation and informational signs may be installed.



Figure 4. North end of the proposed acquisition showing proximity to established parking area and United States Forest Service land. If acquired, the existing roadbed would be closed to vehicular access.



Figure 5. The existing parking area on a county road right-of-way just upstream of the proposed FAS and adjacent to United States Forest Service land. Two FWP signs already exist at this parking area.

This site was first investigated for purchase in 2017. Local FWP biologists worked with hydropower company mitigation programs, the FWP lands unit, and Trout Unlimited to secure funding for the purchase. In June 2019, the Montana Fish and Wildlife Commission endorsed FWP continuing its assessment and due diligence of the acquisition. An appraisal was conducted on the property in summer 2019 at the recommendation of FWP, and the property appraised for \$320,000 based on the property's development potential. Throughout the process, FWP has worked with The Conservation Fund, a national non-profit organization, to engage in discussions with the sellers. In January 2020, The Conservation Fund acquired the property. In March 2020, FWP anticipates that all pieces of the funding will be confirmed for FWP to acquire the property. The Conservation Fund will sell the property to FWP for \$295,000, which is \$25,000 less than the appraised value, assuming FWP can acquire the property in a timely manner. The final sale would be dependent on the Fish and Wildlife Commission and State Land Board approval.

## **PART II. ENVIRONMENTAL REVIEW**

### **1. Description and analysis of reasonable alternatives:**

#### **Alternative A: No Action**

If no action was taken, FWP would not purchase the property. The lots would remain private and closed to public access. The lots would likely be developed with septic systems, dwellings, and roads. Some level of modification to the riparian vegetation would likely occur.

#### **Alternative B: Proposed Action**

FWP would acquire forty acres of property along the Thompson River for inclusion in the statewide Fishing Access Site (FAS) system. The new FAS would be day-use only and managed for walk-in access with minimal development. Acquisition of the property by FWP would ensure future public access and resource protection and would preclude private development that would likely include roads, residences, septic systems, and other disturbances that could negatively impact this important aquatic and recreational resource. The existing roadbed between the highway and the river in Figure 4 would be closed to vehicle traffic and parking would be restricted to the pull-out area shown in Figure 5.

### **2. Evaluation and listing of mitigation, stipulation, or other control measures enforceable by the agency or another government agency:**

None

### **PART III. ENVIRONMENTAL REVIEW CHECKLIST**

**Evaluation of the impacts of the Proposed Action including secondary and cumulative impacts on the Physical and Human Environment.**

#### **A. PHYSICAL ENVIRONMENT**

1. <b><u>LAND RESOURCES</u></b>  Will the proposed action result in:	IMPACT *					
	Unknown *	None	Minor *	Potentially Significant	Can Impact Be Mitigated *	Comment Index
a. **Soil instability or changes in geologic substructure?		X				1a.
b. Disruption, displacement, erosion, compaction, moisture loss, or over-covering of soil, which would reduce productivity or fertility?		X				1a.
c. **Destruction, covering or modification of any unique geologic or physical features?		X				1a.
d. Changes in siltation, deposition or erosion patterns that may modify the channel of a river or stream or the bed or shore of a lake?		X				1a.
e. Exposure of people or property to earthquakes, landslides, ground failure, or other natural hazard?		X				

- 1a. The proposed acquisition would have no effect on existing soil patterns, structures, productivity, fertility, or instability because no additional soil-disturbing activities are planned for the property by FWP. No development of the site is planned.

2. <u>AIR</u>  Will the proposed action result in:	IMPACT *					
	Unknown *	None	Minor *	Potentially Significant	Can Impact Be Mitigated *	Comment Index
a. **Emission of air pollutants or deterioration of ambient air quality? (Also see 13 (c).)		X				2a.
b. Creation of objectionable odors?		X				
c. Alteration of air movement, moisture, or temperature patterns or any change in climate, either locally or regionally?		X				
d. Adverse effects on vegetation, including crops, due to increased emissions of pollutants?		X				
e. ***For P-R/D-J projects, will the project result in any discharge, which will conflict with federal or state air quality regs? (Also see 2a.)		NA				

- 2a. No impact to air quality is expected as vehicle use will be limited to existing parking areas on the perimeter of the property on an existing road. The old roadbed within the property will be blocked from vehicular access.

3. <b><u>WATER</u></b>  Will the proposed action result in:	IMPACT *					
	Unknown *	None	Minor *	Potentially Significant	Can Impact Be Mitigated *	Comment Index
a. *Discharge into surface water or any alteration of surface water quality including but not limited to temperature, dissolved oxygen or turbidity?		X				3a.
b. Changes in drainage patterns or the rate and amount of surface runoff?		X				
c. Alteration of the course or magnitude of floodwater or other flows?		X				
d. Changes in the amount of surface water in any water body or creation of a new water body?		X				
e. Exposure of people or property to water related hazards such as flooding?		X				
f. Changes in the quality of groundwater?		X				
g. Changes in the quantity of groundwater?		X				
h. Increase in risk of contamination of surface or groundwater?		X				
i. Effects on any existing water right or reservation?		X				
j. Effects on other water users as a result of any alteration in surface or groundwater quality?		X				
k. Effects on other users as a result of any alteration in surface or groundwater quantity?		X				
l. ***For P-R/D-J, will the project affect a designated floodplain? (Also see 3c.)		NA				
m. ***For P-R/D-J, will the project result in any discharge that will affect federal or state water quality regulations? (Also see 3a.)		NA				

3a. No development is proposed within the potential project area. Therefore, no impacts to groundwater, run-off, floodwater, water quality, or water quantity are expected. It is expected that walk-in traffic will develop unofficial pathways through the property, but the effects on water will be minimal. Especially when compared to the proximity of the river to multiple roads which exist upstream.

4. <u>VEGETATION</u>  Will the proposed action result in?	IMPACT *					
	Unknown *	None	Minor *	Potentially Significant	Can Impact Be Mitigated *	Comment Index
a. Changes in the diversity, productivity or abundance of plant species (including trees, shrubs, grass, crops, and aquatic plants)?		X				4a.
b. Alteration of a plant community?		X				4a.
c. Adverse effects on any unique, rare, threatened, or endangered species?		X				4b.
d. Reduction in acreage or productivity of any agricultural land?		X				
e. Establishment or spread of noxious weeds?			X		Yes	4a.
f. ****For P-R/D-J, will the project affect wetlands, or prime and unique farmland?		NA				

- 4a. In its current state, the property contains low numbers of spotted knapweed, common mullein, and St. John's Wort which are primarily found near the old roadbed and power line corridor. If the acquisition were approved, FWP would initiate the Statewide Integrated Weed Management Plan using chemical, biological, and mechanical methods. Restricting access to walk-in only will greatly reduce the spread of weeds. Upland stands of trees are healthy so necessary forest management should be minimal.
- 4b. No rare vegetation is known to exist at this site. **A search of the Montana Natural Heritage Program's (MNHP) Species of Concern database found no vascular or non-vascular plants of significance within the boundaries of the proposed acquisitions.**

<b>** 5. <u>FISH/WILDLIFE</u></b>  <b>Will the proposed action result in:</b>	<b>IMPACT *</b>					
	<b>Unknown *</b>	<b>None</b>	<b>Minor *</b>	<b>Potentially Significant</b>	<b>Can Impact Be Mitigated *</b>	<b>Comment Index</b>
a. Deterioration of critical fish or wildlife habitat?		X				5a.
b. Changes in the diversity or abundance of game animals or bird species?		X				5a.
c. Changes in the diversity or abundance of nongame species?		X				5a.
d. Introduction of new species into an area?		X				
e. Creation of a barrier to the migration or movement of animals?		X				
f. Adverse effects on any unique, rare, threatened, or endangered species?			X		Yes	5b.
g. Increase in conditions that stress wildlife populations or limit abundance (including harassment, legal or illegal harvest or other human activity)?			X		Yes	5b.
h. ***For P-R/D-J, will the project be performed in any area in which T&E species are present, and will the project affect any T&E species or their habitat? (Also see 5f.)		NA				
i. ***For P-R/D-J, will the project introduce or export any species not presently or historically occurring in the receiving location? (Also see 5d.)		NA				

5a. The proposed action would preserve fish and wildlife habitat in its current state by preventing residential or commercial development.

5b. Bull Trout are present within the proposed project area. While their abundance in the mainstem Thompson River is lower than other salmonid species, they have been detected near the project area at all months of the year. Allowing public access will increase angling activity in this location but will likely not increase overall angler use of the Thompson River. Angling access throughout the Thompson River is already high, including areas more prone to bull trout use (e.g., tributaries and tributary mouths). Additionally, enforcement will be more effective at a well-managed walk-in site than at developed private lots.



**B. HUMAN ENVIRONMENT**

<b>6. <u>NOISE/ELECTRICAL EFFECTS</u></b>  <b>Will the proposed action result in:</b>	<b>IMPACT *</b>					
	<b>Unknown *</b>	<b>None</b>	<b>Minor *</b>	<b>Potentially Significant</b>	<b>Can Impact Be Mitigated *</b>	<b>Comment Index</b>
a. Increases in existing noise levels?		X				6a.
b. Exposure of people to severe or nuisance noise levels?		X				6a.
c. Creation of electrostatic or electromagnetic effects that could be detrimental to human health or property?		X				6a.
d. Interference with radio or television reception and operation?		X				6a.

6a. No additional noise or disruption is expected.

<b>7. <u>LAND USE</u></b>  <b>Will the proposed action result in:</b>	<b>IMPACT *</b>					
	<b>Unknown *</b>	<b>None</b>	<b>Minor *</b>	<b>Potentially Significant</b>	<b>Can Impact Be Mitigated *</b>	<b>Comment Index</b>
a. Alteration of or interference with the productivity or profitability of the existing land use of an area?		X				7a.
b. Conflict with a designated natural area or area of unusual scientific or educational importance?		X				
c. Conflict with any existing land use whose presence would constrain or potentially prohibit the proposed action?		X				
d. Adverse effects on or relocation of residences?		X				

7a. The property is currently undeveloped. The property is not currently used for commercial or agricultural purposes. The proposed acquisition would not take land out of agricultural production and would not alter or interfere with the productivity or profitability of the existing land use of the property.

8. <b>RISK/HEALTH HAZARDS</b>	IMPACT *					
	Unknown *	None	Minor*	Potentially Significant	Can Impact Be Mitigated *	Comment Index
Will the proposed action result in:						
a. Risk of an explosion or release of hazardous substances (including, but not limited to oil, pesticides, chemicals, or radiation) in the event of an accident or other forms of disruption?		X				8a.
b. Affect an existing emergency response or emergency evacuation plan, or create a need for a new plan?		X				
c. Creation of any human health hazard or potential hazard?		X				
d. ***For P-R/D-J, will any chemical toxicants be used? (Also see 8a)		NA				

- 8a. If acquired, FWP would address the noxious weeds on the property (Appendix D - Weed Inventory). In conjunction with the Sanders County Weed District, FWP would continue implementing an integrated approach to control noxious weeds, as outlined in the FWP Statewide Integrated Noxious Weed Management Plan. The integrated plan uses a combination of biological, mechanical, and herbicidal treatments to control noxious weeds. The use of herbicides would be in compliance with application guidelines to minimize the risk of chemical spills or water contamination and would be applied by people trained in safe handling techniques.

9. <b>COMMUNITY IMPACT</b>						
	Unknown *	None	Minor *	Potentially Significant	Can Impact Be Mitigated *	Comment Index
Will the proposed action result in:						
a. Alteration of the location, distribution, density, or growth rate of the human population of an area?		X				
b. Alteration of the social structure of a community?		X				
c. Alteration of the level or distribution of employment or community or personal income?		X				9a.
d. Changes in industrial or commercial activity?		X				
e. Increased traffic hazards or effects on existing transportation facilities or patterns of movement of people and goods?		X				

- 9a. No community impacts are expected. The property acquisition may increase angler use at the site but is not expected to impact overall fishing pressure on the Thompson River.

10. <u>PUBLIC SERVICES/TAXES/UTILITIES</u>  Will the proposed action result in:	IMPACT *					
	Unknown *	None	Minor *	Potentially Significant	Can Impact Be Mitigated *	Comment Index
a. Will the proposed action have an effect upon or result in a need for new or altered governmental services in any of the following areas: fire or police protection, schools, parks/recreational facilities, roads or other public maintenance, water supply, sewer or septic systems, solid waste disposal, health, or other governmental services? If any, specify:		X				
b. Will the proposed action have an effect upon the local or state tax base and revenues?		X				10b.
c. Will the proposed action result in a need for new facilities or substantial alterations of any of the following utilities: electric power, natural gas, other fuel supply or distribution systems, or communications?		X				10c.
d. Will the proposed action result in increased use of any energy source?		X				
e. **Define projected revenue sources		X				
f. **Define projected maintenance costs.		X				10f.

The proposed project would have no impact on public services, taxes or utilities.

- 10b. There would be no change in the tax base since FWP would pay property taxes in an amount equal to that of a private individual.
- 10c. The existing power lines and associated right-of way will remain the same.
- 10f. Annual additional maintenance costs for the addition are expected to average over \$1000.00 per year including weed control and staff time. Maintenance costs are part of the existing FAS Operations and Maintenance budget.

<b>** 11. <u>AESTHETICS/RECREATION</u></b>	<b>IMPACT *</b>					
	<b>Unknown *</b>	<b>None</b>	<b>Minor *</b>	<b>Potentially Significant</b>	<b>Can Impact Be Mitigated *</b>	<b>Comment Index</b>
<b>Will the proposed action result in:</b>						
a. Alteration of any scenic vista or creation of an aesthetically offensive site or effect that is open to public view?		X				
b. Alteration of the aesthetic character of a community or neighborhood?		X				
c. **Alteration of the quality or quantity of recreational/tourism opportunities and settings? (Attach Tourism Report.)			X		Positive	11c.
d. ***For P-R/D-J, will any designated or proposed wild or scenic rivers, trails or wilderness areas be impacted? (Also see 11a, 11c.)		NA				

11c. Acquisition of the parcel would allow for public river access for fishing, wildlife viewing, and other walk-in activities.

<b>12. <u>CULTURAL/HISTORICAL RESOURCES</u></b>	<b>IMPACT *</b>					
	<b>Unknown *</b>	<b>None</b>	<b>Minor *</b>	<b>Potentially Significant</b>	<b>Can Impact Be Mitigated *</b>	<b>Comment Index</b>
<b>Will the proposed action result in:</b>						
a. **Destruction or alteration of any site, structure or object of prehistoric historic, or paleontological importance?		X				12a.
b. Physical change that would affect unique cultural values?		X				
c. Effects on existing religious or sacred uses of a site or area?		X				
d. ****For P-R/D-J, will the project affect historic or cultural resources? Attach SHPO letter of clearance. (Also see 12.a.)		NA				

12a. No groundbreaking activities that could disturb cultural resources would be initiated as part of the proposed acquisition.

## SIGNIFICANCE CRITERIA

13. <u>SUMMARY EVALUATION OF SIGNIFICANCE</u>  Will the proposed action, considered as a whole:	IMPACT *					
	Unknown *	None	Minor *	Potentially Significant	Can Impact Be Mitigated *	Comment Index
a. Have impacts that are individually limited, but cumulatively considerable? (A project or program may result in impacts on two or more separate resources that create a significant effect when considered together or in total.)		X				13a.
b. Involve potential risks or adverse effects, which are uncertain but extremely hazardous if they were to occur?		X				
c. Potentially conflict with the substantive requirements of any local, state, or federal law, regulation, standard or formal plan?		X				
d. Establish a precedent or likelihood that future actions with significant environmental impacts will be proposed?		X				
e. Generate substantial debate or controversy about the nature of the impacts that would be created?		X				
f. ***For P-R/D-J, is the project expected to have organized opposition or generate substantial public controversy? (Also see 13e.)		NA				
g. ****For P-R/D-J, list any federal or state permits required.		NA				

13a. The proposed action would have no negative cumulative effects on the biological, physical, and human environments. When considered over the long-term, the proposed acquisition of property on the Thompson River would positively affect the community by providing public access for angling and walk-in recreation and by conserving the property in its currently undeveloped condition.

## PART III. NARRATIVE EVALUATION AND COMMENT

The proposed action would have no negative cumulative effects on the biological, physical, and human environments. The preferred alternative would protect the property in its current state rather than allow development. Public access would increase but negative impacts would be minimal as no vehicle access would be allowed.

Based upon the weed inventory conducted by the Sanders County Weed Control District, the proposed acquisitions are relatively weed free, with scattered spotted knapweed, common mullein, and St. John's Wort. If acquired, FWP would initiate the Statewide Integrated Weed Management Plan using biological, chemical and physical methods of weed control.

The proposed addition would have positive effects on terrestrial wildlife species. The property contains intact habitat adjacent to United States Forest Service land and the Mount Silcox Wildlife

Management Area which would be preserved from development under the preferred alternative. Bighorn sheep, elk, whitetail deer, and black bear frequent the property.

The Thompson River is critical habitat for bull trout. The proposed acquisition would likely increase fishing pressure at this site but is not expected to increase overall pressure on the river. Additionally, restricting development and allowing only walk-in access will make for easier angler enforcement and reduce negative impacts on the riparian area.

## **PART IV. PUBLIC PARTICIPATION**

- 1. Describe the level of public involvement for this project, if any, and, given the complexity and the seriousness of the environmental issues associated with the proposed action, is the level of public involvement appropriate under the circumstances?**

The public will be notified in the following manners to comment on the Thompson River FAS/Property Acquisition:

- Public notices in each of these papers: *The Sanders County Ledger*, *Clark Fork Valley Press*, *Helena Independent Record*, and the *Missoulian*.
- Public notice on the Fish, Wildlife & Parks web page: <http://fwp.mt.gov/news/publicNotices>.
- Direct notice will be given to adjacent landowners.
- Draft EA's will be available at the FWP Region 1 Headquarters in Kalispell and the Thompson Falls Field Office.
- A news release will be prepared and distributed to a standard list of media outlets interested in FWP Region 1 issues.

This level of public notice and participation is appropriate for a project of this scope having limited impacts, many of which can be mitigated.

- 2. Duration of comment period.**

The public comment period will extend for (30) thirty days. Written comments will be accepted until 5:00 p.m., April 13th, 2020 and can be e-mailed to [rkreiner@mt.gov](mailto:rkreiner@mt.gov).

or mailed to the address below:

Thompson River FAS/Property Acquisition  
Montana Fish, Wildlife & Parks  
5427 Highway 200  
Thompson Falls, MT 59873  
(406) 382-3032

## **PART V. EA PREPARATION**

1. **Based on the significance criteria evaluated in this EA, is an EIS required? NO**  
**If an EIS is not required, explain why the EA is the appropriate level of analysis for this proposed action.**

Based on an evaluation of impacts to the physical and human environment under MEPA, this environmental review revealed no significant negative impacts from the proposed action: therefore, an EIS is not necessary and an environmental assessment is the appropriate level of analysis. In determining the significance of the impacts, Fish, Wildlife and Parks assessed the severity, duration, geographic extent, and frequency of the impact, the probability that the impact would occur or reasonable assurance that the impact would not occur. FWP assessed the growth-inducing or growth-inhibiting aspects of the impact, the importance to the state and to society of the environmental resource or value effected, any precedent that would be set as a result of an impact of the proposed action that would commit FWP to future actions; and potential conflicts with local, federal, or state laws. As this EA revealed no significant impacts from the proposed actions, an EA is the appropriate level of review and an EIS is not required.

2. **Persons responsible for preparing the EA:**

Ryan Kreiner  
 Lower Clark Fork River Fisheries Biologist  
 5427 Highway 200  
 Thompson Falls, MT 59873  
 (406) 382-3032

3. **List of agencies consulted during preparation of the EA:**

Sanders County Commissioners  
 Sanders County Weed District  
 Montana Department of Commerce – Tourism  
 Montana Fish, Wildlife & Parks  
     Design and Construction  
     Lands Unit  
     Responsive Management Unit  
     Fisheries Division  
     Wildlife Division  
 Montana Natural Heritage Program  
 US Fish and Wildlife Service

## **APPENDICES**

- A. MCA 23-1-110 Qualification Checklist
- B. Native Species Report - Montana Natural Heritage Program (MNHP)
- C. Tourism Report – Department of Commerce
- D. Sanders County Weed Inventory

## APPENDIX A

### 23-1-110 MCA PROJECT QUALIFICATION CHECKLIST

**Date:** February 20, 2020

**Person Reviewing:** \_\_\_\_\_

**Project Location:** Thompson River

**Description of Proposed Work:** FWP proposes to acquire two 20-acre lots on the lower Thompson River for conservation and recreational value. Motorized vehicle access will be restricted, but the site will be managed for walk-in fishing access. The protection of this property will continue to provide pristine fish and wildlife habitat.

The following checklist is intended to be a guide for determining whether a proposed development or improvement is of enough significance to fall under 23-1-110 rules. (Please check ✓ all that apply and comment as necessary.)

- [ ] **A. New roadway or trail built over undisturbed land?**  
Comments: No roadways or trails.
- [ ] **B. New building construction (buildings <100 sf and vault latrines exempt)?**  
Comments: No new construction.
- [ ] **C. Any excavation of 20 c.y. or greater?**  
Comments: No excavation.
- [ ] **D. New parking lots built over undisturbed land or expansion of existing lot that increases parking capacity by 25% or more?**  
Comments: No, parking will be on existing pull-outs.
- [ ] **E. Any new shoreline alteration that exceeds a doublewide boat ramp or handicapped fishing station?**  
Comments: No shoreline alteration.
- [ ] **F. Any new construction into lakes, reservoirs, or streams?**  
Comments: No new construction.
- [ ] **G. Any new construction in an area with National Registry quality cultural artifacts (as determined by State Historical Preservation Office)?**  
Comments: No construction.
- [ ] **H. Any new above ground utility lines?**  
Comments: No new utility lines.
- [ ] **I. Any increase or decrease in campsites of 25% or more of an existing number of campsites?**  
Comments: No camping.
- [ ] **J. Proposed project significantly changes the existing features or use pattern; including effects of a series of individual projects?**  
Comments: No.



## APPENDIX B

### NATIVE SPECIES REPORT – MONTANA NATURAL HERITAGE PROGRAM

#### Sensitive Plant and Animal Species in the Vicinity of Thompson River FAS

##### Species of Concern Terms and Definitions

A search of the Montana Natural Heritage Program (MNHP) element occurrence database (<http://nris.mt.gov>) indicates occurrences of the federally listed threatened bull trout within two miles of the acquisition site in the Stillwater River. No other occurrences of federally listed endangered or threatened animal or plant species have been found within the vicinity of the proposed acquisition site. The search indicated that the project area is within the habitat for the westslope cutthroat trout, listed as sensitive by the U.S. Forest Service and U.S. Bureau of Land Management. MNHP has also recorded occurrences of great blue heron, lake trout, and hoary bat, Montana Species of Concern, within two miles of the proposed acquisition.

**Montana Species of Concern.** The term “**Species of Concern**” includes taxa that are at-risk or potentially at-risk due to rarity, restricted distribution, habitat loss, and/or other factors. The term also encompasses species that have a special designation by organizations or land management agencies in Montana, including: Bureau of Land Management Special Status and Watch species; U.S. Forest Service Sensitive and Watch species; U.S. Fish and Wildlife Service Threatened, Endangered and Candidate species.

##### **Status Ranks (Global and State)**

The international network of Natural Heritage Programs employs a standardized ranking system to denote global (**G** -- range-wide) and state status (**S**) (Nature Serve 2003). Species are assigned numeric ranks ranging from 1 (critically imperiled) to 5 (demonstrably secure), reflecting the relative degree to which they are “at-risk”. Rank definitions are given below. A number of factors are considered in assigning ranks -- the number, size and distribution of known “occurrences” or populations, population trends (if known), habitat sensitivity, and threat. Factors in a species’ life history that make it especially vulnerable are also considered (e.g., dependence on a specific pollinator).

Status Ranks	
Code	Definition
<b>G1</b> <b>S1</b>	At high risk because of extremely limited and/or rapidly declining numbers, range, and/or habitat, making it highly vulnerable to global extinction or extirpation in the state.
<b>G2</b> <b>S2</b>	At risk because of very limited and/or declining numbers, range, and/or habitat, making it vulnerable to global extinction or extirpation in the state.
<b>G3</b> <b>S3</b>	Potentially at risk because of limited and/or declining numbers, range, and/or habitat, even though it may be abundant in some areas.
<b>G4</b> <b>S4</b>	Uncommon but not rare (although it may be rare in parts of its range), and usually widespread. Apparently not vulnerable in most of its range, but possibly cause for long-term concern.
<b>G5</b> <b>S5</b>	Common, widespread, and abundant (although it may be rare in parts of its range). Not vulnerable in most of its range.

**MFWP Conservation Need.** Under [Montana's Comprehensive Fish and Wildlife Conservation Strategy](#) of 2005, individual animal species are assigned levels of conservation need as follows:

- Tier I.** Greatest conservation need. Montana FWP has a clear obligation to use its resources to implement conservation actions that provide direct benefit to these species, communities and focus areas.
- Tier II.** Moderate conservation need. Montana FWP could use its resources to implement conservation actions that provide direct benefit to these species communities and focus areas.
- Tier III.** Lower conservation need. Although important to Montana's wildlife diversity, these species, communities and focus areas are either abundant or widespread or are believed to have adequate conservation already in place.
- Tier IV.** Species that are non-native, incidental or on the periphery of their range and are either expanding or very common in adjacent states.

## SENSITIVE PLANT AND ANIMAL SPECIES IN THE VICINITY OF Thompson River FAS

### 1. Bull trout *Salvelinus confluentus*

*Vertebrate animal- Fish*

Natural Heritage Ranks

State: **S2**

Global: **G5**

*Habitat- Mountain streams, rivers, lakes*

Federal Agency Status:

U.S. Fish and Wildlife Service: **LT; CH**

U.S. Forest Service: **Threatened**

U.S. Bureau of Land Management: **Threatened**

FWP CFWCS Tier: **1**

Bull Trout do occupy waters within the proposed property acquisition.

### 2. Westslope cutthroat trout (*Oncorhynchus clarkii lewisi*)

*Vertebrate animal- Fish*

Natural Heritage Ranks

State: **S2**

Global: **G4T3**

*Habitat- Mountain streams, rivers, lakes*

Federal Agency Status:

U.S. Fish and Wildlife Service: **Petitioned**

U.S. Forest Service: **Sensitive**

U.S. Bureau of Land Management: **Sensitive**

FWP CFWCS Tier: **2**

Westslope Cutthroat Trout do occupy waters within the proposed property acquisition.

### 3. *Haliaeetus leucocephalus* (Bald Eagle)

*Vertebrate animal- Bird*

Natural Heritage Ranks

State: **S4**

Global: **G5**

*Habitat- Riparian forests*

Federal Agency Status:

U.S. Fish and Wildlife Service:

U.S. Forest Service: **Sensitive**

U.S. Bureau of Land Management: **Sensitive**

FWP CFWCS Tier: **2**

Bald Eagles have been observed within the project area and have documented nesting areas nearby.

### 4. *Corynorhinus townsendii* (Townsend's Big-Eared Bat)

*Vertebrate animal- Mammal*

Natural Heritage Ranks

State: **S3**

Global: **G4**

*Habitat- Riparian and forests*

Federal Agency Status:

U.S. Fish and Wildlife Service:

U.S. Forest Service: **Sensitive**

U.S. Bureau of Land Management: **Sensitive**

FWP CFWCS Tier: **2**

Observations of Townsend's Big-Eared Bats have been documented on the lower Thompson River 3 km to the north of the property and 15 km east of the property at Roundhorn WMA.

**5. Aquila chrysaetos (Golden Eagle)***Vertebrate animal- Bird*Natural Heritage RanksState: **S3**Global: **G5***Habitat- Riparian forests*Federal Agency Status:U.S. Fish and Wildlife Service: **BGEPA; MBTA; BCC17**

U.S. Forest Service:

U.S. Bureau of Land Management: **Sensitive**FWP CFWCS Tier: **2**

Confirmed nesting area buffered by a minimum distance of 3,000 meters in order to be conservative about encompassing the entire breeding territory and area commonly used for renesting and otherwise buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters

**6. Lasiurus cinereus (Hoary Bat)***Vertebrate animal- Mammal*Natural Heritage RanksState: **S3**Global: **G3G4***Habitat- Riparian and forests*Federal Agency Status:

U.S. Fish and Wildlife Service:

U.S. Forest Service:

U.S. Bureau of Land Management:

FWP CFWCS Tier: **1**

Element Occurrence data was reported of hoary bat within two miles of the project area. The last recorded observation date was 2010.

**7. Ursos Arctos (Grizzly Bear)***Vertebrate animal- Mammal*Natural Heritage RanksState: **S2S3**Global: **G4***Habitat- Riparian and forests*Federal Agency Status:U.S. Fish and Wildlife Service: **PS: LT; XN**U.S. Forest Service: **Threatened**U.S. Bureau of Land Management: **Threatened**FWP CFWCS Tier: **1**

Species Occurrence polygons represent the greatest extent of 1) Recovery Zone Boundaries, 2) Demographic Monitoring Areas, and 3) Current Known Distribution within Montana as defined in the 2018 Grizzly Bear Recovery Program annual report. This includes the Bitterroot Recovery Zone, which is not currently occupied by a resident population of Grizzly Bears.

**8. Sorex hoyi (Pygmy Shrew)***Vertebrate animal- Mammal*Natural Heritage RanksState: **S3**Global: **G5***Habitat- Riparian and forests*Federal Agency Status:U.S. Fish and Wildlife Service: **MBTA**

U.S. Forest Service:

U.S. Bureau of Land Management:

FWP CFWCS Tier: **1**

Confirmed breeding area based on the presence of a resident animal of any age. Point observation location is buffered by a minimum distance of 100 meters in order to encompass the population density reported for the species and buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters.

**9. Ixoreus naevius (Varied Thrush)***Vertebrate animal- Bird*Natural Heritage RanksState: **S3B**Global: **G5**FWP CFWCS Tier: **3***Habitat- Riparian forests*Federal Agency Status:

U.S. Fish and Wildlife Service:

U.S. Forest Service:

U.S. Bureau of Land Management:

Confirmed breeding area based on the presence of a nest, chicks, or territorial adults during the breeding season. Point observation location is buffered by a minimum distance of 225 meters in order to encompass the reported minimum stand size occupied by breeding pairs and otherwise is buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters.

**10. Pekania pennanti (Fisher)***Vertebrate animal- Mammal*Natural Heritage RanksState: **S3**Global: **G5**FWP CFWCS Tier: **2***Habitat- Riparian and forests*Federal Agency Status:

U.S. Fish and Wildlife Service:

U.S. Forest Service: **Sensitive**U.S. Bureau of Land Management: **Sensitive**

Confirmed area of occupancy based on the documented presence of adults or juveniles within tracking regions containing core habitat for the species. Outer boundaries of tracking regions are defined by areas of forest cover on individual mountain ranges or clusters of adjacent mountain ranges with continuous forest cover.

**11. Gulo gulo (Wolverine)***Vertebrate animal- Mammal*Natural Heritage RanksState: **S3**Global: **G4**FWP CFWCS Tier: **2***Habitat- Riparian and forests*Federal Agency Status:U.S. Fish and Wildlife Service: **P**

U.S. Forest Service:

U.S. Bureau of Land Management: **Sensitive**

Confirmed area of occupancy supported by recent (post-1980), nearby (within 10 kilometers) observations of adults or juveniles. Tracking regions were defined by areas of primary habitat and adjacent female dispersal habitat as modeled by Inman et al. (2013). These regions were buffered by 1 kilometer in order to link smaller areas and account for potential inaccuracies in independent variables used in the model.

**12. Falco peregrinus (Peregrine Falcon)***Vertebrate animal- Bird*Natural Heritage RanksState: **S3**Global: **G4**FWP CFWCS Tier: **2***Habitat- Riparian and forests*Federal Agency Status:U.S. Fish and Wildlife Service: **DM**U.S. Forest Service: **Sensitive**U.S. Bureau of Land Management: **Sensitive**

Peregrine Falcons have confirmed nesting areas on the cliffs of Kookoosint Ridge near the site.

## Appendix C TOURISM REPORT MONTANA ENVIRONMENTAL POLICY ACT (MEPA) & MCA 23-1-110

The Montana Department of Fish, Wildlife and Parks has initiated the review process as mandated by MCA 23-1-110 and the Montana Environmental Policy Act in its consideration of the project described below. As part of the review process, input and comments are being solicited. Please complete the project name and project description portions and submit this form to:

Jan Stoddard, Industry Services & Outreach Bureau  
Montana Office of Tourism & Business Development, Department of Commerce  
301 S. Park Ave.  
Helena, MT 59601

**Project Name:** Thompson River Property/FAS Acquisition

**Project Description:** Montana State Parks (MSP), a Division of Montana Fish, Wildlife & Parks (FWP), proposes to purchase 40-acres on the Thompson River to be managed as an undeveloped, walk-in Fishing Access Site (FAS) approximately five miles east of the city of Thompson Falls.

1. Would this site development project have an impact on the tourism economy?  
NO YES If YES, briefly describe:

Yes, as described, the project has the potential to positively impact the tourism and recreation industry economy if properly maintained. The opportunity to fish Montana waters and native Montana fish populations is marketed to destination visitors from around the world, as well as in-state travelers. A 2016 report from the Institute for Tourism and Recreation Research states that Fishing/Fly Fishing as a "Top Outdoor Recreation Activity" reported by 2% of visitors to Montana (2016). Additionally, the report also notes that nationwide participation in outdoor recreation specific to fishing is expected to increase in the coming decades. The Thompson River is home to many larger rainbow trout and provides solid trout fishing in a remote and secluded environment. An additional, walk-in fishing access site would be a valuable addition for non-resident and resident recreationalists.

2. Does this impending improvement alter the quality or quantity of recreation/tourism opportunities and settings?  
NO YES If YES, briefly describe:

Yes, as described, the project has the potential to improve quality and quantity of tourism and recreational opportunities. We are assuming the agency has determined it has necessary funding for the on-going operations and maintenance once this project is complete.

Signature Jan Stoddard

Date: 2/7/20

## APPENDIX D

### SANDERS COUNTY WEED DISTRICT WEED INVENTORY

FWP Land Acquisition – Weed Inspection and Report

#### COMPLIANCE CHECKLIST FOR SECTION 7-22-2154, MCA

*FWP Regional Staff: Please return this form to  
FWP Lands Bureau, P.O. Box 200701, Helena, MT 59620*

Property Name: Thompson River FWP Region: 1  
 County: Sanders  
 Date of Property Inspection with County Weed Management District: Feb 13, 2020  
 County Representative(s): Mark Lincoln  
 FWP Staff: Ryan Kreiner

County Weed Management District - Inspection Report (Please attach weed inspection report or use the space below to describe noxious weeds present on the property, including observations of weed distribution and abundance):

Spotted Knapweed, St. John's Wort, Common Mullen

Noxious Weed Management Agreement (Please attach applicable weed management agreement or use the space below to indicate how noxious weeds on the property will be managed when the property is under FWP ownership. Indicate if property will be included in an FWP county or regional weed management plan):

FWP will monitor and treat noxious weeds on the  
property in accordance with Statewide weed management plan.  
Once the property is acquired, the site will be incorporated  
into the agreement with the Sanders County Weed District.

County Weed Management District Representative: I have inspected the property, and reviewed the weed situation with a representative of Montana Fish, Wildlife & Parks. I concur with FWP's weed management plan for the property, as presented above and/or described in the attached information.

Signed: RL

Date: 2-13-2020



FWP.MT.GOV

THE **OUTSIDE** IS IN US ALL.

Region One  
490 North Meridian Road  
Kalispell, MT 59901

**DECISION NOTICE**  
and  
**Finding of No Significant Impact**  
for the  
**Thompson River Property Acquisition**

**April 14, 2020**

**Description of Proposed Project**

Montana Fish, Wildlife and Parks proposes to purchase 40-acres on the Thompson River from The Conservation Fund to be managed as an undeveloped, walk-in Fishing Access Site (FAS) approximately five miles east of the city of Thompson Falls. The property contains intact upland and riparian habitat and would provide access to approximately 2,500 feet of river frontage along both banks of the Thompson River. Since 1982, the Thompson River has averaged over 8,000 annual angler days with a maximum of over 13,000 in 2015. The mainstem fishery primarily consists of rainbow and brown trout, but many of the river's intact tributaries provide excellent spawning and rearing habitat for native salmonids. A recent study conducted on the Thompson River verified that bull trout which originate in its tributaries spend a considerable amount of time in the mainstem Thompson River. The lower seven miles of the Thompson River possess the coldest water and provide the best habitat for native fish. A PIT tag antenna near the confluence with the Clark Fork River recently documented bull trout usage of the lower Thompson River during every calendar month of the year. The property is also located close to the Mount Silcox Wildlife Management Area, and adjacent to United States Forest Service administered land. It provides excellent wildlife habitat for bighorn sheep, elk, deer and other game and non-game species.

Based on observational data provided by the Montana Natural History Program, 12 sensitive species are found in the vicinity of the proposed property acquisition including westslope cutthroat trout and bull trout. Purchase of this property would prevent residential development, which would preserve sensitive fish and wildlife habitat and allow for continued terrestrial wildlife movement.

## Montana Environmental Policy Act (MEPA) Process and Public Involvement

FWP released a draft environmental assessment (EA) for public review on March 13, 2020 and asked for public comment through April 13, 2020. FWP ran legal ads describing the proposed project and the availability of the draft EA in the *Sanders County Ledger*, *Clark Fork Valley Press*, *The Missoulian*, and *Helena Independent Record*. FWP also mailed postcards to neighboring landowners. The draft EA was posted on FWP's official website and was also available at the Region One headquarters in Kalispell and online for people with internet access or through internet service at public libraries.

The EA evaluated the potential impacts of the following alternatives:

### **Alternative A: No Action**

If no action was taken, FWP would not purchase the property. The lots would remain private and closed to public access. The lots would likely be developed with septic systems, dwellings, and roads. Some level of modification to the riparian vegetation would likely occur.

### **Alternative B: Proposed Action**

FWP would acquire forty acres of property along the Thompson River for inclusion in the statewide Fishing Access Site (FAS) system. The new FAS would be day-use only and managed for walk-in access with minimal development. Acquisition of the property by FWP would ensure future public access and resource protection and would preclude private development that would likely include roads, residences, septic systems, and other disturbances that could negatively impact this important aquatic and recreational resource. The existing roadbed between the highway and the river would be closed to vehicle traffic and parking would be restricted to the pull-out area upstream of the property.

## Summary of Public Comment

FWP received 13 public comments on the proposed acquisition including from adjacent landowners, county commissioners, hunting/fishing groups, and individual local anglers. All were generally supportive. Below is a summary of concerns raised and FWP's response:

- One concern was that a parking area may need to be developed in the future.

**FWP Response:** Currently, FWP believes the existing parking areas at pull-outs adjacent to the property will have enough capacity to handle expected use. If it is determined in the future that more parking is needed, a separate environmental assessment will be conducted for that project.

- Two commenters were supportive of this purchase but noted that the property downstream near the confluence with the Clark Fork River should also be purchased or would be a better access.

**FWP Response:** The property downstream would be a great piece of property to protect from development and provide access. If it ever becomes available for sale, FWP will pursue it.

- A third concern was that the price seemed high and the land wasn't developable.

**FWP Response:** During preliminary investigations, an appraisal was conducted on the property. As part of that, an engineer determined that both lots had enough space to develop homes and septic units. That raised the value of the property and the need for conservation.

- A fourth concern were the existing easements on the property.

**FWP Response:** There are currently easements on the property including powerline and abandoned petroleum pipeline. These will remain in place but will not restrict access or further prevent conservation.

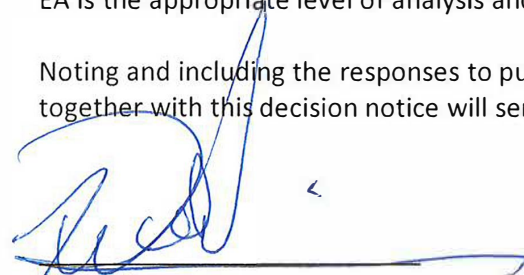
- Finally, it was recently brought to FWP's attention that an existing covenant on the subdivision prohibits the discharge of firearms on the property. Because of this covenant, the relatively small size of the property, and adjacent private lots, FWP has determined that the property will be best suited as an "archery hunting only" area. This would be consistent with the management of other small Fishing Access Sites which may not allow hunting at all.

#### **FWP Recommended Alternative and Final Decision**

In reviewing all the public comment and other relevant information, and evaluating the environmental effects, I recommend that the Fish and Wildlife Commission approve the purchase of 40 acres on the lower Thompson River as proposed in the Alternative B, the Proposed Action. The property would be open to walk-in public activities such as angling, bird watching, and archery hunting.

Through the public review process described above, the public raised some concerns with the project, but all concerns were either addressed in the EA or did not directly apply to this project. FWP found no significant impacts on the human or physical environments associated with this proposal; therefore, the EA is the appropriate level of analysis and an environmental impact statement is not required.

Noting and including the responses to public comments, the draft EA will become the final EA and together with this decision notice will serve as the final documents for this proposal.

  
Jim Williams  
Region One Supervisor

4/22/20  
Date

**Land Board Agenda Item  
July 20, 2020**

**0720-2B Department of Fish, Wildlife & Parks, C. Ben White Memorial Fishing Access Site Purchase**

<b>Location:</b>	<b>Ravalli County</b>
<b>Trust Benefits:</b>	<b>N/A (non-trust land)</b>
<b>Trust Revenue:</b>	<b>N/A</b>

**Item Summary:** FWP proposes to purchase a fee simple interest in a 97-acre private property for a Fishing Access Site (FAS) in Ravalli County, Montana. The proposed FAS encompasses the West Fork of the Bitterroot River on the east and abuts Bitterroot National Forest on the west (see attached map). The private landowner wishes to sell this parcel to FWP at a substantially reduced sale price to create a fishing access site, picnic area, campground, and trail access for neighboring residents, Ravalli County residents and visiting recreationists to enjoy in perpetuity.

The proposed FAS is located roughly 7.5 miles south of Darby along both sides of West Fork Road (Highway 473). A much smaller footprint including a parking area is currently leased annually from the landowner for use as a FAS. The area as a whole is used primarily for rural residential development and recreational purposes. Approximately 0.5 miles of the main stem of the West Fork – a blue-ribbon trout fishery -- flows through the property, with an additional 0.5 miles of side channels and 68 acres of associated riparian habitat. The riparian habitat includes 56 acres of mixed cottonwood and ponderosa pine riparian forest and 12 acres of willow thickets, gravel bars, and river channel. FWP's intent is to maintain the FAS and develop 1-3 campsites, picnic tables and a vault latrine on the parcel east of the highway. On the west side of the highway, FWP and the US Forest Service have been cooperatively planning a parking area and trail that will connect to the National Forest to improve public access for hunters and recreationists.

The landowners are highly motivated to sell this site to FWP as a permanent public FAS to honor the late C. Ben White, a firefighter and avid fisherman who had a special connection to the land. Partnering with the Bitter Root Land Trust, it has taken the landowners over 10 years to make this sale a reality, even discounting the sale by almost 60% *and* donating ½ acre to a neighbor as an encroachment solution. Because several partners have stepped up --- the Ravalli County Commission, the Bitter Root Land Trust, private donors, the Montana Fish and Wildlife Conservation Trust and local chapters of the Audubon Society, FWP will be contributing just a small percentage of the purchase price of \$ 600,000. The Ravalli County Commission's vote to approve \$ 250,000.0 in funding for this proposed purchase was unanimous (see attached Resolution dated July 7<sup>th</sup>), and neighbors and other residents submitted written support for the project prior to the Commission meeting. A table summarizing the various funding sources is attached as well.

The entire parcel is threatened with imminent development. FWP will pay property taxes to Ravalli County pursuant to MCA 87-6-103.

FWP published an Environmental Assessment (EA, attached) and invited public comment for 30 days, ending March 27, 2020. FWP issued a Decision Notice on April 15, 2020 (attached), supporting approval of the proposed fee simple acquisition.

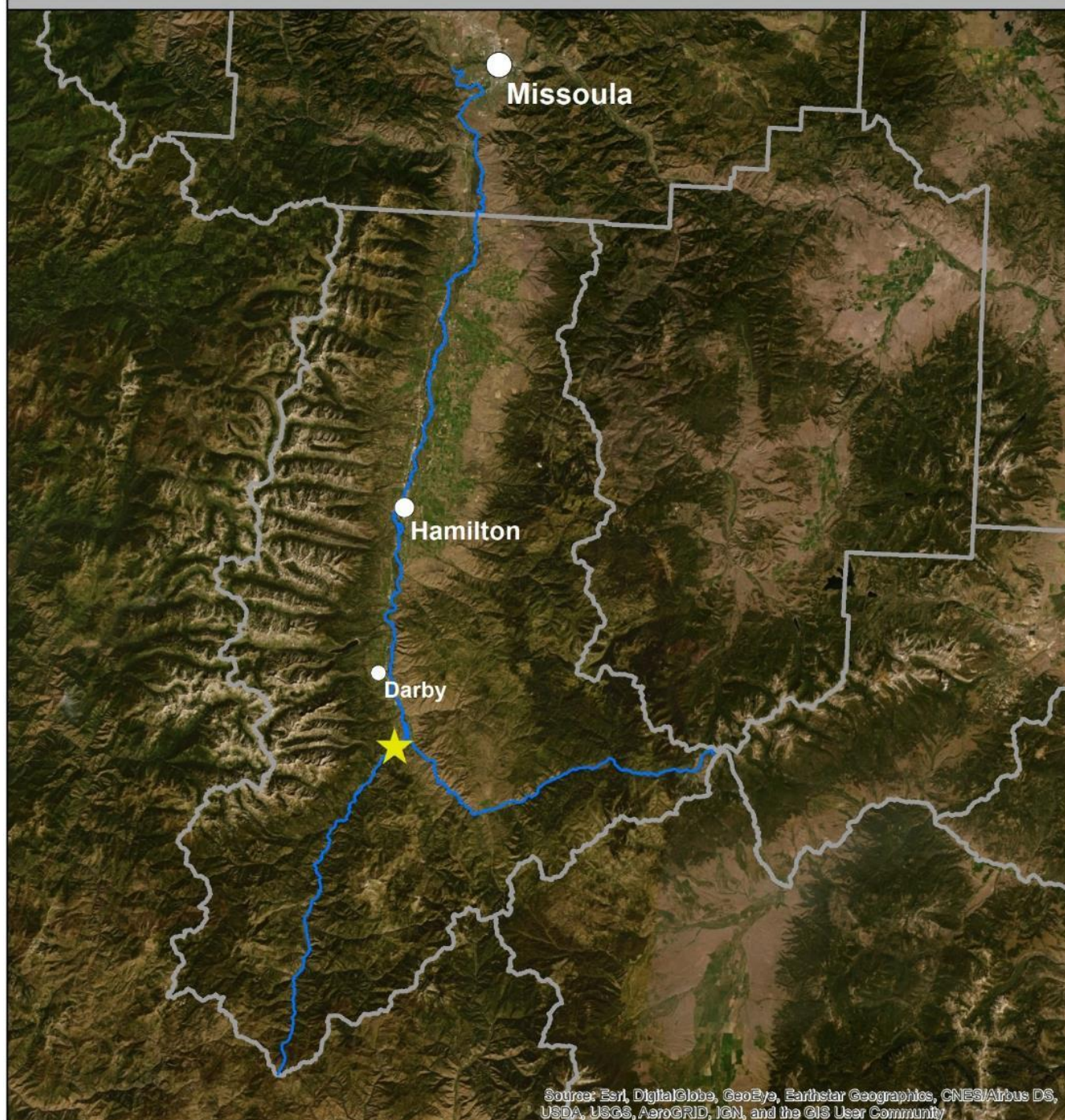
**Rationale for Land Board Action:** The community would benefit from this acquisition as this property would be the only FAS owned by FWP on the West Fork of the Bitterroot River, located at the gateway to the West Fork of the Bitterroot River canyon, and the habitats the property provides are vital to protecting the local trout fishery and wildlife populations in the area.

**FWP Recommendation:** FWP recommends the Land Board approve Fish, Wildlife & Parks' fee simple acquisition of C. Ben White Memorial Fishing Access Site.



## C. Ben White Memorial Fishing Access Site

MONTANA FWP



FAS Location



Bitterroot River System



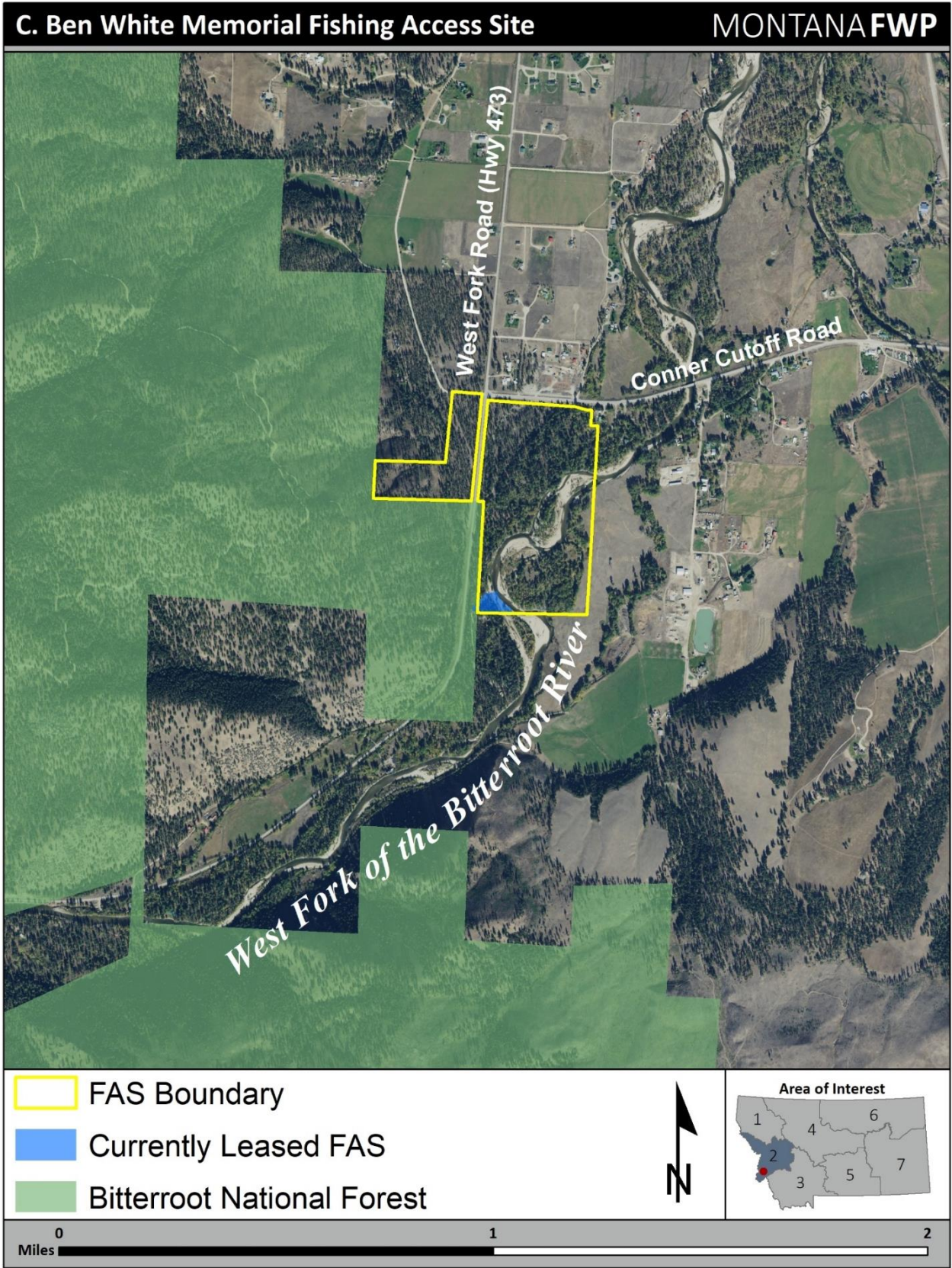
County Boundaries



Area of Interest









The following is an updated version of the funding table provided in the Decision Notice. This table is current as of July 8, 2020:

<b>Entity</b>	<b>Funding Amount (status)</b>
FWP Fishing Access Site Program	\$ 70,000 (committed)
FWP Access Public Lands Program	\$ 50,000 (committed)
White, Dickman, and Stomberg Families	\$ 420,000 (donated value)
Ravalli County Open Lands Bond	\$ 250,000 (committed)
Private Donors	\$ 123,000 (committed)
MT Fish and Wildlife Conservation Trust	\$ 100,000 (committed)
Ravalli County Fish & Wildlife Association	\$ 10,000 (committed)
Audubon Society (Bitterroot & Five Valleys Chapters)	\$ 3,500 (committed)
Other public and private funding sources	\$ 13,500 (anticipated)
<b>Total acquisition cost (including transaction costs)</b>	<b>\$1,040,000</b>
Estimated FAS development costs *	\$ 100,000
<b>Total Project Cost</b>	<b>\$1,140,000</b>

*\* Preliminary estimate; jointly funded by BRLT and FWP*

**RESOLUTION NO. 4098**

**A RESOLUTION OF THE BOARD OF COUNTY COMMISSIONERS OF RAVALLI COUNTY AUTHORIZING EXPENDITURE OF OPEN LAND BOND PROCEEDS (OR FINANCING IN ANTICIPATION OF BOND PROCEEDS) TOWARD THE CREATION OF "C. BEN WHITE MEMORIAL FISHING ACCESS SITE" SUBJECT TO CERTAIN CONDITIONS**

**WHEREAS**, a vote of Ravalli County citizens in November 2006 authorized the Board of County Commissioners of Ravalli County ("BCC") to issue \$10 million of Open Lands Bonds;

**WHEREAS**, the November 2006 election ballot lists conserving working farms and ranches, managing growth, preserving open lands, protecting water quality, maintaining wildlife habitat, and protecting drinking water sources as the allowed purposes for bond expenditures;

**WHEREAS**, The BCC passed Resolution No. 2256, "RESOLUTION ESTABLISHING THE RAVALLI COUNTY OPEN LANDS BOND PROGRAM," (the "Program") and enacting the Program's procedures and standards (the "Program Procedures");

**WHEREAS**, co-applicant Donald E. White, Martha Stomberg, & Barbara S. Dickman as current owner and co-applicant the Bitter Root Land Trust have submitted an application (the "Application") requesting that Ravalli County contribute Program funds towards creation of a fishing access site fronting the Bitterroot River, in the lands with future ownership by Montana Fish, Wildlife, & Parks (the "Owner"), with a legal description substantially as follows;

A tract of land located in and being a portion of Section 36, T6N, R21W, P.M.,M., Ravalli County, Montana and being more particularly described as Tract 2, Certificate of Survey No. 717185.

Real property owned by Donald E. White, Martha J. Stomberg, and Barbara S. Dickman, being more particularly described as follows:

The SW¼NE¼ and the N½SE¼ of Section 13, Township 2 North, Range 21 West, Principal Meridian Montana (P.M.M.), Ravalli County, Montana.

Recording Reference: Book 59 Deeds, page 45.

EXCEPTING AND RESERVING THEREFROM land deeded to the State of Montana in Book 117 Deed, page 368 and Book 117 Deed, page 399.

ALSO EXCEPTING AND RESERVING THEREFROM the two small parcels north of Conner Cutoff.

ALSO EXCEPTING AND RESERVING THEREFROM approximately ¼ acre immediately south of Conner Cutoff near the northeast corner of the property, which will be surveyed and boundary adjusted into an adjacent parcel.

AND ALSO EXCEPTING AND RESERVING THEREFROM approximately 21 acres in the NE corner of the N½SE¼ of Section 13, which will be surveyed and excluded prior to completion of the project.

Containing approximately 96.5 acres, more or less, being subject to easements and encumbrances, apparent, visible and of record.

CONTINUED

**WHEREAS**, under the Application, the Owner will permanently transfer the open lands subject to the Application to co-applicant the Bitter Root Land Trust upon receiving OLB funds proceeds, for the purpose of creating Montana Fish, Wildlife, and Parks fishing and public lands access site in perpetuity;

**WHEREAS**, the preliminary phases of the Application indicate that the Application satisfies the legal requirements of State law and of the Program, and that the Project meets the goals listed in the Program review criteria, due to the property's public access, aesthetic, scenic, and wildlife values;

**WHEREAS**, in accordance with the Program Procedures, the Open Lands Board, in a public meeting, voted 8-2 to recommend the project for approval on May 27<sup>th</sup>, 2020 that -- subject to the Application satisfactorily meeting the remaining requirements and criteria of the Program Procedures -- the BCC authorizes contributing to C. Ben White Memorial Fishing Access Site under the Program in the amount requested in the Application;

**WHEREAS**, the Program Procedures require the BCC to conduct a public hearing on the Application, prior to approval;

**WHEREAS**, the Ravalli County Planning Department submitted the attached Staff Report recommending conditional approval of the Application (Attachment A);

**WHEREAS**, after due notice being given, the BCC conducted a public hearing on July 7<sup>th</sup>, 2020, and afforded the public the opportunity to comment on the Application; and

**WHEREAS**, the BCC received public comment in favor of the project and in opposition to the project, including comment from nearby landowners, and a majority of the BCC determined the Project merits support at the request amount, subject to certain enumerated conditions that must be met before funding is granted.

**THEREFORE BE IT RESOLVED** by the BOARD OF RAVALLI COUNTY COMMISSIONERS:

1. The BCC approves the Application, SUBJECT TO THE APPLICANTS MEETING THE FOLLOWING CONDITIONS TO THE COUNTY'S SATISFACTION:

- (i) the applicants complete the final phases of the Application and Program Procedures and meet the conditions of the Planning Department Staff Report (Attachment A), including a title commitment to the BCC's satisfaction;
- (ii) the final appraisal meets Program requirements;
- (iii) the final documentation shows any changes from the information reported on the Application, including any provisions made for liens on the subject property; and
- (iv) before closing, the BCC determines to its sole and exclusive satisfaction that all instruments to be executed at closing (including but not limited to the proposed deed transferring the property to the State of Montana Fish, Wildlife, and Parks) in the transaction protect the County's -- and the County's taxpayers' -- interests in maintaining open lands by maintaining the Project lands as a Montana Fish, Wildlife, and Parks fishing and public lands access site in perpetuity, and protects adjoining and neighboring properties;
- (v) County funds shall not be released at closing unless or until the BCC provides its prior express written approval that the conditions have been met and the funds may be released.

2. Upon satisfaction of the conditions described above, the BCC authorizes that \$250,000 of Open Lands Bond proceeds, or financing arranged in anticipation of Open Lands Bond proceeds, be awarded toward creation of the C. Ben White Memorial Fishing Access Site according to the Application.

**Chris Hoffman, Chair**

Date: 7-7-20

**Jeff Burrows, Member**

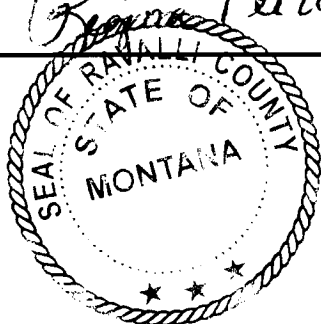
Date: 7 July 2020

**Greg Chilcott, Member**

Date: July 7, 2020

**Attest: Clerk and Recorder**

Date: 7-7-2020



745739 - Page: 3 of 3

# **Draft Environmental Assessment**

## **C. Ben White Memorial Fishing Access Site**

### **Proposed Acquisition and Development**

February 2020



**Region 2**  
**3201 Spurgin Road, Missoula, MT 59804**

## Draft Environmental Assessment CHECKLIST

### **PART I. PROPOSED ACTION DESCRIPTION**

#### **1. Type of proposed state action**

Montana Fish, Wildlife and Parks (FWP) proposes a fee-title acquisition of approximately 97 acres of private land along the West Fork of the Bitterroot River in Ravalli County for creation of the C. Ben White Memorial Fishing Access Site (FAS). The proposed FAS would expand the smaller area currently leased by FWP as the W. W. White Memorial FAS and permanently protect access, recreation, and wildlife values at the gateway of the West Fork of the Bitterroot River canyon. Proposed developments at the site include expanded day-use improvements, a small campground with 1-3 sites, river-bottom and upland parking areas, 2 vault latrines, and walking trails. The existing boat launch area would largely remain the same with possible minor improvements. Fishing, hunting, and wildlife-watching opportunities would increase as a result of the additional acreage. The FAS would also protect important floodplain habitat to benefit game and nongame species in perpetuity, including state Species of Concern (SOC).

#### **2. Agency authority for the proposed action**

- § (Section) 87-1-209 of the Montana Code Annotated (MCA) allows FWP to “acquire . . . lands or waters for . . . public hunting, fishing or trapping areas.”
- § 87-1-605, MCA, directs FWP to use certain portions of fishing license fees “for the purchase, operation, development, and maintenance of fishing accesses; . . .”
- § 23-1-110, MCA, requires FWP to consider the wishes of the public; the capacity of the site for development; environmental impacts; long-range maintenance; protection of natural, cultural, and historical FAS features; and impacts on tourism. See Appendix A for HB 495 qualification.
- Administrative Rules of Montana (ARM) 12.8.601 through 12.8.606 establish the rules for implementing § 23-1-110, MCA.
- ARM 12.2.428 through 12.2.433 establish procedures for implementing the Montana Environmental Policy Act (MEPA) in conjunction with EAs and public involvement for proposed FWP actions.
- § 87-1-303, MCA, authorizes the Fish & Wildlife Commission to “adopt and enforce rules governing uses of lands that are acquired . . . by the commission . . .”
- § 23-1-105, MCA, authorizes FWP to “levy and collect reasonable fees . . . for the use of privileges and conveniences [e.g., overnight camping] that may be provided [at FASs].”

#### **3. Name, address and phone number of project sponsor, if other than the agency: None**

#### **4. Anticipated Schedule**

Public Comment Period: February 27 through March 27, 2020

Decision Notice Published: early April 2020

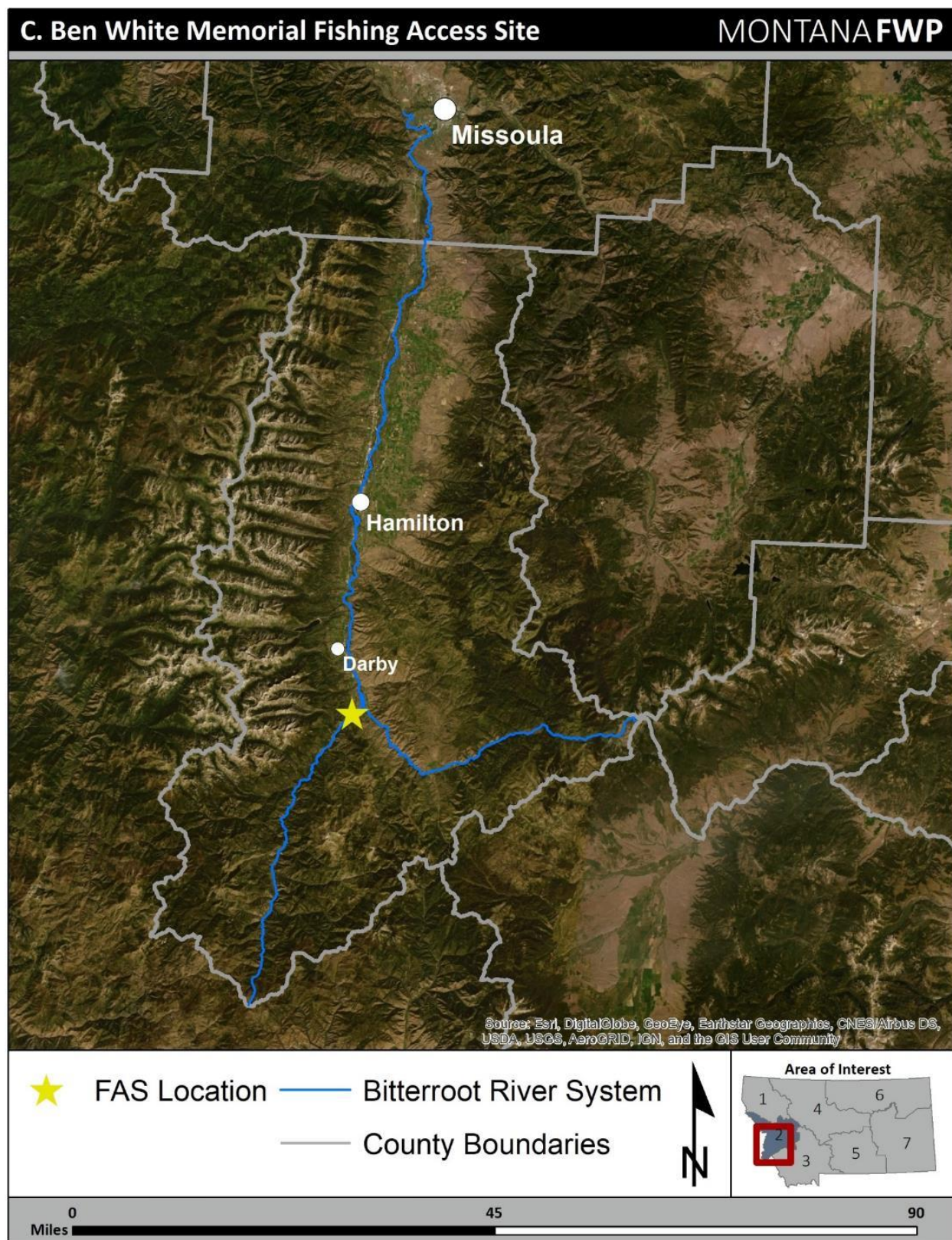
Reviewed by Fish & Wildlife Commission (project approval): tentatively scheduled for June 2020  
Commission meeting.

Reviewed by the State Board of Land Commissioners: tentatively July 2020

#### **5. Locations affected by proposed action**

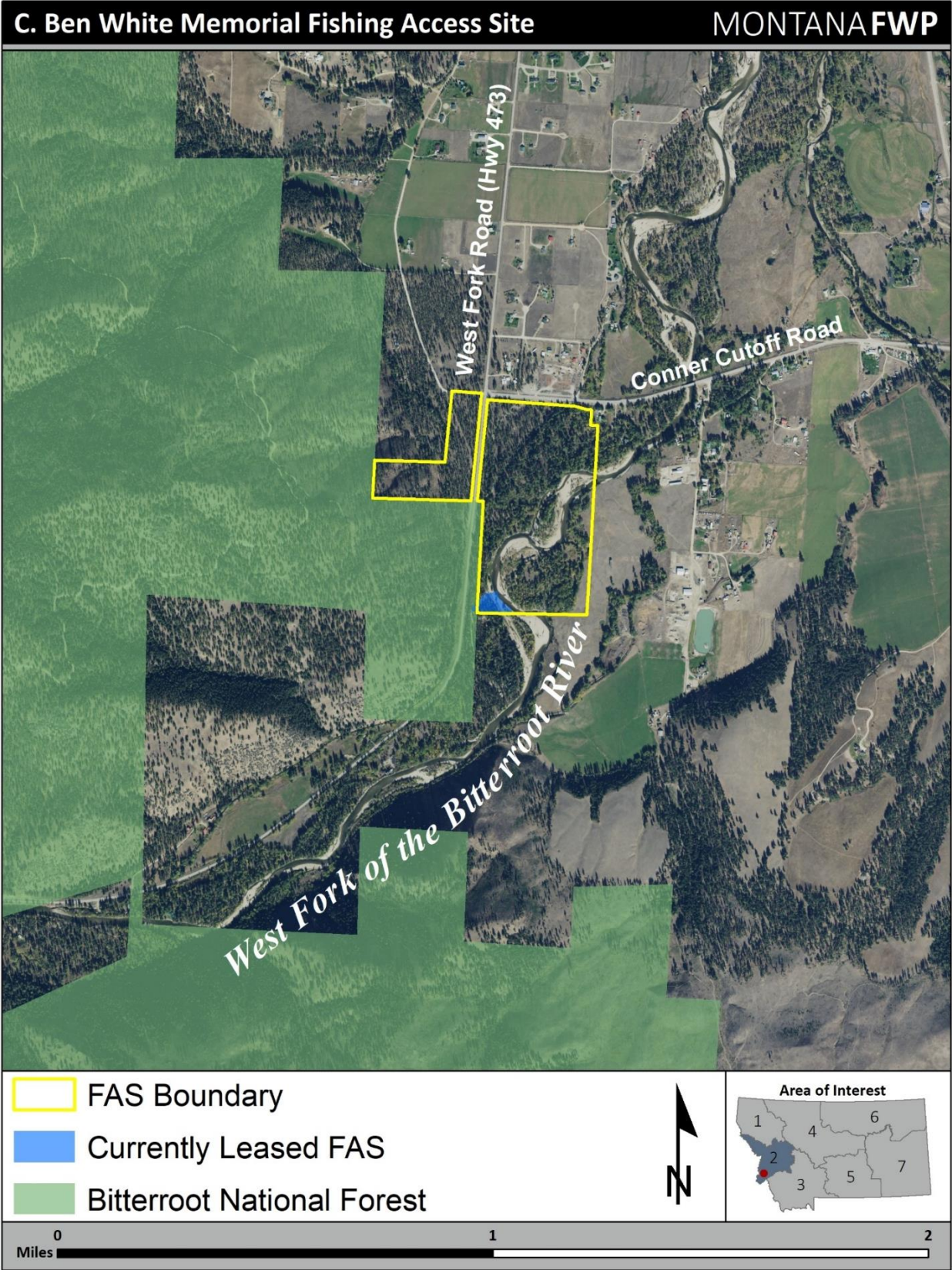
The proposed C. Ben White Memorial Fishing Access Site is located along the West Fork of the Bitterroot River and is accessed via Highway 473 (West Fork Road). The FAS is approximately 7.5 miles south of Darby, Montana in Ravalli County, and includes a portion of Township 2 North, Range 21 West; Section 13 (Figures 1-3).





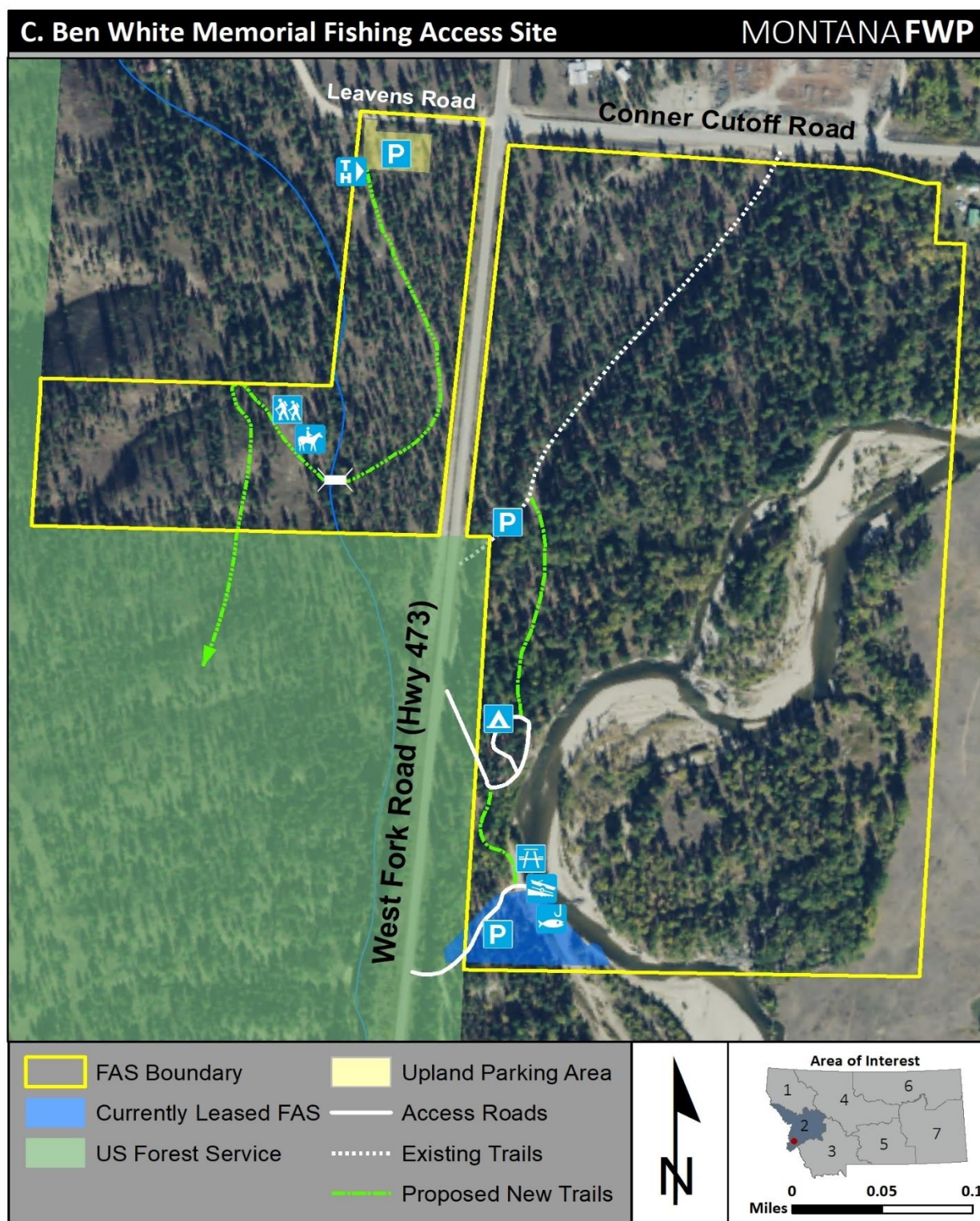
**Figure 1.** Location of the proposed C. Ben White Memorial Fishing Access Site in Ravalli County.





**Figure 2.** Landscape context map of the proposed C. Ben White Memorial Fishing Access Site in FWP Region 2. All lands not indicated as Bitterroot National Forest are privately owned.





**Figure 3.** Site map of the proposed C. Ben White Memorial Fishing Access Site and developments and/or improvements. Upon acquisition, basic improvements would be made to facilitate public use (e.g., parking areas, vault latrine near the boat launch). Additional improvements (e.g., campground, picnic area, additional latrine) would be made in future years with support from the Bitter Root Land Trust and other partners. Location of roads, trails, parking areas, and trailhead are tentative.

**6. Project Size, estimated 97 acres**

<b>Land Type</b>	<b>Affected Area (estimated in acres)</b>	<b>Land-type Total (acres)</b>
<b>a. Developed:</b>		
Residential	0	
Industrial	0	
Recreation	3	<b>3</b>
<b>b. Open Space/ Woodlands/ Recreation</b>	<b>37</b>	<b>37</b>
<b>c. Wetlands/ Riparian Areas</b>	<b>34</b>	<b>34</b>
<b>d. Floodplain</b>	<b>12</b>	<b>12</b>
<b>e. Productive:</b>		
Irrigated Cropland	0	
Dry Cropland	0	
Forestry	11	
Rangeland	0	
Other	0	<b>11</b>
<b>Total</b>		<b>97</b>

**7. Permits, Funding and Overlapping Jurisdiction****a. Permits:** Permits would be filed at least 2 weeks prior to project start

<b>Agency Name</b>	<b>Permits</b>
MT Department of Environmental Quality (DEQ)	318 Short Term Water Quality Standard for Turbidity
MT Fish, Wildlife & Parks (FWP)	124 Montana Stream Protection Act
Ravalli County	Floodplain Permit and Sanitation Permit Approach Permit
US Army Corps of Engineers	404 Federal Clean Water Act

**b. Funding:**

<b>Entity</b>	<b>Funding Amount (status)</b>
FWP Fishing Access Site Program	\$ 70,000 (committed)
FWP Access Public Lands Program	50,000 (committed)
White, Dickman, and Stomberg Families	100,000 (donated value)
Private Donors	100,000 (committed)
MT Fish and Wildlife Conservation Trust	100,000 (committed)
Ravalli County Open Lands Bond	250,000 (requested)
Other public and private funding sources	80,000 (anticipated)
<b>Total acquisition cost</b>	<b>\$750,000</b>
Estimated FAS development costs*	100,000
<b>Total Project Cost</b>	<b>\$850,000*</b>

\*The current project budget (Total) may change as development plans are finalized.

**c. Other Overlapping Jurisdictional Responsibilities:**

<b>Agency Name</b>	<b>Type of Responsibility</b>
State Historic Preservation Office	Cultural Clearance
FWP Fish & Wildlife Commission	Project Approval
Ravalli County Weed District	Weed Management Coordination
United States Forest Service	Access Easement and Trail Design

## 8. Narrative summary of the proposed action

Montana Fish, Wildlife & Parks (FWP) is working with the Bitter Root Land Trust (BRLT) to purchase 97 acres along the West Fork of the Bitterroot River (West Fork) for the creation of the C. Ben White Memorial Fishing Access Site (FAS). The site is located approximately 22 miles downstream of Painted Rocks Reservoir and approximately 3 miles upstream of the confluence of the East and West Forks of the Bitterroot River. The proposed FAS would provide recreational river access to the West Fork while protecting 97 acres of sensitive and biodiverse habitat types in the Bitterroot Valley. The property encompasses a variety of aquatic and terrestrial habitats that provide resources for a wide range of fish and wildlife species. As such, the property offers diverse hunting, angling, and wildlife-watching opportunities. Approximately 0.5 miles of the main stem of the West Fork flows through the property, with an additional 0.5 miles of side channels and 68 acres of associated riparian habitat (Figure 4). The riparian habitat includes 56 acres of mixed cottonwood and ponderosa pine riparian forest and 12 acres of willow thickets, gravel bars, and river channel. The upland portion of the property consists of approximately 19 acres of open, large-diameter ponderosa pine forest connected to Bitterroot National Forest (BNF) lands owned by the US Forest Service (USFS).



**Figure 4.** The proposed FAS would facilitate easy access to the West Fork of the Bitterroot River for fishing, swimming, picnicking, and wildlife-watching.

FWP's acquisition of the property would permanently protect open space, outdoor recreation opportunities, and fish and wildlife habitat at the gateway to the West Fork of the Bitterroot River canyon. The C. Ben White Memorial FAS would be the only FWP-owned or operated FAS on the West Fork of the Bitterroot River and would complement an array of other boating and access sites owned and operated by the USFS on the upstream portions of the West Fork. The proposed FAS would expand the smaller (1.5 acres) W. W. White Memorial FAS currently leased by FWP since 2001.

The Bitterroot River and its forks are blue-ribbon trout waters and experience heavy use by anglers, floaters and other recreationists throughout the year. The West Fork is open annually to angling from the third Saturday in May through November 30<sup>th</sup>, with extended catch-and-release angling for trout during the remainder of the year<sup>1</sup>. The West Fork experiences heavy use by anglers especially between the months of April and October. The primary game fish on the West Fork are westslope cutthroat, brown, and rainbow trout as well as mountain whitefish. Brook and bull trout are also present but are rare. Common non-game fish species include largescale sucker, longnose dace, and slimy sculpin. The West

<sup>1</sup> See FWP's annual *Fishing Regulations* (available at <http://fwp.mt.gov/default.html>, then "FishMT") for details of statewide, district, and stream-specific regulations and exceptions applying to the West Fork of the Bitterroot, including species, harvest limits, angling methods, etc.



Fork is a stronghold for westslope cutthroat trout, a state Species of Concern<sup>2</sup> (SOC) and provides habitat for federally threatened (under the Endangered Species Act) bull trout.

Wetlands and riparian areas are some of the most biologically rich yet threatened habitat types in Montana, and western North America as a whole. The portion of the West Fork within the proposed FAS is still capable of lateral channel migration due to limited development and a relatively wide floodplain (Figure 5). The migration of the river creates favorable conditions for willow and cottonwood growth, develops side channels and backwaters that support rich aquatic and terrestrial life, and maintains a relatively large and accessible section of river for anglers, floaters, and wildlife watchers to enjoy. In the spring, high water dissipates energy in this portion of the river by filling the backwaters and flowing through side channels. This process maintains a healthy river-bottom ecosystem by depositing fresh gravel and providing protection for aquatic and terrestrial species from high waters. Additionally, this process is critical for helping reduce flooding of human structures and alleviating abnormal rates of erosion downstream.



**Figure 5.** Movement of the river within its floodplain is a critical process for maintaining healthy terrestrial and riparian habitats and provides a wide swath of the river bottom for anglers to enjoy.

The southern Bitterroot Valley is a popular hunting destination, and the proposed FAS would offer hunting opportunities in a strategic location on the landscape and in habitat types that are sparsely available in the area (i.e., forested riparian areas). Primary terrestrial game species include white-tailed deer, mule deer, elk, moose, black bear, ruffed grouse, dusky grouse, wild turkey, and some waterfowl. The upland acreage provides a critical movement corridor for game animals moving between high-elevation forests and the river bottom and is used by elk and deer in the winter (Figure 6).

The proposed FAS encompasses diverse and healthy habitat types that support a variety of nongame wildlife, including many SOC (Appendix B). The riparian area adjacent to the river is a mix of large-diameter ponderosa pines and cottonwoods with a mid-story of aspen and alder. The understory is composed of deciduous shrubs and grasses as well as willow thickets. This multistory varied-vegetation

<sup>2</sup> A native animal (or plant) breeding in Montana and considered to be “at risk” due to declining population trends, threats to its habitats, and/or restricted distribution. Montana’s SOC listing highlights species in decline and encourages conservation efforts to reverse population declines and prevent the need for future listing as Threatened or Endangered Species under the Federal Endangered Species Act. Further information available at <http://fwp.mt.gov/fishAndWildlife/species/speciesOfConcern/> (accessed 12 Nov 2019).

community and structure is associated with increased abundance and diversity of songbirds, woodpeckers, small mammals, and many other species (Figure 7). In addition, these resources are located near water, further increasing their value to wildlife. The property would likely be a birding and wildlife-watching hot spot in the Bitterroot Valley.

The property is currently owned by the White Family, the Dickman Family, and the Stomberg Family, who have a strong desire to see the property protected and placed in the public domain. The BRLT has been working with the landowners for nearly 10 years on a conservation outcome for this property. The name of the site pays tribute to the owners' special connection to the land. The property is under imminent threat of development given its prime location in a popular recreation corridor, adjacent and nearby residential development, and the access it provides to the river and USFS land. The current landowners have received multiple offers from private buyers but opted to give FWP the opportunity to acquire the land instead because they want to see the land protected and open to the public.



**Figure 6.** The upland portion of the property would include a trail that leads from the flat bench along West Fork Road up this ridge into the Bitterroot National Forest, providing hunting, horseback, and hiking opportunities as well as spectacular views.

The property would be managed under existing FWP public-use regulations. Management of the FAS would include routine maintenance, control of motorized use and firearms, forestry management to reduce wildfire threat and remove hazard trees, and other accepted FWP recreation area management policies. Protection of natural resources, the health and safety of visitors, and consideration of neighboring properties would all be incorporated into development plans for the site. Anticipated improvements to the FAS in the near-term would be installation of a latrine near the boat launch area, development of an upland access parking lot and trailhead, and installing signage on-site as well as along West Fork Road. Future developments are likely to include a small campground (1-3 sites), a stock bridge and trails development on the upland portion of the property, a picnic area near the boat launch, and a small additional parking area north of the boat ramp to accommodate hikers and walk-in anglers (see Figure 3 for potential developments).



### Angling

The proposed FAS would retain the gravel boat launch and parking area at the southwest corner of the property (Figures 3, 8, 9). The boat launch area already exists as part of the currently leased FAS and would only be improved as needed, retaining the natural river-rock base. A concrete ramp is not planned due to ever-changing gravel deposition patterns, water levels, and other uncontrollable and unpredictable factors. The property encompasses approximately 0.5 mile of the West Fork where side channels and backwaters are abundant and provide good wade angling opportunities. A latrine would be installed near the boat launch and parking area. FWP intends on providing a day-use picnic area adjacent to the boat ramp that would include picnic tables and access to trails leading north into the rest of the FAS property.



**Figure 7.** Diverse, multi-story riparian vegetation provides cover for game species and promotes increased abundance and diversity of nongame animals such as songbirds, woodpeckers, and small mammals.

### Hunting

The proposed FAS would provide hunting opportunities for black bear, deer, elk, grouse, turkey, and waterfowl. The portion of the property east of West Fork Road (approximately 78 acres) would be regulated as an archery-only hunting zone (Figures 3, 10). No weapons restrictions would be placed on the portion of the FAS west of West Fork Road (approximately 19 acres), but signs would be posted regarding locations of roads, trails, and structures in the area to promote safe hunting practices. Signs would be installed at the trailhead/parking areas that explain hunting access rules and regulations as well as provide a map of the property, adjacent public and private lands, and safety zones. FWP would install property-boundary signs along all boundaries that border private lands to minimize potential trespass issues and conflicts between hunters and neighbors.



### Camping

FWP anticipates developing a fee-camping area on the east side of West Fork Road directly north of the boat launch and day-use area (Figure 3). The campground would include 1-3 primitive campsites selected from several possible locations based on anticipated use and topographic/habitat features of the property. An additional latrine might be installed in the campground. An information kiosk with camping regulations and fee-collection box would be located within the campground loop. Rocks or other barriers would be placed in strategic locations throughout the FAS to ensure vehicular use of the area is confined to acceptable locations.



**Figure 8.** The current parking area at the leased FAS would be improved to accommodate vehicles, boat trailers, and adequate space for users to turn around.

### Upland Access Site

FWP would develop a parking area, trailhead, and trail on the upland portion of the property west of West Fork Road (Figures 3, 10). This site would be accessible via Leavens Road and would be large enough to accommodate horse trailers and other vehicles. The parking area would be surrounded by a perimeter barrier to deter off-road travel. The trailhead would provide multiuse recreational access and would include a stock bridge over the irrigation ditch and a trail ascending a prominent ridgeline leading into BNF property. Signage would be installed that denotes the public-private property line to discourage trespass into adjacent private lands. FWP would work with the Darby Ranger District of the BNF to explore opportunities for extending formal trail access further into USFS lands. Access improvements on the upland acreage would enhance access to hundreds of acres of lands in the BNF.



### Hiking/Birdwatching/Horseback riding

FWP intends to retain and/or develop trails on both the river-bottom and upland portions of the FAS to facilitate public access (Figure 3). Existing trails would be cleared and maintained, and rock barriers would be placed to deter illegal motorized use of the property. An additional new trail would be developed to link the boat launch and day-use area to the campground and on into the relatively undeveloped river-bottom portion of the property to the north. Horseback use would be allowed on the entire FAS but would be restricted to established trails.



**Figure 9.** The current boat launch area at the FAS is functioning well and would only be improved as-needed to retain the natural river-rock base.

### Reserved Rights

The C. Ben White Memorial FAS includes a memorial site adjacent to the potential campground area with special significance to the current property owners. The memorial site would be fenced or otherwise delineated in order to prevent damage. Because of the significance of this property to the current landowners, FWP would enter an agreement that grants to Marty Stomberg, Linnea Miner, Barbara Dickman, Thomas A. Dickman, and Don White, each a lifetime right to exclusively occupy and use the campground from sunrise to one hour after sunset on July 1<sup>st</sup> and from noon on Friday through one hour after sunset on Sunday during the third full weekend of July. These dates would be used by the current landowners for private gatherings in the campground area, and the campground would be closed to the public during these times. FWP would post notice of these reserved periods on the campground entrance gate, which may be locked during these reserved periods. The remainder of the FAS would be open to the public during those periods.

### Other Regulations

Target shooting would be prohibited on all portions of the property as is consistent with other FWP Fishing Access Sites.



**Figure 10.** Looking south, Highway 473 (West Fork Road) bisects the property and separates the river-bottom portion (left side of photo) from the upland portion (right side of photo). A parking lot and trailhead would be established to accommodate users of the upland portion of the property.

## 9. Description and analysis of reasonable alternatives

### **Alternative A: No Action**

Under the No Action Alternative, FWP would not acquire and develop the C. Ben White Memorial FAS. The existing 1.5-acre leased FAS would be maintained and remain subject to continued cooperation with current and future landowners. If the property is sold, the leased FAS may not be available in the future. The property is under imminent threat of development, and the landowners are exploring alternative options to sell the property as soon as possible. Therefore, long-term availability of the current leased FAS is uncertain. If the property is sold to another private party, portions could be developed as home sites, potentially diminishing the fish and wildlife habitat and disrupting wildlife movement. The opportunity for public access would be expected to cease.

### **Alternative B: Proposed Action**

FWP would acquire 97 acres of river-bottom and upland habitats for the creation of the C. Ben White Memorial FAS. Public access to the West Fork of the Bitterroot River and associated floodplain would be secured and enhanced, as would access to adjacent USFS lands. Critical aquatic and terrestrial habitats



for a range of game and nongame species at the gateway of the West Fork of the Bitterroot River canyon would be protected in perpetuity. Site developments would maximize recreational opportunities while minimizing impacts to sensitive habitats.

#### 10. Evaluation and listing of mitigation, stipulation, or other control measures enforceable by the agency or another government agency

FWP would develop the final design and specifications for the development portion of the Proposed Action. FWP would employ Best Management Practices (BMPs) for FAS development and improvement, which (among other things) are designed to reduce or eliminate sediment delivery to waterways during construction (Appendix C). All county, state, and federal permits listed in Part I.7.a (above) would be obtained by FWP as required.

## **PART II. ENVIRONMENTAL REVIEW CHECKLIST**

### **Evaluation of the impacts of the Proposed Action including secondary and cumulative impacts on the Physical and Human Environment.**

#### **A. PHYSICAL ENVIRONMENT**

1. <b><u>LAND RESOURCES</u></b>	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
Will the proposed action result in:						
a. Soil instability or changes in geologic substructure?		X				
b. Disruption, displacement, erosion, compaction, moisture loss, or over-covering of soil which would reduce productivity or fertility?			X		Yes	1b
c. Destruction, covering or modification of any unique geologic or physical features?		X				
d. Changes in siltation, deposition or erosion patterns that may modify the channel of a river or stream or the bed or shore of a lake?			X		Yes	1d
e. Exposure of people or property to earthquakes, landslides, ground failure, or other natural hazard?		X				
f. Other (list)		X				

**1b.** During construction, some minor modifications to the existing soil features would be required for construction and improvement of parking areas, access roads, the boat ramp, rock barriers, and latrines. Disturbed areas would be seeded with a native-seed mix to minimize erosion and sediment delivery to the West Fork and to reduce the spread of noxious weeds. The Proposed Action would not affect soil productivity or fertility over large areas. FWP BMPs would be followed during all phases of construction to minimize erosion (Appendix C).

**1d.** Areas around parking lots, trails, and campground sites would necessarily have reduced vegetation cover due to human impacts. The impacted areas could result in increased erosion and subsequent sediment delivery to the West Fork as well as reductions in riparian vegetation and possible spread of noxious weeds. FWP would work to minimize these impacts and adjust FAS regulations to offset major issues when identified. The impacts of these activities are not expected to exceed those of other FASs under FWP management in Region 2. The proposed project would have minor impacts to the bank of the West Fork where people access the river. Minor amounts of sediment might enter the river during construction activities, but these impacts would be temporary. FWP BMPs would be followed during all phases of construction to minimize erosion (Appendix C).

2. <u>AIR</u> Will the proposed action result in:	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Emission of air pollutants or deterioration of ambient air quality? (also see 13 (c))			X		Yes	2a
b. Creation of objectionable odors?		X				2b
c. Alteration of air movement, moisture, or temperature patterns or any change in climate, either locally or regionally?		X				
d. Adverse effects on vegetation, including crops, due to increased emissions of pollutants?		X				
e. <u>For P-R/D-J projects</u> , will the project result in any discharge which will conflict with federal or state air quality regs? (Also see 2a)		X				
f. Other		X				

**2a.** Increased levels of dust may be generated during construction activities at the proposed FAS, but FWP would follow BMPs during all phases of construction to minimize dust creation (Appendix C). Diesel equipment may be used to implement the Proposed Action, potentially resulting in temporary increased diesel exhaust fumes in the area. However, these impacts would be temporary and only present in the immediate area around construction equipment during construction activities.

**2b.** FWP would regularly maintain latrines and pick up trash and litter to minimize objectionable odors.

<b>3. WATER</b>  Will the proposed action result in:	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Discharge into surface water or any alteration of surface water quality including but not limited to temperature, dissolved oxygen or turbidity?			X		Yes	3a
b. Changes in drainage patterns or the rate and amount of surface runoff?			X		Yes	3b
c. Alteration of the course or magnitude of flood water or other flows?		X				
d. Changes in the amount of surface water in any water body or creation of a new water body?		X				
e. Exposure of people or property to water related hazards such as flooding?			X		Yes	3e
f. Changes in the quality of groundwater?		X				
g. Changes in the quantity of groundwater?		X				
h. Increase in risk of contamination of surface or groundwater?			X		Yes	3h
i. Effects on any existing water right or reservation?		X				
j. Effects on other water users as a result of any alteration in surface or groundwater quality?		X				
k. Effects on other users as a result of any alteration in surface or groundwater quantity?		X				
l. <u>For P-R/D-J</u> , will the project affect a designated floodplain? (Also see 3c)			X		Yes	3l
m. <u>For P-R/D-J</u> , will the project result in any discharge that will affect federal or state water quality regulations? (Also see 3a)			X		Yes	3m
n. Other:		X				

**3a.** The proposed developments may cause a temporary localized increase in turbidity in the West Fork. FWP would obtain a Montana Department of Environmental Quality (DEQ) 318 Authorization Permit for Short-Term Water Quality Standard for Turbidity. FWP BMPs would be followed during all construction (Appendix C).

**3b.** Construction of parking areas and trails, boat launch area improvements, and designation of campsites may result in altered surface runoff patterns. However, these alterations would occur over a relatively small area and are not expected to be excessive. The Proposed Action would be designed to minimize any effect on surface water, surface runoff, and drainage patterns. FWP BMPs would be followed (Appendix C).

**3e.** The boat launch, picnic area, and associated parking lot would be located in a designated floodplain (see 3l,m below). Therefore, there is the potential for people to use the FAS during runoff periods when fast-moving water may be close to FAS infrastructure. However, the design of the FAS would not cause these types of hazards to be excessive for users and would not be expected to exceed hazards that exist at other FASs in west-central Montana.

**3h.** The use of heavy equipment during construction may result in a slight risk of contamination from petroleum products and a temporary increase in sediment delivery to the West Fork. FWP BMPs would be followed during all phases of construction to minimize these risks (Appendix C).

**3l.m.** A portion of the proposed project that includes the boat ramp and day-use area would be located within a designated floodplain, as shown on Federal Emergency Management Agency (FEMA) Map #30081C, Panel #1050D, effective date January 16, 2015. The boat launch, day-use parking area, and picnic area would be located within the 100-year floodplain, with a 1% annual chance of a flood hazard. However, most of this infrastructure has been in place in this location for many years, with minimal damage to the infrastructure or sensitive portions of the floodplain. Picnic tables would likely need to be moved out of the path of flood waters annually and repairs to the boat launch area may be required following large runoff events.

The remainder of the project area is in Zone C, defined as areas subject to minimal flooding. Permits from FWP, DEQ, the US Army Corps of Engineers, and Ravalli County would be obtained to ensure the proposed project would follow federal, state, and county floodplain and water quality regulations. All impacts to water quality resulting from construction would be minor and/or temporary.

4. <b>VEGETATION</b>  Will the proposed action result in:	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Changes in the diversity, productivity or abundance of plant species (including trees, shrubs, grass, crops, and aquatic plants)?			X		Yes	4a
b. Alteration of a plant community?			X		Yes	4b
c. Adverse effects on any unique, rare, threatened, or endangered species?		X				
d. Reduction in acreage or productivity of any agricultural land?		X				
e. Establishment or spread of noxious weeds?			X		Yes	4e
f. For P-R/D-J, will the project affect wetlands, or prime and unique farmland?		X				4f
g. Other:		X				

**4a.** Construction/enhancement of parking areas, access roads, campsites, trails, fencing, signs, and latrines would have a minor impact on the vegetation at the FAS. Campsites, parking areas, and access routes would be designed so that a minimal number of trees and shrubs would be removed during construction. Any disturbed area would be reseeded with a native-seed mix. FWP would coordinate with the Ravalli County Weed District to implement weed management at the site, consistent with other FAS maintenance activities. After acquisition, the FWP forester would evaluate the site and determine what, if anything, may be done to enhance forest health and minimize hazards to users. This could include removal of some trees, though the overall impact to the forested portions of the property would be minimal and would be designed to promote healthy wildlife habitat to the greatest extent possible.

**4b.** While localized construction activities could change the plant community in small areas, the Proposed Action is not expected to alter the composition of the plant community over the larger area. It can be expected that increased human use may cause ground disturbance in some areas that could promote the establishment of noxious weed species. FWP FAS maintenance staff would implement routine weed control actions at the FAS to monitor and control noxious weed infestations. A noxious weed inventory has not been conducted on the property but would be conducted if the property is acquired by FWP.

**4e.** Populations of noxious weeds, as designated by the Montana Department of Agriculture, are found within the currently leased FAS and likely occur throughout the property. In conjunction with the Ravalli County Weed District, FWP would implement the Statewide Integrated Noxious Weed Management Plan<sup>3</sup> using chemical, biological, and mechanical methods to control weeds on the property. Weed management would also include the establishment of native vegetation on disturbed and treated sites to prevent the spread of weeds. Motorized use

<sup>3</sup> Available at < <http://fwp.mt.gov/fishAndWildlife/habitat/noxiousWeeds/default.html>>. Accessed 24 Feb 2020.



would be restricted to designated parking areas and access roads, which would be maintained as weed-free. Horseback users would be required to use certified weed-free hay and straw, consistent with surrounded USFS lands.

**4f.** According to a search of the Natural Resource Conservation Service (NRCS) Web Soil Survey on August 7, 2019, no portion of the proposed project site is classified as Prime Farmland or as Farmland of Local Importance, and the site has not been under any form of agricultural production for many years. The Montana Natural Heritage Program's Wetland and Riparian Inventory indicates that no major wetland would be impacted by construction activities at the FAS, though minor localized impacts to the riparian area around the river are expected due to construction activities and increased human use.

<b>5. FISH / WILDLIFE</b>	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
Will the proposed action result in:						
a. Deterioration of critical fish or wildlife habitat?		X				5a
b. Changes in the diversity or abundance of game animals or bird species?		X				
c. Changes in the diversity or abundance of nongame species?		X				
d. Introduction of new species into an area?			X		Yes	5d
e. Creation of a barrier to the migration or movement of animals?			X		Yes	5e
f. Adverse effects on any unique, rare, threatened, or endangered species?			X		Yes	5f
g. Increase in conditions that stress wildlife populations or limit abundance (including harassment, legal or illegal harvest or other human activity)?			X		Yes	5g
h. For P-R/D-J, will the project be performed in any area in which T&E species are present, and will the project affect any T&E species or their habitat? (Also see 5f)			X		Yes	5h
i. <input type="checkbox"/> For P-R/D-J, will the project introduce or export any species not presently or historically occurring in the receiving location? (Also see 5d)			X		Yes	5i
j. Other:		X				

**5a.** The proposed developments are designed to minimize impacts to wildlife habitat. A minimal number of trees and shrubs would be removed for construction of the boat launch, parking areas, access roads, campsites, and trails. Efforts would be made to preserve all large healthy trees and snags where possible. The design of the FAS purposefully leaves much of the river-bottom habitat undeveloped to ensure continued use by wildlife species. Construction would likely take place in fall or late winter to avoid disturbance to nesting birds. The US Fish and Wildlife Service (USFWS) classified much of the Bitterroot River system as Critical Habitat for bull trout, including this stretch of the West Fork.

**5d,i.** The threat of Aquatic Invasive Species (AIS) is present at every publicly accessible waterbody in Montana, and the proposed FAS has been accessible for many years. The potential for AIS to enter the Bitterroot River system at the FAS would therefore not increase under the Proposed Action.

**5e.** The enhancement and promotion of recreational use at the FAS, combined with infrastructure improvements, may cause decreased use of the area by big game animals. This could be caused by proximity to humans during most of the year and through direct disturbance by humans during the hunting season. Currently, the landowner

who lives nearby reports elk and deer use the upland portions of the property heavily in the winter and the river-bottom portion as cover during the hunting season. Opening the area to public use may disrupt these movement patterns, though winter use of the FAS is expected to be low. The heaviest development at the FAS would occur in a relatively narrow strip of river-bottom forest between the West Fork Road and the West Fork, potentially resulting in decreased use of that strip of land by animals traveling along the West Fork river corridor. However, animals should still be able to travel on the west side of West Fork Road on USFS properties or along the upland portion of the FAS. This specific impact to animal movements would be expected to occur most often during April-October when recreational use of the river is highest.

**5f.h.** Several state Species of Concern (SOC) have been observed or are expected to occur on the property (Appendix B). Of these, only the bald eagle and golden eagle (protected by the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act) and the bull trout (listed as Threatened under the Endangered Species Act) come under specific federal management guidelines. There are no known bald or golden eagle nests within range of the proposed FAS whereby regulations on construction activities would come into effect.

The West Fork contains federally threatened bull trout, and the proposed FAS may increase incidental mortality of bull trout accidentally caught by anglers targeting other species. The West Fork is currently heavily used by anglers, and the 1.5-acre leased FAS has provided public access for many years. Therefore, impacts to bull trout and its habitat would be minor. If additional angling pressure does occur, it could provide additional fishing license sales. If so, funds from these license dollars would put additional management and restoration work on the ground, providing benefits to bull trout in Montana. Furthermore, protecting the property from future subdivision or development would allow the floodplain to continue lateral migration and would allow other natural floodplain processes to take place, enhancing bull trout habitat in the long-term. These benefits likely offset any potential negative impacts the project may have (Appendix D).

Migratory bird species that use the riparian and upland habitats on the property are protected by the federal Migratory Bird Treaty Act. However, timing of construction activities in the early spring or fall would eliminate concerns over nest disturbance and incidental take. Other SOC that may be impacted by the project include great blue herons (nearest rookery is > 1 mile from the proposed FAS) and westslope cutthroat trout (a common game fish species in the West Fork). The Proposed Action is unlikely to negatively impact these species. Other SOC listed in Appendix B may be locally impacted by infrastructure development and increased human use of the property, but these impacts are not expected to be severe enough to warrant special actions or mitigation measures. FWP ownership of the proposed FAS would assure the land is managed for balanced recreational use with fish and wildlife habitat values. Were the property to be sold to a private buyer, these values could be compromised. Therefore, although there would be some impacts to fish and wildlife species using the site, the overall protection of the property from future development represents a net benefit to fish and wildlife in the area.

**5g.** Increased recreational use of the property may displace some larger animals that have grown accustomed to using the area while under private ownership. However, observations by the landowner indicate most larger wildlife species use the property in the winter, when recreational use of the area is expected to be minimal. Allowing hunting in portions of the proposed FAS would remove or displace some game animals through direct harvest or threat of harvest, but this impact can be expected with any area that is open for public hunting access.

**B. HUMAN ENVIRONMENT**

<b>6. <u>NOISE &amp; ELECTRICAL EFFECTS</u></b> Will the proposed action result in:	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Increases in existing noise levels?			X		Yes	6a
b. Exposure of people to serve or nuisance noise levels?			X		Yes	6b
c. Creation of electrostatic or electromagnetic effects that could be detrimental to human health or property?		X				
d. Interference with radio or television reception and operation?		X				
e. Other:		X				

**6a,b.** Construction equipment would cause a temporary minor increase in noise levels at the project site, and this increase may be heard by nearby neighbors and visitors. Operating hours would be designed to minimize loud noises during time periods that may disturb neighboring landowners, river users, or nesting birds.

<b>7. <u>LAND USE</u></b> Will the proposed action result in:	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Alteration of or interference with the productivity or profitability of the existing land use of an area?		X				
b. Conflicted with a designated natural area or area of unusual scientific or educational importance?		X				
c. Conflict with any existing land use whose presence would constrain or potentially prohibit the proposed action?		X				
d. Adverse effects on or relocation of residences?			X		Yes	7d
e. Other:		X				

**7d.** One of the current landowners lives on the west side of West Fork Road, adjacent to the proposed FAS, and the landowner's property abuts the upland portion of the proposed FAS. Increased use by recreationists might lead to trespass issues, but FWP would install signs and maps to delineate private lands and help minimize these types of conflicts. If conflicts were to persist, FWP might use wildlife-friendly fencing to more clearly delineate property boundaries, though fencing would be avoided if possible, to minimize impacts to big game movement through the area. The landowner is aware of the potential impacts and worked with FWP to establish proposed management guidelines and FAS property boundaries. FWP would continue to work with the landowner to address any future issues.

There is a private residence located just outside the boundary of the proposed FAS on its northeast corner. Trespass issues might arise with these property owners if the proposed FAS project is completed. FWP would meet with these landowners prior to completion of the proposed project to hear and attempt to address their concerns. FWP might pursue boundary fencing along this portion of the FAS boundary if trespass issues become a problem.

<b>8. RISK / HEALTH HAZARDS</b>  Will the proposed action result in:	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Risk of an explosion or release of hazardous substances (including, but not limited to oil, pesticides, chemicals, or radiation) in the event of an accident or other forms of disruption?			X		Yes	8a
b. Affect an existing emergency response or emergency evacuation plan or create a need for a new plan?		X				
c. Creation of any human health hazard or potential hazard?			X		Yes	8c
d. For P-R/D-J, will any chemical toxicants be used? (Also see 8a)			X		Yes	8d
e. Other:		X				

**8a.** During construction and subsequent public use, disturbed areas within the FAS may lead to establishment of noxious weeds. FWP would work with the Ravalli County Weed District to address noxious weed issues on the property using biological, mechanical, and herbicidal treatments. Any application of herbicides on the site would be conducted by trained FWP staff following strict application guidelines to minimize risk of spills or abnormal levels of contamination. Heavy equipment used in construction may release petroleum products inadvertently into the floodplain. However, contractors would inspect equipment daily and have absorbent materials on site to minimize any hydrocarbon releases. FWP would follow BMPs during all phases of construction to minimize risks (Appendix C).

**8c.** The proposed FAS could increase traffic on West Fork Road in the vicinity of the FAS, especially vehicles slowing down or stopping to enter or leave the site. The FAS would be well-marked on West Fork Road and the Conner Cutoff Road to direct users to the site and to warn drivers of possible changes in traffic ahead. Overall, the proposed project would likely enhance public safety by improving roads and parking areas and dispersing parking by different user types to avoid over-crowding.

**8d.** Any application of herbicides on the site to control noxious weeds would be conducted by trained FWP staff following strict application guidelines to minimize risk of spills or abnormal levels of contamination. However, the use of herbicides comes with inherent risk of accidental spills that could result in temporary water contamination. The use of herbicides would follow guidelines outlined in the FWP Statewide Integrated Noxious Weed Management Plan to minimize this risk.

<b>9. <u>COMMUNITY IMPACT</u></b>  Will the proposed action result in:	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Alteration of the location, distribution, density, or growth rate of the human population of an area?		X				
b. Alteration of the social structure of a community?		X				
c. Alteration of the level or distribution of employment or community or personal income?			X		Yes	9c
d. Changes in industrial or commercial activity?		X				
e. Increased traffic hazards or effects on existing transportation facilities or patterns of movement of people and goods?			X		Yes	9e
f. Other:		X				

**9c.** The Proposed Action would provide increased recreational opportunities in the area, potentially drawing more visitors to local retail and service businesses (Appendix E, Tourism Report). A leased FAS has been provided at this location since 2001, and the current boat launch area is adequate for launching boats of all sizes up to and including hard-sided drift boats. Therefore, it is unlikely development of this site would dramatically change the level or distribution of commercial guided fishing on this section of the West Fork.

**9e.** The proposed FAS could increase traffic on West Fork Road in the vicinity of the FAS, especially vehicles slowing down or stopping to enter or leave the site. The FAS would be well-marked on West Fork Road and the Conner Cutoff Road to direct users to the site and to warn drivers of possible changes in traffic ahead.

<b>10. PUBLIC SERVICES/TAXES/UTILITIES</b>	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
Will the proposed action result in:						
a. Will the proposed action have an effect upon or result in a need for new or altered governmental services in any of the following areas: fire or police protection, schools, parks/recreational facilities, roads or other public maintenance, water supply, sewer or septic systems, solid waste disposal, health, or other governmental services? If any, specify:		X				10a
b. Will the proposed action have an effect upon the local or state tax base and revenues?		X				10b
c. Will the proposed action result in a need for new facilities or substantial alterations of any of the following utilities: electric power, natural gas, other fuel supply or distribution systems, or communications?		X				
d. Will the proposed action result in increased used of any energy source?		X				
e. Define projected revenue sources			X			10e
f. Define projected maintenance costs.			X			10f
g. Other:		X				

**10a.** The Proposed Action would have no impact on public services or utilities. The proposed developments would require periodic maintenance by FWP, and the site would be patrolled by FWP's FAS and enforcement divisions.

**10b.** This purchase is not expected to reduce the tax revenues that Ravalli County collects on this property. FWP is required by § 87-1-603, MCA, to pay "to the county in a sum equal to the amount of taxes that would be payable on county assessment of the property if it was taxable to a private citizen."

**10e.** Revenue generated from campsite fees is estimated to be \$2,000-\$3,500 annually.

**10f.** Projected annual operating, maintenance, weed control, and personnel expense for the proposed FAS is estimated to total \$3,000 annually.



<b>11. <u>AESTHETICS / RECREATION</u></b>	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
Will the proposed action result in:						
a. Alteration of any scenic vista or creation of an aesthetically offensive site or effect that is open to public view?			X		Yes	11a
b. Alteration of the aesthetic character of a community or neighborhood?		X				
c. Alteration of the quality or quantity of recreational/tourism opportunities and settings? (Attach Tourism Report)			X		Yes	11c
d. For P-R/D-J, will any designated or proposed wild or scenic rivers, trails or wilderness areas be impacted? (Also see 11a, 11c)		X				11d
e. Other:		X				

**11a.** The upland parking area and trail as well as additional signage throughout the site would slightly degrade the aesthetic values along this portion of the West Fork Road. However, improvements to the FAS would increase the aesthetics of the developed portions of the site. Overall, the proposed FAS would facilitate more diverse public use of the site and would encourage people to enjoy the aesthetics of the West Fork river bottom as well as portions of the BNF.

**11c.** The Proposed Action would increase recreational opportunities in the area by improving existing infrastructure (e.g., boat launch and parking areas) and facilitating new outdoor uses in the area (e.g., hunting, hiking, bird-watching, horseback riding). These improvements would likely benefit local retail and service businesses and would promote dispersed use of the site by various user types (Appendix E, Tourism Report).

**11d.** No designated wild or scenic rivers, trails, or wilderness areas would be impacted by the proposed developments.

<b>12. <u>CULTURAL / HISTORICAL RESOURCES</u></b>	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
Will the proposed action result in:						
a. Destruction or alteration of any site, structure or object of prehistoric historic, or paleontological importance?		X				12a
b. Physical change that would affect unique cultural values?		X				
c. Effects on existing religious or sacred uses of a site or area?			X		Yes	12c
d. For P-R/D-J, will the project affect historic or cultural resources? Attach SHPO letter of clearance. (Also see 12.a)		X				12d
e. Other:		X				

**12a,d.** The Montana State Historic Preservation Office (SHPO) conducted a cultural resource file search for this project and found no major cultural sites on the property. If cultural materials are discovered during construction, work would cease and SHPO would be contacted for a more in-depth investigation.

**12c.** The current owners of the property have a memorial site for a family member at the FAS and have used the riverside location for memorial gatherings. These family members requested that they be able to retain the rights to use the specific site where the memorial is located for gatherings on two occasions in July of each year. FWP was willing to accommodate this request given the level of significance for these gatherings and the landowners' generosity in working with FWP and BRLT on getting this property into the public domain. FWP would use signage to indicate these reserved-use periods, and the rest of the FAS would remain open to public use during those times.

## SIGNIFICANCE CRITERIA

13. SUMMARY EVALUATION OF SIGNIFICANCE	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
Will the proposed action, considered as a whole:						
a. Have impacts that are individually limited, but cumulatively considerable? (A project or program may result in impacts on two or more separate resources which create a significant effect when considered together or in total.)		X				13a
b. Involve potential risks or adverse effects which are uncertain but extremely hazardous if they were to occur?		X				
c. Potentially conflict with the substantive requirements of any local, state, or federal law, regulation, standard or formal plan?		X				
d. Establish a precedent or likelihood that future actions with significant environmental impacts will be proposed?		X				
e. Generate substantial debate or controversy about the nature of the impacts that would be created?		X				
f. For P-R/D-J, is the project expected to have organized opposition or generate substantial public controversy? (Also see 13e)		X				13f
g. For P-R/D-J, list any federal or state permits required.		X				13g

**13a.** During construction of the proposed project, there may be minor and temporary impacts to the physical environment, but the impacts would be short-term, and the developments would benefit the community and recreational opportunities over the long-term. The Proposed Action would have no negative cumulative effects on the biological, physical, and human environments. When considered over the long-term, the Proposed Action positively impacts the public's recreational use of the West Fork of the Bitterroot River and would protect important and threatened habitat types in the Bitterroot Valley in perpetuity.

**13f.** The proposed project is designed to improve recreational facilities on the site and is not expected to generate organized opposition or substantial public controversy. Local conservation and sportsperson's groups have been enthusiastically supportive of the project.

**13g.** The US Army Corps of Engineer 404 Federal Clean Water Act is the only federal permit required for the proposed development. The Montana DEQ 318 Short Term Water Quality Standard for Turbidity and the FWP 124 Montana Stream Protection Act are the only state permits required for the proposed development. In addition, a Ravalli County Floodplain and Sanitation Permit and an Approach Permit would also be required.

### **PART III. NARRATIVE EVALUATION AND COMMENT**

The proposed acquisition and development of the C. Ben White Memorial FAS would protect important aquatic and terrestrial habitats while providing diverse outdoor recreational opportunities on the West Fork of the Bitterroot River. While some negative physical impacts may occur during infrastructure improvements, the overall impact would be short-term and relatively minor. Long-term, the site would increase public access to the outdoors while protecting fish and wildlife habitats from possible deterioration or fragmentation, which could occur were the property to be sold to a private buyer and depending on that or any future buyer's plans.

### **PART IV. PUBLIC PARTICIPATION**

#### **1. Public involvement**

The public will be notified in the following manners about the opportunity to comment on this current EA, the proposed action, and alternative:

- Legal notices will be published twice each in each of these newspapers: *Bitterroot Star* (Stevensville), *Independent Record* (Helena), *Missoulian*, *Ravalli Republic* (Hamilton).
- Public notice will be posted on FWP's webpage: <http://fwp.mt.gov> ("News," then "Public Notices"). The Draft EA would also be available on this webpage, along with the opportunity to submit comments online.
- Copies would be available at the FWP Region 2 Headquarters in Missoula and the FWP State Headquarters in Helena.
- A news release would be prepared and distributed to a standard list of media outlets interested in FWP Region 2 issues; this news release would also be posted on FWP's website <http://fwp.mt.gov> ("News," then "News Releases"). This news release would also be posted on FWP Region 2's website <http://fwp.mt.gov/regions/r2/>.
- Direct mailing or email notification would be made to adjacent landowners and other interested parties (individuals, groups, agencies) to ensure their knowledge of the proposed project.

Copies of this draft EA may be obtained by mail from Region 2 FWP, 3201 Spurgin Rd., Missoula 59804; by phoning 406-542-5540; by emailing [shrose@mt.gov](mailto:shrose@mt.gov); or by viewing FWP's Internet website <http://fwp.mt.gov> ("Public Notices," beginning February 27, 2020).

This level of public notice and participation is appropriate for a project of this scope with no significant physical or human impacts and only minor impacts that can be mitigated.

#### **2. Duration of comment period**

The public comment period will extend for thirty (30) days following the February 26<sup>th</sup> publication of the second legal notice in the *Missoulian*. Comments must be received by FWP no later than March 27, 2020.

Comments may be made online on the EA's webpage, emailed to Sharon Rose at [shrose@mt.gov](mailto:shrose@mt.gov), or mailed to the FWP address below:

Region 2 FWP  
Attn: Sharon  
3201 Spurgin Rd  
Missoula, MT 59804

## **PART V. EA PREPARATION**

### **1. Based on the significance criteria evaluated in this EA, is an EIS required? No**

**If an EIS is not required, explain why the EA is the appropriate level of analysis for this proposed action.**

No, an EIS is not required. Based on an evaluation of the primary, secondary, and cumulative impacts to the physical and human environment, no significant impacts from the proposed acquisition were identified. In determining the significance of the impacts of the proposed project, FWP assessed the severity, duration, geographic extent, and frequency of the impact, the probability that the impact would occur, or reasonable assurance that the impact would not occur. FWP assessed the importance to the state and to society of the environmental resource or value affected; any precedent that would be set as a result of an impact of the proposed action that would commit FWP to future actions; and potential conflicts with local, federal, or state laws. As this EA revealed no significant impacts from the proposed actions, an EA is the appropriate level of review and an EIS is not required.

### **2. Persons responsible for preparing the EA**

Torrey Ritter, FWP Region 2 Wildlife Biologist, Missoula, MT  
 Rebecca Mowry, FWP Region 2 Wildlife Biologist, Hamilton, MT  
 Rory Zarling, FWP Region 2 FAS Manager, Missoula, MT  
 Jason Lindstrom, FWP Region 2 Fisheries Biologist, Hamilton, MT  
 Randy Arnold, FWP Region 2 Regional Supervisor, Missoula MT  
 Sharon Rose, FWP Region 2 Comment Coordinator, Missoula, MT

### **3. List of agencies or offices consulted during preparation of the EA**

United States Forest Service:  
     Bitterroot National Forest--Darby Ranger District  
 Montana Fish, Wildlife & Parks:  
     Lands, Helena, MT  
     Wildlife, Helena, MT  
     Access, Missoula, MT  
 Ravalli County:  
     Road Department

## **APPENDICES**

- A. House Bill 495 Project Qualification Checklist (§ 23-1-110, MCA)
- B. List of Threatened and Endangered Species and state Species of Concern (Montana Natural Heritage Program)
- C. Best Management Practices for Fishing Access Sites (FWP)
- D. Biological Assessment
- E. Tourism Report (Montana Department of Commerce)

## APPENDIX A. House Bill (HB) 495 Qualification Checklist (§ 23-1-110, MCA)

### HB 495 PROJECT QUALIFICATION CHECKLIST

**Date:** November 9, 2019

**Person Reviewing:** Torrey Ritter

**Project Location:** The proposed C. Ben White Memorial Fishing Access Site is located on the West Fork of the Bitterroot River along Highway 473 (West Fork Road), approximately 7.5 miles south of Darby, Montana in Ravalli County (Township 2 North, Range 21 West; Section 13).

**Description of Proposed Work:** Montana Fish, Wildlife & Parks (FWP) proposes to purchase 97 acres of private land along the West Fork of the Bitterroot River for the purpose of providing public access to the West Fork of the Bitterroot River and developing a Fishing Access Site (FAS). Proposed developments include designated parking areas, vault latrines, gravel access roads, a picnic and camping area, an upland parking area and trailhead, and informational signs.

The following checklist is intended to be a guide for determining whether a proposed action or improvement is of enough significance to fall under 23-1-110 rules. (Please check all that apply and comment as necessary.)

- ☒ **A. New roadway or trail built over undisturbed land?**  
Comments: New roadways would be built over undeveloped land within the camping area and for the upland parking area.
- ☐ **B. New building construction (buildings <100 sf and vault latrines exempt)?**  
Comments: No new building construction.
- ☒ **C. Any excavation of 20 c.y. or greater?**  
Comments: Yes, for access roads, campground, and parking areas.
- ☒ **D. New parking lots built over undisturbed land or expansion of existing lot that increases parking capacity by 25% or more?**  
Comments: New parking areas will increase overall capacity of the site by more than 25%, though the existing parking lot at the currently leased FAS would not be expanded more than 25%.
- ☐ **E. Any new shoreline alteration that exceeds a doublewide boat ramp or handicapped fishing station?**  
Comments: No major shoreline alterations.
- ☐ **F. Any new construction into lakes, reservoirs, or streams?**  
Comments: No new construction into the West Fork of the Bitterroot River.
- ☐ **G. Any new construction in an area with National Registry quality cultural artifacts (as determined by State Historical Preservation Office)?**  
Comments: SHPO was contacted and no cultural sites were found on the property.
- ☐ **H. Any new above ground utility lines?**  
Comments: No new utility lines.
- ☒ **I. Any increase or decrease in campsites of 25% or more of an existing number of campsites?**  
Comments: There is currently a private, primitive campsite at the existing leased FAS so the new FAS would improve the existing camping area and add additional campsites.
- ☒ **J. Proposed project significantly changes the existing features or use pattern, including effects of a series of individual projects?**  
Comments: Yes, the Proposed Action would change the use pattern by allowing camping and increasing opportunities for day use in the area.

If any of the above are checked, HB 495 rules apply to this proposed work and should be documented on the MEPA/HB495 CHECKLIST. Refer to MEPA/HB495 Cross Reference Summary for further assistance.

## APPENDIX B. Species of Concern and Threatened and Endangered Species Associated with the C. Ben White Memorial Fishing Access Site

**Table.** Species confirmed present or thought to be present within the proposed C. Ben White Memorial Fishing Access Site. Data were gathered on-site and from the Montana Natural Heritage Program's species observations database. (Delisted = delisted under the federal Endangered Species Act [ESA]; SOC = Montana Species of Concern; Threatened = Threatened under the ESA.)

Species	Type	MT Status	Habitat	Confirmed	Suspected	Possible
Bull Trout	Fish	Threatened	Coldwater streams	X		
Westslope Cutthroat Trout	Fish	SOC	Coldwater Streams	X		
Bald Eagle	Bird	Delisted, SOC	Riparian forests	X		
Clark's Nutcracker	Bird	SOC	Conifer forests	X		
Evening Grosbeak	Bird	SOC	Mixed-conifer forests	X		
Great Blue Heron	Bird	SOC	Riparian woodlands	X		
Pileated Woodpecker	Bird	SOC	Conifer/riparian forests with large trees	X		
Brown Creeper	Bird	SOC	Mixed-conifer forests	X		
Flammulated Owl	Bird	SOC	Low-mid elevation conifer forests with large trees		X	
Lewis's Woodpecker	Bird	SOC	Riparian forests		X	
Pacific Wren	Bird	SOC	Conifer/riparian forests		X	
Varied Thrush	Bird	SOC	Riparian forests		X	
Veery	Bird	SOC	Riparian forests		X	
Western Skink	Reptile	SOC	Open conifer forests/grasslands		X	
Western Toad	Amphibian	SOC	Wetlands, lakes, floodplain ponds		X	
Hoary Bat	Mammal	SOC	Riparian and forests		X	
Great Gray Owl	Bird	SOC	Conifer and riparian forests with large trees			X
Northern Goshawk	Bird	SOC	Mixed conifer forests			X
Northern Hawk Owl	Bird	SOC	Conifer forests			X
Peregrine Falcon	Bird	Delisted, SOC	Cliffs near riparian or wetland habitat			X
Fisher	Mammal	SOC	Mixed conifer forests			X



## APPENDIX C. Best Management Practices for Fishing Access Sites (FWP)

### MONTANA FISH, WILDLIFE AND PARKS BEST MANAGEMENT PRACTICES 10-02-02 (Updated May 1, 2008)

#### I. ROADS

##### A. Road Planning and location

1. Minimize the number of roads constructed at the FAS through comprehensive road planning, recognizing foreseeable future uses.
  - a. Use existing roads, unless use of such roads would cause or aggravate an erosion problem.
2. Fit the road to the topography by locating roads on natural benches and following natural contours. Avoid long, steep road grades and narrow canyons.
3. Locate roads on stable geology, including well-drained soils and rock formations that tend to dip into the slope. Avoid slumps and slide-prone areas characterized by steep slopes, highly weathered bedrock, clay beds, concave slopes, hummocky topography, and rock layers that dip parallel to the slope. Avoid wet areas, including seeps, wetlands, wet meadows, and natural drainage channels.
4. Minimize the number of stream crossings.
  - a. Choose stable stream crossing sites. "Stable" refers to streambanks with erosion-resistant materials and in hydrologically safe spots.

##### B. Road Design

1. Design roads to the minimum standard necessary to accommodate anticipated use and equipment. The need for higher engineering standards can be alleviated through proper road-use management. "Standard" refers to road width.
2. Design roads to minimize disruption of natural drainage patterns. Vary road grades to reduce concentrated flow in road drainage ditches, culverts, and on fill slopes and road surfaces.

##### C. Drainage from Road Surface

1. Provide adequate drainage from the surface of all permanent and temporary roads. Use outsloped, insloped or crowned roads, installing proper drainage features. Space road drainage features so peak flow on road surface or in ditches will not exceed their capacity.
  - a. Outsloped roads provide means of dispersing water in a low-energy flow from the road surface. Outsloped roads are appropriate when fill slopes are stable, drainage will not flow directly into stream channels, and transportation safety can be met.
  - b. For insloped roads, plan ditch gradients steep enough, generally greater than 2%, but less than 8%, to prevent sediment deposition and ditch erosion. The steeper gradients may be suitable for more stable soils; use the lower gradients for less stable soils.
  - c. Design and install road surface drainage features at adequate spacing to control erosion; steeper gradients require more frequent drainage features. Properly constructed drain dips can be an economical method of road surface drainage. Construct drain dips deep enough into the sub-grade so that traffic will not obliterate them.
2. For ditch relief/culverts, construct stable catch basins at stable angles. Protect the inflow end of cross-drain culverts from plugging and armor if in erodible soil. Skewing ditch relief culverts 20 to 30 degrees toward the inflow from the ditch will improve inlet efficiency.

3. Provide energy dissipators (rock piles, slash, log chunks, etc.) where necessary to reduce erosion at outlet of drainage features. Cross-drains, culverts, water bars, dips, and other drainage structures should not discharge onto erodible soils or fill slopes without outfall protection.
4. Route road drainage through adequate filtration zones, or other sediment-settling structures. Install road drainage features above stream crossings to route discharge into filtration zones before entering a stream.

D. Construction/Reconstruction

1. Stabilize erodible, exposed soils by seeding, compacting, riprapping, benching, mulching, or other suitable means.
2. At the toe of potentially erodible fill slopes, particularly near stream channels, pile slash in a row parallel to the road to trap sediment. When done concurrently with road construction, this is one method to effectively control sediment movement and it also provides an economical way of disposing of roadway slash. Limit the height, width and length of these “slash filter windrows” so not to impede wildlife movement. Sediment fabric fences or other methods may be used if effective.
3. Construct cut and fill slopes at stable angles to prevent sloughing and subsequent erosion.
4. Avoid incorporating potentially unstable woody debris in the fill portion of the road prism. Where possible, leave existing rooted trees or shrubs at the toe of the fill slope to stabilize the fill.
5. Place debris, overburden, and other waste materials associated with construction and maintenance activities in a location to avoid entry into streams. Include these waste areas in soil stabilization planning for the road.
6. When using existing roads, reconstruct only to the extent necessary to provide adequate drainage and safety; avoid disturbing stable road surfaces. Consider abandoning existing roads when their use would aggravate erosion.

E. Road Maintenance

1. Grade road surfaces only as often as necessary to maintain a stable running surface and to retain the original surface drainage.
2. Maintain erosion control features through periodic inspection and maintenance, including cleaning dips and cross-drains, repairing ditches, marking culvert inlets to aid in location, and clearing debris from culverts.
3. Avoid cutting the toe of cut slopes when grading roads, pulling ditches, or plowing snow.
4. Avoid using roads during wet periods if such use would likely damage the road drainage features. Consider gates, barricades or signs to limit use of roads during wet periods.

II. RECREATIONAL FACILITIES (parking areas, campsites, trails, ramps, restrooms)

A. Site Design

1. Design a site that best fits the topography, soil type, and stream character, while minimizing soil disturbance and economically accomplishing recreational objectives. Keep roads and parking lots at least 50 feet from water; if closer, mitigate with vegetative buffers as necessary.
2. Locate foot trails to avoid concentrating runoff and provide breaks in grade as needed. Locate trails and parking areas away from natural drainage systems and divert runoff to stable areas. Limit the grade of trails on unstable, saturated, highly erosive, or easily compacted soils.
3. Scale the number of boat ramps, campsites, parking areas, bathroom facilities, etc. to be commensurate with existing and anticipated needs. Facilities should not invite such use that natural features will be degraded.
4. Provide adequate barriers to minimize off-road vehicle use.

B. Maintenance: Soil Disturbance and Drainage

1. Maintenance operations minimize soil disturbance around parking lots, swimming areas and campsites, through proper placement and dispersal of such facilities or by reseeding disturbed ground. Drainage from such facilities should be promoted through proper grading.
2. Maintain adequate drainage for ramps by keeping side drains functional or by maintaining drainage of road surface above ramps or by crowning (on natural surfaces).
3. Maintain adequate drainage for trails. Use mitigating measures, such as water bars, wood chips, and grass seeding, to reduce erosion on trails.
4. When roads are abandoned during reconstruction or to implement site-control, they must be reseeded and provided with adequate drainage so that periodic maintenance is not required.

III. RAMPS AND STREAM CROSSINGS

A. Legal Requirements

1. Relevant permits must be obtained prior to building bridges across streams or boat ramps. Such permits include the SPA 124 permit, the COE 404 permit, and the DNRC Floodplain Development Permit.

B. Design Considerations

1. Placement of boat ramp should be such that boats can load and unload with out difficulty and the notch in the bank where the ramp was placed does not encourage bank erosion. Extensions of boat ramps beyond the natural bank can also encourage erosion.
2. Adjust the road grade or provide drainage features (e.g. rubber flaps) to reduce the concentration of road drainage to stream crossings and boat ramps. Direct drainage flow through an adequate filtration zone and away from the ramp or crossing through the use of gravel side-drains, crowning (on natural surfaces) or 30-degree angled grooves on concrete ramps.
3. Avoid unimproved stream crossings on permanent streams. On ephemeral streams, when a culvert or bridge is not feasible, locate drive-throughs on a stable, rocky portion of the stream channel.
4. Unimproved (non-concrete) ramps should only be used when the native soils are sufficiently gravelly or rocky to withstand the use at the site and to resist erosion.

C. Installation of Stream Crossings and Ramps

1. Minimize stream channel disturbances and related sediment problems during construction of road and installation of stream crossing structures. Do not place erodible material into stream channels. Remove stockpiled material from high water zones. Locate temporary construction bypass roads in locations where the stream course will have a minimal disturbance. Time the construction activities to protect fisheries and water quality.
2. Where ramps enter the stream channel, they should follow the natural streambed in order to avoid changing stream hydraulics and to optimize use of boat trailers.
3. Use culverts with a minimum diameter of 15 inches for permanent stream crossings and cross drains. Proper sizing of culverts may dictate a larger pipe and should be based on a 50-year flow recurrence interval. Install culverts to conform to the natural streambed and slope on all perennial streams and on intermittent streams that support fish or that provide seasonal fish passage. Place culverts slightly below normal stream grade to avoid culvert outfall barriers. Do not alter stream channels upstream from culverts, unless necessary to protect fill or to prevent culvert blockage. Armor the inlet and/or outlet with rock or other suitable material where needed.
4. Prevent erosion of boat ramps and the affected streambank through proper placement (so as to not catch the stream current) and hardening (riprap or erosion resistant woody vegetation).
5. Maintain a 1-foot minimum cover for culverts 18-36 inches in diameter, and a cover of one-third diameter for larger culverts to prevent crushing by traffic.

## APPENDIX D. Biological Assessment for the C. Ben White Memorial Fishing Access Site

### Evaluation

An evaluation should be conducted addressing project impacts to wildlife and plants but specifically listed species. The lead federal agency (Corps of Engineers) or their designated representative will make the effects determination of project impact to listed species and their critical habitat based, in part, upon information that you provide. If a determination is “may affect” for listed species, the federal agency must provide all relevant information used in making impact determinations to the US Fish and Wildlife Service. Your project evaluation should include the following:

#### General information required for consultation requests

##### I. Project Description

- a. Provide the location of the proposed action including state, county, and township, range and section.  
*See attached FWP Environmental Assessment (EA)*
- b. Provide a map of the project vicinity with the boundary of the proposed activity depicted.  
*See EA*
- c. Provide a detailed description of the proposed activity, including secondary project features such as access roads, power lines, etc.  
*See EA*

##### II. Site Specific Information

- a. Identify listed, proposed and candidate species that may occur on site or within the influence of the proposed project.  
*Bull trout are listed as threatened under the Endangered Species Act and is the primary listed species that could be affected by the proposed FAS. Canada lynx and grizzly bears are unlikely to occur in the area and would be unlikely to use habitats within the proposed FAS.*
- b. Provide a description of the habitat on site or within the influence of the project, including constituent elements.  
*The West Fork of the Bitterroot River, where the project is located, is occupied by bull trout year-round with this portion of the river being used primarily as foraging, migratory, and overwintering habitat, as well as juvenile rearing. No known bull trout spawning occurs within the project area. There is an abundant food base present in the West Fork consisting primarily of aquatic macroinvertebrates, forage fish including mountain whitefish, Westslope cutthroat trout, rainbow trout, and slimy sculpin, as well as terrestrial organisms of riparian origin. Habitat complexity in the West Fork is relatively good, although residential development in the riparian corridor and the presence of Montana Highway 473 has led to some areas of bank armoring and channel straightening. Large woody debris is relatively common, although many pieces and accumulations have been altered to facilitate recreational use of the river. Painted Rocks Reservoir is located upstream of the project location and is used heavily in the summer (mid-July through late September) to augment stream flow in the mainstem Bitterroot River. Because of this, flows in the West Fork are above average throughout the summer period. Average daily water temperatures during this time tend to be less than 15° C, with maximum daily temperatures rarely exceeding 20° C. Thermal refugia is also available via groundwater inputs and from the many tributaries that come in upstream of the project area.*

- c. Provide any known survey information.

*FWP has an electrofishing section that is sampled periodically and encompasses the project area. The site was established in 1986 and has been sampled a total of eight times, with the most recent survey being in 2015. Rainbow and Westslope cutthroat trout make up the bulk of the trout numbers in the reach, followed by brown trout and then bull trout. Bull trout densities within this reach are low making obtaining a population estimate difficult. The lowest number of bull trout handled in this section was six in 2002 and 2015, and the greatest number was 23 in 1986. The average number of bull trout handled in this section for all sample years is 11.6. Most fish captured have been less than 15 inches in length.*

### III. Effects of the Action

- a. Describe the effects of the action that would directly affect the species and designated critical habitat.

*It is possible bull trout could be caught incidentally by anglers targeting other species at this location. However, these impacts are likely negligible. It is illegal to intentionally target bull trout in FWP Region 2, and densities are low in the river where the proposed FAS would be located.*

- b. Describe effects of the action that would indirectly affect the species and designated critical habitat.

*There are some potential indirect impacts to the species that could occur during construction and maintenance of the proposed FAS. Bank hardening and stabilization, though expected to be minimal at this site, can decrease stream complexity and interrupt natural fluvial processes. It is not anticipated that any stream bank would be hardened for this FAS, so impacts to bull trout are unlikely.*

*The creation of a FAS could cause increased angler activity at the site, though there is already a leased FAS at this location that has been in place for many years. Increased angling pressure could lead to accidental take of bull trout mistaken for other species, or increased mortality of bull trout due to handling of the fish by anglers. However, the acquisition and development of the proposed FAS is unlikely to dramatically increase these potential impacts to bull trout. It is illegal to target or take bull trout under FWP's fishing regulations for the West Fork of the Bitterroot River, so any harvest would be done illegally. Most studies on the impact of catch-and-release indicate that there is minimal mortality to salmonids, despite occasionally causing hook scars or other deformities.*

*Overall, we do not expect that angling pressure will increase considerably due to the acquisition and development of the proposed FAS. There are currently abundant opportunities for boat and wade access to the West Fork of the Bitterroot River, including at this location currently. The proposed action would simply make it easier and safer for users to access the river. On the positive side, if the acquisition and development of this site does cause increased angler use it may lead to additional fishing licenses being sold by FWP. Fishing License dollars are partially put towards management of bull trout fisheries and to support restoration projects to improve bull trout habitat (e.g. Future Fisheries Program). Impacts of increased angler use could therefore be offset by increased angler dollars put towards fishery management. Additionally, potential increased angler use may increase overall angler participation, potentially providing more political support for bull trout management and protection in the future.*

### IV. Independent and Interrelated

- a. Describe effects of interrelated actions (actions that are part of the primary action and depend on that action for their justification).

*See above - no other independent or interrelated actions expected.*



## V. Cumulative effects

- a. Describe the effects of actions that are cumulative to the primary action. This includes past, present or future state or private activities that are reasonably certain to occur.

*Cumulative impacts can occur due to bank hardening if done at a large scale on multiple banks, but this project affects such a small portion of the river there should not be any significant addition to cumulative impacts from this project. The acquisition of this property will likely prevent future bank hardening activities that could be associated with home sites were the property sold and developed by a private buyer.*

## VI. Determination of Effect on the species and designated critical habitat

- a. One of the following determinations should be recommended, the Corps will make final effects determination:

Beneficial effect: must be submitted to the FWS for written concurrence.

No effect: written concurrence is not required.

Not likely to adversely affect: impacts are insignificant, discountable or completely beneficial.

Written concurrence is required.

Likely to adversely affect: a written request for formal consultation is required.

*Determination: Likely to not adversely affect. The boat ramp and camping area portions of this project may result in bank hardening on a very short length of the West Fork of the Bitterroot River, but this will only occur if absolutely necessary and will have a small footprint if it does occur. Additional angling pressure could occur leading to incidental mortality of bull trout, but access to this portion of the river is already available for both floaters and wade fishermen, so additional impact will likely be negligible. If additional angling pressure does occur, it may provide additional fishing license sales. Funds from these license dollars would put additional management and restoration work on the ground, providing benefits to bull trout in Montana. The potential of increasing angler participation can also provide more political support for bull trout management and protection in the future. These benefits likely offset any impacts the project may have.*

## APPENDIX E. Tourism Report (Montana Department of Commerce)

# TOURISM REPORT

## MONTANA ENVIRONMENTAL POLICY ACT (MEPA) & MCA 23-1-110

The Montana Department of Fish, Wildlife and Parks has initiated the review process as mandated by MCA 23-1-110 and the Montana Environmental Policy Act in its consideration of the project described below. As part of the review process, input and comments are being solicited. Please complete the project name and project description portions and submit this form to:

Jan Stoddard, Bureau Chief, Industry Services and Outreach  
MT Office of Tourism and Business Development-Department of Commerce  
301 S. Park Ave.  
Helena, MT 59602

**Project Name:** *C. Ben White Memorial Fishing Access Site Acquisition and Development*

**Project Description:** *Montana Fish, Wildlife and Parks (FWP) proposes a fee-title acquisition of 97 acres of private land along the West Fork of the Bitterroot River in Ravalli County for creation of the C. Ben White Memorial Fishing Access Site (FAS). The proposed FAS would expand the currently leased W. W. White Memorial FAS and permanently protect access, recreation, and wildlife values at the gateway of the West Fork of the Bitterroot River canyon. Proposed developments at the site include a vault latrine, a small campground with 1-3 sites, walking trails, an upland parking area and access site, and hunting and fishing opportunities. The FAS would also protect important floodplain habitat to benefit game and nongame species in perpetuity, including state Species of Concern (SOC).*

1. Would this site development project have an impact on the tourism economy?

NO

☒ YES

If YES, briefly describe:

*Yes, as described, the project has the potential to positively impact the tourism and recreation industry economy if properly maintained. The opportunity to fish Montana waters and native Montana fish populations is marketed to destination visitors from around the world, as well as in-state travelers.*

*A 2016 report from the Institute for Tourism and Recreation Research states that Fishing/Fly-fishing was a "Top Outdoor Recreation Activity" reported by 12% of visitors to Montana in 2016. Additionally, the report also notes that nationwide participation in Outdoor Recreation specific to fishing is expected to increase in the coming decades. These recreational assets are essential to non-resident and resident travelers.*

2. Does this impending improvement alter the quality or quantity of recreation/tourism opportunities and settings?

NO

☒ YES

If YES, briefly describe:

*Yes, as described, the project has the potential to improve quality and quantity of tourism and recreational opportunities with the addition of specific amenities (a vault latrine, a small campground with 1-3 sites, walking trails, an upland parking area and access site). The additional hunting and fishing opportunities and protection of the floodplain habitat to benefit game and nongame species in perpetuity are critical components for long-term sustainability of this asset. We are assuming the agency has determined it has necessary funding for the on-going operations and maintenance once this project is complete.*

Signature Jan Stoddard

Date: 11/4/19

2/93  
7/98sed



Region 2  
3201 Spurgin Road  
Missoula, MT 59804  
April 15, 2020

Dear Interested Citizens:

Thank you for your thoughtful reviews and comments on a proposal by Montana Fish, Wildlife and Parks (FWP) to acquire approximately 97 acres of private land along the West Fork of the Bitterroot River in Ravalli County, for creation of the C. Ben White Memorial Fishing Access Site (FAS). The proposed FAS would expand FWP's currently leased W. W. White Memorial FAS and permanently protect access, recreation, and wildlife values at the gateway of the West Fork canyon. Proposed FAS developments include expanded day-use improvements, a small campground with 1-3 sites, river-bottom and upland parking areas, 2 vault latrines, and walking trails. The existing boat-launch area would mostly remain the same with possible minor improvements. Fishing, hunting, and wildlife-watching opportunities would increase as a result of the additional acreage.

Enclosed is a decision document in which I explain my rationale for recommending that the Fish & Wildlife Commission (Commission) approve the acquisition and development of the C. Ben White Memorial FAS as proposed by FWP. Upon completion of the public involvement process and by inclusion of this Decision Notice, FWP accepts the Draft Environmental Assessment (EA) as final. I have selected Alternative B, the proposed action. The decision document also includes all public comment received during the 30-day public comment period for the proposal and Draft EA.

FWP will request approval for this FAS project from the Commission, which has approval authority for the proposed purchase and/or development of property for all FASs. At this time the Commission meeting for review of the C. Ben White Memorial FAS proposal has not been set; please see our website <http://fwp.mt.gov/default.html> ("Commission") for information on upcoming Commission meetings. Commission meetings are open to the public, but due to the ongoing Covid-19 pandemic, meetings might be conducted via video and/or phone conferencing; again, please check FWP's Commission webpage for details and further updates. Approval for this proposal is also required from the Montana Board of Land Commissioners.

Please feel free to contact me at 406-542-5500 with any questions you may have. Thank you for your interest and participation.

Sincerely,

Randy Arnold  
Regional Supervisor

RA:sr

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## DECISION NOTICE for the DRAFT ENVIRONMENTAL ASSESSMENT:

### C. Ben White Memorial Fishing Access Site Proposed Acquisition and Development

April 15, 2020

#### PROPOSAL

Montana Fish, Wildlife and Parks (FWP) proposes a fee-title acquisition of approximately 97 acres of private land along the West Fork of the Bitterroot River in Ravalli County for creation of the C. Ben White Memorial Fishing Access Site (FAS). The proposed FAS<sup>1</sup> is accessed via (and split by) Highway 473 (West Fork Road) approximately 7.5 miles south of Darby.

The property is currently owned by the White Family, the Dickman Family, and the Stomberg Family, who have a strong desire to see the property protected and placed in the public domain. FWP is partnering with the Bitter Root Land Trust (BRLT), which has been working with the landowners for nearly 10 years on a conservation outcome for this property. The name of the site pays tribute to the owners' special connection to the land. The property is under imminent threat of development given its prime location in a popular recreation corridor, adjacent and nearby residential development, and the access it provides to the river and adjacent Bitterroot National Forest (BNF) land owned by the US Forest Service (USFS). The current landowners have received multiple offers from private buyers but opted to give FWP the opportunity to acquire the land instead, because they want to see the land protected and open to the public. The EA states that the landowners donated value towards the project of approximately \$100,000. (See "Changes to Draft EA" section below, for updated donation.) But a recently updated appraisal of the property indicated the land value was significantly higher than a 2016 appraisal, but the landowners graciously chose to keep the original asking price for FWP's purchase of the property. Therefore, the landowners are donating approximately \$420,000 worth of land value to make sure the purchase price remains achievable for FWP and its partners.

The proposed FAS would expand the smaller 1.5-acre FAS currently leased by FWP as the W. W. White Memorial FAS and permanently protect public access, recreation and wildlife values at the gateway of the West Fork of the Bitterroot River canyon. The C. Ben White Memorial FAS would be the only FWP-owned or operated FAS on the West Fork of the Bitterroot River and would complement an array of other boating and access sites owned and operated by the USFS on the upstream portions of the West Fork. Proposed developments at the FAS include expanded day-use improvements, a small campground with 1-3 sites, river-bottom and upland parking areas, 2 vault latrines (one each at boat launch and campground areas), and walking trails. The existing boat launch area would largely remain the same with possible minor improvements.

The FAS would also protect important floodplain habitat to benefit game and nongame species in perpetuity, including Montana Species of Concern. The property encompasses a variety of aquatic and terrestrial habitats that provide resources for a wide range of fish and wildlife species. Approximately 0.5 miles of the main stem of the West Fork flows through the property, with an additional 0.5 miles of side channels and 68 acres of associated riparian habitat. The riparian habitat includes 56 acres of mixed cottonwood and ponderosa pine riparian forest and 12 acres of willow thickets, gravel bars, and river channel. The river-bottom portion of the

<sup>1</sup> A portion of the SE4 of Section 13 in Township 2 North, Range 21 West.



property is located on the east side of West Fork Road. The upland portion of the property is located on the west side of West Fork Road and consists of approximately 19 acres of open, large-diameter ponderosa pine forest connected to BNF lands. Fishing, hunting, and wildlife-viewing opportunities would increase as a result of the additional acreage provided by the proposed FAS.

The property would be managed under existing FWP public-use regulations. Management of the FAS would include routine maintenance, control of motorized use and firearms, forestry management to reduce wildfire threat and remove hazard trees, weed control, and other accepted FWP recreation-area management policies. Protection of natural resources, the health and safety of visitors, and consideration of neighboring properties would all be incorporated into development plans for the site. Anticipated improvements to the FAS in the near-term would be installation of a latrine near the boat launch area, development of an upland access parking lot and trailhead, and installation of signage on-site and along West Fork Road. Future developments are likely to include a small campground (1-3 sites, including a latrine), a stock bridge and trails development on the upland portion of the property, a picnic area near the boat launch, and a small additional parking area north of the boat ramp and campground to accommodate hikers and walk-in anglers. (See Draft EA for further project details.)

## ALTERNATIVES

### Alternative A: No Action

Under the No Action Alternative, FWP would not acquire and develop the C. Ben White Memorial FAS. The existing 1.5-acre leased FAS would be maintained and remain subject to continued cooperation with current and future landowners. If the property is sold, the leased FAS land may not be available in the future. Portions of the property could be developed as home sites, and fish and wildlife habitat values could therefore be diminished, and wildlife movement could be disrupted. The property is under imminent threat of development, and the landowners would explore alternative options to sell the property. Therefore, long-term availability of the current leased FAS is uncertain, and the opportunity for public access would be expected to cease.

### Alternative B: Proposed Action

FWP would acquire 97 acres of river-bottom and upland habitats for the creation of the C. Ben White Memorial FAS. Public access to the West Fork of the Bitterroot River and associated floodplain would be secured and enhanced, as would access to adjacent USFS lands. Critical aquatic and terrestrial habitats for a range of game and nongame species at the gateway of the West Fork canyon of the Bitterroot River would be protected in perpetuity. Site developments would maximize recreational opportunities while minimizing impacts to sensitive habitats.

## PUBLIC REVIEW PROCESS

A Draft Environmental Assessment<sup>2</sup> (EA) for the proposed project was made available for public review and comment for a 30-day period from February 27 through March 27, 2020. The EA was posted on FWP's web site (<http://fwp.mt.gov>, under "Recent Public Notices") and was available those same dates for public comment, including opportunity to submit comments directly from the EA's webpage.

Legal notices were published twice each in the *Bitterroot Star* (Stevensville; Feb 26, March 4), *Missoulian* (Feb 19 & 26), and *Ravalli Republic* (Hamilton; Feb 21 & 23) newspapers.

FWP distributed 26 copies of the EA and 61 email-notifications of the EA's availability to adjacent landowners and interested individuals, groups and agencies.

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<sup>2</sup> Draft EA available (and accessed 10 April 2020) on FWP's website at: [http://fwp.mt.gov/news/publicNotices/environmentalAssessments/acquisitionsTradesAndLeases/pn\\_0249.html](http://fwp.mt.gov/news/publicNotices/environmentalAssessments/acquisitionsTradesAndLeases/pn_0249.html)

## PUBLIC COMMENT

### Summary of Public Comment

FWP received emails from 24 commenters regarding the proposed acquisition and development of the C. Ben White Memorial FAS (see Appendix A for all comments received). Comments came from 19 individuals and 5 groups (Bitterrooters for Planning, Five Valleys Audubon, Montana Chapter of Backcountry Hunters and Anglers, Montana Wildlife Federation, and Ravalli County Off Road User Association [RCORUA]). The 24 commenters included: 14 from Ravalli County in Region 2 (R2) of FWP Region (7 from Hamilton, 3 from Victor, 2 from Stevensville, and 1 each from Darby and Florence); 3 from other FWP R2 locations (Missoula); 2 from FWP R3 (1 each from Emigrant and Helena); 1 from an undisclosed town in Montana; and 4 from unknown locations.

Twenty-two commenters supported the acquisition and development, 1 commenter (RCORUA) opposed the project, and one person did not specifically state support or opposition to the project.

#### In support of the FAS proposal, commenters noted:

- *As a fisherman, I appreciate the opportunity to fish in these ecologically complex sites. This site sits at the transition from more high elevations steeper gradient stream types to the lower gradient valley types*
- *I have used the site many times over the years. By all means go forward with it.*
- *This is an excellent opportunity for us and future generations to use the River and its surrounding lands.*
- *This acquisition will be a valuable addition to the wildlife habitat and recreational wealth of the Bitterroot River corridor.*
- *What a great opportunity to not only improve habitat for wildlife but also provide recreational opportunity.*
- *How exciting to have the opportunity to acquire about 97 acres along the west fork of the Bitterroot River in Ravalli County. To have a fishing access site as well as a campground and trails available for our population is a win for those who enjoy the connection with nature.*
- *Because of the conservation importance of this site, our Five Valleys Audubon Board has approved a financial donation of \$1,500 to support this acquisition. We believe in putting our dollars to work with our conservation and habitat partners, to support bird and wildlife habitat protection and improvement not only in the Missoula area, but, when appropriate, throughout western Montana.*
- *I'm a wildlife ecologist, bird watcher, angler, and hiker. The cottonwood and willow riparian habitat and mature ponderosa pine habitats are important for a wide variety of wildlife species. The size of the property that will be protected from development makes it even more valuable, as many wildlife species require intact rather than fragmented habitat. The connection to nearby Bitterroot National Forest lands will make it a valuable access point for hikers, hunters, and horseback riders.*
- *Acquisition of this property is a good investment in Montana and Ravalli County, and we [Bitterrooters for Planning] urge FWP to purchase this valuable riparian land.*
- *Having professionally assessed lands for their ecological values and contribution to wildlife populations and habitat diversity I can confidently state there are very few parcels as uniquely valuable as those being considered in this proposal. The stream channel type, its functioning floodplain connectivity and complexity of riparian and aquatic habitats, along with their importance of the waters to westslope cutthroat trout and bull trout populations makes it a very rare and valuable parcel; one which certainly should be added to the FWP system.*
- *Development of this area would offer a number of opportunities for residents of the Bitterroot and tourists. I especially value the benefit to youth of learning about nature, ecology, riparian zones as*

habitat for wildlife, and to possibly learn how to conduct related research in the area via Darby School District. Or to just roam around. Surprisingly, many youth in the Bitterroot lack access to nature, especially riparian areas.

- Although the total project cost does seem high, Montana BHA [Backcountry Hunters & Anglers] supports the collaborative nature of the fundraising efforts which have been secured to make this acquisition possible. In addition, the extremely valuable nature of this riparian property would surely entice private development. This opportunity cost makes this purchase that much more beneficial to the public, as it will serve to not only provide continued public access, but also will permanently protect the biologically rich riparian habitat that contributes to the abundance of aquatic invertebrates, Westslope Cutthroat and terrestrial wildlife.
- This can only be a win-win situation for all Montanans. Thank you!!!
- The private property owners responsible for making this possible, including the White, Dickman and Stomberg families, should all be recognized and applauded for their commitment toward conservation in keeping these unique lands fully functioning environmentally and available for the public to access and enjoy!
- I also would like to Thank the White Family, the Dickman Family, and the Stomberg Family for their help in getting this done and their donation. It's not everyday that private landowners look out for the public, like these families are doing. Please pass this "THANK YOU" to them from me.

In opposition of the FAS proposal, commenters noted:

- I'm concerned about the trail on the west side of the road as this trail is recognized only for horses and hikers. Yet the hart bench area is used fairly heavy by motor vehicles, ie. dirt bike, atv's and sxs. I feel that excluding them will cause a hard ship amongst recreationists in this area. I respectfully ask that you reconsider including motorized use of this trail.
- The Draft EA states that this [upland] trail would "enhance access to hundreds of acres of lands in the BNF". . . . All of the roads and trails in the Hart Bench area are designated for motorized use. So, a hiker or stock user utilizing this proposed trail would get about ½ mile of "quiet" use before being required to share routes with motorized visitors.
- It would appear that the decision to construct a nonmotorized trail to provide Forest Service access is driven by ideological considerations. We [RCORUA] are confident that an objective, rational analysis would lead FWP to conclude that a motorized trail would better serve the public interest in this case.
- We [RCORUA] have concerns about a proposal to purchase and maintain 100 acres for a FAS. While we agree that the existing leased site (a few acres) is useful, we question a proposal to commit taxpayer funds to purchase and maintain 100 acres for a FAS. The EA does not detail the long-term commitment of funds involved in managing such a large area and associated facilities. . . . We recommend that FWP negotiate for a smaller purchase that would include the existing (leased) FAS area and provide for reasonable anticipated future growth.

**Response to Public Comments**

Following are FWP responses to comments, questions and suggestions received during the public comment period. (Numbers in parentheses below correspond to the numbering of the individual commenters and paragraphs in Appendix A.)

Entrance off West Fork Road into the boat launch area

Comment: Current entrance off the West Fork Rd. to the boat launch area. This entrance is extremely dangerous as it is very near a high speed curve. The narrowness of the entrance, the rough road surface, the oversized vehicles with trailers attempting to enter or exit are in constant peril. I'm in the area frequently and have had too many near misses. There is adequate room to move the entrance 50 yds. or more north (toward

[Highway] 93) to give a longer and safer sight distance. This is a "Must Do" if the area is developed so that it experiences greater use volume. (#4.2)

Response: FWP agrees with the commenter that southbound entry to the current FAS may be problematic due to the road curving near the turn-off. The entrance road serves as access to both the FAS and adjacent private lands. Changing the entrance road location would add an additional cost to the proposed action that would make funding FAS development more difficult. Additionally, moving the entrance road would require further removal of trees and other river-bottom vegetation, and FWP seeks to minimize impacts to wildlife habitat when developing FASs. However, the issue the commenter raised is important, and FWP will take the following steps related to the entrance road to the boat ramp area:

- FWP will work with the Montana Department of Transportation on potential additional signage on West Fork Road for southbound traffic, warning drivers of the upcoming FAS entrance. Additional signage may also be installed to remind users exiting the boat ramp area that they are entering the highway at a potentially problematic location.
- FWP has evaluated the entrance road and will remove brush and/or trees to improve visibility both for users exiting the FAS and for drivers on West Fork Road.
- FWP will construct 2 additional parking areas for the proposed FAS (see Figure 3 in the Draft EA). These parking areas should reduce congestion at the boat ramp entrance and lower the overall number of vehicles turning into and leaving the boat-ramp entrance road.

#### Hunting, firearms

*Comment: Hunting/firearms. I think the EA says no recreational shooting but hunting will still be allowed. With increased traffic in year 'round use, allowing hunting could be problematic. Hunting is not allowed in USFS camping areas (Sam Billings, etc.) and should not be allowed here either. One accident is one too many. (#4.3)*

Response: FWP biologists and managers discussed hunting and hunting access at this location extensively during project development, with the primary concern being the safety of visitors to the site. Based on those discussions, we decided the river-bottom portion of the property would be restricted to archery-only hunting for all legally huntable game species during all Fish and Wildlife Commission-approved hunting seasons. (Please see Appendix B for a map of hunting areas for this FAS.) Furthermore, archery-only hunting would be confined to those portions of the FAS property north of the campground area and west of the main river channel, and to the entire portion of the property on the east side of the main river channel. There is a natural topographic buffer between the campground area and the area to the north where hunting is permitted, which will help ensure that hunters remain north of the campground. Signage would be installed on-site to delineate the boundaries of the huntable area.

Shotguns may still be in use in the vicinity of the property because, under Montana's stream access law, users are permitted to hunt waterfowl and upland game birds using shotguns when the hunter is below the high-water mark of the river and its flowing side-channels. However, we expect waterfowl hunting to be uncommon at this site, and upland game birds are generally not readily available for harvest below the high-water mark. Users will not be allowed to hunt waterfowl or upland game birds using shotguns from the FAS property (i.e., on FAS property above the normal high-water mark).

On the upland site, hunting will be allowed using all legal forms of take and during legal hunting seasons as defined by the Montana Fish & Wildlife Commission and outlined in FWP's hunting regulations. Again, signage would be used to promote safe and ethical hunting practices, to alert users to the possibility of on-site hunting, and to avoid trespass issues on adjacent private lands.

#### Trapping

*Comment: Because the area will be used by a variety of users, including people with dogs, I recommend that trapping not be allowed along the river and its backwaters. (#9.3)*

Response: FWP agrees that the proposed FAS would likely be used frequently by dog-walkers. At this time, no trapping will be allowed at the C. Ben White Memorial FAS, as is consistent with other FASs in FWP R2.

Trails and/or upland trail should or should not be motorized

*Comment: The connection to nearby Bitterroot National Forest lands will make it a valuable access point for hikers, hunters, and horseback riders. (#9.1)*

*To have a fishing access site as well as a campground and trails available for our population is a win for those who enjoy the connection with nature. (#10)*

*The [upland] trail will have to climb a steep side-hill for considerable distance to tie into Forest Service land. In my opinion, allowing both horses and motorcycles/ATVs on this steep of a trail would cause both safety and erosion problems. There are numerous other motorized riding trails that already exist for motorcycles and ATVs on the north end of Hart Bench. These are already being used, and have been for many years. Most motorized riders are locals who ride their motorcycles or ATVs up Leavens and Hart Bench roads to access the National Forest lands. Few are driven to the area loaded on the back of trailers or pick-up trucks. Finally, I would think that the Stomberg's would want peace and quiet right next to their homes, and not have the risk of motorized users trespassing onto their nearby property (which has happened before). To summarize, I would like the upland trail to be for non-motorized use only. (#16a.2)*

*The FAS goes well beyond hunting fishing as it will also have walking trails, a small campground, and an upland parking area with a developed access trail for users to hike up into and access US Forest Service lands. (#18.5)*

*I'm concerned about the trail on the west side of the road as this trail is recognized only for horses and hikers. Yet the hart bench area is used fairly heavy by motor vehicles, ie. dirt bike, atv's and sxs. I feel that excluding them will cause a hard ship amongst recreationists in this area. I respectfully ask that you reconsider including motorized use of this trail. (#20a)*

*Draft EA proposes to construct approximately ½ mile of nonmotorized trail from the upland portion of the FAS to provide access to Forest Service land. The Draft EA states that this trail would "enhance access to hundreds of acres of lands in the BNF". Those claims are certainly true, but, in this case, would not apply to hikers and stock users who object to sharing trails with motorized users. That's because the proposed trail would tie into an area known as the Hart Bench area which is an area designated for motorized recreation. All of the roads and trails in the Hart Bench area are designated for motorized use. So, a hiker or stock user utilizing this proposed trail would get about ½ mile of "quiet" use before being required to share routes with motorized visitors. (#23.4)*

*Would be far more rational to propose to construct a motorized trail that is consistent with the existing designations of the routes it will connect with, and we suggest that the Draft EA be revised to that effect. (#23.5)*

*Would also point out that there is a great need for more motorized trails\* in the BNF. Following the 2016 Travel Plan, 87% of the trails\* in the BNF have been designated exclusively for nonmotorized uses\*\*. (#23.6)*

*Would appear that the decision to construct a nonmotorized trail to provide Forest Service access is driven by ideological considerations. We are confident that an objective, rational analysis would lead FWP to conclude that a motorized trail would better serve the public interest in this case. (#23.7)*

Response: FWP recognizes that the road and trail system to which the proposed upland trail could tie into is a high-value area for motorized outdoor recreation for part of the year. However, the proposed upland trail is already challenging in terms of safe and ethical trail design because it must ascend a steep mountainside in order to potentially tie in with any USFS road and/or trail. Therefore, allowing motorized use of the trail would be expected to cause erosion problems and increase user conflicts.

The nearest USFS road/trail is approximately 1/10-mile from the BNF-FWP boundary. At this point in planning, we have not worked with the BNF to specifically identify where or if the FAS upland trail might connect with any road/trail in BNF's portion of Section 13 that is adjacent to the upland unit of the FAS.



The BNF also has its own review and decision process it would conduct before any proposal to link into a trail that originates off BNF land.

FWP believes that the potential downsides of allowing motorized use on the upland trail are not adequately off-set by the benefits of additional trail mileage for motorized users. Additionally, one of the primary reasons for purchasing the upland acreage was to maintain wildlife movement between the open hillsides and the river bottom. While we acknowledge that allowing hiking and horseback-riding would have some impacts to wildlife use of the area, motorized use would increase those impacts substantially due to greater speeds and mechanical noise associated with motorized use.

Finally, one of the property owners who generously donated substantial value of the property to allow public ownership and use, lives adjacent to the upland parking area and trail, and that owner has expressed a desire for the trail to be restricted to non-motorized use. Allowing motorized use would directly impact this landowner and neighbors with increased mechanical noise and dust creation associated with motorized users climbing the steep trail. Motorized access to BNF land west of the proposed FAS is provided via many other access points, and not allowing motorized use on the proposed upland trail would not represent a substantial burden for motorized users. We believe the management of the Hart Bench area for motorized use highlights the value of the upland access trail as a way for hikers and horseback riders that might have issues sharing trails with motorized users to enjoy the area. Because of these and other associated impacts, the upland access trail will be managed for non-motorized use only.

Is the upland trail also designated open to motorized use?

*Comment: My comment concerns the new upland trail that is proposed for construction on the west side of the West Fork Highway. I was unable to discern from the draft EA if the trail was going to be strictly for non-motorized use, or if motorized use would be allowed. On page 5 of the draft EA, the trail is denoted with icons for hiking and horseback riding, but at the bottom of page 11 (last paragraph), the draft EA states "...The trailhead would provide multiuse recreational access...". Does "multiuse" include motorized use? (#16a.2)*

Response: FWP apologizes for any confusion in the Draft EA as to the motorized or non-motorized status of the upland trail or other trails in the FAS. We refer to "walking trails" in the first paragraph of the EA (Section I.1), use the hiking and horseback icons on Figure 3 for the upland trail (but not for trails on the river-bottom portion), and state "Motorized use would be restricted to designated parking areas and access roads" in the checklist (Section II.4e). But numerous other uses of "trail" and "trailhead" in the Draft EA do not include clear indication that the trails are non-motorized. For clarification, FWP states here that use of all trails in the FAS will be non-motorized.

Educational potential of the FAS

*Comment: I especially value the benefit to youth of learning about nature, ecology, riparian zones as habitat for wildlife, and to possibly learn how to conduct related research in the area via Darby School District. Or to just roam around. Surprisingly, many youth in the Bitterroot lack access to nature, especially riparian areas. (#21)*

Response: FWP agrees that the proposed FAS would be a valuable area for local school groups to learn about riparian systems and wildlife habitat. We hope to help facilitate some of those opportunities in the future. We also believe the current property owners would be delighted if the property could be used to foster education of and appreciation for nature and natural processes.

Property cost

*Comment: The total project cost does seem high. (#22.4)*

Response: Riverside properties along blue-ribbon trout streams in Montana are high-value properties, and land prices in these types of areas have increased in value significantly in the past few decades. This is especially true in the Bitterroot Valley. The acquisition cost is based on an official appraisal by a licensed appraiser who works frequently in the Bitterroot Valley area. FWP does not pay above appraised value for property it seeks to purchase.

Funding for the acquisition comes from more than a half dozen different project partners that support these types of conservation and access projects. FWP's contribution to the purchase represents less than 20% of the acquisition cost.

FWP is also extremely fortunate to be working with a group of landowners that has a habitat conservation and public access vision for this property, and those landowners are willing to sell the property to FWP at over \$400,000 below the appraised value (based on a recently updated 2020 appraisal). FWP thanks the landowners for their substantial gift.

Purchase area too large; long-term costs of management

*Comment: We have concerns about a proposal to purchase and maintain 100 acres for a FAS. While we agree that the existing leased site (a few acres) is useful, we question a proposal to commit taxpayer funds to purchase and maintain 100 acres for a FAS. The EA does not detail the long-term commitment of funds involved in managing such a large area and associated facilities. (#23.9)*

*We recommend that FWP negotiate for a smaller purchase that would include the existing (leased) FAS area and provide for reasonable anticipated future growth. At the very least, the EA should more thoroughly document short and long term financial commitments associated with their proposal. (#23.10)*

Response: The Draft EA (Section I.7b) outlines the diverse entities that are (or may be) providing funding for the purchase of this property. Substantial investment by individuals, nonprofit organizations, and grant programs have been acquired for this project, including a substantial donation in land value from the current property owners. As of the writing of this DN, no public income- or property-tax dollars have been acquired for this project. If the project were to obtain partial funding from the Ravalli County Open Land Bond, then the commenter is correct that "taxpayer funds" would be used. Also, this purchase is not expected to reduce the tax revenues that Ravalli County collects on this property. FWP is required by § 87-1-603, MCA, to pay "to the county in a sum equal to the amount of taxes that would be payable on county assessment of the property if it was taxable to a private citizen."

The boundaries of the property were established based on careful consideration of habitat protections, access values, and current landowners' needs. If acquired, the FAS would be incorporated into FWP's R2 FAS program. Within the FAS program, a team of managers and maintenance crews develop and maintain R2 FASs as a system and not necessarily as individual sites. Therefore, costs and equipment needs are evaluated and requested based on the requirements of the R2 FAS program as a whole. During considerations of whether or not to pursue purchasing this property, the R2 FAS Coordinator evaluated currently available and projected future resources and funding for site development and maintenance and determined that adding a 97-acre FAS at this location would not cause an unmanageable burden on the FAS program that would preclude purchase of the property and incorporation into the FAS system. The EA (Section II.10f) states that "Projected annual operating, maintenance, weed control, and personnel expense for the proposed FAS is estimated to total \$3,000 annually." This is a rough estimate but does demonstrate that the cost of ongoing maintenance was considered in developing the proposed action. The EA (Section II.10e) also outlines potential revenue generated from FAS campground fees, and this expected revenue will help offset some of the annual maintenance costs for the proposed FAS. The current landowners are exceptional stewards of their land, and therefore initial costs associated with weed control, entrance road and campground area development, and forestry projects are minimized.

## CHANGES TO THE DRAFT EA

Based on updated information since the Draft EA was published and responses to comments above, the following are changes or clarifications FWP hereby makes to the Draft EA, which are incorporated into the Final EA as part of this Decision Notice.

1. The Draft EA is amended by substituting the following two paragraphs clarifying hunting opportunities, for the "Hunting" paragraph in Section I.8 of the Draft EA:

The proposed FAS would provide hunting opportunities for black bear, deer, elk, grouse, turkey, and waterfowl. The river-bottom portion of the property east of West Fork Road (approximately 78 acres) would be regulated as an archery-only hunting zone (Figures 3, 10) for all legally huntable game species during all Fish and Wildlife Commission-approved hunting seasons. Furthermore, archery-only hunting would be confined to those portions of the FAS property north of the campground area and west of the main river channel, and to the entire portion of the property on the east side of the main river channel. Shotguns may still be in use in the vicinity of the property because, under Montana's stream access law, users are permitted to hunt waterfowl and upland game birds using shotguns when the hunter is below the high-water mark of the river and its flowing side channels. However, we expect waterfowl hunting to be uncommon at this site, and upland game birds are generally not readily available for harvest below the high-water mark. Users will not be allowed to hunt waterfowl or upland game birds using shotguns from the FAS property (i.e., on FAS property above the normal high-water mark).

No weapons restrictions would be placed on the upland portion of the FAS west of West Fork Road (approximately 19 acres), but signs would be posted regarding locations of roads, trails, and structures in the area to promote safe hunting practices. Signs would be installed at the trailhead/parking area that explain hunting access rules and regulations as well as provide a map of the property, adjacent public and private lands, and safety zones. FWP would install property-boundary signs along all boundaries that border private lands to minimize potential trespass issues and conflicts between hunters and neighbors.

2. The table in Section I.7b of the Draft EA indicated that the current landowners were donating \$100,000 in value toward the purchase price. Based on an updated appraisal and conversations with the current landowners, this donated value is now \$420,000. FWP and our project partners are deeply grateful to the White, Dickman and Stomberg families for this very generous gift towards helping this FAS become a reality.
3. The following updated version of the funding table replaces the table in Section I.7b of the Draft EA:

<b>Entity</b>	<b>Funding Amount (status)</b>
FWP Fishing Access Site Program	\$ 70,000 (committed)
FWP Access Public Lands Program	50,000 (committed)
White, Dickman, and Stomberg Families	420,000 (donated value)
Private Donors	100,000 (committed)
MT Fish and Wildlife Conservation Trust	100,000 (committed)
Ravalli County Open Lands Bond	250,000 (requested)
Other public and private funding sources	800,000 (anticipated)
<b>Total acquisition cost</b>	<b>\$1,070,000</b>
Estimated FAS development costs*	100,000
<b>Total Project Cost</b>	<b>\$1,170,000*</b>

4. All trail use in the FAS, both upland and river-bottom units, is non-motorized.

## DECISION AND RECOMMENDATION

Based upon the Draft Environmental Assessment and the applicable laws, regulations, and policies, I have determined that the proposed action will not have negative effects on the human and physical environments associated with this project. Therefore, I conclude that the EA is the appropriate level of analysis and the preparation of an Environmental Impact Statement is unnecessary.

This proposal for FWP to purchase the approximately 97-acre property and develop it as a Fishing Access Site received strong approval, with 22 of 24 commenters supporting the project. One commenter opposed

purchasing much larger acreage than FWP currently leases for the W. W. White FAS. Two commenters wanted the upland trail to also be open to motorized use, while another commenter specifically requested the upland trail be non-motorized and three other commenters mentioned liking the walking, hiking, and/or horseback trail use.

In consideration of these facts and with the inclusion of this Decision Notice and information and changes in it, I adopt the Draft EA as final. I have selected Alternative B, the proposed action, to pursue acquiring and developing the land as an FAS. Therefore, I am pleased to recommend to the Fish & Wildlife Commission that it approve the proposed purchase of this approximately 97-acre property and its development as the C. Ben White FAS.

In accordance with FWP policy, an appeal may be made by any person who has either commented in writing to the department on the proposed project, or who has registered or commented orally at a public meeting held by the department on the proposed project, or who can provide new evidence that would otherwise change the proposed plan. An appeal must be submitted to the Director of FWP in writing and must be postmarked or received within 30 days of this decision notice. The appeal must describe the basis for the appeal, how the appellant has previously commented to the department or participated in the decision-making process, and how the department can provide relief. The appeal should be mailed to: Director, MT Fish, Wildlife & Parks, PO Box 200701, (1420 East 6<sup>th</sup> Avenue,) Helena, MT 59620-0701.



Randy Arnold  
Region 2 Supervisor  
Montana Fish, Wildlife & Parks

4/15/2020

Date

## APPENDIX A

Comments on the proposed C. Ben White Memorial FAS acquisition and development proposal and Draft EA, received by FWP during the comment period, February 27 through March 27, 2020. All comments received via E = email. (If someone submitted comments more than once, the Commenter # for this person's successive comments are numbered as #.a, #.b, etc.)

Com- men- ter #	Via	Para- graph	Comment
1	E		I support Alternate B for the FWP to acquire 97 acres of river-bottom and upland habitats for the creation of the C. Ben White Memorial FAS. I also would like to Thank the White Family, the Dickman Family, and the Stomberg Family for their help in getting this done and their donation. It's not everyday that private landowners look out for the public, like these families are doing. Please pass this "THANK YOU" to them from me.
2	E		I have a copy of the proposal and have read it. I have used the site many times over the years. By all means go forward with it.
3	E		This is an excellent opportunity for us and future generations to use the River and it's surrounding lands.
4	E	1	I'm generally very much in favor of the proposed changes/improvements to the current W.W.White FAS. I have two primary areas of concern:
		2	1) the current entrance off the West Fork Rd. to the boat launch area. This entrance is extremely dangerous as it is very near a high speed curve. The narrowness of the entrance, the rough road surface, the oversized vehicles with trailers attempting to enter or exit are in constant peril. I'm in the area frequently and have had too many near misses. There is adequate room to move the entrance 50 yds. or more north (toward 93) to give a longer and safer sight distance. This is a "Must Do" if the area is developed so that it experiences greater use volume.
		3	2) Hunting/firearms. I think the EA says no recreational shooting but hunting will still be allowed. With increased traffic in year 'round use, allowing hunting could be problematic. Hunting is not allowed in USFS camping areas (Sam Billings,etc.) and should not be allowed here either. One accident is one too many.
		4	Otherwise, the plan looks very promising and would be a great addition to public access.
		5	Thank you for considering my comments. I look forward to updates on the project.
5	E		This acquisition will be a valuable addition to the wildlife habitat and recreational wealth of the Bitterroot River corridor. I fully support FWP's project and hope it is approved.
6	E		I very much favor the acquisition of 97 acres of private land along the West Fork River in Ravalli County. This can only be a win-win situation for all Montanans. Thank you!!!
7	E		I very much support the C Ben White Memorial Fishing Access Site acquisition and development project. As a fisherman, I appreciate the opportunity to fish in these ecologically complex sites. This site sits at the transition from more high elevations steeper gradient stream types to the lower gradient valley types. The site will also provide wonderful land-based recreational opportunities and will protect important riparian habitat critical to fish and wildlife including birds such as Lewis's Woodpecker, a species of concern. Please continue the acquisition process. Thank you
8	E	1	I strongly support the C. Ben White FAS Acquisition, as outlined in your draft EA. This project has great value for birds and wildlife habitat--cottonwood regeneration, old growth pine forests, river bottoms, and an amazing transition from riparian zone to upland slopes.
		2	As you know, riparian habitats are rare in the West, and are used by birds and wildlife much more than expected based on availability. This site is extremely valuable because of its placement bridging adjacent habitats, as well as for the habitats it possesses.
		3	In fact, because of the conservation importance of this site, our Five Valleys Audubon Board has approved a financial donation of \$1,500 to support this acquisition. We believe in putting our dollars to work with our conservation and habitat partners, to support bird and wildlife habitat protection and improvement not only in the Missoula area, but, when appropriate, throughout western Montana.
		4	Thank you for your consideration.

9	E	1	I support the acquisition and proposed development of the C Ben White Memorial FAS along the West Fork. I'm a wildlife ecologist, bird watcher, angler, and hiker. The cottonwood and willow riparian habitat and mature ponderosa pine habitats are important for a wide variety of wildlife species. The size of the property that will be protected from development makes it even more valuable, as many wildlife species require intact rather than fragmented habitat. The connection to nearby Bitterroot National Forest lands will make it a valuable access point for hikers, hunters, and horseback riders.
		2	One aspect mentioned in the EA that is very important to me is that this property will be managed to allow natural migration of the river. Private ownership along the mainstem and forks of the Bitterroot often results in restricting that movement through use of riprap. But it's that freedom to move that allows for the growth of willows and cottonwoods and their replacement over time as they mature. It increases habitat diversity, thus supporting so many wildlife species.
		3	Because the area will be used by a variety of users, including people with dogs, I recommend that trapping not be allowed along the river and its backwaters.
		4	Please approve this FAS acquisition and development. It's rare for not just one but multiple landowners to have a shared vision and work so hard for this to happen.
10	E		How exciting to have the opportunity to acquire about 97 acres along the west fork of the Bitterroot River in Ravalli County. To have a fishing access site as well as a campground and trails available for our population is a win for those who enjoy the connection with nature.
11	E		I support it.
12	E		I believe that the C Ben White Memorial FAS will benefit many people, wildlife & the environment and should be approved. This is a well thought out plan.
13	E	1	Bitterrooters for Planning is a 501(c)3 organization established in 1995 to advocate for thoughtful, managed growth in the Bitterroot Valley. Our 400-plus member organization has advocated and testified in favor of development projects that allow for for residential and commercial growth near existing municipal services, and have successfully challenged other developments that would fragment wildlife habitat and result in costly sprawl in far-flung areas of Ravalli County. In recent years, BfP has supported such development projects as the Bitter Root Land Trust's Skalkaho Bend project, the donation of land to the Three Mile Wildlife Management Area, and the city of Hamilton's proposal to allow residential in-fill within the city limits.
		2	BfP strongly supports the C. Ben White FAS Acquisition project on the West Fork of the Bitterroot River. This project has all the attributes BfP considers when we support a project: it supports the local fishing and hunting economy; it protects important species and critical habitat; and it will prevent unwise residential development far from municipal services.
		3	Acquisition of this property is a good investment in Montana and Ravalli County, and we urge FWP to purchase this valuable riparian land.
		4	Thank you for the opportunity to comment.
14	E		I strongly approve the acquisition of the 97 acres! What a great opportunity to not only improve habitat for wildlife but also provide recreational opportunity.
15	E	1	As a semi-retired forest hydrologist who has spent 30 years managing and restoring riparian and aquatic habitats, and their upland forest connections, I strongly support and urge the Montana FWP to move ahead with a decision to acquire the 97 acres of private lands along the West Fork of the Bitterroot River for the FAS.
		2	In addition, the private property owners responsible for making this possible, including the White, Dickman and Stomberg families, should all be recognized and applauded for their commitment toward conservation in keeping these unique lands fully functioning environmentally and available for the public to access and enjoy!



3	<p>Having professionally assessed lands for their ecological values and contribution to wildlife populations and habitat diversity I can confidently state there are very few parcels as uniquely valuable as those being considered in this proposal. The stream channel type, its functioning floodplain connectivity and complexity of riparian and aquatic habitats, along with their importance of the waters to westslope cutthroat trout and bull trout populations makes it a very rare and valuable parcel; one which certainly should be added to the FWP system. The aquatic and riparian environments of this unique parcel provide continual sources of cold groundwater upwelling during the warm summer months; cooling the stream temperatures as required for the habitat of these species. The importance of this will only increase with global warming. The complexity provided by this healthy riparian forest and its wide/connected floodplain with multiple stream channels provides clean well-sorted streambed gravels for spawning and rearing which are so important to aquatic species reproduction. In addition, these complex aquatic habitats provide aquatic species with much needed secure cover from predators, beneath down logs and undercut streambanks. Furthermore, few areas will match this land's capacity for naturally dissipating damaging flood energies from reaching private properties downstream, nor match this land's capacity for receiving those same flood waters over-bank and onto its floodplain, resulting in important water storage across its wide floodplain; recharging shallow groundwater supplies and supporting late summer streamflows. This area is aesthetically and environmentally beautiful, as well as socially important in so many ways which I'm sure other's will share with you.</p>
4	<p>One last point to keep in mind in making a decision of whether to purchase these lands or possibly wait on another parcel. These 97 acres are for the most part extremely rare and difficult to find; as they are highly functional RIGHT NOW for wildlife and the environment, as well as currently enjoyed by the public. One might be inclined to consider a counter strategy; one of waiting on another parcel which may be less expensive but with degraded riparian and aquatic habitats and then attempt to invest money in restoring/developing habitats into some improved functioning condition. I'd strongly caution you in that thinking. My professional experience has shown this approach to be flawed and met with very limited success; would be far more expensive in the long run and you'd likely never achieve the unique environmental conditions and functions exhibited in these parcels under consideration here. Furthermore, the public's desire to use newly developed sites can be highly unpredictable.</p>
5	<p>A Regional Supervisor's decision to move this proposal forward for the C. Ben White Memorial Fishing Access Site, as well as much needed approvals from the Montana Fish and Wildlife Commissioners and Montana Board of Land Commissioners, I hope will be decisions that each participant can look back upon as some of their finest work on behalf of the public and their environment, and hopefully represents one of the more rewarding moments in their careers!</p>
16a E 1	<p>My name is [name], and I would like to comment on your Draft EA for the C. Ben White Memorial Fishing Access Site Proposed Acquisition and Development (Feb 2020). I am a local resident who has lived on nearby Hart Bench for the past 20 years. I have spent many days over the past 20 years running, hiking, mountain biking, cross-country skiing, and hunting the network of Forest Service roads, old 2-tracks, and user-created trails that wind their way across the Bitterroot National Forest lands that border your proposed acquisition site. The Stomberg's have also allowed me to hunt on their property many times. In a nutshell, I am very familiar with the acquisition site and the Forest Service lands that border the site.</p>
2	<p>My comment concerns the new upland trail that is proposed for construction on the west side of the West Fork Highway. I was unable to discern from the draft EA if the trail was going to be strictly for non-motorized use, or if motorized use would be allowed. On page 5 of the draft EA, the trail is denoted with icons for hiking and horseback riding, but at the bottom of page 11 (last paragraph), the draft EA states "...The trailhead would provide multiuse recreational access...". Does "multiuse" include motorized use? The trail will have to climb a steep side-hill for considerable distance to tie into Forest Service land. In my opinion, allowing both horses and motorcycles/ATVs on this steep of a trail would cause both safety and erosion problems. There are numerous other motorized riding trails that already exist for motorcycles and ATVs on the north end of Hart Bench. These are already being used, and have been for many years. Most motorized riders are locals who ride their motorcycles or ATVs up Leavens and Hart Bench roads to access the National Forest lands. Few are driven to the area loaded on the back of trailers or pick-up trucks. Finally, I would think that the Stomberg's would want peace and quiet right next to their homes, and not have the risk of motorized users trespassing onto their nearby property (which has happened before). To summarize, I would like the upland trail to be for non-motorized use only. The location of the parking lot shown on the map on page 5 is a good location. Thank you for the opportunity to comment.</p>

16b	E		I am supportive of the proposed acquisition. I just would like the upland trail that leads up on the National Forest to be restricted to non-motorized use.
17	E		I support the proposal to acquire about 97 acres of land for the C. Ben White Memorial Fishing Access Site. My primary interests related to the site would be walking, hiking, and viewing wildlife and wildflowers. Thank you.
18	E	1	I would like to submit comments for the Environmental Assessment (EA) for the C. Ben White Memorial Fishing Access Site (FAS). March 26, 2020
		2	I support the C. Ben White Memorial Fishing Access Site (FAS) for the following reasons:
		3	1) The FAS would protect 97 acres total, with a large proportion of that acreage being river-bottom riparian habitat (mixed cottonwood, alder, willow, and ponderosa pine forest).
		4	2) The FAS encompasses ~0.5 miles of the West Fork of the Bitterroot River, but it is closer to a full 1 mile when all side channels are included. This is a broad, active area of the floodplain where natural erosion and deposition processes are still underway, contributing to a healthy river-bottom ecosystem in both the aquatic and terrestrial realms. This also provides a lot of room for anglers to fish without being confined to within the high water mark.
		5	3) The FAS would provide diverse outdoor recreation opportunities including hunting, fishing and bird watching. The FAS goes well beyond hunting fishing as it will also have walking trails, a small campground, and an upland parking area with a developed access trail for users to hike up into and access US Forest Service lands. This multi-storied vegetation community and structure is associated with increased abundance and diversity of songbirds, woodpeckers, small mammals, and many other species (Figure 7). In addition, these resources are located near water, further increasing their value to wildlife. The property would likely be a birding and wildlife-watching hot spot in the Bitterroot Valley.
		6	4) The FAS protects an important large animal movement corridor between the Bitterroot National Forest and the protected river-bottom area. This section of land is uniquely located to provide ecological benefits disproportionate to its size.
		7	5) The current property owners have been working with the Bitter Root Land Trust for more than a decade to arrive at an outcome for this property that protects the habitat values while allowing public access. Inclusion in the FAS system assures those values are protected and the private landowners' wishes are fulfilled.
19	E		Reviewed the c Ben White acquisition area. Strongly in favor of purchase and development of this site for public use.
20a	E		I'm concerned about the trail on the west side of the road as this trail is recognized only for horses and hikers. Yet the hart bench area is used fairly heavy by motor vehicles, ie. dirt bike, atv's and sx's. I feel that excluding them will cause a hard ship amongst recreationists in this area. I respectfully ask that you reconsider including motorized use of this trail.
20b	E		[same as 20a]
21	E	11	Development of this area would offer a number of opportunities for residents of the Bitterroot and tourists. I especially value the benefit to youth of learning about nature, ecology, riparian zones as habitat for wildlife, and to possibly learn how to conduct related research in the area via Darby School District. Or to just roam around. Surprisingly, many youth in the Bitterroot lack access to nature, especially riparian areas.
		2	As an indirect benefit, it is likely to help Darby businesses. Do acquire this area!
22	E	1	The Montana Chapter of Backcountry Hunters & Anglers submits this comment in support of Montana Fish Wildlife and Parks' ("FWP") proposal to acquire and develop a new Fishing Access Site ("FAS") on the West Fork of the Bitterroot River, in Ravalli County. The Montana Chapter's more than 3,200 members have a keen interest in all fee title acquisitions of FWP, as our organization is dedicated to protecting the value that wild lands, wildlife and wild fish bring to our great state. We strive to protect large parcels of backcountry fish and wildlife habitat, as well as the opportunity for traditional, fair-chase hunting and fishing experiences.
		2	Acquisitions of new public river accesses, such as that proposed by FWP for the C. Ben White Memorial FAS, provide an invaluable resource to Montanans. As FWP is aware, use on the West Fork of the Bitterroot River has risen dramatically over the last several decades. Enlargement and development of public access and FWP land holdings will only serve to assist with distribution of impacts from growing public use and enhancement of the natural resource user experience.

		3	Of particular significance with this acquisition is the multi-use nature of the property. As FWP notes in its Draft EA, the proposed FAS would not just provide access for angling, but also would allow opportunities for hunting, camping, hiking, birdwatching and horseback riding. This type of diverse recreational access perfectly exemplifies what Montanans want to see from their land management agencies. As further noted in the Draft EA, FWP does not own or operate any other FAS along the entire length of the West Fork, making this acquisition an important addition to the state's holdings.
		4	Although the total project cost does seem high, Montana BHA supports the collaborative nature of the fundraising efforts which have been secured to make this acquisition possible. In addition, the extremely valuable nature of this riparian property would surely entice private development. This opportunity cost makes this purchase that much more beneficial to the public, as it will serve to not only provide continued public access, but also will permanently protect the biologically rich riparian habitat that contributes to the abundance of aquatic invertebrates, Westslope Cutthroat and terrestrial wildlife.
		5	For all of these reasons, Montana BHA offers this comment in support of FWP's proposed acquisition of the C. Ben White Memorial FAS, as currently proposed in the Draft EA publish in February 2020.
23	E	1	This letter is in response to FWP's invitation dated February 27, 2020 to comment on the Draft Environmental Assessment proposing to establish the E. Ben White Memorial Fishing Access Site on the West Fork of the Bitterroot River. We request that these comments be included in the Administrative Record for this project and that we be included as an interested party for all future activities regarding this proposal.
		2	These comments are offered on behalf of the Ravalli County Off Road User Association (RCORUA). RCORUA is a nonprofit group of about 250 Ravalli County citizens who advocate for public access to public lands.
		3	<u>Portions of the Proposed Site are Inappropriate for Nonmotorized Recreation</u>
		4	The Draft EA proposes to construct approximately ½ mile of nonmotorized trail from the upland portion of the FAS to provide access to Forest Service land. The Draft EA states that this trail would "enhance access to hundreds of acres of lands in the BNF". Those claims are certainly true, but, in this case, would not apply to hikers and stock users who object to sharing trails with motorized users. That's because the proposed trail would tie into an area known as the Hart Bench area which is an area designated for motorized recreation. All of the roads and trails in the Hart Bench area are designated for motorized use. So, a hiker or stock user utilizing this proposed trail would get about ½ mile of "quiet" use before being required to share routes with motorized visitors.
		5	It would be far more rational to propose to construct a motorized trail that is consistent with the existing designations of the routes it will connect with, and we suggest that the Draft EA be revised to that effect.
		6	We would also point out that there is a great need for more motorized trails* in the BNF. Following the 2016 Travel Plan, 87% of the trails* in the BNF have been designated exclusively for nonmotorized uses**.
		7	It would appear that the decision to construct a nonmotorized trail to provide Forest Service access is driven by ideological considerations. We are confident that an objective, rational analysis would lead FWP to conclude that a motorized trail would better serve the public interest in this case.
		8	<u>Is 100 Acres Too Large for a FAS?</u>
		9	We have concerns about a proposal to purchase and maintain 100 acres for a FAS. While we agree that the existing leased site (a few acres) is useful, we question a proposal to commit taxpayer funds to purchase and maintain 100 acres for a FAS. The EA does not detail the long-term commitment of funds involved in managing such a large area and associated facilities.
		10	We recommend that FWP negotiate for a smaller purchase that would include the existing (leased) FAS area and provide for reasonable anticipated future growth. At the very least, the EA should more thoroughly document short and long term financial commitments associated with their proposal.
		11	* Routes constructed specifically for the uses for which they are designated.
		12	** From Table D, Mod FEIS, BNF Travel Plan
24	E	0	Please accept the attached comments as the Montana Wildlife Federation's support of the C Ben White Memorial FAS. Also, please list my name as the MWF contact for decision notices and other updates for this project.

1	The Montana Wildlife Federation (MWF) is our state's oldest and largest state-based wildlife conservation organization. We were formed in 1936 when hunters joined landowners to restore depleted wildlife in Montana, and for 83 years we have worked on key issues affecting wildlife, habitat and access. We appreciate the opportunity to provide comments on the Draft Environmental Assessment for the C. Ben White Memorial Fishing Access Site Proposed Acquisition and Development.
2	MWF is strongly supportive of the proposed fishing access site (FAS) approximately 7.5 miles south of Darby, MT on the West Fork of the Bitterroot River. The Bitterroot River is a prime fishery with many desirable species including westslope cutthroat trout, a state species of concern. The Bitterroot River is also a world renowned blue-ribbon trout river with vital economic and recreational value.
3	The proposed FAS also provides quality habitat for terrestrial wildlife species ranging from wild turkey and dusky grouse to black bears, elk, and deer. MWF is pleased to see new public hunting opportunities created with this new acquisition and the inclusion of an archery-only hunting zone on 78 acres east of West Fork Road.
4	MWF commends FWP, the Bitterroot Land Trust, and the private donors and families involved in working to preserve this land as a part of our Montana outdoor heritage. Thank you for the opportunity to comment and voice support of this project.



APPENDIX B







# 0720-3

TIMBER SALES:

Schmidt Creek Salvage



**Land Board Agenda Item  
July 20, 2020**

**0720-3 Timber Sale: Schmidt Creek Salvage**

**Location:** Lake County  
Section 18, T26N, R18W

**Trust Beneficiaries:** Eastern College-MSU/Western College-U of M

**Trust Revenue:** \$309,060 (estimated, minimum bid)

**Item Summary**

**Location:** The Schmidt Creek Salvage Timber Sale is located approximately 8 air miles southeast of Bigfork, Montana.

**Size and Scope:** The project contains 7 harvest units (253 acres) (1 unit is optional) of tractor logging.

**Volume:** The estimated volume is 15,300 tons of sawlogs (2,261 MBF) (does not include optional volume from Unit 6).

**Estimated Return:** The minimum bid is \$ \$20.20 per ton which would generate approximately \$303,060 for the Eastern College-MSU/Western College-U of M Trust and approximately \$75,735.00 in Forest Improvement fees.

**Prescription:** The Schmidt Creek Timber Salvage project is predominately a salvage of blow down and wind damaged timber. Some additional trees will be harvested while implementing seed tree, shelterwood, and commercial thin prescriptions. Seed tree and shelterwood prescriptions will provide for disease resistant regeneration of western larch and ponderosa pine while improving the health and vigor of residual forest stands.

**Road Construction/Maintenance:** Approximately 0.2 miles of temporary road would be constructed. 6.2 miles of existing roads would be used to access the project area.

**Access:** Access to the project area will be obtained through a combination of County roads, existing road easements, and road use agreements through private property.

**Public Comments:** Thirteen total comments were received (9 e-mails, 4 phone calls). Concerns were noxious weeds, maintenance of roads used for log hauling, loss of big game thermal cover, disturbance of cultural resources, water quality, and fisheries. All equipment would be washed and inspected prior to start of work. All temporary roads would be reseeded to site adapted grass to reduce the threat of noxious weed spread. Currently, the Department of Natural Resources and Conservation (DNRC) has no record of cultural resources in the area. This project is predominately a salvage, consequently low impacts are anticipated to big game thermal cover, water quality, and fisheries.

**DNRC Recommendation**

The director recommends the Land Board direct DNRC to sell the Schmidt Creek Salvage Timber Sale.

# State Trust Land Vicinity Map

## Kalispell Unit



### SCHMIDT CREEK SALVAGE VICINITY MAP

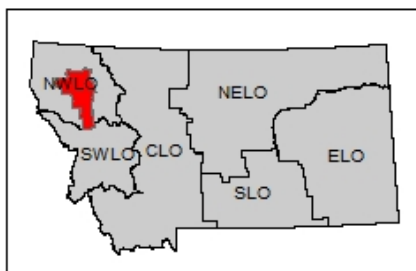
Project Name: Schmidt Creek Salvage

Project Location: Sec 18, T26N, R18W

County: Lake



- |  |  |
|--|--|
|  State Trust Land |  Water Bodies |
|  Towns            |  Rivers       |
|  County Lines     |  Major Roads  |

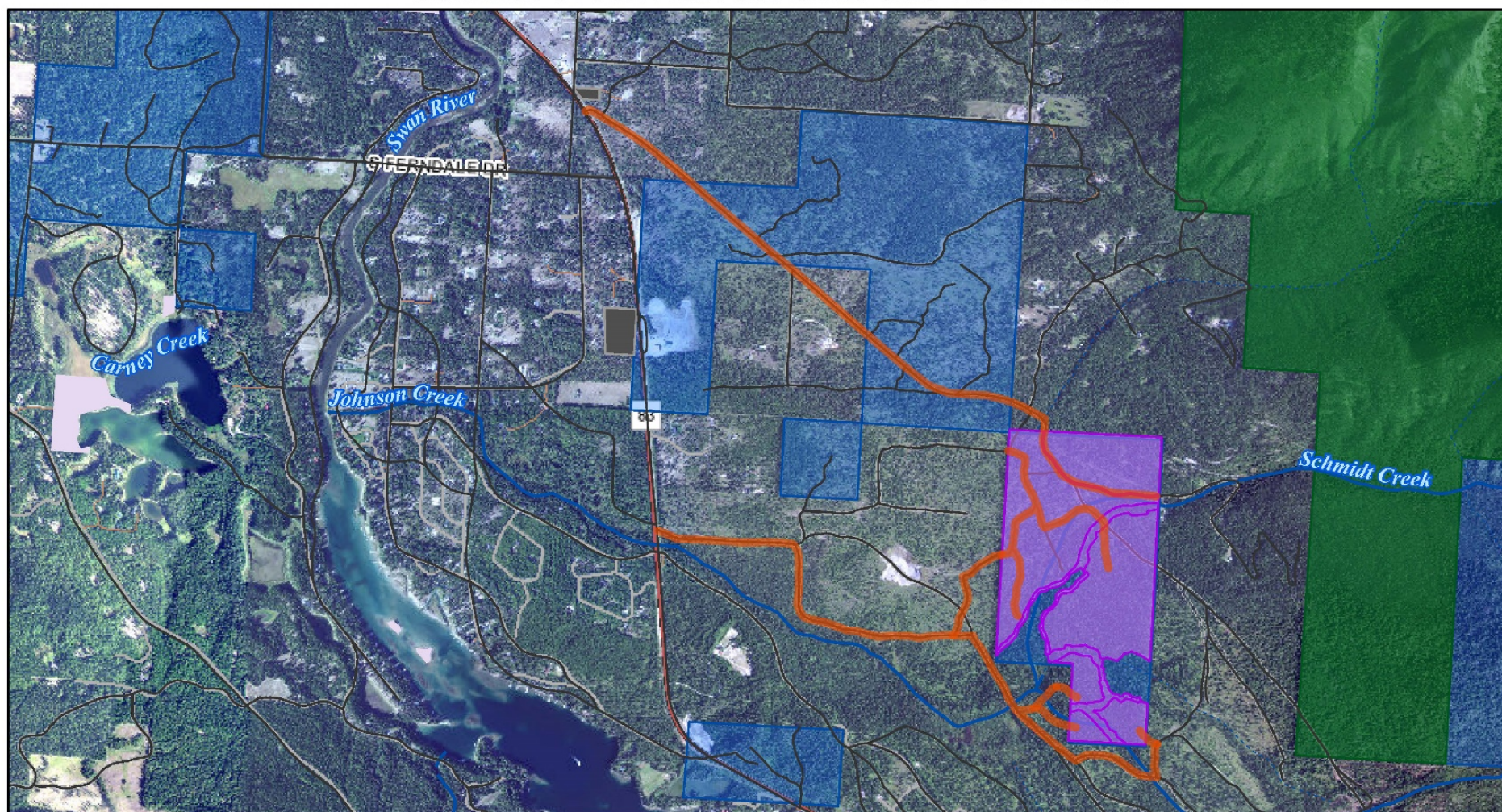


0 5 10 20 Miles

Produced by Montana Department of Natural Resources and Conservation 11/1/2019  
Datum: NAD 1983 StatePlane



## Schmidt Creek Harvest Units and Haul Route



- Schmidt Creek Haul Route
- Schmidt Creek Harvest Units
- Existing Road
- Perennial Stream
- - - Intermittent Stream
- Montana State Trust Lands
- Montana Fish, Wildlife, and Parks
- US Forest Service
- County Government

0 0.3 0.6 0.9 1.2  
Miles







# 0720-4

## FOREST MANAGEMENT BUREAU: Implementing the 2020 Sustainable Yield Calculation (SYC)



**Land Board Agenda Item  
July 20, 2020**

**0720-4 Forest Management Bureau Implementing the 2020 Sustainable Yield Calculation (SYC)**

**Item Summary**

For the past 18 months, The Department of Natural Resources and Conservation (DNRC) has been working with the independent contractor Mason, Bruce & Girard (MB&G) to complete a new sustainable yield calculation (SYC). Since the last calculation in 2015, DNRC has acquired approximately 13,000 acres of former industry-owned timber land. That acquisition as well as strong encouragement from stakeholders made in 2015 to revisit the calculation was a catalyst for DNRC to conduct a new calculation.

**Model Results**

**All Commercial Timber Acres Model Run: 68.3 MMBF**

This model run incorporated all commercial timber acres, including newly acquired lands and all of DNRC's programmatic and operational management constraints. The resulting annual sustainable harvest level was 68.3 MMBF, with 583,889 acres contributing to the solution.

**Implementation Strategy for Annual Target: 60.0 MMBF**

The Implementation Strategy recommends a two-year, phased increase to an annual sales target of 60.0 MMBF by FY22 recognizing a new "Opportunity Wood" classification comprised of an additional 8.3 MMBF per year. This new classification is largely due to lack of markets and mill infrastructure for eastern Montana Ponderosa pine and is unlikely to be sold unless these markets develop.

**Helicopter Acres: Additional 1.4 MMBF**

Consistent with the 2015 methodology, acres identified as suitable only for helicopter logging did not contribute to the annual sustainable yield and were considered to provide volume above and beyond the calculated yields when markets permit. When market conditions are feasible for helicopter logging, those lands could contribute an additional 1.4 MMBF to the annual sustainable yield.

**Lazy/Swift and Wolf Creek Acquisition Model Run: 1.5 MMBF**

The ~ 13,000 acres of newly acquired lands contribute ~ 1.5 MMBF to the annual sustainable yield.

**Public Participation Summary**

Public participation included:

- March 4, 2020 – Posted SYC information on the DNRC website to include announcements, process and public participation information. It included instructions on how to comment on the draft report.
- May 11, 2020 to June 11, 2020 – Official 30-day public review period of SYC Draft Report.
- May 11, 2020 – Emailed SYC Draft Report for public review. Posted online was a copy of the draft report, FAQ, and an executive summary.
- June 23, 2020 – Montana Wood Products Association virtual meeting, DNRC presented a 30-minute summary on the SYC and answered questions from the group.
- July 11, 2020 – DNRC provided written responses to the 6 public comments received.

Issues brought up by the public:

- Forest Inventory (data)
- Forest Inventory (growth rates)
- Climate Change
- Deferred Acres
- RMZ Restrictions
- Sensitive Watersheds
- Old Growth
- Grizzly and Lynx acres
- Precommercial Thinning
- Cable and Helicopter Harvesting
- Opportunity Volume
- Yields by Land Office vs Statewide Yields

DNRC and MB&G reviewed and considered all comments received. Responses to all written comments received are included in Appendix I of the 2020 SYC Final Report.

#### **DNRC Recommendation**

The director recommends the Land Board approve the **2020 Sustainable Yield Calculation of 68.3 MMBF** (8.3 MMBF as “opportunity volume”). The remaining **60.0 MMBF will remain as the standing annual target** and will be implemented partially in FY21 (58.4 MMBF) with the remaining increase in FY22 to 60.0 MMBF. This volume increase will be dependent on the Trust Lands Forest Management Program having the necessary resources to implement this goal.

**DEPARTMENT OF NATURAL RESOURCES  
AND CONSERVATION  
Trust Land Management Division**



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TO: MONTANA BOARD OF LAND COMMISSIONERS

FROM: DAN ROGERS, Trust Lands - Forest Management Bureau Chief

RE: RESULTS OF 2020 SUSTAINABLE YIELD CALCULATION AND IMPLEMENTATION STRATEGY

DATE: 20 JULY 2020

In early 2019, the DNRC Trust Lands Forest Management Program embarked on a new Sustainable Yield Calculation (SYC) based on input from the 2015 SYC (56.9 MMBF) as well as considerable interest and encouragement from external stakeholders. While there was no legislative action requiring this calculation at this time, DNRC found it in their best interests to perform a revision based on several contributing factors outlined in this memorandum. The attached 2020 SYC Report represents extensive effort on this ~18-month process conducted by a 12-member Project Core Team comprised of Forest Management Program staff as well as the commissioned SYC Model by Mason, Bruce & Girard, Inc. These efforts culminated in a **recommendation to phase in an increase to the annual sales target from 56.9 to 60.0 MMBF along with a new "Opportunity Wood" category comprised of an additional 8.3 MMBF per year.** This SYC of 68.3 MMBF is achievable under the model, but due to lack of markets and mill infrastructure for Eastern Montana Ponderosa pine, is unlikely to be sold.

By definition (MCA 77-5-221) *"annual sustainable yield" means the quantity of timber that can be harvested from forested state lands each year in accordance with all applicable state and federal laws, including but not limited to the laws pertaining to wildlife, recreation, and maintenance of watersheds, and in compliance with water quality standards that protect fisheries and aquatic life and that are adopted under the provisions of Title 75, chapter 5, taking into account the ability of state forests to generate replacement tree growth.*

MCA 77-5-222 (2) states that *"A determination of annual sustainable yield under subsection (1) must be reviewed and redetermined by the department, under the direction of the board, at least once every 10 years."* Upon the Land Board approval of this item, this effort shall constitute a resetting of the statutory timeline.

A program level sustainable yield calculation has been completed 6 times since the first in 1983. The DNRC has completed a calculation, on average, every 6.2 years meeting MCA 77-5-222 (2). Typically a SYC is triggered by a significant change in our program metrics (i.e. significant forested trust lands acquisition/disposal or significant mortality from insects, disease or fire).

MCA 77-5-223 requires the *"annual sustainable yield constitutes the annual timber sale requirement for the state timber sale program administered by the department. This annual requirement may be reduced proportionately by the amount of sustained income to the beneficiaries generated by site-specific alternate land uses approved by the board based on a determination under 77-5-222."*

The 2020 SYC was completed using a linear-based, optimization model that produced a sustainable harvest volume level reflecting current policy constraints, legal constraints and various other management constraints including those for wildlife habitat and, water resources. The modeling effort also took into consideration current forest conditions on state trust lands across the state. Statistically, this model provided a calculated output reflecting more plot data as well as strata representation (more plots representing majority volume strata). This calculation utilized plot sampling data with 90% confidence interval/20% error - the highest confidence calculation statistically thus far (SYCs completed 1983, 1996, 2004, 2011, & 2015).

The overall constrained volume estimate of the 2020 SYC is 68.3 MMBF representing several subtle refinements. Compared to the 2015 SYC value there are two specific changes that provide a significant, identifiable influence for the calculation output. The first and largest influence involves the utilization of an east side ponderosa pine growth/yield variant (Custer/Gallatin National Forest) including more accurate growth rates. This equates to a sizable increased volume estimate of available ponderosa pine on lands in eastern Montana. The second involves the acquisition of +/- 13,000 acres of forested trust lands (Lazy/Swift Acquisition).

The 68.3 MMBF provides the DNRC Trust Lands Forest Management Program with a realistic target, albeit with several ongoing challenges in place. Variables like data quality, parcel access, mill infrastructure, timber markets, and timber sale development costs all play a key role in affecting future projects. Diminished pine markets across the state, specifically in the eastern half, present the most significant challenge in achieving this target over the next 10 years. The DNRC has experienced several sales that have not received bids in recent years, which demonstrates this fact. For that reason, the DNRC recommends an annual target of 60.0 MMBF and the creation of the previously mentioned "Opportunity Wood Classification." The additional ponderosa pine volume (8.3 MMBF) from our eastern area offices is available if market opportunities present.

The Trust Lands Program has a standing track record of excellence in the management of its forestlands. We have survived challenging factors related to market volatility, changing ownership patterns, significant demographic turnover in ranks to name a few, and we feel 60.0 MMBF with 8.3 MMBF opportunity volume achievable. Our current organizational capacity has been functionally reduced as our annual targets have generally risen since 1996. In 2004 our annual targets were 53.2 MMBF with 55.0 available FTE. That compares to a current FY21/22 scenario of 60.0 MMBF with 50.0 available FTE. A 6% increase in the annual target represents a significant workload issue for field staff in several locations. Without some additional resources in contract dollars or FTE, we may not be able to fully realize this new target.

In summary, I am requesting approval of the **2020 SYC of 68.3 MMBF**, which includes 8.3 MMBF as "opportunity volume." The remaining **60.0 MMBF will be presented annually to the Land Board as the minimum sale volume** and will be implemented partially in FY21 (58.4 MMBF) with the remainder in FY22 (60.0 MMBF). This 3.1 MMBF volume increase from the current level of 56.9 MMBF will be dependent on the Trust Lands Forest Management Program having the necessary resources to implement this goal.



**Final Report**

**Montana Department of Natural Resources &  
Conservation**

**State Trust Lands Sustainable Yield Calculation**



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**July 8, 2020**

**MB&G**

Natural Resource Consultants Since 1921

**Final Report**

**Montana Department of Natural Resources &**

**Conservation:**

**State Trust Lands Sustainable Yield Calculation**

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## **List of Acronyms**

**ARM:** Administrative Rules of Montana. Agency regulations, standards or statements of applicability that implement, interpret, or set law or policy. DNRC has adopted ARMs that address Forest Management on forested state trust lands.

**BA: Basal Area.** The cross-sectional area of the bole of a tree measured at breast height, expressed in square feet per acre.

**BBF: Billion Board Feet.** A unit of measure for timber volume expressed in billions of board feet.

**CCRX: Clear-Cut Management Prescription.** An aggregate term for even-aged management pathways (EARX) that terminate in a regeneration harvest, which leaves 4 trees per acre (leave trees) as an over-story contribution towards the regenerated stand. These leave trees are not reduced with a second entry harvest.

**CE: Central Land Office.** A DNRC administrative office that includes all the administrative units from the central part of Montana. Units included in the Central Land Office are Bozeman (BOZ), Conrad (CON), Dillon (DIL) and Helena (HEL).

**CT: Commercial Thinning.** A silvicultural treatment incorporated into even-aged management pathways (EARX), which calls for a partial harvest that reduces the trees per acre down to a predetermined threshold. Volume removed is considered commercial since harvest is scheduled at an age which should produce merchantable trees. The purpose of this treatment is to reduce the competition between trees for resources, allowing the retained trees to potentially accelerate growth.

**DBH: Diameter at Breast Height.** A measure of the diameter of a tree at 4.5 feet above ground level (breast height).

**DNRC: Department of Natural Resources and Conservation.** The state agency tasked with managing the Montana trust lands to create revenue for the beneficiaries, while considering environmental factors and protecting the future income-generating capacity of the land.

**EA: Eastern Land Offices.** A collective term for the Land Offices and administrative units from the eastern part of Montana. Land Offices included are Southern, Northeastern and Eastern. Units included are Billings (BIL), Glasgow (GLA), Havre (HAV), Lewistown (LEW) and Miles City (MIL).

**EM: Eastern Montana.** A term used in reference to the Forest Vegetation Simulator (FVS) variant for the eastern parts of Montana (Central and Eastern Land Offices).

**EARX: Even-Aged Management Prescription.** An aggregate term for management pathways terminating in a regeneration harvest, during which the majority of trees are removed, resulting

in a single-age regenerated stand (single canopy structure). Some of these pathways include options to do pre-commercial and commercial thinning.

**FIA: United States Forest Service Forest Inventory and Analysis.** A program of the United States Forest Service, tasked with running a continuous national census on forest land, and predicting the future state of forests.

**FVS: Forest Vegetation Simulator.** A growth and yield simulator developed by the United States Forest Service for predicting the future forest conditions. It was used in the 2015 sustainable yield calculation to predict the future yields from DNRC lands under various management pathways.

**GIS: Geographic Information System.** A computerized system for storing and analyzing spatial data. GIS was used extensively in the 2015 sustainable yield calculation to establish the location of stands for growth modeling, as well as their participation in various wildlife and habitat constraints.

**GORX: Grow-Only Management Prescription.** A management pathway with no active management anywhere along the planning horizon (i.e. no regeneration harvest, thinning, or selection harvest).

**GZB: Grizzly Bear.** A term commonly used in this report, which refers to various habitat constraints applied that mitigate adverse effects to grizzly bears.

**HCP: Habitat Conservation Plan.** A plan prepared under Section 10 of the Federal Endangered Species Act to conserve threatened and endangered species. The HCP is a 50-year cooperative plan with the United State Fish and Wildlife Service that contains minimization and mitigation measures for grizzly bear, Canada lynx, bull trout, west-slope cutthroat and Columbia red-band trout. These conservation measures are applied to minimize effects to the covered species from implementation of forest management activities. Applicable constraints were developed for these measures and applied in the calculation model.

**IE: Inland Empire.** A term used in reference to the Forest Vegetation Simulator (FVS) variant for the western parts of Montana (Northwestern and Southwestern Land Offices).

**LMA: Lynx Management Area.** A key geographic area in the context of DNRC ownership that is of notable importance for lynx. LMAs are delineated zones that contain forested trust lands where increased levels of lynx conservation commitments are applied. Within these areas, records indicate that lynx are likely present (or have been in the relatively recent past) or lands are considered important for maintenance of resident lynx populations.

**LP: Linear Programming.** A mathematical programming technique used to solve problems that contain a series of linear equations, which can be subdivided into an objective function that needs to be optimized, and a set of constraints that limits the extent of the optimization.

**MB&G: Mason, Bruce & Girard.** A natural resource management consultancy based in Portland, OR which was hired by the DNRC to perform the 2015 sustainable yield calculation.

**MCA: Montana Code Annotated.** Codification and compilation of existing Montana state general and permanent law.

**MBF: Thousand Board Feet.** A unit of measure for timber volume expressed in thousands of board feet.

**MMBF: Million Board Feet.** A unit of measure for timber volume expressed in millions of board feet.

**NW: Northwestern Land Office.** A DNRC regional administrative office that includes all the administrative units from the north-western part of Montana. Units included in the Northwestern Land Office are Kalispell (KAL), Libby (LIB), Plains (PLN), Stillwater (STW) and Swan (SWN).

**NDY: Non-Declining Yield.** A term used in context of harvest scheduling and controlling the period-on-period difference in harvest volumes, where the volume for each planning period is allowed to increase from one period to the next, but not decrease.

**OGRX: Old-Growth Management Prescription.** An aggregate term for all old-growth management pathways that include a selection harvest (partial harvest). Harvests occur on a periodic basis (30 or 50 years) and trees are selected for harvest based on a basal area target for the stand as a whole, as well as a trees per acre target for large trees (large defined by a DBH threshold). The objective of these management pathways is to allow selection harvest from old-growth stands, while sustaining the ecological condition and maintaining their old-growth status.

**OS: Over-Story.** The trees that are kept after the regeneration harvest on even-aged management pathways (EARX) for the purposes of aiding the regeneration of the next stand of trees. The composition of the over-story is dependent on the even-aged management objective (CCRX, STRX, or SWRX), as well as the timing and intensity of removal during the second entry harvest.

**PCT: Pre-Commercial Thinning.** A silvicultural treatment in seedling/sapling stands incorporated into even-aged (EARX) and uneven-aged (UERX) management pathways, which calls for a partial harvest that reduces the trees per acre down to a predetermined threshold.

**QMD: Quadratic Mean Diameter.** A measure of the diameter at breast-height for the tree of average basal area in a sample of trees.

**RMZ: Riparian Management Zone.** Under the DNRC HCP and Forest Management Administrative Rules (ARMs 36.11.401 through 36.11.450), an RMZ refers to streamside buffer established when forest management activities are proposed on sites with high erosion risk or on sites that are adjacent to fish-bearing streams or lakes (ARM 36.11.425).

**SDI: Stand Density Index.** A measure of tree stocking, expressing the degree to which trees are utilizing the available growing space. Calculation is based on the number of trees and the diameter at breast height of the tree with average basal area.

**SFLMP: State Forest Land Management Plan.** A programmatic plan adopted by DNRC in 1996 that provides the philosophical basis and technical rationale for DNRC's forest management program on state trust lands. The resource management standards contained in the selected alternative were adopted into administrative rules in 2003.

**SLI: Stand Level Inventory.** The DNRC's central repository for all stand register data. Each record in this database represents a single stand, with a stand defined as a piece of land that is uniform with regards to the properties of its vegetation and is identified through a known stand boundary. These stand boundaries are contained within the agency's Geographic Information System (GIS), which is fully integrated with the SLI.

**STRX: Seed-Tree Management Prescription.** An aggregate term for even-aged management pathways (EARX) that terminate in a regeneration harvest, which leaves 8 trees per acre (leave trees) as an over-story contribution towards the regenerated stand. On approximately half of the stands treated with this prescription, the leave trees are reduced to 4 trees per acre with a second entry harvest, 10 years after the regeneration harvest.

**SW: Southwestern Land Office.** A DNRC regional administrative office that includes all the administrative units from the south-western part of Montana. Units included in the Southwestern Land Office are Anaconda (ANA), Clearwater (CLW), Hamilton (HAM), and Missoula (MSO).

**SYC: Sustainable Yield Calculation.** A calculation that represents the harvest volume that can be sustained over the planning horizon, given the projected stand yields, habitat constraints, and an inventory of standing trees in the final planning period that can theoretically sustain the same harvest volumes beyond the planning horizon.

**SWRX: Shelter-Wood Management Prescription.** An aggregate term for even-aged management pathways (EARX) that terminate in a regeneration harvest, which leaves 25 trees per acre (leave trees) as an over-story contribution towards a regenerating stand. On approximately half of these stands, leave trees are reduced to 4 trees per acre with a second entry harvest, 20 years after the regeneration harvest.

**TPA: Trees per Acre.** The estimated count of trees (stems) on one acre of land.

**UERX: Uneven-Aged Management Prescription.** An aggregate term for management pathways that include a selection harvest (partial harvest). Such harvests occur on a periodic basis (30 or 40 years) and trees are selected for harvest based on a pre-determined DBH distribution. This distribution is an abstraction of what a multi-aged stand (heterogeneous canopy structure) would look like, and trees are selected for harvest in such a manner as to



move the stand closer to this distribution. Some of these pathways include options to do pre-commercial and commercial thinning.

**UMZ: Unique Management Zone.** Land parcels with unique management considerations, due to their inclusion in Conservation Agreements & Easements, as well as Federal Wild & Scenic River Corridors.

**USFS: United States Forest Service.** The agency of the U.S. Department of Agriculture charged with managing the national forests.

## **List of Technical Terms**

**Commercial Forest Land:** Timber land capable of growing commercial crops of trees. Land that can grow 20 cubic feet of timber volume per acre per year.

**Cruise:** To take field measurements of trees in a timber stand. Cruising is a statistical sampling technique.

**Deferred Land:** Timber land not managed for timber production due to other administrative uses, topographic constraints, and/or other physical factors, accessibility problems, or high development costs relative to timber values.

**Even-Aged Management:** A management regime culminating in a final harvest. Trees in the newly regenerated stand will be of a similar age.

**Even-flow:** A term used in context of harvest scheduling and controlling the difference between subsequent periods in harvest volumes, where the volume for each planning period has to be exactly the same.

Forest Vegetation Simulator (FVS) -A forest growth and yield model developed and maintained by the U.S. Forest Service. FVS provides a platform to simulate and estimate the effects of various forest management activities on forest conditions, growth, and yield. FVS uses geographic variants to estimate potential forest growth for different regions in the U.S. The Inland Empire (IE) and Eastern Montana (EM) variants were used for this calculation.

**Grizzly Bear Security Zones:** Areas within the DNRC Stillwater Unit intended to provide security for grizzly bears, which generally meet the Interagency Grizzly Bear Committee definition of “Core.” For this calculation, the Security Zone Areas were based on land areas identified in a negotiated settlement (August 20, 2015) between DNRC and Plaintiffs in a lawsuit involving the DNRC Forest Management Habitat Conservation Plan. Of the 22,007 acres of security zones identified in the settlement agreement, 20,370 commercial acres were identified and deferred from harvest.

**Land Board:** The State Board of Land Commissioners consists of Montana’s five top elected officials who direct the management of State trust lands administered by the Department of Natural Resources and Conservation.

**Maximum Biological Potential:** The highest level of timber harvest that could be sustained, assuming all commercial timber land is available for harvest, and optimal management regimes could be implemented. This is a measure used to benchmark the productivity of a forest.

**Management Regime:** A schedule of specific management actions to be applied to a timber stand over time. Management actions may include activities such as natural regeneration, pre-commercial thinning, commercial thinning, regeneration harvest, selection harvest, etc.

**Old Growth:** A timber stand is designated as “old growth” if it meets the old-growth minimum criteria found in Green *et al.* (1992) as adopted by the DNRC.

**Planning Horizon:** The number of years, or planning periods, for which a strategic planning effort makes future predictions.

**Second Entry Harvest:** The second harvest associated with even-aged management pathways (EARX), where the over-story of trees kept after the regeneration (first) harvest are reduced to the final number of trees per acre.

**Sustainable Yield:** “...the quantity of timber that can be harvested from forested state lands each year in accordance with all applicable state and federal laws, including but not limited to the laws pertaining to wildlife, recreation, and maintenance of watersheds, and in compliance with water quality standards that protect fisheries and aquatic life and that are adopted under the provisions of Title 75, chapter 5, taking into account the ability of state forests to generate replacement tree growth.” (MCA 77-5-221)

**Tariff Equations:** Equations that the DNRC uses to calculate Scribner board foot volumes for a tree, given the species, height and DBH of the tree.

**Timber Stand:** A tract of forest land relatively homogenous with respect to species mix, size and stocking of tree species. The minimum stand size is five acres.

**Timber Type:** A code assigned to each timber stand describing the existing species mix, size class and stocking class.

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## **1 Acknowledgements**

We at MB&G appreciate the hard work and valuable insight provided by the dedicated professionals at the Montana Department of Natural Resources and Conservation. Mark Slaten, Tim Spoelma, and Ross Baty were especially helpful in assisting with the design of the analysis and providing data. Dan Rogers provided both leadership and encouragement to the planning team. Members of the field review team provided careful review and thoughtful comments.

Finally, we acknowledge the contributions of Dave Mason, founder of our firm in 1921. His early and zealous advocacy for sustainable forest management practices have had long lasting impacts on how our society views and manages our forest resources.

## 2 Executive Summary

The Trust Land Management Division of the Montana Department of Natural Resources (DNRC) manages approximately 750,000 commercial forest acres for the benefit of the Common Schools and other endowed institutions. Management activities on those lands focus on providing a consistent and long-term revenue source for the trust beneficiaries, which is generated by selling a consistent annual timber volume. The amount of timber sold annually is determined through a sustainable yield calculation (MCA 77-5-223).

The last sustainable yield calculation was performed in 2015 in conjunction with the acquisition of approximately 67,000 acres of land to the DNRC's timber base. The passage of Senate Bill 154 in the 2013 Montana Legislative Session required DNRC to conduct this calculation, which set a sustainable harvest level of 56.9 million board feet (MMBF) annually. Mason, Bruce, and Girard, Inc. performed that calculation.

Since that last calculation in 2015, DNRC has acquired  $\pm 13,000$  acres of former industry-owned timber land, primarily in the Stillwater Unit. Pursuant to state law (MCA 77-5-222), requiring that an independent third party conduct the calculation, the DNRC contracted with Mason, Bruce & Girard in 2019 to perform the calculation.

For this sustainable yield calculation, the DNRC relied on data collected from its own lands in 2014 and 2018 and used FVS growth model calibrations developed by the U.S. Forest Service and MB&G. For this calculation the DNRC also emphasized using the professional expertise of its field staff for several facets of the project, including updating areas deferred from active management, identifying lands suitable for helicopter and cable logging, designing management regimes, and verifying growth and yield projections. The DNRC used the Inland Empire and Eastern Montana variants of the Forest Vegetation Simulator<sup>1</sup>, both of which are specific to Montana forests, for growth and yield projections.

For this calculation, MB&G evaluated two scenarios. The first scenario incorporated all of DNRC's commercial timber acres, including newly acquired lands, and all of DNRC's programmatic and operational management constraints, resulting in an annual sustainable harvest level of 68.3 MMBF.

The second scenario was designed to determine the impact of the  $\pm 13,000$  recently acquired acres on the sustainable yield. For that scenario, the acquired lands were withdrawn from the model developed for the first scenario where all commercial forest acres were available for management, resulting in an annual sustainable harvest level of 66.8 MMBF and inferring that the addition of those lands contributes 1.5 MMBF to the annual sustainable yield.

For all scenarios, acres identified as suitable only for helicopter logging did not contribute to the annual sustainable yield and were considered to provide an opportunistic amount of volume

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<sup>1</sup> Documentation and software available at <https://www.fs.fed.us/fvs/index.shtml>

above and beyond the calculated yields when markets permit. When market conditions are feasible for helicopter logging, those lands could contribute an additional 1.4 MMBF to the annual sustainable yield.

The results of this calculation show an increase of approximately 20 percent in the annual sustainable harvest volume compared to the previous calculation from 2015 (68.3 MMBF vs. 56.9 MMBF). There are several important factors that distinguish this effort from the prior effort and that provide a significant contribution to these results. DNRC carefully examined its inventory data and associated cruise plot data used for growth and yield modeling and found weak correlation between the timber strata as identified in its inventory and as described by the cruise plots for sampled stands. To improve the correlation of inventory and cruise data and therefore the accuracy of the calculation, DNRC re-stratified both its inventory data and plot data into new species groups and stocking classes for this calculation. DNRC also re-evaluated the calibration used in the FVS growth and yield model, and for this calculation used western root disease model calibrations for the IE variant of FVS developed by the U.S. Forest Service, and a calibration developed by MB&G and the Custer-Gallatin National Forest for the EM variant of FVS. DNRC also re-evaluated acres deferred from management in the 2015 calculation and made many of those acres, particularly in the Central and Eastern areas, available for harvest.



### 3 Purpose, Need and History

#### 3.1 Purpose of and Need for the Sustainable Yield Calculation

The Trust Land Management Division of the Montana Department of Natural Resources and Conservation (DNRC) Forest Management Program manages approximately 930,000 forested acres for the benefit of the Common Schools and other endowed institutions. Of those 930,000 acres, approximately 750,000 acres are commercial forest land. Commercial forest land includes those lands that are dominated by commercial conifer species and have potential productivity greater than 20 cubic feet/acre/year. DNRC manages trust lands to “produce revenues for the trust beneficiaries while considering environmental factors and protecting the future income-generating capacity of the land.”<sup>2</sup>

On forested trust lands, the DNRC’s management standards and philosophy are guided by the State Forest Land Management Plan (SFLMP)<sup>3</sup>, associated Administrative Rules (ARM)<sup>4</sup> and the DNRC’s Forested State Trust Lands Habitat Conservation Plan (HCP)<sup>5</sup>. Management is based on maintaining biodiversity and sustainability, while utilizing active forest management<sup>6</sup>. Annual activities on forested state trust lands are aimed at generating income, monitoring and improving practices, investing in the future productivity of forested stands, and conserving an array of resources.

Revenue from forested state trust lands is primarily derived from the sale of forest products. State law directs the DNRC to sell a consistent amount of timber each year, as determined by the annual sustainable yield calculation, which in turn provides a consistent revenue source for the trust beneficiaries.<sup>7</sup> State law also requires that the DNRC, under the direction of the State Board of Land Commissioners (Land Board), commission an independent third party to calculate the annual sustainable yield for forested state trust lands at least once every 10 years.<sup>8</sup> Annual sustainable yield is defined as:

*“...the quantity of timber that can be harvested from forested state lands each year in accordance with all applicable state and federal laws, including but not limited to the laws pertaining to wildlife, recreation, and maintenance of watersheds, and in compliance with water quality standards that protect fisheries and aquatic life and that are adopted under the provisions of Title 75, chapter 5, taking into account the ability of state forests to generate replacement tree growth.”<sup>9</sup>*

<sup>2</sup> Mission Statement, Trust Lands Management Division, Montana Department of Natural Resources

<sup>3</sup> Montana DNRC, State Forest Land Management Plan, 1996

<sup>4</sup> Administrative Rules of Montana for Forest Management, 2003

<sup>5</sup> Montana DNRC, Forested State Trust Lands Habitat Conservation Plan Record of Decision, December 2011.

<sup>6</sup> Montana DNRC, Trust Lands Management Division Annual Report FY 2014

<sup>7</sup> Montana Code Annotated (MCA) 77-5-223

<sup>8</sup> MCA 77-5-222

<sup>9</sup> MCA 77-5-221

Periodic recalculation of sustainable yield is necessary to incorporate changes in management intensity or emphasis, or as new laws and regulations are applied.

In 2019, the DNRC contracted with Mason, Bruce & Girard, Inc. (MB&G) to perform the sustainable yield calculation. Established in 1921, MB&G is a natural resources consulting firm located in Portland, Oregon. MB&G has performed similar calculations for a variety of federal, state, private and tribal landowners across the US. MB&G performed the DNRC's previous three sustainable yield calculations in 2004, 2011, and 2015.

## 3.2 History

### 3.2.1 Past Sustainable Yield Calculations

DNRC has calculated a sustainable yield six times in the past 40 years. Table 1. provides summary information for the five prior calculations.

**Table 1: Past Sustainable Yield Calculations**

Year	Sustainable Yield	Acres Receiving Management
1983 <sup>10</sup>	50.0 MMBF	399,700
1996 <sup>11</sup>	42.2 MMBF	363,769
2004 <sup>12</sup>	53.2 MMBF	430,784
2011 <sup>13</sup>	57.6 MMBF	469,159
2015	56.9 MMBF	570,511

The last sustainable yield calculation was completed in September 2015 by MB&G. That study determined that the annual sustainable harvest level was 56.9 MMBF.<sup>14</sup>

From FY 1997 through FY 2003, the DNRC based the timber sale program on the 1996 calculation. In 2003, the Legislature directed the DNRC to sell 50 MMBF annually.<sup>15</sup> In 2004, the annual sustainable yield was calculated to be 53.2 MMBF; this calculation also served as the baseline for the no-action alternative for DNRC's HCP. The DNRC based its annual timber sale requirement on the 2004 calculation until 2012 when its HCP was adopted, increasing the annual sustainable yield to 57.6 MMBF. Between 2011 and 2015, DNRC acquired approximately 67,000 acres of commercial forest land, prompting a new calculation to incorporate production from those acres into DNRC's annual sustainable yield. At the same time, the DNRC resolved a lawsuit regarding

<sup>10</sup> Sheartl, Dick, Montana Department of Natural Resources, Allowable Cut Report, August 26, 1983

<sup>11</sup> Arney, James D., The Annual Sustained Yield of Montana's Forested State Lands, December 1996.

<sup>12</sup> Mason, Bruce & Girard, 2004 Sustained Yield Calculation, State of Montana Department of Natural Resources, November 20, 2004.

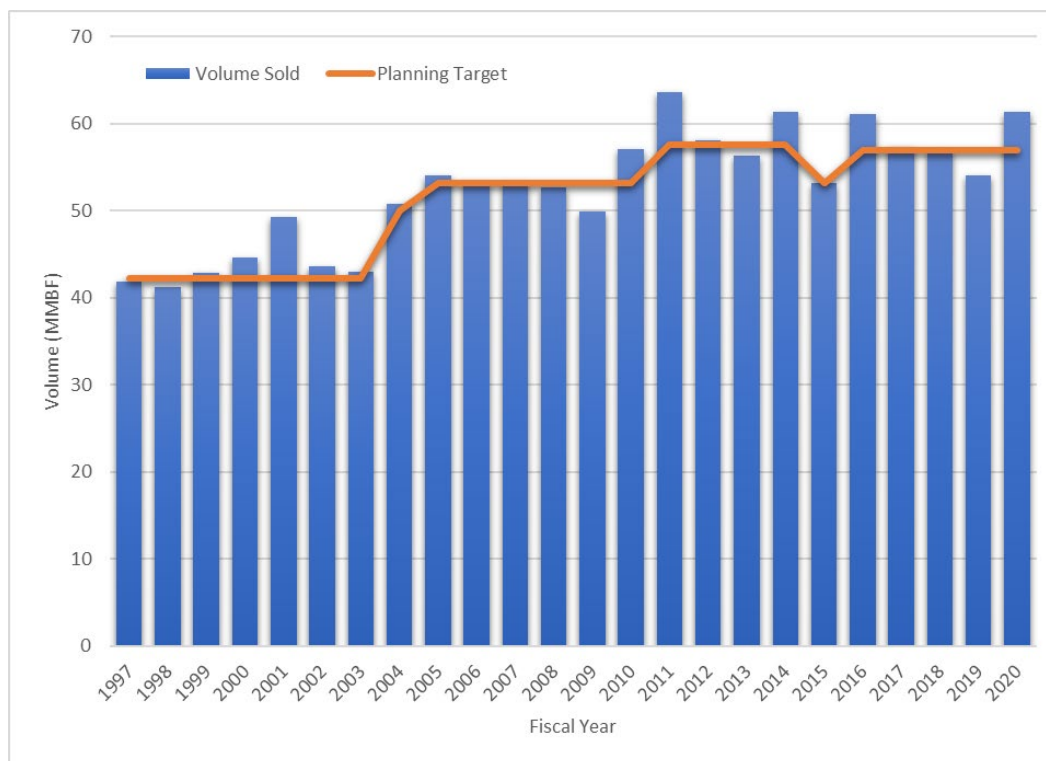
<sup>13</sup> Montana DNRC, Forested State Trust Lands Habitat Conservation Plan Record of Decision, December 2011.

<sup>14</sup> MBF – thousand board feet; MMBF – million board feet; BBF – Billion board feet, all in Scribner measure. A typical log truck holds 4-5 MBF.

<sup>15</sup> 77-5-222 MCA, 2003

the HCP that resulted in the creation of “security zones” for grizzly bears in the Stillwater Unit, and the terms of the settlement of that lawsuit were included in the calculation, resulting in an annual sustainable yield of 56.9 MMBF.

The annual timber sale program since 1997 is shown in **Figure 1**.<sup>16</sup> In some years, sold volumes exceeded the basis provided by the sustainable yield calculation due to timber salvage activities following wildfires or insect infestations that required timely entry to capture the value of the standing dead timber, or less frequently due to resale of unsold volume that was offered for sale in prior years.



**Figure 1: Volume sold from State Lands, FY 1997-2020 (MMBF, saw timber)**

### **3.2.2 Changes since the 2015 Sustainable Yield Calculation**

In the report for the 2015 calculation, MB&G made three recommendations to the DNRC to improve on the efforts made for that calculation as well as previous efforts:

1. Collect cruise information in areas/strata that have not been cruised and collect additional plot data to strengthen future inventory calculations.
2. Improve stand inventory data, particularly stand age and productivity estimates
3. Continue and expand FVS calibration

<sup>16</sup> Note that Figure 1 shows volume sold, not volume harvested. While revenues ultimately flow to the beneficiaries based on harvest, the volume sold is a more direct measure of DNRC annual timber sale effort. Volume sold for FY 2015 is estimated.

In response to those recommendations and to produce improved results over prior sustainable yield calculation efforts for this calculation, DNRC initiated several steps to increase its understanding of conditions on, and affecting forested state trust lands, as well as the quality of its data:

- DNRC expanded on its 2014 cruise information by cruising stands belonging to timber strata in the NWLO, SWLO, and CLO that had no or minimal cruise information. This cruise was conducted in 2018 and included 43 stands with a total of 765 plots, resulting in a grand total of 358 stands and 6,058 plots representing 53 timber strata (not including productivity class designations within strata) in the NWLO, SWLO, and CLO. Approximately 89 percent of acres in the NWLO, SWLO, and CLO are in strata that have at least one stand that has been cruised [the EA area relies on U.S. Forest Service Forest Inventory and Analysis Data (FIA) as the source of tree list data for growth and yield models; DNRC has not conducted any cruise sampling in that area].
- DNRC carefully examined its inventory data and associated cruise plot data used for growth and yield modeling. To improve the correlation of inventory and cruise data and therefore the accuracy of the calculation, DNRC re-stratified both its inventory data and plot data into new species groups and stocking classes for this calculation. This resulted in a significant reduction in the number of timber strata compared to the 2015 calculation, and also necessitated the development of a new set of yield tables for growth and yield modeling.
- DNRC has kept its Stand Level Inventory (SLI) current through monthly updates each year. Updates are based on harvest activities or on re-visitation of individual stands. DNRC also collected new stand-level inventory on its newly acquired acres in the Stillwater and Libby Units in 2019 for inclusion in this calculation.
- DNRC updated its productivity classes to a consistent statewide standard that matches the productivity classes used by the U.S. Forest Service FIA program as opposed to defining separate productivity classes for each Land Office.
- DNRC updated its growth and yield model calibration using western root disease model calibrations developed by the U.S. Forest Service for the IE variant of FVS, and used a calibration developed for the Custer-Gallatin National Forest by MB&G for the EM variant. DNRC also opted to use the IE variant of FVS for the CLO as opposed to the EM variant that was used in 2015; the EM variant is now used only in the EA area. These calibrations resulted in increased growth rates across all Land Offices compared to 2015 and that are in line with published growth rates for Montana as well as anecdotal growth rates from industrial private forest landowners in Montana.
- DNRC undertook measures to update several other data sources, including road and hydrology GIS layers, which resulted in a more accurate representation of the amount and location of those features and their impacts on management.
- DNRC used an ArcGIS online project with its foresters to review and reclassify stands that are deferred from management. For this exercise, DNRC reviewed and revised stand

deferral criteria, resulting in a more accurate representation of stands that are not currently available for management due to factors including topography, wet areas, low productivity, low timber value combined with high development costs, inaccessibility, timber conservation licenses, and other land uses, among others.

### 3.3 Uses & Limitations

This sustainable yield calculation is based on a great deal of spatial and tabular data about the forest. Some of the data are site specific, other data are more generalized. A Forest Management Model was designed to address strategic level questions.<sup>17</sup> Specifically, the model was designed to provide a reasonable and defensible estimate of:

- A sustainable harvest level from DNRC lands, along with associated revenues;
- The interaction between management, and wildlife habitat and water resource constraints; and
- A projection of forest conditions across DNRC lands.

Given the data and effort invested in the modeling effort, it may be tempting to try to use the model for purposes beyond the stated objectives. As discussed below, however, the model has limited spatial capabilities. Readers are cautioned against trying to use the model for more tactical, operational or site-specific tasks. While the model might be used to analyze general management strategies, for example, it should not be used to locate harvests into specific stands or under specific management regimes.

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<sup>17</sup> Strategic questions: How should we manage this forest to meet objectives? What kinds of management regimes are most compatible with our objectives? How important are current investments for meeting future harvest objectives?

Tactical questions: Which roads should we build and which stands should we harvest first?

Operational questions: Where should the landing go?

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## 4 Data and Methods

In this section, we discuss the source data for each component of the 2020 calculation and relevant differences between the models used for the 2020 and 2015 SYCs. Included are a general overview of the modeling approaches describing the main components of the models and their relationship to each other. This is followed by a detailed discussion of the components with emphasis on describing the land information used, how this was compiled into an inventory estimate, growth predictions, and optimization of the sustainable yield calculation.

### 4.1 Overview of the Forest Management Model

The objective of the forest management model is to find the optimum sustainable harvest for the land managed by the DNRC, subject to fulfilling the agency's obligations towards wildlife habitat, water resources, managing the land towards a desired future condition, and the operational constraints inherent to the organization.

The data and methods used in this analysis will be discussed in detail below. In short, the modeling effort consisted of combining the cruise and SLI data through a stratification process into an inventory estimate, which described the current state of the forest. The data from this process were used in FVS in conjunction with management pathways to make future yield projections. These projections were used within a LP modeling framework to optimize the sustainable harvest level subject to meeting wildlife, water resource, and operational constraints.

### 4.2 Land Base

The description of the land base provided estimates of acres, content (what is on these acres) and location (where is it) used in the modeling framework, and it played a pivotal role in stratification, inventory calculation, management pathway allocation and setting the starting condition for the LP optimization model. Within the DNRC Forest Management Program, the SLI is the central repository for all land data.

#### 4.2.1 *The Stand Level Inventory (SLI)*

The DNRC's Stand Level Inventory is the central repository for all of the agency's stand inventory data. The SLI is contained within DNRC's Geographic Information System (GIS). Each record in the SLI represents a single stand defined by a boundary that has uniform site characteristics (slope, aspect, elevation, habitat type, etc.) and vegetation. The SLI contains approximately 29,800 stand records, of which approximately 27,890 are commercial forested land. Each SLI record contains data describing numerous attributes of each stand; of those, the following were essential to this calculation:



**Table 2: List of Key SLI Parameters**

Land Office	The DNRC administrative Land Office to which the stand belongs
Unit	The DNRC administrative unit, within a Land Office boundary, to which the stand belongs
Species	A description of timber type, in terms of major species
Size	The existing dominant tree (timber) size in inches
Stocking	The density of trees in the stand expressed as trees per acre
Age	An estimated average age for the stand
Productivity	The expected average productivity of a stand in terms of ft <sup>3</sup> /acre/year
Habitat Type	The stand's habitat type classification following Pfister et al. (1977) <sup>18</sup>
Acres	The net acres contained within the stand

SLI data is typically gathered by directly visiting a stand (“walk-through”) or photo interpretation data gathering. The SLI database used in this analysis was current as of September 2019.

#### **4.2.2 Other Information about the DNRC Commercial Forest Land Base**

Several GIS layers were used to incorporate wildlife habitat and operability considerations into the model. The following data were incorporated into the model through a series of GIS overlay analyses:

**Table 3: Additional DNRC Forested Land Base Information**

Deferred	Acres deferred from management, due to operational issues such as legal access, topography, excessively wet areas, and cabin site leases.
Riparian Management Zone (RMZ)	“No harvest” zones established immediately adjacent to Class 1 streams and lakes in accordance with the DNRC Forest Management HCP.
Unique Management Zone (UMZ)	Conservation Agreement & Easement areas, as well as Federal Wild & Scenic Corridors.
Helicopter Harvest Acres	Stands only operationally feasible to be logged by helicopter.

<sup>18</sup> Pfister, R.D, B.L. Kovalchik, S.F. Arno, R.C. Presby. 1977. Forest Habitat Types of Montana. USDA Forest Service, Gen. Tech. Rep. INT-34, Intermountain Research Station, Ogden, UT.

Cable Harvest Acres	Stands only operationally feasible to be logged using cable (skyline) harvest systems.
Sensitive Watersheds	DNRC parcels that lie within watersheds that are designated as sensitive to increases in water yield. Harvest levels in these watersheds need to be managed within the ARMS and HCP commitments governing cumulative watershed effects.
Grizzly Bear	Two defined land areas exist (1. Recovery Zone, and 2. Non-recovery Occupied Habitat lands) that contain DNRC lands, where distinct constraint sets relevant to habitat management for grizzly bears are required.
Lynx Management Areas	Seven defined areas of notable importance for lynx conservation containing DNRC ownership. Several habitat parameters must be maintained above minimum threshold levels in these areas requiring a specific suite of management constraints.
Potential Lynx Habitat	Stands of appropriate Habitat Type (Pfister et al. 1977) that are, or have the potential to become, lynx habitat, with management actions aimed at attaining habitat attributes.
Bald Eagle Nesting Site	Bald eagle nest locations on or near DNRC lands, which must be managed to maintain the suitability of the site for nesting.

#### **4.2.3 Source of Stand Table Data**

For the NWLO, SWLO, and CLO (hereafter NW, SW, and CE) Land Offices, cruise data collected from DNRC land in 2014 and 2018 served as the source data to describe timber strata and develop stand tables for those Land Offices. For the NELO, SLO and ELO (hereafter EA Land Offices), the same FIA data used in the 2014 calculation was used. Descriptions of the cruise design and data collected can be found in Chapter 4 of the 2015 SYC report.

Following MB&G's recommendation in the 2015 SYC report, DNRC collected supplemental cruise data from strata in the NW, SW, and CE areas in 2018 to collect or strengthen information for strata that had no or minimal cruise data. When combined with the cruise data collected for the 2015 SYC, DNRC sampled 358 stands with 6,058 individual plots (Table 4).

**Table 4: Number of Stands Sampled and Plots Collected by Land Office**

<b>Land Office</b>	<b>Stands Sampled</b>	<b>Plot Count</b>
CE	48	801
NW	184	3,134
SW	126	2,123
<b>Total</b>	<b>358</b>	<b>6,058</b>

DNRC used the same FIA plot data to develop tree lists for DNRC's East-side timber strata that was used in the 2015 SYC.

#### **4.2.4 Stratification of Timber Types**

As with the 2015 SYC, a strata-based approach, rather than a stand-based approach, was used to generate both inventory, and growth and yield information for the 2020 SYC. Each stand in the SLI was grouped into a stratum defined by a unique combination of Land Office, species, size class, stocking, and productivity class.

To improve correlation between the cruise information and SLI and produce more accurate inventory and growth and yield model estimates, DNRC re-stratified both the inventory cruise data collected in 2014 and 2018 and its SLI. The forest types defined in the SLI were grouped according to forest types that occupy similar sites (e.g., ponderosa pine and Douglas-fir on warm/dry sites or grand fir, western redcedar, western hemlock, and western white pine forests on moist sites), and the "moderate-" and "well-stocked" classes were grouped into a single "adequate" stocking class. Adjustments were also made to size class information for some stands, particularly stands classified as sawtimber in the SLI that had been previously harvested using even-aged methods and that were dominated by seedling/sapling or poletimber-sized trees.

After the new strata defined by the re-stratification process were applied to the SLI and cruise data, the cruise plot data within a given strata were compiled to produce a tree list representing an average condition. This process did not deliver a tree list for every stratum, because in some cases there were no plot data within certain strata. In such cases, these empty strata were assigned a substitute tree list from a stratum with plot data that were closest in terms of vegetation, with priority given to matching species, size class, and stocking, respectively.

To estimate differences in site productivity within each stratum, low, medium and high productivity variants of each stratum were generated by producing three copies of the tree list for the stratum and then growing each with a different estimate of future growth potential corresponding to low, medium, and high-productivity sites. Estimates of future growth potential were differentiated by using different habitat types and site index depending on the productivity class (see 0).

#### **4.2.5 Timber Cruise Compilation and Initial Inventory Estimate**

As described in Section 4.2.3, two sets of cruise data were used to produce tree lists and stand tables for each stratum:

- DNRC SYC cruise data for the NW, SW, and CE Land Offices
- USFS FIA inventory data for the Eastern Land Office.

Using the final version of each set of cruise data, an MBGTools<sup>19</sup> database was built to process the data for each Land Office. All the cruise data was compiled and merchandized using MBGTools utilities. The following merchandizing specifications were specified by DNRC:

- Minimum DBH = 6 inches
- Stump Height = 1.0 foot
- Log Length = 16 feet
- Minimum Top DIB = 6 inches
- Minimum Log Length = 8 feet
- Trim Amount – 2.5 percent
- Observed tree defect from inventory data
- Unseen cull & breakage default value by species
- Scribner Decimal C Short Log Rule

Following cruise compilation for each stratum in MBGTools, the compiled results for each stratum were multiplied by the number of acres in each stratum and aggregated to produce an initial estimate of standing inventory.

#### **4.2.6 Yield Table Development**

This section describes the process of calibrating the growth and yield model and applying management actions to the growth predictions to create the yield projections required for the LP model.

##### **4.2.6.1 FVS Variants**

As with the 2015 SYC, FVS was used to predict future forest conditions, growth, and yield associated with various types of management actions. For the NW, SW, and CE Land Offices, the Inland Empire (IE) variant of FVS was selected, and the Eastern Montana (EM) variant was selected for EA Land Offices. Initially, the EM variant was selected for the CE Land Office; however, the results were unsatisfactory for certain strata, so the IE variant was selected for some strata in the CE Land Office despite being outside the geographic range defined for that variant.

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<sup>19</sup> MBGTools is a comprehensive software system for stand-based forestry inventory data compilation and management.

#### 4.2.6.2 Background

All yield tables were created in MBG's YTGTools application. This is a custom application created by MBG, which utilizes FVS to grow tree lists forward on a period-by-period basis.

A period length of 10 years was used, implying that the difference between subsequent model periods represents ten years of growth. The only exception to this was period one, which represented five years of growth (from period zero to period one). The rationale in this was that the yield table for each stratum should represent the average condition over the ten-year time span; by setting the first growth interval to five years, the quantities in the yield tables reflect the periodic mid-point average in all subsequent periods. Each yield table was grown for 20 periods, thereby representing 200 years of growth.

All yield tables were post-processed to perform a gross to net volume adjustment on inventory and harvest volumes using DNRC's tariff equations.

#### 4.2.6.3 Habitat Types

Forest habitat type information (Pfister et al. 1977) is used extensively in both the IE and EM FVS variants to parameterize site species, site index, and maximum basal area, all of which are crucial determinants of potential growth.

The SLI contains habitat type information for most stands and was used to allocate habitat types to the low, medium, and high productivity classes within each stratum based on the predominance of the habitat types within each stratum. Please see Appendix L: for the final allocation of habitat types.

#### 4.2.6.4 Productivity Classes and Site Index

Site Index is another means to quantify site quality and potential productivity, and it is described in terms of the expected height of dominant or co-dominant trees at a base or index age.<sup>20</sup> It is used in conjunction with habitat type in the IE and EM variants to predict expected future growth.

Determining site index began by assigning a productivity class (Low, Medium or High) to each stand based on its expected average productivity (ft<sup>3</sup>/acre/year). The expected average productivity for each stand was extracted from the SLI database, while the productivity classes were provided by the DNRC. In the 2015 SYC, productivity classes were defined for each Land Office; however, for the 2020 SYC DNRC chose to define productivity classes at the statewide level using classes that match those used by the FIA program. The productivity classes are differentiated by the potential growth in a stand at culmination of mean annual increment (Table 5).

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<sup>20</sup> Helms, JA, ed. 1998. *The Dictionary of Forestry*. Society of American Foresters, Bethesda, MD.

**Table 5: Productivity Classes (ft<sup>3</sup>/ac/yr.)**

<b>Productivity Class</b>	<b>Low</b>
Low	20 – 49
Medium	50-84
High	85+

Next, the stand level productivity estimates were aggregated up to an area weighted average productivity, for each unique combination of Land Office and productivity class. The resulting weighted productivity averages are shown in Table 6.

**Table 6: Average Productivity (ft<sup>3</sup>/ac/yr.)**

<b>Land Office</b>	<b>Low</b>	<b>Medium</b>	<b>High</b>
CE	38	56	85
EA	32	–	–
NW	33	69	101
SW	30	67	95

Site index was derived by assigning each SLI stand a potential productivity rating (ft<sup>3</sup>/ac/yr.) and then calculating the weighted average productivity estimate for each site class and Land Office. Potential productivity was converted to site index (DF site index base age 50) using conversion factors published by Brickell (Int-75)<sup>21</sup>. Results were reviewed for logical consistency within and between Land Offices. The resulting site index values are shown in Table 7:

**Table 7: Site Index**

<b>Land Office</b>	<b>Low</b>	<b>Medium</b>	<b>High</b>
CE	42	50	60
EA	30	50	--
NW	50	55	70
SW	50	55	65

#### 4.2.6.5 Stand Age

Stand age is not a required parameter for using either variant of FVS, but it is an important parameter for allocating the silvicultural treatments that accompany some management

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<sup>21</sup> Brickell, James E., Equations and Computer Subroutines for Estimating Site Quality of Eight Rocky Mountain Species", Intermountain Forest and Range Experiment Station, USDA Forest Service Research Paper INT-75, 1970, 22 pages.



pathways. In addition, the linear programming model is age-based, and therefore needs to keep track of age throughout the planning horizon to optimize the harvest level subject to the constraints.

The SLI contains an estimate of average age for most stands. These values were used as a starting point to determine age, resulting in an area weighted average age by Land Office, timber size class and productivity class. These age allocations were reviewed by the DNRC for accuracy, and manually adjusted where necessary. For final implementation, these ages were rounded to the closest mid-decade point (15, 25, 35, etc.), which accommodated the five-year growth period between periods zero and one and allowed subsequent ages to fall on full decadal values (20, 30, 40, etc.). Please refer to Appendix M: Strata Starting Age, for more detail regarding age.

#### *4.2.6.6 Location Code*

FVS utilizes geographic location in several ways to determine localized growth rates. One of these mechanisms is the location code, which matches growth to observed growth on a corresponding USFS National Forest. Each stratum was therefore assigned a location code, using the following scheme:

**Table 8: Location Codes**

<b>Land Office</b>	<b>USFS National Forest</b>	<b>FVS Location Code</b>
CE	Helena (ie)	112 (maps to 116)
EA	Custer (em)	108
NW	Flathead (ie)	110
SW	Lolo (ie)	116

The analytical steps described in section 4.2.5 resulted in a tree list for each stratum at each productivity class level. The final step before taking these tree lists into FVS was to assign each combination of strata and productivity class with a habitat type, site index, age and location code. These parameters were the result of the analytical processes described in sections 4.2.6.3 through 4.2.6.6.

#### *4.2.6.7 Growth Model Calibration*

At this time, DNRC does not have sufficient information regarding growth rates on its land that could be used for growth and yield model calibration. For the 2020 SYC, DNRC selected calibrations for FVS developed by outside sources. For the IE variant, DNRC used a series of FVS keyword files designed to simulate varying levels of western root diseases on forest growth and

yield that were developed by personnel in the U.S. Forest Service<sup>22</sup>. For the EM variant, DNRC used an FVS calibration developed by MB&G and the Custer-Gallatin National Forest.

The first set of yield tables consisted of a complete set of grow-only tables (not inclusive of any management treatments such as pre-commercial thinning, commercial thinning and selection harvest) that established a reference point for future calibration by focusing on growth without the influence of active management. These tables were reviewed by a team of DNRC foresters and adjustments were made to either the selected root disease keyword file and/or habitat type until results fell into an acceptable range of expected growth. Productivity classes were also properly ordered within each stratum (i.e.—predicted volumes/growth on low productivity did not exceed those on moderate productivity sites, and moderate did not exceed high). After the full set of grow-only yield tables was complete, a set of yield tables reflecting the application of management activities was produced. At that point, MT DNRC developed factors to adjust volumes reported by FVS, using published growth rates from the FIA program for areas within each Land Office (Appendix O: Growth Rates by Land Office), and aligned with the distribution of acres in each productivity class relative to other Land Offices. These factors were applied to both grow-only and regime yields for the appropriate Land Office. The factors applied were as follows: CE—0.71, EA—1.46, NW—0.96, SW—0.75. Following application of those factors, calibration of FVS was complete.

#### 4.2.6.8 Management Regimes

Three types of management pathways were formulated for the 2020 SYC: even-aged prescriptions (EARX), uneven-aged prescriptions (UERX), and old growth prescriptions (OGRX). The EARX incorporate a regeneration harvest removing most of the overstory in a single harvest with the objective of regenerating a new age class of trees, while the UERX incorporate a partial harvest of the overstory on a repeated cutting cycle. For old-growth strata in the NW and SW area, OGRX were developed that incorporate an uneven-aged harvest with residual tree targets aimed at maintaining old growth status. Some EARX pathways included a precommercial thinning (PCT) treatment modeled as a thin-from-below (remove smallest trees until target is reached) and/or commercial thinning (CT) modeled as a weighted thin (remove equal proportions from all DBH classes until target is reached). Minimum harvest thresholds for both tractor- (ground) and cable- (skyline) based systems in each Land Office were applied so all thinning treatments falling short of the threshold were skipped (Table 9).

**Table 9: Minimum harvest thresholds by Land Office (Mbf/ac)**

Land Office	Tractor	Cable
CE	2.0	5.0
EA	0.5	6.0
NW	1.0	3.0

<sup>22</sup> <https://www.fs.fed.us/foresthealth/applied-sciences/fvs-models/index.shtml>

SW	1.0	3.5
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Three different types of EARX pathways were developed: clear-cut prescriptions (CCR<sub>X</sub>), seed-tree prescriptions (STR<sub>X</sub>) and shelter-wood prescriptions (SWR<sub>X</sub>). These three types were distinguished by the amount of over-story that was retained after regeneration harvest, with CCR<sub>X</sub> retaining 4 trees per acre (TPA), STR<sub>X</sub> 8 TPA and SWR<sub>X</sub> 25 TPA. These types were further subdivided by the type of management treatments applied, which varied the inclusion and timing of PCT, CT, and overstory removal. The availability of these pathways to individual strata was defined by Land Office, forest type (species), size class, productivity class. A detailed summary of all the EARX pathways can be found in Appendix D: Management Pathways.

Two different types of UERX pathways were developed for forests occupying dry and moist/wet sites. Eligibility for these types was determined by Land Office and forest type. Both UERX pathways simulated selection harvest by periodically removing trees every 30 or 50 years according to a target DBH distribution, depending on prescription type. The target distributions were generated by defining the total BA, the Q-factor for the distribution, the DBH range and the DBH class size. A tiered approach was then used to incrementally reduce BA in each entry until the target level was reached. A detailed summary of all the UERX pathways can be found in Appendix D: Management Pathways, and Appendix E: Selection Harvest Reversed J-Curves, contains a detailed description of the tiered approach used to incrementally reduce BA. The UERX also included the ingrowth of young trees following a selection harvest, simulating the development of regeneration and understory development following harvesting. The tree lists used for ingrowth were the same as those used for the 2015 SYC.

The OGR<sub>X</sub> were formulated in a similar manner to the UERX and consisted of periodic selection harvests that reduced the trees to a minimum BA threshold. In addition, the residual trees had to contain a certain number of large individuals defined by a minimum DBH threshold. Periodic entries ranged from 30 to 50 years, depending on old growth type. A detailed summary of all the OGR<sub>X</sub> pathways can be found in Appendix D: Management Pathways.

#### 4.2.6.9 *Regeneration Yields*

Regeneration yield tables are required to fully model the application of even-aged regimes (EARX). The EARX regimes result in a complete stand replacement after final harvest, with age resetting to zero, resulting in a transition from the yield table for the existing stand to a new yield table representing the regenerated stand.

For the 2020 SYC, regeneration yield tables were based on the existing adequately-stocked size class 7 (seedling/sapling) stratum for a given species group. All records for trees greater than 5" were removed from the existing size class 7 stratum to compose a new tree list reflecting trees expected to regenerate following harvesting. Large trees representing the remaining overstory associated with each of the EARX groups by stratum (CCR<sub>X</sub>—4 trees/acre, STR<sub>X</sub>—8 trees/acre,

SWRX—25 trees/acre) were added to the regenerating trees to compose the full tree list for the regeneration yield table. For the STRX and SWRX pathways that included overstory removal (OSR), OSR was applied as a thinning treatment to leave four remaining overstory trees following the OSR harvest. OSR is not applied in the CCRX group. For the STRX pathways that included overstory removal (OSR), 4 of the 8 overstory trees were designated for removal, and for the SWRX, 21 of the 25 overstory trees were designated for removal, resulting in 4 remaining leave trees for each group following OSR.

When transitioning from existing to regenerated strata following the application of EARX, the assumption was made that poorly stocked strata would regenerate as adequately stocked strata. In some cases a species change was also implemented to represent expected natural processes and DNRC's management toward desired future cover types. These species<sup>23</sup> changes are summarized in Table 10: Regeneration Species changes.

**Table 10: Regeneration Species changes**

<b>Existing Species</b>	<b>CE</b>	<b>EA</b>	<b>NW</b>	<b>SW</b>
DPMC	DPMC	DPMC	n/a	n/a
GFRC	n/a	n/a	GFRC	GFRC
LP	LP	LP	LP	LP
NS	DMPC	DPMC	WLDF	PPDF
OGW1	n/a	n/a	PPDF	PPDF
OGW4	n/a	n/a	WLDF	WLDF
OGW6	n/a	n/a	SFC	SFC
PPDF	n/a	n/a	PPDF	PPDF
SF	LP	LP	n/a	n/a
SFC	n/a	n/a	SFC	SFC
SFM	n/a	n/a	SFM	SFM
WLDF	n/a	n/a	WLDF	WLDF

For the regeneration yield tables, all of the PCT and CT options were made available in addition to the over-story treatments described above.

<sup>23</sup> DPMC – Douglas-fir/ponderosa pine/mixed conifer, GFRC – grand fir/western redcedar/western hemlock/western white pine, LP – lodgepole pine, NS – non-stocked, OGW1 – West-side Old Growth Type 1, OGW4 – West-side Old Growth Type 4, OGW6 – West-side Old Growth Type 6, SF – Engelmann spruce/subalpine fir, SFC –Engelmann spruce/subalpine fir/whitebark pine cold site, SFM –Engelmann spruce/subalpine fir moist site, WLDF – western larch/Douglas-fir

### **4.3 Formulation of the Montana Forest Management Model**

The following sections describe the general structure of the optimization model, followed by a detailed discussion of the various components.

#### ***4.3.1 Structure of Forest Management Optimization Model***

For the 2020 SYC, the optimization model used for the 2015 calculation was applied, with some modifications. This model uses a linear programming (LP) formulation that is well suited to strategic/tactical level harvest optimizations, since optimization solutions can typically be formulated through a system of linear equations. In addition, given a feasible problem, the LP will always solve to the absolute optimum, which ensures that the greatest volume possible solution is always found. The LP model used for this SYC was built in Remsoft's Spatial Planning System.

The main structure of the model consists of four components: analysis areas, actions and transitions, yield projections, and objectives plus constraints. Analysis areas describe the existing condition of the land, as well as alternatives that could be realized in the future. Actions and transitions are responsible for placing land onto various management pathways and converting existing conditions into future conditions. Yield projections quantify the contribution that one acre of land in a given condition would make to various parameters being tracked. These parameters take on several forms, ranging from timber volume to wildlife habitat, and are used to calculate various outputs used in the objectives and constraints component of the model. Objectives and constraints are the model elements respectively used for optimizing the model and constraining the solution to be within certain parameters. For this SYC the objective was to maximize the total harvest volume across the planning horizon, while the constraints limited the management activities and required various habitat thresholds to be maintained. DNRC explored an option maximizing present net value (NPV) across the planning horizon but testing with that objective function produced essentially no difference compared against maximizing NPV.

Model results were reported by planning period, with one period representing 10 years. The planning horizon was 20 periods, resulting in the model scheduling activities for the next 200 years.

#### ***4.3.2 Analysis Areas***

The analysis area used for this study is defined as all commercial forest land on State Trust Lands throughout Montana, partitioned into administrative units and areas of special consideration. Analysis areas describe both the existing condition of the land, as well as the future options. As such this section of the model is initialized through an imported GIS layer, while the future options are created through a series of actions and transitions. The GIS layer used in this SYC was based on one provided by the DNRC. This layer essentially contained all the stand boundaries (coded for Land Office, unit, species, size, stocking and productivity class), intersected with the

boundaries of various operational and wildlife features (deferred acres, grizzly bear, lynx management areas, etc.). MBG passed this GIS layer through several processes to convert the data into thematic layers, each of which describes a unique feature, that is compatible with the LP model. A total of 25 themes were created in this way. Table 11 provides a description of each of these themes, as well as whether it was ultimately used in the model. Appendix C: Acres in the Forest Management Model, contains a summary of the acres in various themes subdivided by thematic codes.

**Table 11: LP Model Thematic Layers (Themes)**

Theme	Name	Description	Used
1	Strata ID	A four-part code, denoting the Land Office, species, size and stocking of the stratum that the stand belongs to.	No
2	Land Office	The Land Office that the stand belongs to.	Yes
3	Unit	The administrative unit that the stand belongs to.	Yes
4	Species	The species code used by the stratum to find the appropriate yield table. Not necessarily the same as the one in Strata ID.	Yes
5	Size	The size code used by the stratum to find the appropriate yield table. Not necessarily the same as one in Strata ID.	Yes
6	Stocking	The stocking code used by the stratum to find the appropriate yield table. Not necessarily the same as one in Strata ID.	Yes
7	Productivity Class	The stratum productivity class.	Yes
8	Start Age	The age of the stratum in period zero.	No
9	Deferred	Designates the land parcel as deferred or not.	Yes
10	Rx	The management pathway allocated to the land parcel. All start off on grow-only (E++++GO).	Yes
11	Timing	The timing option associated with the given Rx that was selected. Created the option to delay the start of the treatments associated with a management pathway.	Yes
12	Rotation	Denotes whether the land parcel has existing or regenerated tree cover.	Yes
13	Sensitive Watershed	Denotes whether a land parcel is in a sensitive watershed or not, as well as the name of the watershed.	Yes
14	UMZ	Designates whether the land parcel is within a unique management zone or not.	Yes
15	Logging System	Designates whether the land parcel is within an area requiring helicopter, tractor, or cable logging.	Yes
16	RMZ	Designates whether the land parcel is within a riparian management zone or streamside management zone or not.	Yes

Theme	Name	Description	Used
17	GZB Visual	Designates whether the land parcel is within a grizzly bear visual buffer or not.	Yes
18	GZB Class A	Designates whether the land parcel is within a grizzly bear Class A area or not, as well as the name of the Class A area.	No
19	GZB Security Zones	Designates whether the land parcel occurs within one of seven Grizzly Bear Security Zone located on Stillwater Unit or not.	Yes
20	GZB Subzone	Designates whether the land parcel is within an HCP grizzly bear Management Subzone on the Swan River State Forest or not, as well as the identifying number of the subzone.	No
21	LMA	Designates whether the land parcel is within a Canada lynx management area (LMA) or not, as well as the name of the LMA.	Yes
22	Potential Lynx	Designates whether the land parcel is flagged as potential Canada lynx habitat or not.	Yes
23	Eagle	Designates whether the land parcel is part of a known bald eagle nesting area or not.	Yes
24	OG Recruit	Designates whether the land parcel could be recruited into OG or not.	No
25	OG Current	Designates whether the land parcel is currently OG or not.	Yes

Several themes featured in the 2015 SYC model architecture were not directly used for calculations in the 2020 SYC, including GZB Class A, GZB Subzone, and OG Recruit. These themes were retained to allow comparison to SYC 2015 or in future models to re-enable the functionality.

In addition to the thematic layers described above, the model also required the surface area (acres) of each land parcel and the age at period zero. Age was obtained from the strata data, while the area was already calculated in the GIS layer. Once all of this data was complete, the LP model imported the data and created existing development types. Development types are a way for the model to aggregate data and reduce the computational overhead. This aggregation is done on unique combinations of thematic codes and age (i.e.—all land parcels with the same combination of thematic codes and age would have been grouped into the same development type). Many separate polygons may share a development type, and the model operates on the acres within a development type aggregated across relevant polygons. In total, the model imported 747,280 acres from 47,235 polygons, of which 9,966 polygons (21.1%) were less than 1 acre in area. From this the model created 6,048 development types representing the existing land.



### 4.3.3 *Actions & Transitions*

A series of actions and transitions were incorporated into the model to generate the various management pathway options that the model could utilize. These actions and transitions generated additional development types, collectively called future development types. In total, 183,648 development types were generated, of which 177,600 (96.7%) were future development types.

Two main forms of actions and transitions were used. Occurring only in the first period was an action to re-assign each development type from its initial grow-only trajectory onto a potential management pathway. An action and transition were created for every unique combination of management prescription and timing option. The actions were used to filter out those acres that possessed thematic codes appropriate for the action being considered, while the transitions placed the acres onto the new prescription and timing option.

The second set of actions and transitions determined when a regeneration harvest would occur for the even-aged regimes. These could occur anywhere along the planning horizon, given that enough harvest volume was available (see Table 9) and the minimum harvest age of 80 years had been reached. In addition, the actions also filtered the acres to apply the regeneration harvest only to those acres which had the appropriate thematic codes. The transitions were responsible for taking acres from their existing yield table and placing them onto the regenerated yield table, by changing the appropriate thematic codes. In some cases, this meant a change in species and stocking codes. In all cases this meant resetting age to zero and changing size class to seedling-sapling (size class 7).

Most transitional elements were retained from the 2015 model. For example, currently older existing strata set to even-aged management were allowed to select regeneration pathways that may have differed from their original assignment, staying within the broader silviculture method (e.g. STRX, followed by STRX with CT).

In addition, to reduce model size and solve times while maintaining flexibility to explore management scenarios, only permissible development types were created. For example, only LP and SF in the NW, SW, and CE Land Offices were eligible for CCRX, so no other strata were included in the CCRX action. Some scenarios like BioGross and BioNet required access to CCRX, while others restricted CCRX based on thematic components.

Several new action-transition classes were introduced with this model:

1. Regimes including a PCT or CT can be conducted economically on gentle topography, so actions specifying either of these methods were limited to Tractor ground via Theme 15, Logging System.
2. Minimum harvest volumes (Table 9) were imposed by Land Office, so each action was specified for a single Land Office if the harvest threshold was unique, or by Land Office aggregates of the harvest threshold was shared.

3. STRX and SWRX are to be managed as 50% with OS removal and 50% with OS retention. Any action specifying a transition to these even-aged pathways was modified by a percentage allocation, setting half of the acreage to removal and half to retention.

#### 4.3.4 Yield Projections

Yield projections in this model represent the contribution of one acre of land in a given planning period to harvest volume and standing inventory. Yields can represent harvest volumes, interpreted as to wildlife habitat values, or converted to revenues. In terms of LP modeling, yield projections can be described as the coefficients that are associated with variables tracking the number of acres allocated to a given development type in a given period. Yield projections are therefore specified for a specific development type (or group of development types) in a specific period. A total of 3,650 yield tables were developed through this process, each with 20 yield projections representing each decade in the planning horizon. Additional information about the number and distribution of yield tables can be found in Table 12.

**Table 12: Existing and Future Yield Table Counts by Prescription**

Development Type	Rx Type	Silviculture	Count
Existing	GORX	---	227
	EARX	CCRX	87
		STRX	672
		SWRX	661
	UERX	Dry	364
		Moist	129
	OGRX	W1	56
		W4	152
		W6	86
Future	EARX	CCRX	32
		STRX	640
		SWRX	544
Total			3,650

The following yield projections were associated with these yield tables:

- Age in years
- Standing inventory in MBF/Acre before harvest, after defect and tariff equations
- Timber volume removed in MBF/Acre through commercial thinning and selection harvest, after defect and tariff equations
- Standing inventory of Douglas-fir and western larch in MBF/Acre before harvest, after defect and tariff equations (DF)

- Standing inventory of grand fir and western hemlock in MBF/Acre before harvest, after defect and tariff equations (HF)
- Standing inventory of ponderosa pine in MBF/Acre before harvest, after defect and tariff equations (PP)
- Standing inventory of western redcedar in MBF/Acre before harvest, after defect and tariff equations (RC)
- Standing inventory of Engelmann spruce and lodgepole pine in MBF/Acre before harvest, after defect and tariff equations (SP)
- Standing inventory of western white pine in MBF/Acre before harvest, after defect and tariff equations (WP)
- Standing inventory of subalpine fir, mountain hemlock and whitebark pine in MBF/Acre before harvest, after defect and tariff equations (WW)
- Basal area in ft<sup>2</sup>/Acre after harvest
- Total stems per acre after harvest
- Stems per acre larger than or equal to 13" DBH after harvest
- Stems per acre larger than or equal to 17" DBH after harvest
- Stems per acre larger than or equal to 21" DBH after harvest
- A PCT flag, used in certain outputs to determine if a PCT harvest occurred or not
- Valid yield table flag, used to prevent the model from assigning acres to development types that do not have a valid yield table

The matter of overstory removal was resolved differently in this model versus the 2015 version. Previously, a generic overstory removal yield was provided by stratum, and all CCRX, STRX, and SWRX pathways received OS removal. In the current version, the OS volume is modeled directly into the yield table. If OS removal is to occur, then the thinning volume represents the OS, and it is removed if this volume exceeds a minimum 1.0 Mbf/ac. If OS retention is specified, then the OS volume remains in the tree list and those trees continue to influence growth rates in the residual stand. Structure of the residual overstory was comparable to 2015, where STRX retaining 8 TPA for two periods and removed 4 TPA at final harvest; SWRX retained 25 TPA for two periods and removed 21 TPA at final harvest. In all pathways, 4 TPA remained permanently.

Another important difference from the 2015 model was the interpretation of the yield for regeneration harvest types. Previously, the regeneration harvest and the separate stratum level OS removal volume were combined into a harvest at a single time point. The 2020 SYC, in contrast, continues to use the volume for regeneration harvest types to represent the harvested timber at the time a regeneration treatment is initiated, but the OS removal, if specified, occurs two periods later. This approach accurately represents the volume removal over time. Minimum harvest volume was determined by the actions section (see section 4.3.3 and Table 9), and the regen harvest yield was set to zero when stand age was less than 80 years.

Yields for the 2015 SYC used uncalibrated FVS variants and UERX built to a TPA target, while the 2020 SYC used a different FVS calibration, WRD modifiers, and UERX built to BA targets. In

general, 2020 UERX yields rivaled or exceeded the most productive even-aged regimes. Whereas the 2015 LP model favored EARX and required threshold limits on EARX to control this tendency, the 2020 LP model favored UERX. The mechanisms from the 2015 model to limit EARX were repurposed in the 2020 model to limit UERX. DNRC relied on observed silviculture frequency and estimated application of UERX in the SFLMP to support limiting UERX to less than 40% of the acreage.

Economic data were also incorporated into the LP model through a series of yield projections. Stumpage revenues were used in both the 2015 and 2020 SYC models to represent economic value of the harvested timber, with average stumpage updated through 2019 for the 2020 SYC. Average bid price (\$/Mbf) on sales and permits, weighted by volume, were provided by the DNRC on a Land Office basis for the period from 2015 to 2019 for use in the 2020 SYC (Table 13). These values were in nominal terms. These values were incorporated into a stumpage revenue for each Land Office. In early LP model experiments, it was demonstrated that maximizing Harvest Volume resulted in an identical SYC to maximizing Net Present Value using these stumpage rates. As this model assumes an implicit logging cost, optimizing revenue and volume is functionally equivalent.

**Table 13: Stumpage (\$/Mbf) for the 2015 SYC and updated for 2020 SYC.**

Area	2014 Stumpage/MBF	2020 Stumpage/MBF
CLO	146.42	114.80
Eastern Land Offices	70.71	34.25
NWLO	239.37	189.80
SWLO	221.29	159.80

#### **4.3.5 Objectives and Constraints**

Within the LP modeling framework, objectives are the mechanism whereby results are optimized, while constraints limit the solutions to pre-defined thresholds. An LP solution will therefore always contain an objective function that has been optimized, subject to meeting the constraints that were established.

The objective of the 2020 SYC was to maximize total harvest volume, where total harvest volume was defined as the sum of the harvest volume in each period across the planning horizon (20 periods). Periodic harvest volume was calculated as the sum of the periodic harvest volumes from even-aged pathways and uneven-aged pathways. The sum of the periodic harvest volumes from even-aged pathways was inclusive of volumes from commercial thinning, regeneration harvest (net volume from first harvest) and over-story removal volume (second harvest volume).

All these volumes were inclusive of the volume from helicopter acres, which implies that the helicopter acres participated in the objective function.

To ensure equity between current and future beneficiaries of the forested State trust lands, it is important to maximize the short-term harvest that can be sustained over the 200-year planning horizon. However, it is also important to know whether future harvests could be sustained at a higher level, perhaps because of investments in stand improvement, forest regulation, etc. The LP objective function, therefore, must emphasize the short-term harvests, while also recognizing benefits from long term improvements. This dual objective is achieved by discounting the harvest of each period. We used a discount rate of 2%. A typical discount rate of 4% or 5% might be used for forestry investments in which the primary objective is maximized value. For State-owned forestlands serving a variety of constituents, a lower value of 2% is acceptable. Moreover, a 2% discount rate likely captures the growth rate at the time when many DNRC stands are harvested. The difference in annual sustainable yield between 2% versus 4% discount rate in a maximum production scenario is only 93.15 MMbf versus 93.55 MMbf, or just 0.4 MMbf. When all DNRC management constraints are imposed, the differential due to discount rate selection was not meaningful.

Several constraints were established to limit the optimal solution to pre-determined limits. All constraints were applied on a per period basis. The purpose of these constraints can be classified as either non-declining yield (NDY), protection of wildlife habitat, water resources, application of silvicultural regimes, operational limits, or LP error control.

A single NDY constraint was established to ensure that the optimum harvest levels can be maintained over the length of the planning horizon. In this case a non-declining flow constraint (period-on-period increase allowed, but never decreasing) was used, as opposed to an even-flow constraint (equal period-on-period volumes). The rationale behind this was that it could be theoretically possible for the model to harvest more volume in the future as new and improved development types became available. Using the NDY constraint would make this extra volume accessible, since the SYC level can increase (not decrease); while the even-flow constraint would make it inaccessible since no fluctuation is allowed. The NDY constraint also excluded the volume from helicopter logging acres. The fact that these acres were included in the objective function resulted in them being scheduled for harvest, but not contributing to the sustainable yield level. Their contribution is therefore purely opportunistic, which is consistent with current operating and market conditions.

Whereas the 2015 LP model featured an overall NDY constraint, the 2020 updated model applies the NDY constraint over each Land Office. Sustaining yields at the Land Office level was deemed an important goal for 2020, rather than allowing fluctuation by Land Office, which even in the case of Statewide NDY could mean declining yields in some periods for certain Land Office(s).

**Table 14: Non-Declining Yield Constraint**

Constraint	Group	Description
Non-Declining Yield	NDY	Total harvest volume exclusive of volume from helicopter acres can increase period-on-period but cannot decrease.

The wildlife habitat, water resource, and management constraints were directed towards protecting water resources by maintaining water quality, maintaining the levels of existing wildlife habitat, or limiting the intensity of management on existing habitat, or requiring certain levels of habitat development. The wildlife habitat, water resource, and management constraints are summarized in Table 15: Wildlife Habitat, Water Resource and Management Constraints. Please refer to section 4.2.2 for more detail on each constraint theme. Appendix B: Compatibility Matrix, contains additional information pertaining to the constraints. All listed endangered, threatened, sensitive, and big game species for which DNRC has management obligations under administrative rules were considered during the development of constraints for the calculation. Appendix N: Wildlife Habitat, contains information and notes regarding constraint development, and inclusion/exclusion rationale for all species considered in this study.

**Table 15: Wildlife Habitat, Water Resource and Management Constraints**

Constraint	Group	Description
Snags	BIO NET	Requirements for the retention of snags and snag recruits were addressed in the design of the management regimes for this calculation. Volume necessary for snag maintenance was constrained as a part of the residual volumes and trees per acre retained in each allowable prescription. See Appendix D: Management Pathways.
Deferred	DEF	No treatment was assigned to deferred acres. All deferred acres (Theme 9 = Y) must be assigned to grow-only management pathways.
RMZ	RUMZ	All riparian management zone (RMZ) and Streamside Management Zone (SMZ) acres (Theme 16 = Y) must be assigned to grow-only management pathways.
UMZ	RUMZ	No unique management zone (UMZ) acres (Theme 14 = Y) can be assigned to even-aged management pathways.
Swift BPA	RUMZ	Acres in the BPA portion of the Lazy-Swift acquisition in the Stillwater Unit must be assigned to uneven-aged management pathways.

Constraint	Group	Description																				
Old Growth	OG	At least 8% of acres must meet the old-growth criteria for the NW and SW Land Offices on a unit basis, and 4% of acres must meet the old-growth criteria for the CE Land Office on a unit basis. Old-growth acres were contributed from two sources, namely existing old-growth and recruitment. Existing old-growth acres are existing acres classified as either OGW1, OGW4 or OGW6, prior to receiving an even-aged harvest. Recruitment acres are those acres not currently classified as existing old-growth but that met the old-growth criteria at a future point in the planning horizon. For the NW and SW Land Offices these acres could be recruited into either OGW1, OGW4 or OGW6, with the following criteria:																				
		<table><tr><th>Group</th><th>Species</th><th>Age</th><th>BA</th><th>TPA</th></tr><tr><td>OGW1</td><td>PPDF</td><td>160</td><td>60</td><td>8 @ 21"</td></tr><tr><td>OGW4</td><td>GFRC, SFM, WLDF</td><td>170</td><td>80</td><td>10 @ 21"</td></tr><tr><td>OGW6</td><td>LP, SFC</td><td>170</td><td>60</td><td>10 @13"</td></tr></table>	Group	Species	Age	BA	TPA	OGW1	PPDF	160	60	8 @ 21"	OGW4	GFRC, SFM, WLDF	170	80	10 @ 21"	OGW6	LP, SFC	170	60	10 @13"
		Group	Species	Age	BA	TPA																
		OGW1	PPDF	160	60	8 @ 21"																
		OGW4	GFRC, SFM, WLDF	170	80	10 @ 21"																
		OGW6	LP, SFC	170	60	10 @13"																
For the CE Land Office recruitment acres had to meet the following criteria:																						
<table><tr><th>Species</th><th>Age</th><th>BA</th><th>TPA</th></tr><tr><td>DPMC</td><td>180</td><td>50</td><td>5 @ 17"</td></tr></table>	Species	Age	BA	TPA	DPMC	180	50	5 @ 17"														
Species	Age	BA	TPA																			
DPMC	180	50	5 @ 17"																			
The age used in these classifications were average stand age, as opposed to the age of the oldest trees used in Green <i>et al.</i> <sup>24</sup> , and will therefore be lower than the published criteria.																						
Sensitive Watersheds	SEN	No more than 36% of acres in sensitive watershed areas may be younger than age 40 years.																				
GZB Visual Buffers	GZB	Only uneven-aged management pathways are available. No even-aged management pathways in grizzly bear visual buffers (Theme 17 = Y)																				
GZB Security Zones	GZB	All Grizzly Bear Security Zone acres in Stillwater Unit (Theme 19 = Y) must be assigned to grow-only management pathways.																				
Lynx Management Area LM1	LMA	At least 65% of acres in each LMA must meet canopy cover criteria, which is defined as 180 TPA when age < 40 years, or BA 60 when age >= 40 years.																				
Lynx Management Area LM2	LMA	No more than 15% of acres (per period) in each LMA can receive a regeneration harvest from an even-age pathway.																				
Lynx Management Area LM31	LMA	At least 20% of acres in each LMA must be in the saw-log size class, with BA at least 60, and must possess inventory in either HF, SP, or WW (see pages 38-39 for definitions of these species groups).																				
Lynx Management	LMA	Limit PCT to 12,000 acres per period across all LMA's, allocated proportional to each LMA based on LMA acres.																				

<sup>24</sup> Green, P, J. Joy, D. Sirucek, W. Hann, A. Zack, and B. Naumann. Old-Growth Forest Types of the Northern Region. USDA Forest Service, Northern Region, Missoula, MT, 1992.



<b>Constraint</b>	<b>Group</b>	<b>Description</b>
Area ITP		
Potential Lynx Habitat	POT	On non-LMA lands, at least 65% of acres flagged as potential lynx habitat (Theme 22 = Y), must meet canopy cover criteria, which is defined as $\geq 180$ TPA when age < 40 years, or BA 60 when age $\geq 40$ years.
Bald Eagle	EAG	All bald eagle nesting site acres (Theme 23 = Y) must be assigned to either uneven-aged or moist-site management pathways, as well as maintain 60 BA.

The purpose of the silvicultural regime constraints was to steer the land base towards the desired condition by limiting the acres that can be allocated respectively to even- and uneven-aged management regimes. These limits tie-in with the management allocations defined in the yield projections.

**Table 16: Silvicultural Regime Constraint**

<b>Constraint</b>	<b>Group</b>	<b>Description</b>
Even-Age Rx	EAR	Acres allocated to CCRX, STRX, SWRX and UERX cannot exceed the allowable thresholds established for each species and pathway group by DNRC administrative Unit (see Appendix K: Silvicultural Regime Acre Constraints).

The operational limits constraint limited the amount of harvest acres from cable-based harvesting and harvest volume from helicopter acres to levels that are feasible considering market limitations assessed over the last 20 years.

<b>Constraint</b>	<b>Group</b>	<b>Description</b>
Cable	HEL	Total harvest acres from cable ground cannot exceed 18% of the periodic harvest acres for each period
Helicopter	HEL	Total harvest volume from helicopter acres (Theme 15 = Y) cannot exceed more than 2% of the periodic harvest volume for each period exclusive of volume from helicopter acres (NDY volume).

The LP error control constraint prevented the model from allocating acres to development types that were ineligible, with ineligibility defined as development types without a yield projection for growth.

<b>Constraint</b>	<b>Group</b>	<b>Description</b>
Valid Yield	VAL	All acres must be assigned to a yield table with a valid flag value (1).

---

## 5 Results

### 5.1 Qualifications

The LP model used in this sustainable yield calculation can produce detailed stand-level results; however, these results should not be interpreted as indicators of how each stand should be managed, and what could be expected from each stand along its management pathway since the data used to run these models were aggregated by strata. The inventory data used in this analysis were collected from plots distributed over a range of stands, which were aggregated and mapped into strata, resulting in an average condition for each stratum. The results represent the average condition across a range of stands within a given stratum, as opposed to the condition within a particular stand. Furthermore, the objective of this study was to determine a strategic direction for the DNRC in terms of sustainable annual harvest. The results of this study should be interpreted at the strategic planning level, since site-specific operational constraints were not considered in this analysis.

The interpretation of the model results should, however, not be limited only to the annual harvest level, since it is also important to examine the factors that contribute towards a given sustainable harvest level. In this regard it is essential to take note of the management pathways that were selected by the model, and the importance of these pathways in achieving the calculated harvest level. It would be inappropriate to conclude that all acres should be managed exactly like the modeled acres. However, if a general shift towards managing along a given group of pathways is observed in the model results, then it should be considered for incorporation into the DNRC's tactical and operational selection of harvest treatments that are applied on the ground.

### 5.2 Discussion of Model Results

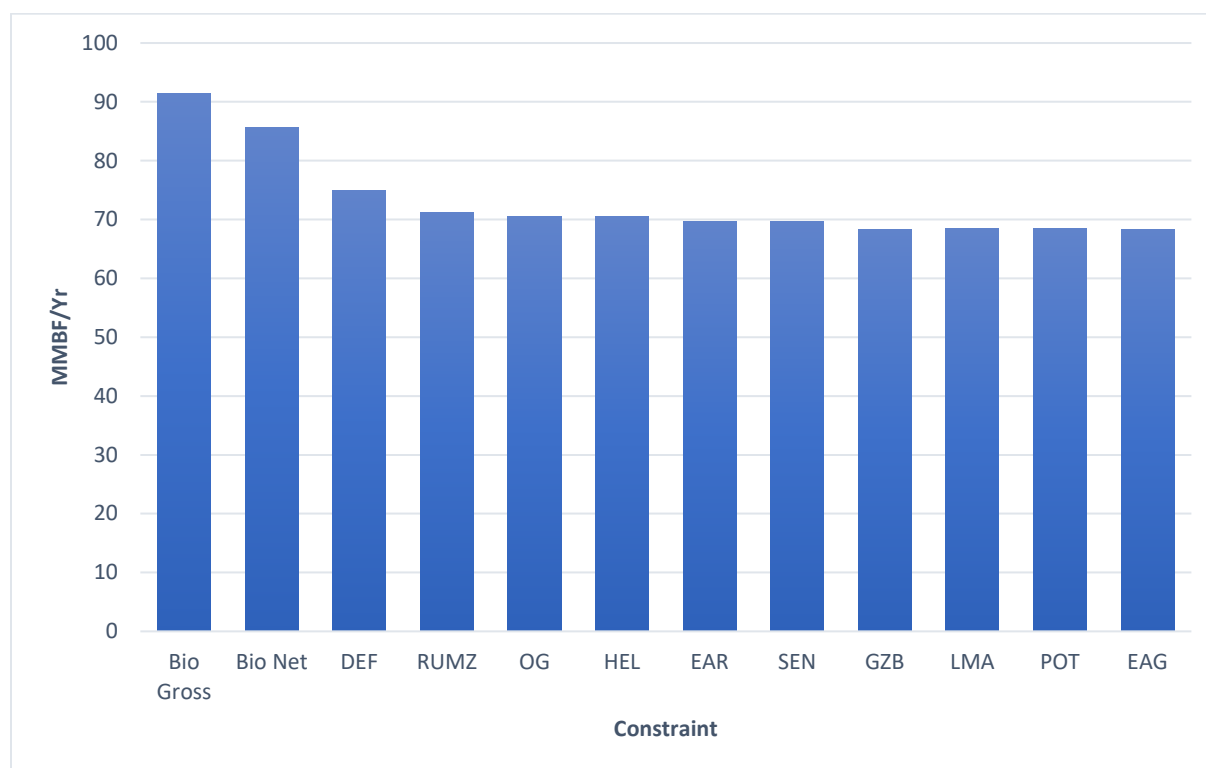
The final runs of the LP model were conducted at a Land Office level where the model is solved in four separate parts (one for each Land Office or Land Office aggregate), as opposed to a statewide approach with all acres optimized in a single model. In the 2015 SYC, early versions of the calculation were performed in four discrete LP models and the statewide result was composited from the summary of the four separate models. The final 2015 SYC was defined at the statewide level with no NDY by Land Office. In contrast, the 2020 SYC is constructed as a single LP model with a separate NDY constraint declared for each Land Office, so that statewide constraints can still be imposed without leading to model infeasibilities. The NDY by Land Office approach restricts the number of options that the model can select, resulting in slightly lower yield outputs for the statewide land base. DNRC managers chose to select the outputs from the Land Office level to provide an increased level of certainty and minimize fluctuation in Land Office harvest planning target levels given DNRC's current operating environment, to ensure that harvest planning targets in each Land Office reflect the present availability of timber within that

Land Office, and to prevent over- or under-harvesting in certain Land Offices as a result of other Land Offices compensating for planned volume from other Land Offices.

MB&G modeled two scenarios for the 2020 SYC. The first included all commercial forest acres and management constraints to determine annual sustainable yield, and the second withdrew newly acquired acres in order to determine the impact of recent land acquisitions.

### 5.2.1 Scenario 1 – Fully Constrained Model

In this scenario, all commercial forest acres were available for management subject to the model constraints described in Section 4.3.5. The model was run at the Land Office level and in a step-wise manner, incrementally adding constraints to assess their impact. These incremental steps are discussed and illustrated in the following sections and Figure 2. With all constraints applied (EAG model), a total of 583,889 acres were allocated to management regimes (included in solution), and 163,391 acres were excluded from management. Under this scenario a harvest level of 68.3 MMBF/Year can be maintained.



**Figure 2: Sequential Reduction in Harvest Volume by Constraint**

#### 5.2.1.1 GO – Grow Only

During the grow-only run all constraints were switched off, and the model was forced to send all acres to no-management pathways by maximizing the acres in no-management. The results were used to assess growth, inventory and the ability of the model to meet constraints. The average

growth across the state was 123 Bf/Acre/Year. Growth rates observed at the Land Office level were 171 Bf/Acre/Year for the NW, 117 Bf/Acre/Year for SW, 52 Bf/Acre/Year for CE and 85 Bf/Acre/Year for EA. Inventory (standing volume) started at 4.4 BBF in period zero, and increased to 15.0 BBF by the end of period 20.

#### *5.2.1.2 BIO GROSS – Maximum Biological Potential*

The purpose of this model run was to determine the highest biologically achievable harvest level by removing all constraints. Instead of using the non-declining yield constraint, an even-flow constraint was used in this model run. The harvest volume included leave trees, meaning that the over-story component associated with even-aged pathways, which is normally left standing after a regeneration harvest, was harvested and reported in the harvest volume. The resulting model returned a sustainable harvest of 91.4 MMBF/Year. Inventory increased over time to 4.7 BBF by period 20. On this run 4,481 acres were allocated to no-management, while 742,799 acres received a pathway with active management. The model had the option to schedule these acres but elected not to do so since they did not contribute to an increase in the harvest level.

#### *5.2.1.3 BIO NET – Leave Tree and Snag Requirements*

The purpose of this model run was to show the impact of the leave trees, which include snags, snag recruits, and other un-harvested over-story trees, on the biological potential. It is exactly the same as BIO GROSS, with exception that the leave tree volumes are removed from the sustainable harvest level. As such it shows the decrease harvest volume attributable to the leave trees. The resulting model returned a sustainable harvest of 85.7 MMBF/Year, a decrease of 6.4%. Inventory decreased over time to 4.1 BBF at period 20. This run allocated 2,018 acres to no-management, while 745,262 acres received a pathway with active management.

#### *5.2.1.4 DEF – Deferrals*

The purpose of this model run was to show the impact of the deferred acres on the sustainable harvest level. All deferred acres are limited to grow-only pathways, resulting in 92,055 acres being removed from managed pathways and assigned to grow-only pathways. The resulting sustainable harvest level was 74.9 MMBF/Year, a decrease of 12.5%. Inventory increased over time to 5.7 BBF at period 20. On this run, 112,050 acres were assigned to no-management, while 635,230 acres received a pathway with active management. The no management acres resulted from the deferred acres that were added to this run, plus a portion of the no management acres that were carried over from the BIO GROSS and BIO NET runs.

#### *5.2.1.5 RMZ/UMZ- Riparian and Unique Management Zone Constraints*

This run showed the impact of RMZ and UMZ acres on the sustainable harvest level. The constraints associated with these acres call for no-management on the RMZ and SMZ acres, and

no even-aged management on the UMZ acres. There are a total of 30,284 RMZ acres, and 3,617 UMZ acres. The resulting sustainable harvest level was 71.2 MMBF/Year, a decrease of 5.0%. Inventory increased over time to 6.1 BBF at period 20. On this run, 135,719 acres were assigned to no-management, while 611,561 acres received a pathway with active management. The no management acres resulted from the RMZ acres that were added to this run, plus the no management acres that were carried over from the DEF run.

#### 5.2.1.6 OG – Old Growth Constraints

This run showed the impact of constraints associated with OG, which called for 8% OG on each unit in the NW and SW Land Offices, and 4% OG on each unit in the CE Land Office. Existing amounts of old growth in some Units were below the targeted amounts of 8% for NW and SW or 4% for CE, due to the effects of past disturbances including wildfires, forest insect and disease outbreaks, and past timber management. In those Units, as with the 2015 SYC, the old growth constraint was adjusted to require that each Unit currently below the intended target percentage meet that percentage by the same period that the grow only model run was able to meet the constraint. For all units currently below the intended percentage, the grow only model met the percentage requirement in period 5, so the constraint was adjusted to require units below the intended percentage to meet the constraint by period 5. This required the model to maintain existing old growth in accordance with the management regimes applicable to old growth stands while also assigning management pathways to non-old growth stands that facilitated their development into old growth in a sufficient amount to meet the Unit's percentage requirement by the period required, which ensured that the intended old growth amount was met as quickly as possible. The target old growth acres for each unit are shown in Table 17.

**Table 17: Old Growth Target Acres per Unit**

Land Office	Unit	Target Acres
CE	BOZ	764
	CON	188
	DIL	1,136
	HEL	2,172
NW	KAL	4,008
	LIB	2,398
	PLN	3,975
	STW	9,834
SW	SWN	4,111
	ANA	2,072
	CLW	5,316
	HAM	1,813
	MSO	6,534

The resulting sustainable harvest level was just below 70.5 MMBF/Year, a decrease of 0.05%. Inventory increased over time to 6.2 BBF at period 20. On this run, 135,874 acres were assigned to no-management, while 611,406 acres received a pathway with active management.

#### 5.2.1.7 *HELI – Helicopter Harvest Constraint*

The helicopter harvest constraint limited the volume that can be harvested from helicopter acres, by capping the helicopter harvest volume to 2% of the total harvest volume within any given time period (exclusive of helicopter volume). The helicopter volume is seen as opportunistic, and it is therefore excluded from the NDY constraint, but included in the objective function. In addition to the helicopter constraint, this scenario introduced a constraint to limit the acreage of cable logging to not more than 18% in any period. The sustainable harvest level was 70.5 MMBF/Year, a decrease of 0.9%. The associated threshold helicopter harvest volume was 1.4 MMBF/Year (i.e., when available, the model could harvest a maximum of 1.4 MMBF/Year from helicopter acres). Inventory increased over time to 6.1 BBF at period 20. On this run, 136,122 acres were assigned to no-management, while 611,158 acres received a pathway with active management.

#### 5.2.1.8 *EAR – Even-Aged Harvest Constraint*

The even-aged harvest constraint limited the number of acres that could be managed under CCRX, STRX, SWRX, in accordance with estimated amounts described in the SFLMP and ARM aimed at applying appropriate silvicultural treatments in reasonable proportions by cover type. Table 18 shows the constraint levels used. The resulting sustainable harvest level was 69.6 MMBF/Year, a decrease of 0.05%. Inventory increased over time to 6.2 BBF at period 20. On this run, 152,096 acres were assigned to no-management, while 595,184 acres received a pathway with active management.

**Table 18: Threshold Acres for EAR Constraint**

<b>Rx Group</b>	<b>Threshold Acres</b>
CCRX	48,471
STRX	114,479
SWRX	190,193
UERX	242,040
GORX	152,097
<b>Total</b>	<b>747,280</b>

#### 5.2.1.9 *SEN – Sensitive Watershed Constraint*

The purpose of this run was to show the impact of the sensitive watershed constraints, which limited the amount of acres less than age 40 years to 36% of the sensitive watershed acres. This target was imposed for all sensitive watersheds to limit the minimum acres of age classes less

than 40 years to 39,900 acres. The resulting sustainable harvest level was 69.7 MMBF/Year, a decrease of 1.2%. Inventory increased over time to 6.2 BBF at period 20. In this run, 149,545 acres were assigned to no-management, while 597,735 acres received a pathway with active management.

#### 5.2.1.10 GZB – Grizzly Bear Habitat Constraints

This run showed the impact of the Grizzly Bear constraints, including the Grizzly Bear Visual Buffer and the Grizzly Bear security zones, on the harvest level. The visual buffers totaled 4,978 acres, while the security zones totaled 20,370 acres of commercial forest. The resulting sustainable harvest level was just under 68.4 MMBF/Year, a decrease of 0.05%. Inventory increased over time to 6.4 BBF at period 20. On this run, 163,857 acres were assigned to no-management, while 583,423 acres received a pathway with active management.

#### 5.2.1.11 LMA – Canada Lynx Management Area Constraints

The purpose of this run was to show the impact on the harvest level of HCP constraints applied within the LMAs. This constraint consisted of various subsets of constraints, each dealing with a different aspect of Lynx habitat (LM1, LM2, LM31, and ITP). The acreage thresholds associated with these constraints are shown in Table 19. The resulting sustainable harvest level was 68.4 MMBF/Year, a decrease of 1.8%. Inventory increased over time to 6.4 BBF at period 20. In this run, 167,222 acres were assigned to no-management, while 580,058 acres received a pathway with active management.

**Table 19: LMA Constraint Targets**

<b>LMA</b>	<b><u>LM1</u> - Retain 65% Suitable Habitat</b>	<b><u>LM2</u> - Restrict Suitable Habitat Conversion to 15% per Decade</b>	<b><u>LM31</u> - Retain 20% Winter Foraging Habitat</b>	<b><u>ITP</u> - Pre-Commercial Thinning Cap</b>
Coal Creek (CC)	9,323	2,152	2,869	1,019
Garnet (GA)	5,632	1,300	1,733	616
Stillwater East (SE)	23,794	5,533	7,377	2,622
Seeley Lake (SLA)	7,728	1,783	2,377	845
Stillwater West (SW)	24,189	5,584	7,446	2,626
Stillwater South (SS)	5,668	1,308	1,744	620
Swan	33,219	7,666	10,221	3,632

#### 5.2.1.12 POT – Suitable Canada Lynx Habitat Constraint on Scattered Lands

This constraint required the maintenance of suitable habitat with ample cover on at least 65% of all total potential habitat acres, at a Land Office level outside of LMA boundaries. The target acres for each Land Office associated with this constraint are shown in Table 20. The resulting sustainable harvest level was 68.4 MMBF/Year. There was no detectable reduction in sustainable



harvest level associated with this constraint. Inventory increased over time to 6.5 BBF at period 20. In this run, 173,263 acres were assigned to no-management, while 574,017 acres received a pathway with active management.

**Table 20: Suitable Lynx Habitat Target Acres**

Land Office	Target Acres
CE	32,935
EA	3,783
NW	48,896
SW	24,306

#### *5.2.1.13 EAG – Bald Eagle Habitat Constraint*

The results of this run showed the impact of bald eagle habitat constraints on the harvest level. This constraint called for habitat in eagle nesting and primary use areas to be maintained on 6,675 acres with basal area exceeding 60 ft<sup>2</sup>/acre. The model was unable to meet the threshold requirement of 6,675 acres due to the fact that some stands did not meet the minimum requirement of 60 ft<sup>2</sup>/acre of BA from the onset (period 0), despite being classified as bald eagle habitat; while others never grew beyond 60 ft<sup>2</sup>/acre of BA. The primary cause of this is that the model utilized strata level yield tables, which represented the average condition of all stands in the strata (i.e., the actual stand probably achieved the threshold value, and hence the fact that it was classified as bald eagle habitat). With no management (grow only), the model was able to meet the constraint on a statewide basis by period seven, so in order to provide the model with a workable solution that incorporated management, the starting period for the constraint was changed to period seven and the threshold was reduced to 6,650 acres to maintain the greatest level of constraint possible. Although the eagle habitat constraint was intended to emphasize uneven-aged management pathways with sustained basal area exceeding 60 ft<sup>2</sup>/acre, this constraint conflicted with the cap imposed on uneven-aged acres by the EAR constraint (\$0). No additional acreage could be diverted to uneven-aged at this point, so the model sought the eagle habitat acres in even-aged silvicultural regimes that met the criteria of exceeding 60 ft<sup>2</sup>/acre at all times. These even-aged pathways are effectively managed as uneven-aged because they are not harvested. Consequently, the final sustainable harvest level was 68.3 MMBF/Year, a decrease of 0.1% despite an increase in the total acres under active management. Inventory increased over time to 6.5 BBF at period 20. In this run, 163,857 acres were assigned to no-management, while 583,889 acres received a pathway with active management.

#### **5.2.2 Scenario 2 – Impact of Acquired Lands**

A model run was conducted to determine the impact of the acquired acres on the sustainable yield. For this scenario, the acquired lands were withdrawn from the Fully Constrained Model

(Section 5.2.1), resulting in an annual sustainable harvest level of 66.8 MMBF and inferring that the addition of those lands contributes 1.5 MMBF to the annual sustainable yield.

## 6 Recommendations for Future Calculations

The 2020 SYC represents the latest refinement to a harvest scheduling model devised in 2004. During the 2015 SYC update, MB&G identified several avenues to improve the result. The DNRC has implemented aspects of the 2015 recommendations, which we will review in the next section. During the last five years, other developments have emerged that justify new recommendations, with which we close this section.

### 6.1 Revisiting Recommendations from 2015 SYC

Each of the recommendations below are condensed from the 2015 SYC report, with further comments regarding DNRC progress toward each objective and opportunities for updates.

Inventory program: Implement annual inventory program first focused on capturing data from unrepresented or under-represented strata, eventually to update all strata on a regular basis.

Progress: DNRC undertook a significant effort to re-stratify existing stands by species composition and forest structure more suited to the ownership. Additional inventory data from 2018 were included in the 2020 SYC. The 2015 report recommended expansion of inventory to the Eastern Land Office, but that has not yet been possible.

Update 1: Extend inventory to the Eastern Land Office and update the tree lists for each EA stratum, including testing FVS calibration to anticipate impacts of change to tree lists.

Update 2: Extend inventory to strata that are currently represented by substitutions— affects 115 strata across all of the Land Offices.

Augmenting SLI with habitat typing and stand age: Refine the habitat typing and stand age assignment in the SLI, recognizing that defining stand age is challenging for uneven-aged management types that are widely represented in DNRC ownership.

Progress: The habitat type code is among the strongest drivers of growth in the Inland Empire and Eastern Montana variants of FVS. The re-stratification undertaken for the 2020 SYC required new habitat code assignments for all strata. Similarly, re-stratification necessitated new age assignment by stratum.

Update 1: Both habitat type and age are effectively acting as FVS calibration proxies in the 2020 SYC, and may not derive from observations for all strata due to the new stratification method. Habitat can be assigned during annual inventory efforts.

Update 2: The set of stand ages used in the 2020 SYC was inherited from the 2015 SYC and may be refined to better represent the age classes of the new strata.

Calibrate FVS more specifically for DNRC lands: The out-of-the-box FVS IE and EM variants are typically unsuited to particular locations and should be calibrated.

Progress: The 2020 SYC adopted FVS calibrations developed for the Custer Gallatin and Helena Lewis and Clark National Forests, as well as Western Root Disease modules devised for several productivity classes.

Update 1: The EM variant of FVS should be best suited for the CE and EA Land Offices, but the calibration was not always acceptable without strata substitutions, habitat reassignment, or conversion to IE variant. For a future SYC, the DNRC annual inventory program could be leveraged to provide tree list data helpful for a DNRC-specific EM calibration.

Update 2: Both EM and IE variant yield forecasts required additional modifications even after application of CG, HLC, and WRD key word sets, but could be further calibrated to DNRC specifications using standard key word modifiers.

## **6.2 Additional Recommendations**

The DNRC has already implemented various elements of the recommendations from the 2015 SYC report. Changes to stratification in the 2020 effort will necessitate a review of the habitat type and age assignments prior to the next SYC update. Beyond the updates recommended in the previous section, which were chiefly a continuation of the ongoing programs, there are several areas where DNRC may consider new approaches.

The revised stratification scheme in the 2020 SYC is more appropriate, but sampling intensity was not explicitly discussed in the 2015 report. Certain strata in certain Land Offices (NW, SW) produce the bulk of the timber volume and value. If there is an economic imperative for revenue generation rather than simply proportionally representing acreage, sampling could be emphasized in Land Offices or districts where this is the case.

Each LP from 2004, 2015, and 2020 was constructed as a stratum-based model, but the DNRC GIS consists of individual stands, which could afford the opportunity to upgrade to a stand-based model, assuming sufficient resolution on inventory. Budget may not support a traditional timber cruising program to update the SLI at the time scale necessary for a stand-based model, but remote sensing approaches may be an option in the near future. The DNRC system relies on the combination of SLI, tree lists, and FVS, however, it is not clear that the USFS itself is anticipating that FVS will remain its yield projection system of choice.

Rapidly declining costs for acquisition of detailed satellite imagery and LiDAR data are leading the USFS to look to these total coverage data types to describe their entire ownership. As a State agency, DNRC could be in a good position to collaborate with USFS on data acquisition and analysis. A remote sensing approach could gain relevance as USFS devotes only limited resources to maintenance and active development of FVS. Proportionally greater emphasis is being placed on remote sensing data collection, suggesting a strategic shift from mechanistic individual-tree modeling to recurrent and complete "wall to wall" observations. The modeling

framework to project future yields and stand structure from these remote sensing products has not been developed, however, and it is unclear what form these will ultimately take.

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## **7 MB&G Certification**

I certify that to the best of my knowledge and belief that:

- The statement of facts contained in this report is true and correct.
- The reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions and reflect my personal, unbiased professional analyses, opinions and conclusions.
- We have no present or prospective interest in the resource that is the subject of this report.
- Engagement in this assignment was not contingent upon developing or reporting predetermined results.
- Compensation for completing this assignment is not contingent upon the development or reporting of a predetermined result or direction in result that favors the cause of the client.
- Significant professional assistance was provided to the persons signing this certification as follows: and Jessica Burton-Desrocher.

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Tom Baribault

**Mason, Bruce & Girard, Inc.**

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Mark L. Rasmussen

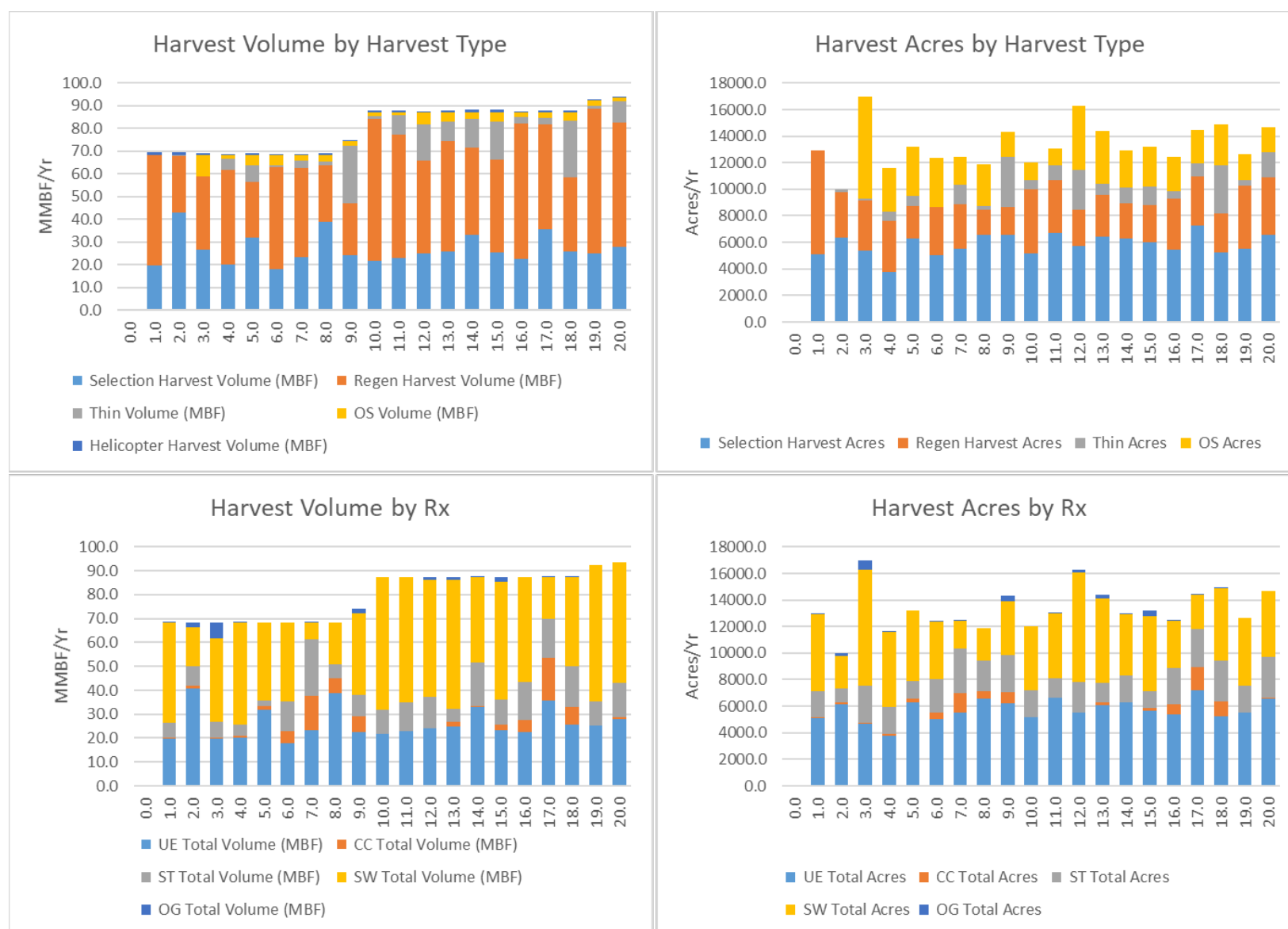
**Mason, Bruce & Girard, Inc.**

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## 8 Appendix A: Summary of Model Runs

### 8.1 Fully Constrained Model

The following charts show selected results from the final Fully Constrained LP model run.



**Figure 3: Fully Constrained Model Results – Page 1**



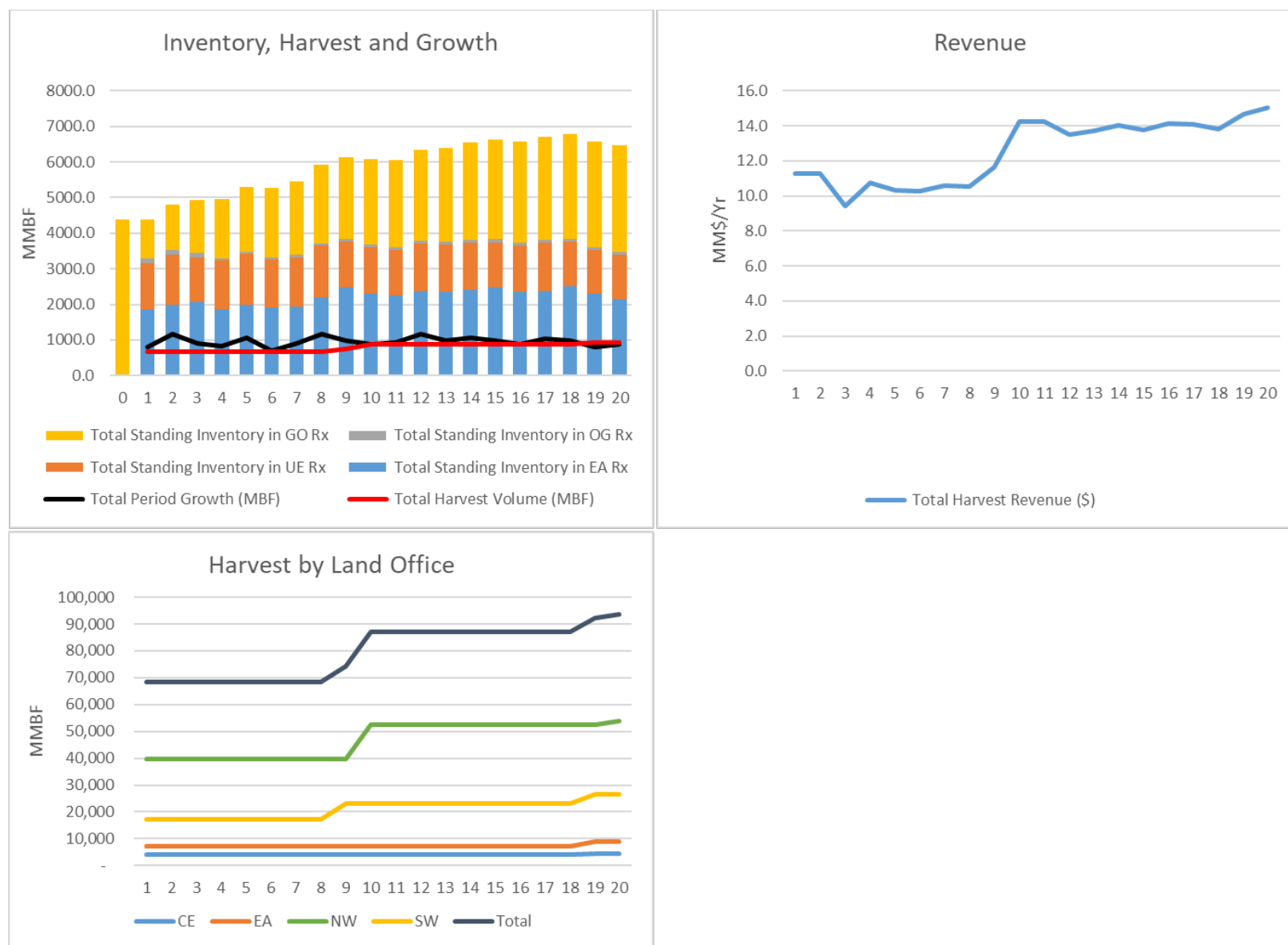


Figure 4: Fully Constrained Model Results – Page 2

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## 9 Appendix B: Compatibility Matrix

The following matrix shows the relationship between the various LP model thematic layers and the major management pathway groups

- GORX. Grow only management pathways with no active management or silvicultural treatments.
- CCRX. Even-aged management pathway (EARX) that terminates in a clear-cut regeneration harvest.
- STRX. Even-aged management pathway (EARX) that terminates in a seed-tree regeneration harvest.
- SWRX. Even-aged management pathway (EARX) that terminates in a shelter-wood regeneration harvest.
- UERX. Uneven-aged management pathway with multiple selection harvests.
- OGRX. Old-growth management pathway with multiple selection harvest entries, which aim to maintain old-growth status.

In this table a “?” indicated that the given thematic layer was not limiting with regards to the pathway, while an “N” indicates that only areas coded as not part of the thematic layer could participate in the pathway. Additional details for the land office, species and productivity themes are provided in Appendix D.

Theme	Description	GORX	CCRX	STRX	SWRX	UERX	OGRX
1	Strata ID	?	?	?	?	?	?
2	Land Office	Appendix D	Appendix D	Appendix D	Appendix D	Appendix D	Appendix D
3	Unit	?	?	?	?	?	?
4	Species	Appendix D	Appendix D	Appendix D	Appendix D	Appendix D	Appendix D
5	Size	?	?	?	?	?	?
6	Stocking	?	?	?	?	?	?
7	Productivity Class	Appendix D	Appendix D	Appendix D	Appendix D	Appendix D	Appendix D
8	Start Age	?	?	?	?	?	?
9	Deferred	?	N	N	N	N	N
10	Rx	?	?	?	?	?	?
11	Timing	?	?	?	?	?	?
12	Rotation	?	?	?	?	?	?
13	Sensitive Watersheds	?	?	?	?	?	?
14	UMZ	?	N	N	N	?	?
15	Helicopter	?	?	?	?	?	?
16	RMZ	?	N	N	N	N	N
17	GZB Visual Buffer	?	N	N	N	?	?
18	GZB Security Zone	?	N	N	N	N	N
19	GZB Subunits	?	?	?	?	?	?
20	LMA	?	?	?	?	?	?
21	Potential Lynx Habitat	?	?	?	?	?	?
22	Eagle	?	N	N	N	?	?
23	OG Recruitment	?	?	?	?	?	?
24	OG Current	?	?	?	?	?	?

## 10 Appendix C: Acres in the Forest Management Model

The following tables show the acres present in various thematic layers, and how the acres were classified within each. The thematic layer represented in each table is labeled in the top right corner of each table. The data within each table is organized as cross-tabulations, with thematic values in the rows and land management unit in the columns (except for the first table which has land office in the columns).

The table “Unit Acres” contains a cross-tabulation of management unit acres by land office. Table 21 shows the various codes used for unit and land office:

**Table 21: Key to Codes for Land Office and Unit**

Land Office	Name	Unit	Name
CE	Central	ANA	Anaconda
EA	Eastern	BIL	Billings
NW	North-Western	BOZ	Bozeman
SW	South-Western	CLW	Clearwater
		CON	Conrad
		DIL	Dillon
		GLA	Glasgow
		HAM	Hamilton
		HAV	Havre
		HEL	Helena
		KAL	Kalispell
		LEW	Lewiston
		LIB	Libby
		MIL	Miles City
		MSO	Missoula
		PLN	Plains
		STW	Stillwater
		SWN	Swan

The thematic codes used in the “Strata Acres” table consists of three components, namely species (vegetation type), size class and stocking. The code “WLDF7A” therefore represents the strata for western larch/Douglas-fir species (WLDF), seedling-sapling size class (7), and adequate stocking (A). Species is represented by

a two-, three-, or four-digit code, while size and stocking are always represented by a single digit. The old-growth strata (OGW1, OGW4 and OGW6) do not follow this classification scheme and are only represented by their four-digit codes. Please refer to section 4.3.5 for a definition of the old growth codes. Table 22 shows the various codes used for species, size and stocking:

**Table 22: Key to Codes for Species, Size and Stocking**

Species	Land Office	Name	Size	Name	Stocking	Name
DPMC	CE, EA	Douglas-fir/Ponderosa Pine/Mixed Conifer	6	Non-Stocked	N	Non-Stocked
GFRC	NW, SW	Grand fir/Western Redcedar/Western Hemlock/Western White Pine	7	Seedling - Sapling	A	Adequate
LP	ALL	Lodgepole Pine	8	Pole-Timber	L	Low
NS	ALL	Non-stocked	9	Saw-Timber		
PPDF	NW, SW	Ponderosa Pine/Douglas-fir				
SF	CE, EA	Engelmann spruce/Subalpine fir				
SFC	NW, SW	Engelmann spruce/Subalpine fir/Whitebark Pine Cold Site				
SFM	NW, SW	Engelmann spruce/Subalpine fir Moist Site				
WLDF	NW, SW	western larch/Douglas-fir				

Some thematic layers were labeled with either a “yes” (Y) or “no” (N) value to indicate whether a given acre was part of the constraint or not. Therefore, in the tables below a row value of “In (Y)” was used to flag the acres that were part of the thematic layer, while “Out (N)” was used to flag the acres outside of the thematic layer. For instance, in the Deferred Acres table, the acres associated with the “In (Y)” row were deferred, while the acres associated with the “Out (N)” row were not deferred.

Finally, the following codes in Table 23 were used to identify acres in sensitive watersheds and lynx management areas (LMA).

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Appendix C

**Table 23: Key to Codes for Sensitive Watersheds and LMA's**

<b>Sensitive Watershed</b>	<b>Name</b>	<b>LMA</b>	<b>Name</b>
(UPWH)	Upper Whitefish	(CC)	Coal Creek
(SFLS)	South Fork Lost-Soup	(GA)	Garnet
(POWO)	Porcupine-Woodward	(SE)	Stillwater East
(LICR)	Lion Creek	(SLA)	Seeley Lake
(LACR)	Lazy Creek	(SW)	Stillwater West
(GOCR)	Goat Creek	(SS)	Stillwater South
(STCC)	Stillwater-Coal Creek	Swan	Swan

Unit	Acres by Land Office			
	CE	EA	NW	SW
ANA	-	-	-	25,895
BIL	-	52,720	-	-
BOZ	19,107	-	-	-
CLW	-	-	-	66,453
CON	4,692	-	-	-
DIL	28,407	-	-	-
GLA	-	4,741	-	-
HAM	-	-	-	22,662
HAV	-	4,402	-	-
HEL	54,289	-	-	-
KAL	-	-	50,103	-
LEW	-	30,239	-	-
LIB	-	-	29,979	-
MIL	-	47,916	-	-
MSO	-	-	-	81,670
PLN	-	-	49,688	-
STW	-	-	122,930	-
SWN	-	-	51,389	-
<b>Total:</b>	<b>106,495</b>	<b>140,018</b>	<b>304,089</b>	<b>196,681</b>

Stratum	Acres by Unit																	
	ANA	BIL	BOZ	CLW	CON	DIL	GLA	HAM	HAV	HEL	KAL	LEW	LIB	MIL	MSO	PLN	STW	SWN
CEDPMC7A	-	-	117	-	32	85	-	-	-	946	-	-	-	-	-	-	-	-
CEDPMC7L	-	-	158	-	-	308	-	-	-	566	-	-	-	-	-	-	-	-
CEDPMC8A	-	-	1,039	-	1,651	1,222	-	-	-	5,256	-	-	-	-	-	-	-	-
CEDPMC8L	-	-	1,554	-	286	2,295	-	-	-	7,917	-	-	-	-	-	-	-	-
CEDPMC9A	-	-	8,174	-	795	15,392	-	-	-	25,736	-	-	-	-	-	-	-	-
CEDPMC9L	-	-	2,516	-	5	2,694	-	-	-	5,641	-	-	-	-	-	-	-	-
CELP7A	-	-	374	-	-	368	-	-	-	365	-	-	-	-	-	-	-	-



Stratum	Acres by Unit																	
	ANA	BIL	BOZ	CLW	CON	DIL	GLA	HAM	HAV	HEL	KAL	LEW	LIB	MIL	MSO	PLN	STW	SWN
CELP7L	-	-	135	-	-	167	-	-	-	173	-	-	-	-	-	-	-	-
CELP8A	-	-	445	-	-	665	-	-	-	894	-	-	-	-	-	-	-	-
CELP8L	-	-	67	-	-	140	-	-	-	47	-	-	-	-	-	-	-	-
CELP9A	-	-	1,515	-	114	1,464	-	-	-	2,520	-	-	-	-	-	-	-	-
CELP9L	-	-	77	-	-	376	-	-	-	43	-	-	-	-	-	-	-	-
CENS6N	-	-	1,986	-	1,808	1,124	-	-	-	3,958	-	-	-	-	-	-	-	-
CESF7L	-	-	-	-	-	9	-	-	-	-	-	-	-	-	-	-	-	-
CESF8A	-	-	46	-	-	95	-	-	-	70	-	-	-	-	-	-	-	-
CESF8L	-	-	49	-	-	292	-	-	-	39	-	-	-	-	-	-	-	-
CESF9A	-	-	855	-	-	1,642	-	-	-	64	-	-	-	-	-	-	-	-
CESF9L	-	-	-	-	-	68	-	-	-	55	-	-	-	-	-	-	-	-
EADPMC7A	-	14	-	-	-	-	-	-	-	-	-	163	-	122	-	-	-	-
EADPMC7L	-	241	-	-	-	-	-	-	-	-	-	116	-	151	-	-	-	-
EADPMC8A	-	659	-	-	-	-	115	-	296	-	-	652	-	891	-	-	-	-
EADPMC8L	-	6,774	-	-	-	-	850	-	784	-	-	3,601	-	7,078	-	-	-	-
EADPMC9A	-	19,499	-	-	-	-	2,185	-	1,891	-	-	17,475	-	19,100	-	-	-	-
EADPMC9L	-	14,109	-	-	-	-	1,504	-	1,360	-	-	6,571	-	10,135	-	-	-	-
EALP7A	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EALP7L	-	-	-	-	-	-	-	-	10	-	-	10	-	-	-	-	-	-
EALP8A	-	10	-	-	-	-	-	-	-	-	-	214	-	-	-	-	-	-
EALP8L	-	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EALP9A	-	536	-	-	-	-	-	-	52	-	-	1,021	-	-	-	-	-	-
EALP9L	-	740	-	-	-	-	-	-	-	-	-	65	-	-	-	-	-	-
EANS6N	-	10,094	-	-	-	-	87	-	8	-	-	350	-	10,439	-	-	-	-
NWGFRC7A	-	-	-	-	-	-	-	-	-	-	378	-	207	-	-	114	4,658	760
NWGFRC7L	-	-	-	-	-	-	-	-	-	-	22	-	10	-	-	-	594	1,021
NWGFRC8A	-	-	-	-	-	-	-	-	-	-	329	-	177	-	-	116	3,608	2,356
NWGFRC8L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	189	554
NWGFRC9A	-	-	-	-	-	-	-	-	-	-	3,221	-	984	-	-	2,207	9,065	6,019
NWGFRC9L	-	-	-	-	-	-	-	-	-	-	245	-	-	-	-	715	599	2,769

Stratum	Acres by Unit																	
	ANA	BIL	BOZ	CLW	CON	DIL	GLA	HAM	HAV	HEL	KAL	LEW	LIB	MIL	MSO	PLN	STW	SWN
NWLP7A	-	-	-	-	-	-	-	-	-	-	368	-	254	-	-	785	6,464	731
NWLP7L	-	-	-	-	-	-	-	-	-	-	39	-	-	-	-	165	406	61
NWLP8A	-	-	-	-	-	-	-	-	-	-	1,029	-	717	-	-	486	7,633	786
NWLP8L	-	-	-	-	-	-	-	-	-	-	11	-	19	-	-	75	194	-
NWLP9A	-	-	-	-	-	-	-	-	-	-	153	-	249	-	-	10	1,512	532
NWLP9L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	89	79	232
NWNS6N	-	-	-	-	-	-	-	-	-	-	711	-	1,226	-	-	985	2,496	471
NWOGW1	-	-	-	-	-	-	-	-	-	-	597	-	798	-	-	33	876	17
NWOGW4	-	-	-	-	-	-	-	-	-	-	1,614	-	1,774	-	-	328	10,998	7,660
NWOGW6	-	-	-	-	-	-	-	-	-	-	-	-	21	-	-	129	3,906	161
NWPPDF7A	-	-	-	-	-	-	-	-	-	-	828	-	951	-	-	1,142	444	28
NWPPDF7L	-	-	-	-	-	-	-	-	-	-	98	-	111	-	-	132	308	24
NWPPDF8A	-	-	-	-	-	-	-	-	-	-	1,121	-	2,568	-	-	1,101	709	180
NWPPDF8L	-	-	-	-	-	-	-	-	-	-	63	-	86	-	-	140	150	-
NWPPDF9A	-	-	-	-	-	-	-	-	-	-	17,132	-	12,484	-	-	20,112	4,400	2,711
NWPPDF9L	-	-	-	-	-	-	-	-	-	-	2,484	-	1,465	-	-	5,098	1,161	304
NWSFC7A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,229	-
NWSFC7L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	202	-
NWSFC8A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,612	31
NWSFC8L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	84
NWSFC9A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,909	350
NWSFC9L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	161
NWSFM7A	-	-	-	-	-	-	-	-	-	-	62	-	-	-	-	-	3,612	52
NWSFM7L	-	-	-	-	-	-	-	-	-	-	7	-	-	-	-	-	430	90
NWSFM8A	-	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	3,301	435
NWSFM8L	-	-	-	-	-	-	-	-	-	-	33	-	-	-	-	-	332	267
NWSFM9A	-	-	-	-	-	-	-	-	-	-	851	-	89	-	-	311	11,397	2,690
NWSFM9L	-	-	-	-	-	-	-	-	-	-	-	-	65	-	-	-	441	277
NWWLDF7A	-	-	-	-	-	-	-	-	-	-	1,424	-	342	-	-	857	4,874	702
NWWLDF7L	-	-	-	-	-	-	-	-	-	-	19	-	-	-	-	103	892	752

Stratum	Acres by Unit																	
	ANA	BIL	BOZ	CLW	CON	DIL	GLA	HAM	HAV	HEL	KAL	LEW	LIB	MIL	MSO	PLN	STW	SWN
NWWLDF8A	-	-	-	-	-	-	-	-	-	-	1,620	-	546	-	-	731	5,879	3,794
NWWLDF8L	-	-	-	-	-	-	-	-	-	-	30	-	36	-	-	-	439	211
NWWLDF9A	-	-	-	-	-	-	-	-	-	-	13,557	-	4,538	-	-	11,103	19,969	9,822
NWWLDF9L	-	-	-	-	-	-	-	-	-	-	1,958	-	261	-	-	2,621	4,849	4,296
SWGFR7A	155	-	-	37	-	-	-	241	-	-	-	-	-	-	347	-	-	-
SWGFR7L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	41	-	-	-
SWGFR8A	13	-	-	272	-	-	-	-	-	-	-	-	-	-	271	-	-	-
SWGFR8L	128	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SWGFR9A	188	-	-	1,364	-	-	-	16	-	-	-	-	-	-	558	-	-	-
SWGFR9L	-	-	-	161	-	-	-	-	-	-	-	-	-	-	420	-	-	-
SWLP7A	904	-	-	577	-	-	-	2,204	-	-	-	-	-	-	1,167	-	-	-
SWLP7L	291	-	-	841	-	-	-	198	-	-	-	-	-	-	39	-	-	-
SWLP8A	729	-	-	1,705	-	-	-	587	-	-	-	-	-	-	1,135	-	-	-
SWLP8L	359	-	-	129	-	-	-	7	-	-	-	-	-	-	32	-	-	-
SWLP9A	358	-	-	406	-	-	-	12	-	-	-	-	-	-	497	-	-	-
SWLP9L	30	-	-	-	-	-	-	-	-	-	-	-	-	-	191	-	-	-
SWNS6N	1,030	-	-	511	-	-	-	3,213	-	-	-	-	-	-	3,176	-	-	-
SWOGW1	1,366	-	-	1,428	-	-	-	284	-	-	-	-	-	-	511	-	-	-
SWOGW4	26	-	-	684	-	-	-	-	-	-	-	-	-	-	771	-	-	-
SWOGW6	112	-	-	171	-	-	-	26	-	-	-	-	-	-	92	-	-	-
SWPPDF7A	300	-	-	847	-	-	-	2,887	-	-	-	-	-	-	3,754	-	-	-
SWPPDF7L	362	-	-	383	-	-	-	782	-	-	-	-	-	-	1,989	-	-	-
SWPPDF8A	555	-	-	4,312	-	-	-	150	-	-	-	-	-	-	7,174	-	-	-
SWPPDF8L	112	-	-	624	-	-	-	18	-	-	-	-	-	-	1,460	-	-	-
SWPPDF9A	14,997	-	-	32,277	-	-	-	8,657	-	-	-	-	-	-	34,831	-	-	-
SWPPDF9L	2,233	-	-	6,654	-	-	-	3,104	-	-	-	-	-	-	8,585	-	-	-
SWSFC7A	-	-	-	38	-	-	-	-	-	-	-	-	-	-	11	-	-	-
SWSFC8A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	55	-	-	-
SWSFC9A	10	-	-	74	-	-	-	-	-	-	-	-	-	-	142	-	-	-
SWSFC9L	-	-	-	71	-	-	-	61	-	-	-	-	-	-	60	-	-	-

Stratum	Acres by Unit																	
	ANA	BIL	BOZ	CLW	CON	DIL	GLA	HAM	HAV	HEL	KAL	LEW	LIB	MIL	MSO	PLN	STW	SWN
SWSFM7A	55	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-
SWSFM7L	47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SWSFM8A	25	-	-	46	-	-	-	-	-	-	-	-	-	-	178	-	-	-
SWSFM8L	27	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SWSFM9A	116	-	-	350	-	-	-	-	-	-	-	-	-	-	214	-	-	-
SWSFM9L	-	-	-	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SWWLDF7A	20	-	-	284	-	-	-	-	-	-	-	-	-	-	878	-	-	-
SWWLDF7L	22	-	-	314	-	-	-	-	-	-	-	-	-	-	133	-	-	-
SWWLDF8A	77	-	-	1,685	-	-	-	-	-	-	-	-	-	-	1,518	-	-	-
SWWLDF8L	69	-	-	185	-	-	-	-	-	-	-	-	-	-	39	-	-	-
SWWLDF9A	727	-	-	7,955	-	-	-	160	-	-	-	-	-	-	9,841	-	-	-
SWWLDF9L	454	-	-	2,014	-	-	-	53	-	-	-	-	-	-	1,549	-	-	-
Total:	25,895	52,720	19,107	66,453	4,692	28,407	4,741	22,662	4,402	54,289	50,103	30,239	29,979	47,916	81,670	49,688	122,930	50,389

Stocking	Acres by Unit																	
	ANA	BIL	BOZ	CLW	CON	DIL	GLA	HAM	HAV	HEL	KAL	LEW	LIB	MIL	MSO	PLN	STW	SWN
A (adequate)	19,228	20,755	12,565	52,229	2,593	20,933	2,300	14,915	2,239	35,851	42,172	19,525	24,105	20,113	62,582	39,074	93,274	31,977
L (low)	4,133	21,871	4,556	11,431	291	6,350	2,354	4,224	2,155	14,480	5,009	10,364	2,055	17,364	14,538	9,138	11,381	11,102
N (non-stock)	1,030	10,094	1,986	511	1,808	1,124	87	3,213	8	3,958	711	350	1,226	10,439	3,176	985	2,496	471
W1	1,366	-	-	1,428	-	-	-	284	-	-	597	-	798	-	511	33	876	17
W4	26	-	-	684	-	-	-	-	-	-	1,614	-	1,774	-	771	328	10,998	7,660
W6	112	-	-	171	-	-	-	26	-	-	-	-	21	-	92	129	3,906	161
Total:	25,895	52,720	19,107	66,453	4,692	28,407	4,741	22,662	4,402	54,289	50,103	30,239	29,979	47,916	81,670	49,688	122,930	51,389

<u>Deferred Acres</u>	ANA	BIL	BOZ	CLW	CON	DIL	GLA	HAM	HAV	HEL	KAL	LEW	LIB	MIL	MSO	PLN	STW	SWN	Total
<b>Out (N)</b>	21,114	47,170	9,919	63,801	1,084	24,287	-	22,459	3,096	33,369	47,030	24,877	29,494	47,287	77,058	42,079	110,940	50,163	655,228
<i>Lease Lots, Policy, Law</i>	6	886	330	155	0	79	0	0	0	201	361	207	13	132	86	168	213	6	2,844
<i>Low Value - High Dev. Costs</i>	2,144	1,292	2,289	143	3,195	2,252	4,741	0	523	11,025	125	1,844	174	78	2,218	732	4,765	0	37,542
<i>No Legal Access</i>	1,231	11	4,732	162	0	1,305	0	0	585	7,809	672	1,704	0	351	655	5,308	991	67	25,583
<i>Timber Cons. License / Lease</i>	0	5	0	67	0	0	0	0	0	0	0	0	0	0	75	31	0	0	179
<i>Topography (steep, rocky, etc.)</i>	981	1,718	1,229	96	133	259	0	157	198	1,349	907	1,606	130	42	1,497	950	4,564	617	16,431
<i>Wet Areas</i>	419	1,639	608	2,029	279	225	0	46	0	536	1,009	0	168	24	81	422	1,456	535	9,476
<b>In (Y)</b>	4,782	5,550	9,188	2,652	3,607	4,120	4,741	203	1,306	20,920	3,073	5,362	485	628	4,612	7,609	11,990	1,226	92,055
	25,895	52,720	19,107	66,453	4,692	28,407	4,741	22,662	4,402	54,289	50,103	30,239	29,979	47,916	81,670	49,688	122,930	51,389	747,283

<b>Sensitive Watershed</b>	<b>Acres by Unit</b>																		<b>Total</b>
	ANA	BIL	BOZ	CLW	CON	DIL	GLA	HAM	HAV	HEL	KAL	LEW	LIB	MIL	MSO	PLN	STW	SWN	
Out (N)	25,895	52,720	19,107	66,453	4,692	28,407	4,741	22,662	4,402	54,289	48,917	30,239	29,979	47,916	81,670	49,688	64,390	281	636,449
In (Y)	-	-	-	-	-	-	-	-	-	-	1,185	-	-	-	-	-	58,540	51,109	110,834
Total:	25,895	52,720	19,107	66,453	4,692	28,407	4,741	22,662	4,402	54,289	50,103	30,239	29,979	47,916	81,670	49,688	122,930	51,389	747,283

<b>UMZ</b>	<b>Acres by Unit</b>																		<b>Total</b>
	ANA	BIL	BOZ	CLW	CON	DIL	GLA	HAM	HAV	HEL	KAL	LEW	LIB	MIL	MSO	PLN	STW	SWN	
Out (N)	25,895	52,720	19,107	66,453	4,692	28,407	4,741	22,662	4,402	54,289	50,103	30,239	29,979	47,916	81,670	49,688	121,621	51,271	745,855
In (Y)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,309	119	1,428
Total:	25,895	52,720	19,107	66,453	4,692	28,407	4,741	22,662	4,402	54,289	50,103	30,239	29,979	47,916	81,670	49,688	122,930	51,389	747,283

Helicopter Logging	Acres by Unit																		Total
	ANA	BIL	BOZ	CLW	CON	DIL	GLA	HAM	HAV	HEL	KAL	LEW	LIB	MIL	MSO	PLN	STW	SWN	
Out (N)	25,321	52,613	18,659	65,883	4,692	28,407	4,741	22,506	4,402	54,289	49,441	30,239	29,298	47,916	81,670	49,552	113,868	50,712	734,208
In (Y)	575	107	448	571	-	-	-	157	-	-	661	-	681	-	-	137	9,061	677	13,075
<b>Total:</b>	<b>25,895</b>	<b>52,720</b>	<b>19,107</b>	<b>66,453</b>	<b>4,692</b>	<b>28,407</b>	<b>4,741</b>	<b>22,662</b>	<b>4,402</b>	<b>54,289</b>	<b>50,103</b>	<b>30,239</b>	<b>29,979</b>	<b>47,916</b>	<b>81,670</b>	<b>49,688</b>	<b>122,930</b>	<b>51,389</b>	<b>747,283</b>

RMZ	Acres by Unit																		Total
	ANA	BIL	BOZ	CLW	CON	DIL	GLA	HAM	HAV	HEL	KAL	LEW	LIB	MIL	MSO	PLN	STW	SWN	
Out (N)	24,842	50,955	18,344	64,186	4,550	27,472	4,645	21,491	4,242	52,392	48,530	29,169	28,950	46,565	79,261	48,070	114,823	48,510	716,997
In (Y)	1,054	1,765	764	2,268	141	936	96	1,171	160	1,897	1,572	1,070	1,028	1,350	2,409	1,618	8,107	2,880	30,286
<b>Total:</b>	<b>25,895</b>	<b>52,720</b>	<b>19,107</b>	<b>66,453</b>	<b>4,692</b>	<b>28,407</b>	<b>4,741</b>	<b>22,662</b>	<b>4,402</b>	<b>54,289</b>	<b>50,103</b>	<b>30,239</b>	<b>29,979</b>	<b>47,916</b>	<b>81,670</b>	<b>49,688</b>	<b>122,930</b>	<b>51,389</b>	<b>747,283</b>

GZB Vis.	Acres by Unit																		Total
	ANA	BIL	BOZ	CLW	CON	DIL	GLA	HAM	HAV	HEL	KAL	LEW	LIB	MIL	MSO	PLN	STW	SWN	
Out (N)	25,895	52,720	19,107	66,143	4,657	28,407	4,741	22,662	4,402	54,260	49,783	30,239	29,529	47,916	81,670	49,374	120,435	50,365	742,305
In (Y)	-	-	-	311	35	-	-	-	-	29	320	-	450	-	-	315	2,495	1,025	4,978
<b>Total:</b>	<b>25,895</b>	<b>52,720</b>	<b>19,107</b>	<b>66,453</b>	<b>4,692</b>	<b>28,407</b>	<b>4,741</b>	<b>22,662</b>	<b>4,402</b>	<b>54,289</b>	<b>50,103</b>	<b>30,239</b>	<b>29,979</b>	<b>47,916</b>	<b>81,670</b>	<b>49,688</b>	<b>122,930</b>	<b>51,389</b>	<b>747,283</b>

GZB Sec. Zone.	Acres by Unit																		Total
	ANA	BIL	BOZ	CLW	CON	DIL	GLA	HAM	HAV	HEL	KAL	LEW	LIB	MIL	MSO	PLN	STW	SWN	
Out (N)	25,895	52,720	19,107	66,453	4,692	28,407	4,741	22,662	4,402	54,289	50,103	30,239	29,979	47,916	81,670	49,688	102,560	51,389	726,913
In (Y)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20,370	-	20,370
<b>Total:</b>	<b>25,895</b>	<b>52,720</b>	<b>19,107</b>	<b>66,453</b>	<b>4,692</b>	<b>28,407</b>	<b>4,741</b>	<b>22,662</b>	<b>4,402</b>	<b>54,289</b>	<b>50,103</b>	<b>30,239</b>	<b>29,979</b>	<b>47,916</b>	<b>81,670</b>	<b>49,688</b>	<b>122,930</b>	<b>51,389</b>	<b>747,283</b>

Current OG	Acres by Unit																		Total
	ANA	BIL	BOZ	CLW	CON	DIL	GLA	HAM	HAV	HEL	KAL	LEW	LIB	MIL	MSO	PLN	STW	SWN	
Out (N)	24,391	52,720	19,107	64,171	4,692	28,407	4,741	22,352	4,402	54,289	47,892	30,239	27,386	47,916	80,296	49,197	107,150	43,550	712,900
In (Y)	1,505	-	-	2,282	-	-	-	310	-	-	2,211	-	2,592	-	1,374	491	15,780	7,839	34,383
<b>Total:</b>	<b>25,895</b>	<b>52,720</b>	<b>19,107</b>	<b>66,453</b>	<b>4,692</b>	<b>28,407</b>	<b>4,741</b>	<b>22,662</b>	<b>4,402</b>	<b>54,289</b>	<b>50,103</b>	<b>30,239</b>	<b>29,979</b>	<b>47,916</b>	<b>81,670</b>	<b>49,688</b>	<b>122,930</b>	<b>51,389</b>	<b>747,283</b>

LMA	Acres by Unit																		Total
	ANA	BIL	BOZ	CLW	CON	DIL	GLA	HAM	HAV	HEL	KAL	LEW	LIB	MIL	MSO	PLN	STW	SWN	
CC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14,343	-	14,343
GA	-	-	-	7,432	-	-	-	-	-	-	-	-	-	-	1,232	-	-	-	8,664
Out (N)	25,895	52,720	19,107	47,133	4,692	28,407	4,741	22,662	4,402	54,289	50,103	30,239	29,979	47,916	80,438	49,688	25,755	284	578,450
SE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36,884	-	36,884
SLA	-	-	-	11,889	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11,889
SS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8,720	-	8,720
SW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	37,228	-	37,228
Swan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	51,106	51,106
<b>Total:</b>	<b>25,895</b>	<b>52,720</b>	<b>19,107</b>	<b>66,453</b>	<b>4,692</b>	<b>28,407</b>	<b>4,741</b>	<b>22,662</b>	<b>4,402</b>	<b>54,289</b>	<b>50,103</b>	<b>30,239</b>	<b>29,979</b>	<b>47,916</b>	<b>81,670</b>	<b>49,688</b>	<b>122,930</b>	<b>51,389</b>	<b>747,283</b>

Potential Lynx Hab.	Acres by Unit																		Total
	ANA	BIL	BOZ	CLW	CON	DIL	GLA	HAM	HAV	HEL	KAL	LEW	LIB	MIL	MSO	PLN	STW	SWN	
Out (N)	20,038	48,939	4,629	46,523	3,690	6,865	4,741	21,094	4,402	40,643	27,083	28,200	20,446	47,916	62,017	28,247	10,663	2,961	429,098
In (Y)	5,858	3,782	14,478	19,930	1,001	21,543	-	1,568	-	13,647	23,019	2,038	9,532	-	19,653	21,441	112,267	48,428	318,186
<b>Total:</b>	<b>25,895</b>	<b>52,720</b>	<b>19,107</b>	<b>66,453</b>	<b>4,692</b>	<b>28,407</b>	<b>4,741</b>	<b>22,662</b>	<b>4,402</b>	<b>54,289</b>	<b>50,103</b>	<b>30,239</b>	<b>29,979</b>	<b>47,916</b>	<b>81,670</b>	<b>49,688</b>	<b>122,930</b>	<b>51,389</b>	<b>747,283</b>

Bald Eagle Habitat	Acres by Unit																		Total
	ANA	BIL	BOZ	CLW	CON	DIL	GLA	HAM	HAV	HEL	KAL	LEW	LIB	MIL	MSO	PLN	STW	SWN	
Out (N)	25,878	52,560	19,107	65,644	4,692	28,339	4,741	22,457	4,402	54,182	49,804	30,239	29,387	47,916	80,203	49,330	120,555	51,173	740,608
In (Y)	18	160	-	809	-	68	-	206	-	108	298	-	591	-	1,467	358	2,375	216	6,675
<b>Total:</b>	<b>25,895</b>	<b>52,720</b>	<b>19,107</b>	<b>66,453</b>	<b>4,692</b>	<b>28,407</b>	<b>4,741</b>	<b>22,662</b>	<b>4,402</b>	<b>54,289</b>	<b>50,103</b>	<b>30,239</b>	<b>29,979</b>	<b>47,916</b>	<b>81,670</b>	<b>49,688</b>	<b>122,930</b>	<b>51,389</b>	<b>747,283</b>

## 11 Appendix D: Management Pathways

The following tables show the combinations of land office, species and productivity class that were eligible for each management pathway (Rx). These tables also show the types of silvicultural treatments that each pathway was eligible for. These treatments can be classified as either pre-commercial thinning (PCT), commercial thinning (CT), or selection harvest (Sel. or uneven-aged). PCT treatments were defined in terms of age of treatment and after-harvest trees per acre (TPA). CT treatments were defined in terms of earliest age of treatment and after-harvest trees per acre (TPA). The selection harvest for the uneven-aged pathways (UERX) were defined in terms of earliest age of treatment, residual TPA target and re-entry period, while the old-growth selection harvests (OGRX) were defined in terms of after-harvest BA, TPA larger than a threshold diameter at breast height (DBH), and re-entry period. The even-aged pathways (EARX) were also defined in terms of the number of leave trees associated with each harvest intensity type (CC, ST, or SW).

Each of the management pathways were labelled with a unique 8-digit Rx code, with each digit describing a different aspect of the pathway. This allowed each pathway to be labeled with a unique code that could be used as a reference for the silvicultural treatments within the pathway. The following table describes the composition of the Rx codes in further detail:

**Table 24: Key to the Rx Codes**

Digits	Group	Code	Definition
1	Strata Type	E	Existing Strata
		N	Future (Regeneration) Strata
2	PCT	+	No PCT
		2	PCT at Age 20
3 to 4	CT and Sel. Harvest	++	No CT or Selection Harvest
		1T	One CT to a TPA Target
		MB	Multiple Selection Harvests to a BA Target
5	Fertilization	+	No Fertilization
6 to 7	Rx Type	CC	EARX with Clear-Cut Regeneration Harvest
		ST	EARX with Seed-Tree Regeneration Harvest
		SW	EARX with Shelter-Wood Regeneration Harvest
		UD	UERX on Dry Site
		UM	UERX on Moist Site
		W1	OGRX on W1
		W4	OGRX on W4
		W6	OGRX on W6
8	Overstory Removal	N	No Overstory Removal Harvest
		X	Overstory Removal Harvest Option Not Available
		Y	Overstory Removal Harvest



**Table 25: Even-Aged Management Prescriptions for Existing Strata (EARX)**

Rx	OSR	Land Office	Species	Size Class	Productivity Class	PCT Age	PCT TPA	CT Age	CT TPA	Residual TPA	OSR Timing	# Leave Trees after OSR
E++++CC	X	NW, SW	LP, SFC, W6,	All	All	n/a	n/a	n/a	n/a	4	n/a	n/a
E++++CC	X	CE, EA	LP, SF	All	All	n/a	n/a	n/a	n/a	4	n/a	n/a
E2+++CC	X	All	LP, SFC	7	H	20	300	n/a	n/a	4	n/a	n/a
E++++ST	N/Y	NW, SW	All except LP	All	All	n/a	n/a	n/a	n/a	8	20 years	4
E++++ST	N/Y	CE, EA	DPMC, NS	All	All	n/a	n/a	n/a	n/a	8	30 years	4
E+1T+ST	N/Y	NW, SW	All except LP	8	H, M	n/a	n/a	60	100	8	20 years	4
E2+++ST	N/Y	NW, SW	All except LP	7	H	20	200	n/a	n/a	8	20 years	4
E21T+ST	N/Y	NW, SW	All except LP	7	H	20	200	50	100	8	20 years	4
E++++SW	N/Y	NW, SW	All except LP, SFC, W6	All	All	n/a	n/a	n/a	n/a	25	20 years	4
E++++SW	N/Y	CE, EA	DPMC, NS	All	All	n/a	n/a	n/a	n/a	25	30 years	4
E+1T+SW	N/Y	NW, SW	All except LP, SFC, W6	8	H, M	n/a	n/a	60	100	25	20 years	4
E2+++SW	N/Y	NW, SW	All except LP, SFC, W6	7	H	20	200	n/a	n/a	25	20 years	4
E21T+SW	N/Y	NW, SW	All except LP, SFC, W6	7	H	20	200	50	100	25	20 years	4

**Table 26: Uneven Aged Management Prescriptions (UERX)**

Rx	Land Office	Forest Type (Species)	Productivity Class	Sel. Res. TPA	Diameter range allowable	Legacy Trees (> up. diam)	Sel. Re-Entry
E+MB+UD	All	DPMC, PPDF, WLDF	All	226	6" – 22"	2	40
E+MB+UM	NW, SW	GFRC, SFM	All	226	6" – 22"	4	30

**Table 27: Old-Growth Management Prescriptions (OGRX)**

Rx	Land Office	Forest Type (Species)	Productivity Class	Sel. Res. BA	Sel. TPA Large Trees	Sel. Large Tree DBH	Sel. Re-Entry
E+MB+W1	NW, SW	OGW1	All	60	10	21	30
E+MB+W4	NW, SW	OGW4	All	100	12	21	50
E+MB+W6	NW, SW	OGW6	All	80	12	13	50

**Table 28: Even-Aged Management Prescriptions for Future Strata (EARX)**

Rx	OSR	Land Office	Species	Productivity Class	PCT Age	PCT TPA	CT Age	CT TPA	Residual TPA	OSR Timing	# Leave Trees after OSR
E++++CC	X	All	LP, SFC, SF	All	n/a	n/a	n/a	n/a	4	n/a	n/a
E2+++CC	X	All	LP, SFC, SF	H	20	300	n/a	n/a	4	n/a	n/a
E++++ST	N/Y	NW, SW	All except LP	All	n/a	n/a	n/a	n/a	8	20 years	4
E++++ST	N/Y	CE, EA	DPMC	All	n/a	n/a	n/a	n/a	8	30 years	4
E+1T+ST	N/Y	NW, SW	All except LP	H, M	n/a	n/a	60	100	8	20 years	4
E2+++ST	N/Y	NW, SW	All except LP	H	20	200	n/a	n/a	8	20 years	4
E21T+ST	N/Y	NW, SW	All except LP	H	20	200	50	100	8	20 years	4
E++++SW	N/Y	NW, SW	All except LP, SFC	All	n/a	n/a	n/a	n/a	25	20 years	4
E++++SW	N/Y	CE, EA	DPMC	All	n/a	n/a	n/a	n/a	25	30 years	4
E+1T+SW	N/Y	NW, SW	All except LP, SFC	H, M	n/a	n/a	60	100	25	20 years	4
E2+++SW	N/Y	NW, SW	All except LP, SFC	H	20	200	n/a	n/a	25	20 years	4
E21T+SW	N/Y	NW, SW	All except LP, SFC	H	20	200	50	100	25	20 years	4

## 12 Appendix E: Selection Harvest Reversed J-Curves

The reversed J-Curves for UERX were developed through a series of trials. Initially only three curves were defined, one each for dry, moist and wet sites. Each of these curves had a Q-factor, a DBH range from zero to 24, a DBH class size of 4", and retained 2 TPA larger than 24". All of them also used a 30-year re-entry period. Implementation of these curves showed unacceptably large BA reductions following selection harvests, often resulting in tree lists that were well below their BA target and unsustainable with regards to volume. The solution was to follow a tiered approach, which incrementally decreased the BA target until the desired level was reached (Don't try to get to future desired condition in one step). This approach worked well for moist, resulting in two tiers each. For moist sites the first tier targeted 115 BA with a Q-factor of 1.8, while the second tier targeted 80 BA with a Q-factor of 1.4. For dry sites more trials were needed. A three-tier approach with a 40-year re-entry period was investigated, which worked well for NW and SW strata. For these strata the first tier targeted 85 BA with a Q-factor of 1.7, the second tier targeted 65 BA with a Q-factor of 1.5, and the third tier targeted 45 BA with a Q-factor of 1.2. The CE and EA strata however still showed residual BA falling well below the target. Following more trials, a two-tier approach was adopted for these strata using a DBH range between zero and 20", and 1 TPA larger than 20". For these strata the first tier targeted 80 BA with a Q-factor of 2.8, while the second tier targeted 50 BA with a Q-factor of 2.2.

**Table 29: Reversed J-Curve Definitions**

Rx	Land Office	Tier	BA Target	Q-Factor	DBH From	DBH To	TPA
UD	CE, EA	1	80	2.8	0	4	335
UD	CE, EA	1	80	2.8	4	8	120
UD	CE, EA	1	80	2.8	8	12	43
UD	CE, EA	1	80	2.8	12	16	15
UD	CE, EA	1	80	2.8	16	20	5
UD	CE, EA	1	80	2.8	20	99	1
UD	CE, EA	2	50	2.2	0	4	125
UD	CE, EA	2	50	2.2	4	8	57
UD	CE, EA	2	50	2.2	8	12	26
UD	CE, EA	2	50	2.2	12	16	12
UD	CE, EA	2	50	2.2	16	20	5
UD	CE, EA	2	50	2.2	20	99	1

Rx	Land Office	Tier	BA Target	Q-Factor	DBH From	DBH To	TPA
UD	NW, SW	1	85	1.7	0	4	90
UD	NW, SW	1	85	1.7	4	8	53
UD	NW, SW	1	85	1.7	8	12	31
UD	NW, SW	1	85	1.7	12	16	18
UD	NW, SW	1	85	1.7	16	20	11
UD	NW, SW	1	85	1.7	20	24	6
UD	NW, SW	1	85	1.7	24	99	2
UD	NW, SW	2	65	1.5	0	4	46
UD	NW, SW	2	65	1.5	4	8	31
UD	NW, SW	2	65	1.5	8	12	21
UD	NW, SW	2	65	1.5	12	16	14
UD	NW, SW	2	65	1.5	16	20	9
UD	NW, SW	2	65	1.5	20	24	6
UD	NW, SW	2	65	1.5	24	99	2
UD	NW, SW	3	45	1.2	0	4	15
UD	NW, SW	3	45	1.2	4	8	12
UD	NW, SW	3	45	1.2	8	12	10
UD	NW, SW	3	45	1.2	12	16	8
UD	NW, SW	3	45	1.2	16	20	7
UD	NW, SW	3	45	1.2	20	24	6
UD	NW, SW	3	45	1.2	24	99	2
UM	All	1	115	1.8	0	4	146
UM	All	1	115	1.8	4	8	81
UM	All	1	115	1.8	8	12	45
UM	All	1	115	1.8	12	16	25
UM	All	1	115	1.8	16	20	14
UM	All	1	115	1.8	20	24	8
UM	All	1	115	1.8	24	99	2
UM	All	2	80	1.4	0	4	45
UM	All	2	80	1.4	4	8	32
UM	All	2	80	1.4	8	12	23
UM	All	2	80	1.4	12	16	16
UM	All	2	80	1.4	16	20	12
UM	All	2	80	1.4	20	24	8
UM	All	2	80	1.4	24	99	2

## 13 Appendix F: Summary of SYC Law from Montana Code Annotated

**77-5-221. Definition.** As used in 77-5-222, 77-5-223, and this section, "annual sustainable yield" means the quantity of timber that can be harvested from forested state lands each year in accordance with all applicable state and federal laws, including but not limited to the laws pertaining to wildlife, recreation, and maintenance of watersheds, and in compliance with water quality standards that protect fisheries and aquatic life and that are adopted under the provisions of Title 75, chapter 5, taking into account the ability of state forests to generate replacement tree growth.

**History:** En. Sec. 1, Ch. 517, L. 1995.

**77-5-222. Determination of annual sustainable yield.** (1) (a) On July 1, 2013, the department, under the direction of the board, shall commission a new study by a qualified independent third party to determine, using scientific principles, the annual sustainable yield on forested state lands. The department shall direct the qualified independent third party to determine the yield pursuant to, but not exceeding, all state and federal laws.

(b) A new study may be commissioned by the department, under the direction of the board, at any time during the 10-year period provided for in subsection (2).

(2) A determination of annual sustainable yield under subsection (1) must be reviewed and re-determined by the department, under the direction of the board, at least once every 10 years.

**History:** En. Sec. 2, Ch. 517, L. 1995; amd. Sec. 1, Ch. 440, L. 2003; amd. Sec. 1, Ch. 288, L. 2013.

**77-5-223. Annual sustainable yield as timber sale requirement -- review.** The annual sustainable yield constitutes the annual timber sale requirement for the state timber sale program administered by the department. This annual requirement may be reduced proportionately by the amount of sustained income to the beneficiaries generated by site-specific alternate land uses approved by the board based on a determination under 77-5-222.

**History:** En. Sec. 3, Ch. 517, L. 1995 ; amd. Sec. 2, Ch. 288, L. 2013.

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## 14 Appendix G: List of Contributors

### **Mason Bruce, and Girard, Inc.**

Mark Rasmussen

Tom Baribault

Jessica Burton Desrocher

### **DNRC Contributors**

Dan Rogers, Forest Management Bureau Chief

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Tim Spoelma, Forest Management Bureau Silviculturist/Forest Ecologist

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Karen Goode, Northwestern Land Office Forest Management Program Manager

Jon Hayes, Southwestern Land Office Forest Management Program Manager

Sam Whitney, Clearwater Unit Management Forester

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Andy Burgoyne, Central Land Office Trust Lands Program Manager

Josh Stoychoff, Northeastern Land Office Forester

Jeff Hermanns, Southern Land Office Forester

Shawn Thomas, Trust Land Management Division Administrator

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## 15 Appendix H: SYC Internal and Public Involvement Process

- March 11, 2020 – Met with Montana Wood Products Association members to present preliminary SYC results and answer questions.
- April 1, 2020 – Briefed Southwestern Land Office field staff on SYC results and answered questions.
- April 2, 2020 – Briefed Northwestern Land Office field staff on SYC results and answered questions.
- April 9, 2020 – Briefed all DNRC Forest Management Program staff on preliminary SYC Draft Report and answered questions.
- May 5, 2020 – Completion of the SYC Draft Report.
- May 8, 2020 – Scoping notice sent via email to interested members of the public and the DNRC statewide scoping list announcing the availability of the SYC Draft Report. The notice included an executive summary, instructions for requesting a public meeting and copy of the report, links to the website, an update on the process, instructions for submitting comments, and contact information. Published the Draft Report on the DNRC website, along with an executive summary, FAQ, and a copy of the scoping notice.
- May 11, 2020 to June 11, 2020 – Official 30-day public review period of SYC Draft.
- June 11, 2020 – End of public review period.
- June 23, 2020 – Presented SYC results to Montana Wood Products Association Resource Committee and answered questions.
- July 8, 2020 – DNRC completed written responses to public comments.
- July 8, 2020 – Completion of the SYC Final Report.
- July 8, 2020 – Presented SYC results to Land Board Staffers and answered questions.
- July 20, 2020 – SYC Final Report presented to the Land Board.

## 16 Appendix I: DNRC Responses to Public Comments

### Forest Management Bureau Sustainable Yield Calculation Technical Team

July 8, 2020

DNRC received written comments on the 2020 SYC Draft Report from six respondents identified below. Since many respondents offered similar comments on certain topics, comments are presented as a statement paraphrasing the topic of the comment, followed by the identifying numbers of the respondents who submitted the comment and DNRC's response.

1. F.H. Stoltze Land & Lumber (Stoltze)
2. Friends of the Wild Swan (FOWS)
3. Idaho Forest Group (IFG)
4. Pyramid Mountain Lumber (Pyramid)
5. Sun Mountain Lumber (Sun Mtn)
6. Weyerhaeuser (Weyco)

#### Topic: Climate Change

**Comment 1:** DNRC did not consider impacts of climate change when calculating the sustainable yield and should not rely on past conditions to predict future growth and forest conditions.

**Specific Comments:**

(FOWS) - The most glaring omission from the SYC is not factoring climate change into the calculation. There is abundant scientific data that climate change is and will impact tree growth and forested ecosystems in Montana, yet climate change is not even mentioned in the SYC. It is unrealistic for DNRC to paint a rosy picture of growth and yield while increasing the timber target without accounting for a warmer, drier climate in Montana, decreasing tree growth and tree species conversion. Past conditions will not predict the future in the wake of climate change.

(FOWS)—DNRC must not rely on the past to predict the future when it comes to calculating sustained yield. Climate change must be factored in to determine where trees will regrow, what trees will regrow, and whether trees will regrow.

**Response 1:** *We agree that evidence of widespread climate change has been well-documented and reported and is an important consideration today (Intergovernmental Panel on Climate Change 2013). In Montana, effects of climate change will be related to changes in temperature and moisture availability, and the response of individual tree species, forests and habitats will be complex and variable depending local site and stand conditions. Changes in temperature and moisture availability may affect the ability of some tree species to establish and regenerate on some sites. Forest productivity may increase in some areas due to longer growing seasons associated with increased temperature where moisture is not limited, but may decrease in other areas where increasing temperature results in decreased water availability (Wade et al. 2017).*



*Drought severity is expected to increase, leading to increases in forest and tree mortality. Changing climate may also lead to changes in the range of some species, resulting in changes in forest composition and distribution (Wade et al. 2017).*

*Changing climate is also expected to alter natural disturbance regimes, such as fire and insects, with the resulting effects expected to have greater impact on Montana's forests than changes in temperature and moisture availability that directly affect individual trees and species (Wade et al. 2017).*

*Climate change related factors and influences are considered and incorporated in a number of ways in the SYC. These include current growth data, regeneration success and stocking, tree species composition, standing inventory, and actual constraints themselves that address currently important habitat parameters, such as those for bull trout, Canada lynx and grizzly bears. By using the most current constraints and forest data available, the calculation integrates and considers numerous variables potentially influenced by, and sensitive to, changes in climate in deriving sustainable harvest estimates. Thus, this type of modeling provides one of the best available assurances for any forest management program that key variables potentially influenced by climate factors are considered and incorporated each time a sustainable harvest level is calculated. Three of the most important elements that DNRC will continue to incorporate, and believes are critical to obtaining accurate calculation estimates are: current and accurate stand data, ample sample size and sample distribution to address the appropriate land base, and continued calculations every 10 years as required under (MCA 77-5-222) that continue to incorporate and track changing local forest conditions over time.*

#### **References:**

*Intergovernmental Panel on Climate Change (IPCC). 2013. Fifth Assessment Report for the Intergovernmental Panel on Climate Change. Available online at <http://www.ipcc.ch/report/ar5/index.shtml> (accessed 6 July 2018).*

*Wade, A.A, A.P. Ballantyne, A.J. Larson, W.M. Jolly. 2017. Forests and climate change in Montana. In: Whitlock, C., W. Cross, B. Maxwell. N. Silverman, A.A. Wade. 2017 Montana Climate Assessment. Bozeman and Missoula, MT: Montana State University and University of Montana, Montana Institute on Ecosystems. Available online at <http://montanaclimate.org/chapter/forests> (accessed 6 August 2018).*

### **Topic: Growth and Yield Calibration**

**Comment 2:** DNRC's growth and yield calibration fails to account for situations where forest is converted to nonforest, and their use of FVS variants does not provide an accurate picture of conditions of DNRC forest land.

#### **Specific Comments:**

(FOWS) The SYC states: "DNRC updated its growth and yield model calibration using western root disease model calibrations developed by the U.S. Forest Service for the IE (Inland Empire) variant of FVS (Forest Vegetation Simulator), and used a calibration developed for the Custer-Gallatin National Forest by MB&G for the EM (Eastern Montana) variant. DNRC also opted to use the IE variant of FVS for the CLO (Central Land Office) as opposed to the EM variant that

was used in 2015; the EM variant is now used only in the EA (Eastern Land Offices) area. These calibrations resulted in increased growth rates across all Land Offices compared to 2015 and that are in line with published growth rates for Montana as well as anecdotal growth rates from industrial private forest landowners in Montana." However, it fails to acknowledge that the Forest Service has voluntarily reported on two other case histories of conversion to non-forest, one in the Ashland district of the Custer-Gallatin, another in the Big Belts of the Helena-L&C.

(Weyco)-- The reliance on FVS variants developed for other applications to represent the specific conditions on DNRC Trust Lands lends the appearance of a temporary rather than a permanent solution.

(IFG)—While we appreciate the improvements made in the 2020 methodology including additional data collection, we feel that the use of regional variants introduces an assumption that limits further understanding and inhibits decision making particularly at the Land Office scale.

**Response 2:** *Case studies of conversion from one forest type to another (non)forest type are not appropriate sources for estimating forest growth and yield; instead DNRC relied on calibrations developed by third-party sources that are based on permanent plot data. If DNRC were to observe conversion of forested land to nonforest, that change in condition would be reflected in Stand Level Inventory updates and in future sustainable yield calculations. DNRC selected the Forest Vegetation Simulator (FVS) as the growth and yield model for this calculation for several reasons, including that it is a nationally-recognized and supported model that is widely used by both private and public forest landowners. FVS relies on regional variants to estimate forest growth in geographic areas throughout the U.S., and the two variants that were used for this calculation, the Inland Empire (IE) and Eastern Montana (EM) variants, are specifically applicable to Montana forests. As such, we feel that the estimates of growth and yield produced by those variants is appropriate for estimating growth and yield on forested State trust lands.*

## Topic: Inventory Data

**Comment 3:** A stand-level inventory based on “walkthrough” data is subjective and does not provide an adequate level of detail to reliably estimate forest conditions or model sustainable yield. DNRC should transition to a stand-level inventory that is based on field-sampled data.

### Specific Comments:

(Weyco)-- we feel that the basis for the entire process relies on subjective data produced by the Stand Level Inventory (SLI) walkthrough system. Inventory and growth and yield programs are only as good as the data that feeds them and the reliance upon a walkthrough inventory data set does not provide adequate data to base a growth and drain program upon. Even with the modifications and restratification of the SLI doesn't change the fact that it does not use measurable data; furthermore the workload and cost required to augment a system that doesn't adequately represent the conditions on the ground is questionable. The reliance on FVS variants developed for other applications to represent the specific conditions on DNRC Trust Lands lends the appearance of a temporary rather than a permanent solution. We agree with the MBG suggestions under the “Recommendations for Future Calculations” heading that the DNRC implement an annual inventory collection program focusing on under-represented Strata, assigning standard habitat typing to the SLI so FVS can more accurately represent growth models and ultimately transition to a stand based

inventory using field sampled data. Some suggestions for achieving this include exploring new technology such as Lidar or utilizing timber cruises already performed during timber sale preparation and associating that cruise data with stand polygons; depletions can be based on timber volume removed from the timber sale. DNRC foresters are already collecting cruise data as a part of timber sale preparation, it seems as if that data should be put to use on the land base and a programmatic plan to ultimately transition to practices used throughout the forest industry is advisable.

(IFG)-- We'd like to encourage the DNRC to continue its investment in a full stand-based inventory in order to continue to enhance the level of detail and information available regarding existing conditions and the State's ability to fine-tune growth and yield calculations.

(Sun Mtn)--Continuing the Stand Level Inventory and increasing the data to describe forest conditions are important investments and will significantly aid the success of future SYC projects.

(Stoltze)—The 2020 SYC is a step ahead of the 2015 project. We were pleased to see the DNRC acting on the recommendations of MB&G from 2015 and encourage continued improvement along those lines. We support the DNRC continuing to build a Stand Level Inventory, utilizing current processes and new technology to incrementally build a SLI. We think the return over time would be significant in high level planning as well as project level analysis, not to mention budgeting.

(Stoltze)—Similarly, investment in some permanent growth plots will help better inform the SYC process as well as aid in management decision prioritization. Focus your efforts on those lands that are sufficiently productive to produce a return on investment faster.

**Response 3:** *DNRC's stand level data (SLI) is currently based upon "walk-through" data collection. DNRC recognizes that "walk-through" is subjective and has a lower degree of accuracy compared to measured plot data collection at the stand level. Due to budget and personnel limitations, the "walk-through" data collection system was chosen by the DNRC many years ago in order to inventory the most acres for the least amount of costs. We are considering several alternative methods of data collection to update the SLI that would result in a more accurate and robust forest inventory, including using timber sale cruise data (as recommended by one of the commenters), expanding use of remote sensing and LiDAR methods, and installation of permanent plots to inform and improve growth and yield data.*

## **Topic: Deferred Acres and Constraints**

**Comment 4:** Deferred acres and other management constraints account for a substantial reduction in sustainable yield and therefore return to the Trust beneficiaries. DNRC should review deferred acres and other constraints and work to bring those acres into management in order to increase revenues to the trust beneficiaries.

### **Specific Comments:**

(Stoltze)—It continues to be surprising to see the scale of deferred acres within the program. Having 163,851 acres under No Management, over 21% of total forested acres, still seems high. While an improvement over the last calculation, we encourage continued review of this number. Ensuring there is consistent direction given regarding criteria required to designate acres deferred is

important. Specific criteria for what constitute “Low Value – High Development Cost” and “Topography” must be consistently applied. We question if “No Legal Access” should be a deferral criterion as that is a limitation that could be remedied. We would encourage the DNRC to continue to review how commercial forestlands are categorized as “deferred” especially as new harvest techniques and other remedies may become available.

(Weyco)—The SYC report indicates a certain portion is related to parcels with no legal access and we suggest the DNRC have a system to address parcels without legal access by focusing on obtaining either permanent or temporary access, land trades, or ultimately divestiture of the parcel. A parcel without access or a plan to obtain access is not contributing to the trust and it is incumbent upon the DNRC to maximize returns to the school trusts while divesting of underperforming assets.

(IFG)—It has been widely discussed and noted by others that the Sustainable Yield Calculation (SYC) is heavily constrained by many years and layers of forest management regulations. We would like our comments to reflect that these decisions have incremental, but very significant impacts on the beneficiaries return from Trust Lands. Combined these restrictions reduce the yield by over 25% from a biological capacity of 91.5 MMBF to a constrained 68.3 MMBF on 750,000 acres of commercial forestland. Approximately 18% of that reduction is just in leave trees and deferred acres. We would encourage the DNRC to continue to review how commercial forestlands are categorized as “deferred” especially as new harvest techniques and other remedies may become available.

(Stoltze)—As we have seen in previous SYC work, it is continually surprising the impact and scale of deferred acres and constraints on the model. Going from a biological capacity of over 90mmbf/yr to an operational capacity of 68.3mmbf/yr is huge. Using a conservative, unweighted average stumpage value of \$125/mbf, this equates to roughly \$2.7 million dollars in forgone annual stumpage payments to the Trusts. Certainly, some of that is due to physical constraint, but much can be attributed to management constraints that have either been imposed upon or agreed to by the agency. That is a significant cost of constraint that needs to be kept in mind as future management, access and land ownership decisions are considered.

**Response 4:** *The DNRC recognizes that there are a significant amount of acres deferred from management in our commercial timber base. The DNRC will be taking a closer look at these deferred acres and explore ways to move those acres out of Trust ownership when careful evaluation determines it is beneficial to the Trust Beneficiaries to divest of these parcels. Some of the parcels are generating revenue from other land uses and this must be a consideration during the evaluation.*

*Constraints applied in this 2020 calculation are consistent with those applied in prior DNRC calculations. The constraints account for programmatic requirements contained in the SFLMP, Forest Management ARMs, and Forest Management HCP. 22,007-acres alone are constrained as deferred lands required as a part of a Federal Court settlement agreement approved in 2015 pertaining to a lawsuit filed against the U.S. Fish and Wildlife Service regarding the HCP. Further, many of the lands recently acquired by DNRC are constrained by conservation easements legally bound to land deeds. DNRC remains diligent in finding and acquiring permanent and temporary*

*access to all of its forested land base and continues to take advantage of opportunities to put up limited access projects. Constraints applied in this calculation ensure that the volume target will be achievable for the upcoming decade while complying with all applicable laws and agreements, while fostering a credible forest management program that promotes sound forest stewardship and protects the short and long-term interests of Trust beneficiaries.*

*While access and markets are highly limiting in eastern Montana, timber production and management is not the primary revenue-generating use on the vast majority of these lands. Most are managed for the purpose of grazing and agriculture.*

## **Topic: RMZ Restrictions**

**Comment 5:** The RMZ constraint specifies no management with RMZs; however, management in RMZ's can be beneficial and should be allowed. Is this restriction for modeling purposes only, or is management allowed in RMZs?

### **Specific Comments:**

(Stoltze)—We were surprised to see the entire RMZ acreage treated as “grow only” management regime. We have been told all along that there would be some management allowed within the expanded RMZ to meet resource objectives. Is that not the case?

(IFG)—Regarding RMZs, it appears that these areas were extended to include adjacent wetlands as well as channel migration zones and modeled as a “grow only” management pathway. This may be a limitation of the model itself, but it's our understanding that some management would be allowed within the expanded RMZ definition to meet resource objectives. Further clarification on these constraints would be helpful.

(Weyco)—We find the exclusion of RMZ acres from harvest surprising and question the efficacy of this decision. Management of RMZ's is critical to forest health, LWD recruitment, uneven aged management, and wildlife security. This abrupt change to management is concerning, however it is concerning whether this is a model constraint or an actual management decision. Under this description one could also infer that no management of RMZ's could also qualify as Old Growth (OG) or OG recruitment and those OG specific acres should be removed from elsewhere on the landscape but this does not appear to be the case. Stepping away from RMZ's should be more thoroughly vetted before implementing this strategy.

(Sun Mtn)—The reasons for the restrictions with RMZ classification are not clear. Management activities could occur on these acres versus the ‘grow only’ constraint in the model.

**Response 5:** *We apologize for not providing more clarity in the report regarding the RMZ constraint. The HCP and ARMs contain measures to provide habitat connectivity for biodiversity, Canada lynx, and fisher, which are difficult to quantify and account for in a SYC modeling process. Thus, rather than try and develop a subjective separate constraint in an attempt to account for varied patch retention on a subset of projects for this purpose across all land offices, the decision was made by the DNRC SYC working group to account for these requirements through a model constraint “deferral” of the entire RMZ. The working group and third party contractor believed this approach would provide a reasonable estimate of minor additional volume that would typically be constrained*

*for this purpose. It is important to note that volume retained to address wildlife habitat connectivity requirements is not permanently deferred. Also in practice, during normal project development, DNRC will continue to consider and harvest volume in RMZs where it is allowable and deemed feasible according to related existing allowances under ARMs and the HCP. We apologize for this confusion.*

## **Topic: Sensitive Watersheds**

**Comment 6:** What is a sensitive watershed and why are harvests constrained in those areas? DNRC should continue to evaluate management techniques in areas sensitive to potential increases in water yield.

### **Specific Comments:**

(Stoltze)—This is a significant constraint on the Stillwater and Swan units, both highly productive areas. What specifically constitutes a “sensitive watershed”? Is there a regulatory definition? Specific restriction within the SFLMP? Once again, it would be nice to determine if this is a required or voluntary constraint.

(IFG)—However, we would encourage the DNRC to continue to evaluate management techniques in areas that are sensitive to potential increases in water yield. The science available for establishing limitations on non-stocked or younger age class stands for the purposes of sustaining water yields is very site specific and best efforts are easily undone by factors such as wildfire and insect and disease issues that could have far more long-term effects than managed harvest.

**Response 6:** *Sensitive watersheds are those that have been identified for municipal water uses and/or listed as impaired on Montana’s 303(d) list. These watersheds are required by Rule (36.11.423) to be managed with a low to moderate degree of risk when cumulative watershed effects are assessed. The DNRC continually assesses the best available information and adaptively incorporates monitoring data from the forest management program into its management to limit cumulative watershed effects while maintaining maximum management flexibility.*

## **Topic: Old Growth**

**Comment 7:** How is old growth distributed across the landscape and between managed and unmanaged acres?

### **Specific Comments:**

(Stoltze)—We appreciate the projections of old growth acres by management area and planning period. How are old growth acres distributed between managed acres and deferred acres? It would seem over time that the preponderance of OG acres would naturally occur on the non-managed acres. Does the model prefer grow-only management regimes for allocation of OG stand characteristics?

(IFG)—We appreciate the explanation and establishment of the old growth targets by Land Office. We understand that selection harvest in old growth stands is included in the modeled silvicultural prescriptions; however, it is unclear if old growth stand characteristics are required to be distributed across the landscape or if the preponderance of old growth (current and planned) is on deferred

acres, RMZs, etc. On lands designated as commercial forestlands, we would expect that most of the old growth stands would occur on unmanaged or otherwise restricted acres.

**Response 7:** *As described on page 44, each DNRC Administrative Unit is required to maintain a specific percentage of old growth within its area. For Units in the NWLO and SWLO, each Unit is required to maintain, or achieve if it currently does not have, 8% of its acreage as old growth, and Units in the CLO are required to maintain or achieve 4%. There is no specific requirement for where old growth acres should be located within each Unit. Current old growth stands, regardless of their geographic location, can be managed using old growth maintenance or restoration treatments that maintain stands as old growth. In Units that are currently below their intended percentage of old growth acres, currently existing old growth stands must be managed using treatments that maintain those stands as old growth, while Units that currently exceed their intended percentage of old growth may apply treatments that would remove acres from old growth down to the intended percentage. Over time, areas that do not receive management, such as deferred acres, would be expected to develop into old growth; however, if those acres did not provide sufficient acreage to meet a Unit's intended percentage, an appropriate amount of acres would be managed using treatments that would facilitate their development into old growth. Old growth acres that occur in deferred and other unmanaged areas do contribute to the 8 and 4 percent old growth requirements and serve to free up other manageable acres for non-old growth management prescriptions. This would particularly be true and applicable regarding DNRC's recent Swift Creek BPA Land Acquisition on the Stillwater Unit, which is required to be managed in an old growth forest condition.*

*The results of this calculation show that 9,500 acres of old growth are under active management, while the number acres contributing to old growth amounts that are not under active management for various reasons including deferral, RMZ, etc. increases from 7,011 acres in period 1 to over 127,000 acres in period 20.*

## **Topic: Grizzly bear, Lynx, UMZ, Sensitive Watershed Constraints**

**Comment 8:** Do wildlife, RUMZ, and sensitive watershed constraints result in more acres assigned to grow-only regimes, and does that result in reduced restrictions on managed acres?

### **Specific Comments:**

(Stoltze)—do the grow only acres bear more of the burden for these future management constraints? And does that reduce the restriction burden on the management acres?

**Response 8:** *In general, the application of each successive constraint increases the amount of acres assigned to grow-only management regimes; this can be considered the "cost" of applying the management constraint associated. Acres under management are unencumbered by constraints. The constraints that result in the largest amounts of acres assigned to grow-only regimes in terms of the number of acres added to grow-only from the prior constraint are deferred acres (110,032 acres), riparian/unique management zones (23,669 acres), even-aged silviculture (15,974 acres), grizzly bear habitat/security zones (14,312 acres), and lynx habitat constraints (9,406 acres, cumulatively). It is important to note that some acres already assigned to grow only from constraints applied earlier in the model run could also fulfill the requirements of constraints applied*

*later in the model run; therefore, these numbers should not be considered the “gross” effect of each constraint in terms of acres assigned to grow only regimes. For example: some acres that would have been assigned to grow only in the GZB constraint may have already been assigned to grow only because of another constraint (egs. deferred acres, riparian/unique management zones, etc.), but because of the order of constraint application, the GZB constraint results in additional 14,312 acres being assigned that were not already deferred through application of a prior constraint.*

## **Topic: Precommercial Thinning**

**Comment 9:** The amount of PCT treatments seems low; this is a treatment that is very beneficial and should be applied as much as practicable, particularly on highly productive sites.

### **Specific Comments:**

(Stoltze)—It was interesting to see very few acres modeled for PCT. We wonder if that was in response to Lynx habitat restrictions or an economic constraint? It is an interesting question if it is economically driven. Maybe a concentrated study on the economic return of precommercial thinning on State lands would be in order. While generally considered good stand tending, in many of our less productive sites, the economic viability may be questionable. Then you would need to assess if PCT has other benefits, habitat, meeting desired future condition, fuels management. Then the funding source for this may need to be reviewed based upon the beneficiary of the value promoted if not economic.

(Weyco)—The number of acres modeled for Precommercial Thinning (PCT) seems very low and does not appear to be a consideration in future management decisions. We believe the application of PCT in specific stands can greatly influence growth rates and when further coupled with commercial Thinning (CT) can have very favorable results. This benefits of this silvicultural method is particularly evident on the Stillwater Acquisition and we strongly encourage both modeling and implementation of PCT and CT on younger stands particularly in the NWLO where stocking levels and growth rates are higher than other regions.

(Sun Mtn)—The minimal use of pre-commercial thinning is a concern. Applying this treatment on as many acres as possible would seem necessary to maintain the sustained yield and maximize growth potential.

**Response 9:** *The occurrence of PCT within Lynx Management Areas was not reported correctly in the draft report, and this has been corrected in Figures 33-39 of Appendix J in the Final Report. However, the results presented in Figures 33-39 of Appendix J only show the application of PCT within LMAs, not the entirety of DNRC’s ownership. As shown in Appendix D, for modeling purposes PCT treatments were limited to high productivity sites on the NW and SW Land Offices, although in practice some acres in the moderate productivity class receive PCT treatments. Across the entirety of DNRC ownership, 32,118 acres were assigned to management pathways that include PCT.*

## **Topic: Cable and Helicopter Harvesting**



**Comment 10:** What is the basis for the 18% cable harvest constraint, and is this only a model constraint or is it an operation constraint? New harvesting methods may allow for more harvesting in difficult terrain.

**Specific Comments:**

(Weyco)—The not to exceed 18% cable harvest during a period is concerning and is not clear whether a period is one year or 20. It is unclear if the not to exceed 18% cable harvest is only a model constraint or an operational decision that will be implemented on trust lands. We are concerned that the 18% imposition artificially limits the full capacity of the cable logging workforce; if more cable units are offered, the market will respond and more capacity will come online. Please consider this going forward as we have routinely witnessed agencies deciding what levels of cable logging are appropriate and focusing on ground-based systems instead; this is a short-sighted solution as it defers cable units to a future date. Additionally, this constraint does not consider the advent of new harvest technology such as steep slope and cable assist systems allowing more harvest on steeper ground. The focus should be on accessing difficult areas with appropriate systems instead of deferring these areas to later years.

(Pyramid)—In the current draft calculations, 1.4 MMBF was determined to only be accessible by helicopter logging. We agree helicopter logging in Montana is mostly uneconomical at this time. This may change in the future, time will tell. We encourage the DNRC to continue the use of Exca-line cable logging and look at future technology as it develops. Today, Exca-line logging can be used in many areas where helicopter was the only opportunity in the past. Tethering and new technology may continue to access more of what was considered helicopter only. Exca-line and Tethering are not cheap compared to traditional tractor ground-based harvesting, but much cheaper than helicopter harvest.

**Response 10:** *The 18% cable harvesting constraint was derived from slope analysis on our commercial acres. We found that 18% of our commercial timber acres has slopes in excess of 40%. This constraint is a modeling constraint per 10-year period and not an operational constraint. We agree that new harvesting technology such as Exca-line and Tethering have the potential to increase the feasibility of harvesting on steeper terrain.*

## **Topic: Sustainable Yield by Land Office**

**Comment 11:** How will the 60 MMBF of annual harvest (excluding the 8.3 MMBF of “opportunity” volume) be distributed among Land Offices?

**Specific Comments:**

(Stoltze)—It appears from the report discussion that the SYC was modeled on a land office level, specifically for the NDY constraint. This makes sense on an organizational level due to the extreme variability in productivity and constraints. However, I can’t find anywhere in the report where the results are presented on a land office level. This becomes important when the recommendation is 60mmbf target and 8.3mmbf “opportunity” volume that accounts for regional market distinctions.

(Weyco)—While conceptually the annual 8.3 MMBF of “opportunistic” volume makes sense, a specific breakdown of the constraints and associated volumes would be appreciated.

(Weyco)--The report indicates the SYC constraints placed on the 8.3 MMBF “Opportunity” volume is based on market constraints and geographic distribution however the total annual harvest of target of 60 MMBF is presented as a final sum, not broken down by office. A breakdown of annual harvest targets by Region and office would be appreciated as well as a breakdown of where the “Opportunity” volume exists and a plan to address it.

(IFG)— We fully support the concept and process of modeling the SYC at the Land Office level due to wide variation in productivity, operational constraints, and specific markets. That said, its unclear in the report how the recommendation of a 60 MMBF target will be distributed among the Land Offices annually.

**Response 11:** *We have added a graph to Figure 4 in Appendix J showing the resulting harvest levels by Land Office for the Fully Constrained model run. The harvest levels shown in the graph include the 8.3 MMBF of opportunity volume. The graph also shows the change in harvest levels over the planning horizon for each Land Office. For planning purposes, we expect to increase from our current harvest level of 56.9 MMBF in two phases, with a planning target of 58.4 MMBF in fiscal year 2021, and increasing to 60.0 MMBF in fiscal year 2022. The 60 MMBF target would include the following Land Office sale planning targets, although these may fluctuate slightly from year-to-year depending on the sequence and size of sales offered at each Land Office: NW—39.6 MMBF; SW—15.4 MMBF; CE—3.5 MMBF; EA—1.5 MMBF.*

## Topic: Opportunity Volume

**Comment 12:** How will the opportunity volume be implemented? Is it all ponderosa pine? Opportunity volume should be included in the statewide target as this would ensure consistent supply and create demand if sales are designed/packaged in a desirable manner.

### Specific Comments:

(Pyramid)—In your draft, you have calculated 8.3 MMBF in Eastern Montana as “Opportunity Wood” which is currently uneconomical to harvest, haul and make any money for the Trust in today’s markets. Is this volume all species or just Ponderosa Pine? If market conditions don’t allow economical harvest in the next 5-10 years, does that 8.3 MMBF/year get added onto their sustainably harvest when markets do improve? There are other markets for Douglas fir, Spruce, Lodgepole in Eastern Montana that are not available for Ponderosa Pine.

(IFG)--We’d like to encourage the DNRC to include the opportunity volume in the statewide target in an effort to encourage creation of a market for eastside pine, which would also help the DNRC meet some of its forest health and restoration goals.

(Weyco)--Ponderosa Pine (PP) volume primarily found in the ELO is indicated to be a large contributor to the 8.3 MMBF of annual deferred volume and the report states that future markets could develop and bring that volume online. Perhaps the DNRC could approach ELO PP by offering several sales lumped together in a larger multi-year package rather than an individual, per sale basis with shorter terms. The larger volumes and longer timeframe could encourage bidders/businesses and provide some supply related certainty which is a limiting factor for wood products manufacturing.

(Stoltze)—While we understand the rationale behind recommending a target level of 60mmbf and additional “opportunity volume” we question how this will be implemented. While markets in the eastern part of the state may be less developed than the west, not having consistency in supply is one of the primary barriers to market development.

(Stoltze)—One option would be to develop a “wood basket” or portfolio of potential projects in the east that a potential purchaser could then review and possibly purchase from. It is the proverbial chicken and egg situation, but from a trust mandate standpoint, it is the role of the agency to develop value from these lands or to divest and reinvest. We suggest that some level of annual target be allocated to all units with forestland, then direct development of a portfolio of management projects that could be available to a purchaser. Quite honestly, opportunities don’t just show up on your doorstep, you usually need to seek or create them.

(Stoltze)—While we fully understand the scope of the model is not project level, the management intent of the model needs to match that on the ground. Hence the reason for allocating some of the 8.3mmbf opportunity volume as target rather than all “opportunity”.

**Response 12:** *The 2020 SYC of 68.3 MMBF provides an estimate of annual timber harvest level given the current DNRC forested land base and set of management constraints. Diminished pine markets across the state, specifically in the eastern half of Montana, present the most significant challenge in achieving this target over the next 10 years. To date, DNRC has experienced several ponderosa pine sales that have received no bids and support classifying this predominately eastside ponderosa pine volume as opportunity volume. For this reason, the DNRC is recommending an adjusted annual target of 60.0 MMBF recognizing an additional 8.3 MMBF of unharvested, commercial reserves that could be realized in the program should strategic markets and infrastructure develop in the future. DNRC as an agency, will continue working with interested stakeholders to package this eastside “wood basket,” to test existing markets in new ways and to work towards developing new markets.*

*The eastern area offices will have a proposed annual target of 1.5 MMBF. This 1.5 MMBF is part of the proposed 60.0 MMBF annual target. It is important to note that the dispersed nature of our eastside forested parcels, poor market conditions and limited mill availability have only warranted that we maintain 1.1 full time staff split between three eastside DNRC Area Offices. We also note that all eastside opportunity volume parcels produce revenue from other predominant uses in many cases, which include agriculture, grazing, and/or oil and gas leases and therefore are not prime candidates for disposition. These eastside forested acres (opportunity volume) were included in the 2020 SYC because it allows DNRC to account for these assets, albeit as unrealized potential future revenue for the trusts.*

### **Topic: Comments Related to Unclear Information in the Report**

**Comment 13:** (Weyco)—Figure 4 on page 59 indicates that the total standing inventories are increasing but harvest levels exceed growth, this does not seem possible.

**Response 13:** *We discovered that the growth rate calculation used to generate the numbers shown in Figure 4 of Appendix A in the Draft Report was incorrect. It has been corrected and Figure 4 of Appendix A has been updated in the Final Report. The updated figure shows that growth exceeds*

*harvest until the final two periods of the planning horizon, which corresponds with the increase in inventory until the final two periods of the planning horizon.*

**Comment 14:** (Weyco)—Appendix J, Figure 9-Age Class Distribution Chart: It looks like a definition is missing for the large yellow bar beginning period 4. Are we to assume this group of acres is greater than 160 years old? Comparing back to the Acres by Species chart there are very few acres in the OG categories, why is there a difference? In Period 1 there looks to be ~100K acres of 0-10 year-olds, but in period 2 there are only ~25K acres of 10-20 year-olds, why didn't the 100K acres grow into the 10-20 year old class?

**Response 14:** *The definition for the 150+ age class was missing from Figure 9 of Appendix J in the Draft Report; this has been corrected in the Final Report. The difference in acres in old growth species groups shown in Figure 5 and the 150+ age class shown in Figure 9 occurs because only existing stands are classified as an old growth species type (W1, W4, or W6) at the onset of the model run; as currently existing non-old growth acres develop into old growth during the progression of the model run they retain their original species classification. Therefore, the acreage of old growth species does not appear to increase as shown in Figure 5. However, the amount of acres in the 150+ age class increases over the planning horizon as shown in Figure 9, and those acres include both existing old growth from the onset of the model run and non-old growth acres that are recruited into old growth. It is important to note that not all stands in the 150+ age class meet the criteria to be classified as old growth; at the conclusion of the model run there are nearly 137,000 acres of old growth, while there are over 400,000 acres in the 150+ age class.*

*The issue with recruitment of the 0-10 age class to the 10-20 age class between periods 1 and 2 is due to a difference in the start age of regeneration yields and existing stands, and also because the interval from period 0 to period 1 is only 5 years, while the interval between all other periods is 10 years. While investigating this issue, we discovered an error in the age assignment for regeneration yields that has been corrected in the final report, and Figure 9 of Appendix J has been updated accordingly. In the updated figure, there are 43,672 acres in the 0-10 age class in period 0. Those acres do not advance to the 10-20 age class in period 1 because the interval between period 0 and period 1 is only 5 years. Additionally, there are 78,249 acres that were regenerated from period 0 to period 1 that are now included in the 0-10 age class in period 1, resulting in a total of 121,921 acres in period 1 but creating an apparent gap in the 10-20 age class in period 1. From period 1 to period 2, the 121,921 acres of 0-10 age class now advance into the 10-20 age class as expected.*

**Comment 15:** (Weyco)—Appendix J, Figure 10-Average Annual Growth Rate Chart: Why does the annual growth rate drop so much in periods 6, 9 and 18? Regional growth rates vary a fair bit period to period, why is that? Over a large acreage and in a sustainable yield calculation won't the growth rates remain reasonably constant? Also, a stacked bar chart by Region is very hard to discern. The total growth rates in this chart are also different than the growth rates in Table 35.

**Response 15:** *As mentioned in the response to Comment #13, we discovered that the growth rate calculation in the Draft Report was incorrect. Figure 10 in Appendix J has been updated to show the correct growth rates, and also re-formatted from a stacked bar chart to a clustered column chart to be able to more easily discern trends by Land Office.*

*The variation in growth rates between periods is due to large increases in regenerated acres that achieve merchantable volume in a given period, and also due to the replacement of slower-growing existing types by faster-growing regeneration types in some periods. The regeneration types typically have very low board foot volume growth for the first 2-4 periods before they attain merchantable size containing board-foot volume. For example, there are relatively large regen acreages in periods 1, 4, 10, 11, and 16, each of which is followed by an increase in growth rate 2-4 periods later.*

*The growth rates in Figure 10 are different than those in Table 35 because they represent growth rates from fully constrained model results, while the growth rates shown in Table 35 compare biological potential (unconstrained managed) and grow only (unmanaged) growth rates.*

**Comment 16:** (Weyco)—According to the Old Growth Acres charts starting with Figure 45, OG recruitment in many of the NWLO office units take dramatic spikes in years 9 and 18, what causes this? Is there an age class chart/table of existing inventory that shows development of this of age group is possible? Looking at the Plains and Stillwater offices for example does there currently exist several thousand acres of 100- year old stands that can be classified as OG in periods 5 & 6?

**Response 16:** *The large increases in old growth acres is primarily due to existing non-old growth stands that attain sufficient age, along with having the minimum number and size of trees, necessary to be classified as old growth. Age is not the only factor in determining whether a stand is old growth; the stand must also contain a specified number of large trees of a given diameter along with a minimum amount of basal area. Because of this, not all stands that achieve the age threshold will qualify as old growth, nor will stands that meet them minimum requirements for number of large trees and basal area if the stand does not also meet the age requirement. The minimum criteria for each old growth type are shown on Page 44 of the Final Report.*

## **Topic: General observations and recommendations**

**Comment17:** (FOWS)—We find it disturbing that you are asking the public to comment on the 2020 SYC yet will not change anything in it based on science (climate change) and public input - if you solicit public comments you should incorporate public comments into your final decision.

**Response 17:** *Accommodation of transparent public review and consideration of public comments for this process is being conducted in a consistent manner with calculations done in the past. Current data, scientific information relevant to the process, and state-of-the-art modeling procedures and technology were all incorporated into this calculation. To foster objectivity and credibility of the calculation, DNRC is required by statute to have a third party to conduct each calculation (MCA 77-5-222). We note that public comment was solicited, received and considered in this process prior to final adoption of the result by the Montana Board of Land Commissioners. See response to comment number 1 regarding more specific information regarding climate change.*

**Comment 18:** (Stoltze)—We appreciate the cumulative way you presented the constraints effects, allowing us to see what the incremental change to the SYC is of each subsequent constraint. Undoubtedly, many of the constraints overlap so it is hard to independently assess the impact of an individual constraint, none the less, the presentation is appreciated.

**Response 18:** *Thank you for recognizing our efforts to transparently demonstrate the effects of constraints on volume.*

**Comment 19:** (Pyramid)—In your draft, you talk about the decrease in FTE available from 55 to 50 to setup, sell and administer the new sustained yield number. In our opinion, the DNRC is the most efficient governmental agency in setting up efficient and profitable timber sales. Roads are constructed or reconstructed to the degree necessary, not adding very expensive bells and whistles. The DNRC looks at the harvest units as what do they want them to look like post-harvest. We encourage the DNRC to utilize end result silviculture, i.e. Designation by Description and Designation by Prescription and other “End-result” prescriptions in lieu of marking timber. Today’s professional loggers are almost as good at selecting leave trees as a forester with a paint gun.

**Response 19:** *Thank you for the compliments regarding DNRC efficiency and profitability. We are conscientious about keeping our costs down and have already begun to implement many of these suggestions.*

**Comment 20:** (Stoltze)—Finally, while the model is heavily constrained and, in some estimates, conservative, ultimately the management strategy of the agency needs to reflect the model in intent and application. Case in point is in the Overstory Removal management directive. Oftentimes, the environmental document or even just local preference indicates tree retention into the future that are more restrictive than what is required in the SFLMP. If OSR is part of the management regime, then they need to be included in projects on the ground. Likewise, it is important that buffers and restricted zones are implemented to the letter of the SFLMP and not arbitrarily expanded without specific justification. It is seen all too often, this constraint creep may be unintentional, but has significant and long-standing impacts on the ability of the Trusts to reap returns.

**Response 20:** *The DNRC agrees that application of on-the-ground management should be similar to the management regimes modeled in the calculation, and to that end refined the management regimes used in the 2015 calculation based on extensive input and review from its foresters. DNRC also recognizes that voluntary implementation of additional restrictions beyond those required will impact its ability not only to achieve management objectives and annual timber sale targets, but also to generate revenue for the Trust beneficiaries. We believe the constraints that were developed and applied in this calculation process accurately and adequately capture the philosophy, intent and sideboards provided by the State Forest Land Management Plan, Forest Management Arms, Forest Management HCP and other applicable rules, laws and agreements. Appropriate application of constraints and measures implemented on DNRC forest management activities support a credible forest management program that promotes sound forest stewardship and protects the short and long-term interests of Trust beneficiaries.*

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## 17 Appendix J: Additional Model Results

The following charts show selected results from the final LP model run with the model fully constrained.

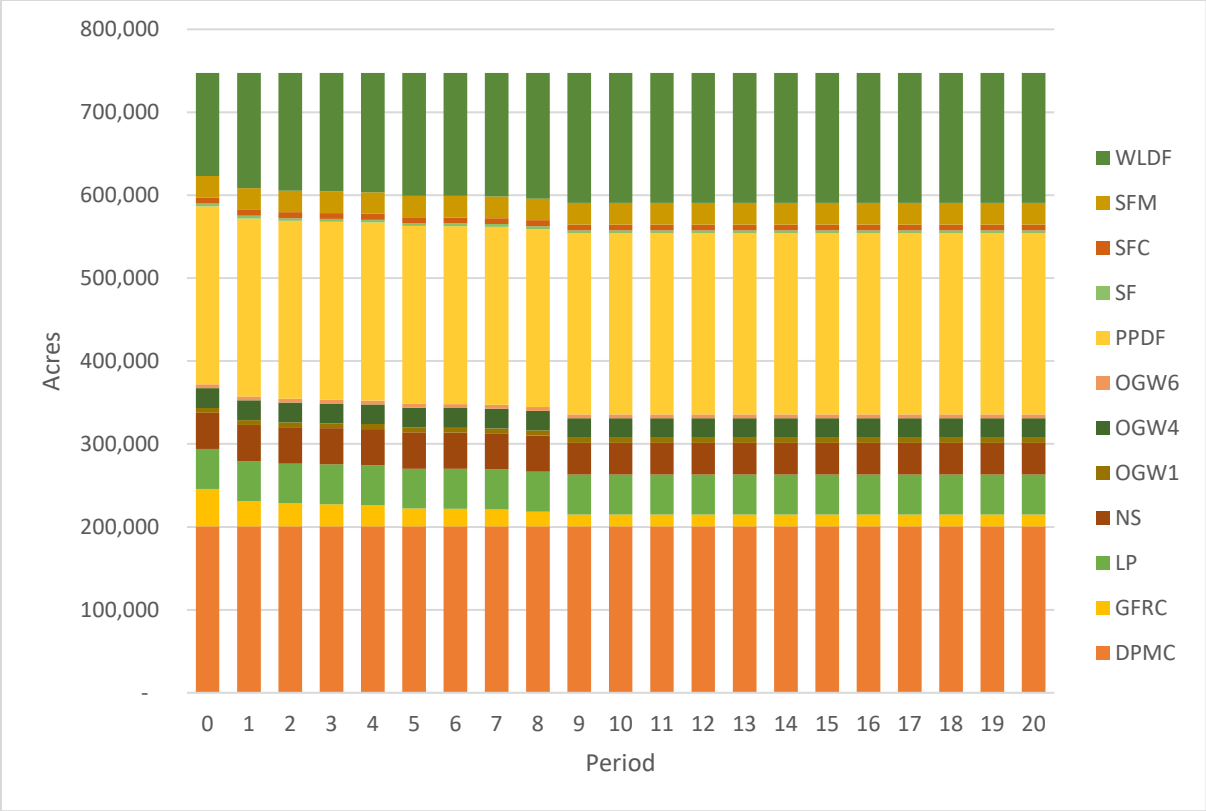


Figure 5: Acres by Species – Fully Constrained Model

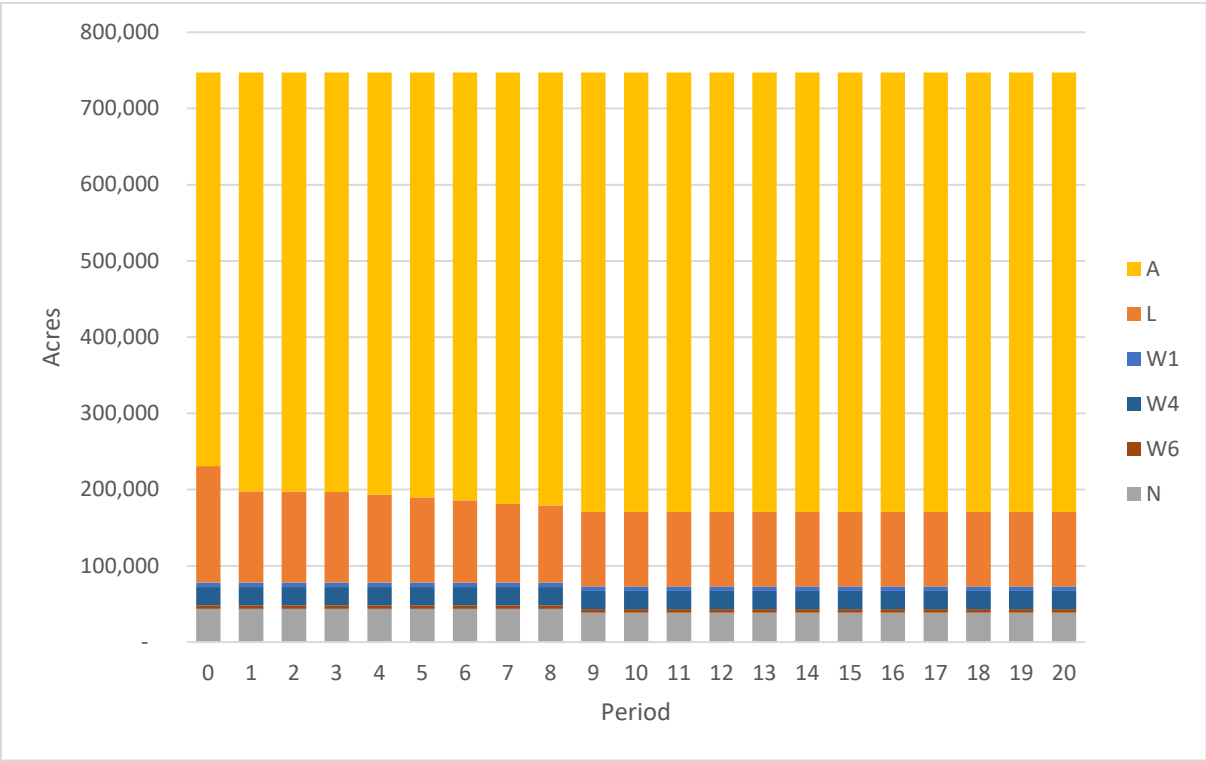
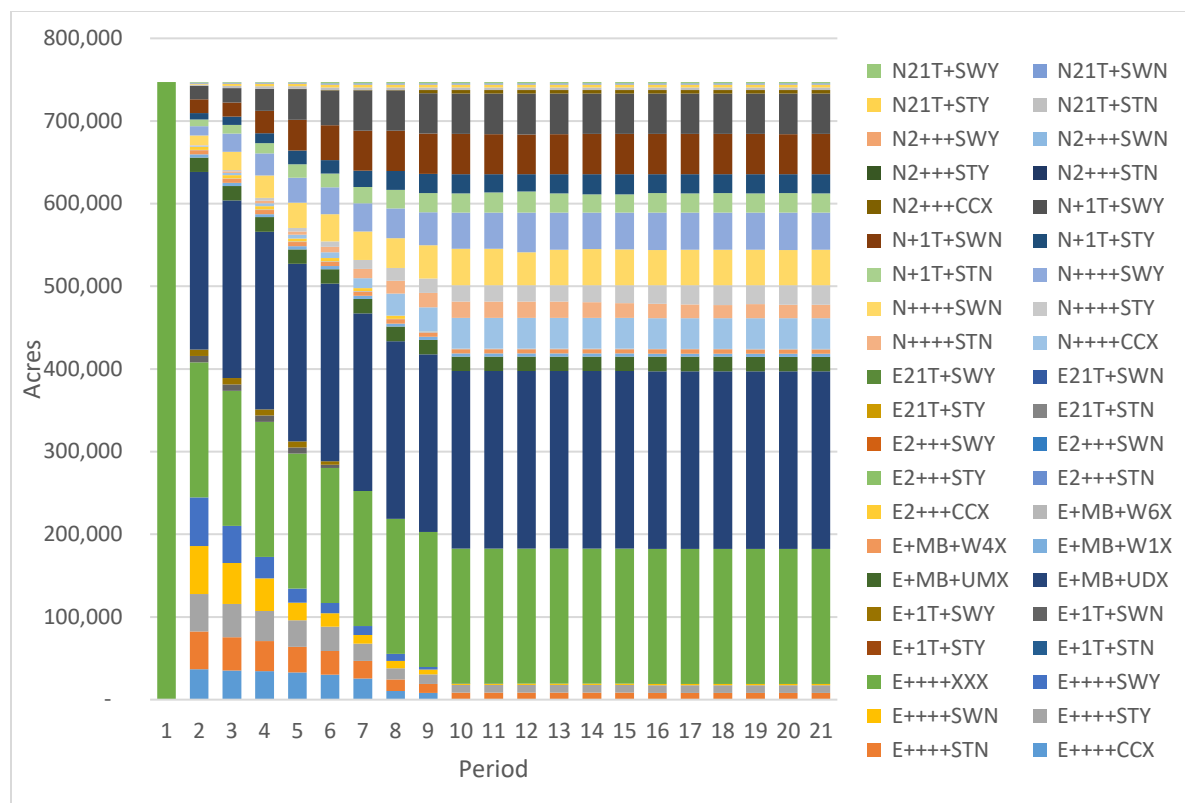
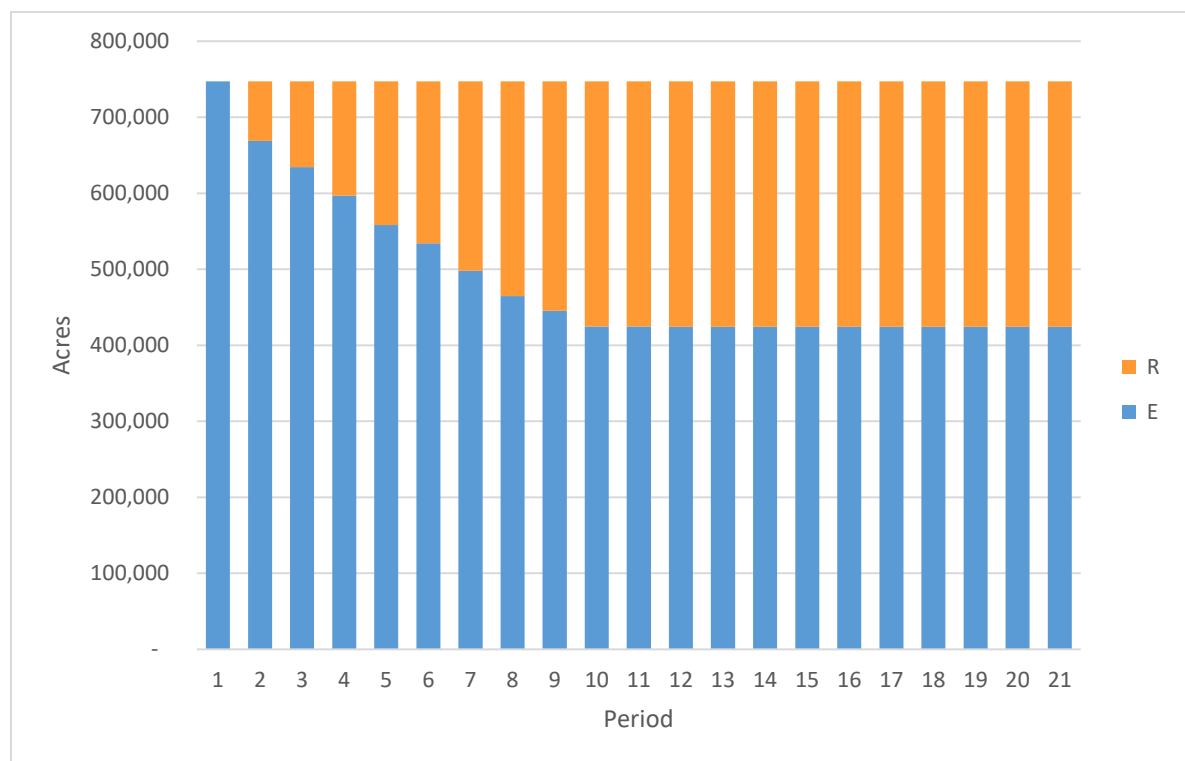


Figure 6: Acres by Stocking – Fully Constrained Model





**Figure 7: Management Pathway Acres – Fully Constrained Model**



**Figure 8: Existing vs. Future Rotation Acres – Fully Constrained Model**

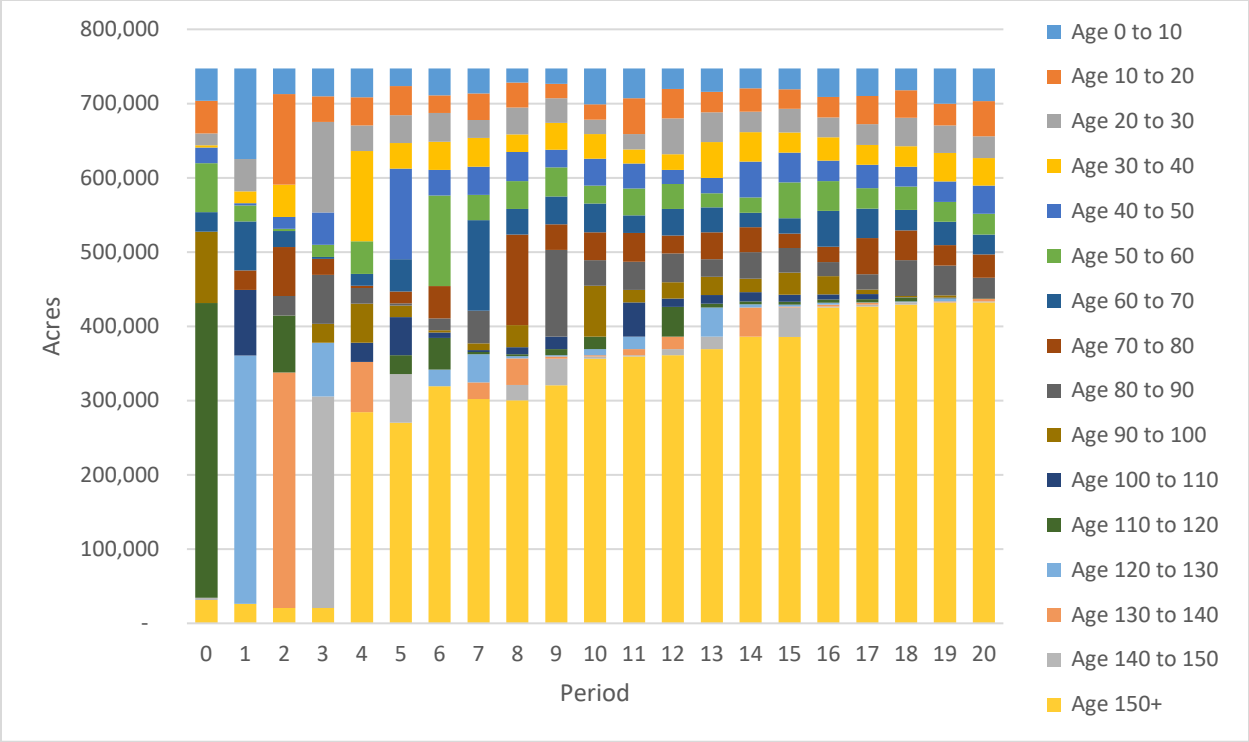


Figure 9: Age Class Distribution – Fully Constrained Model

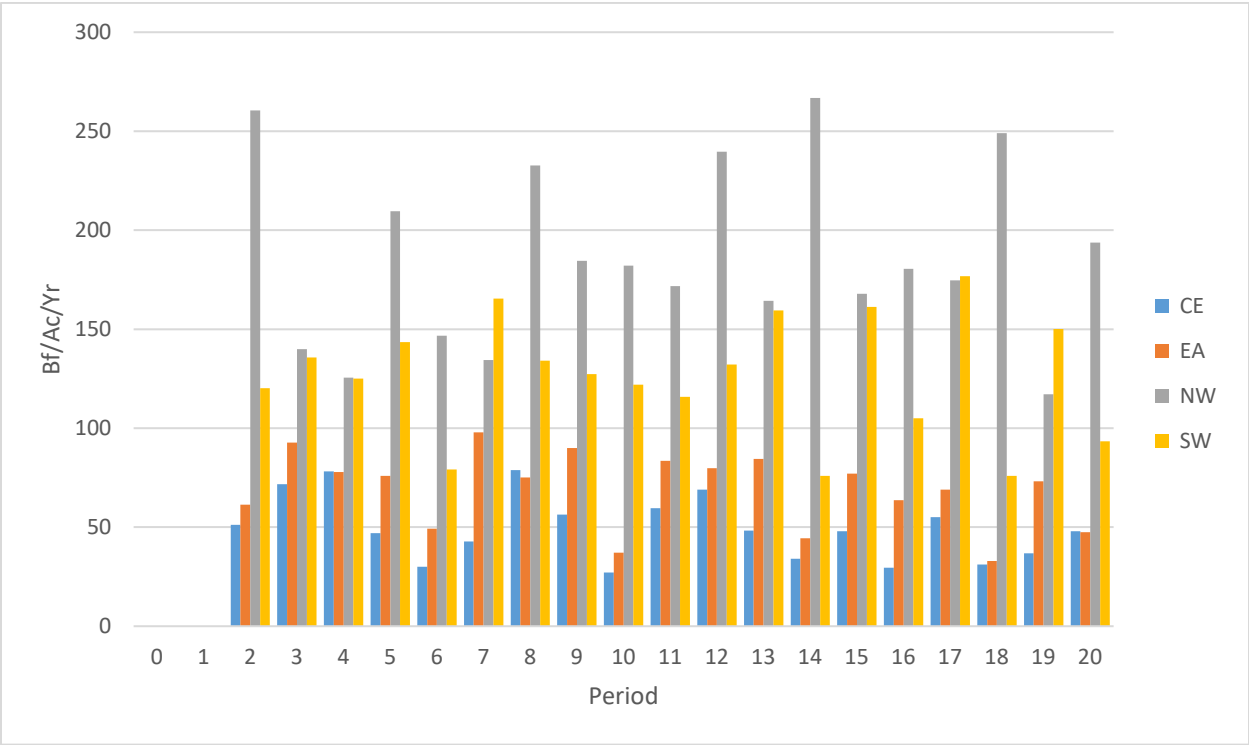
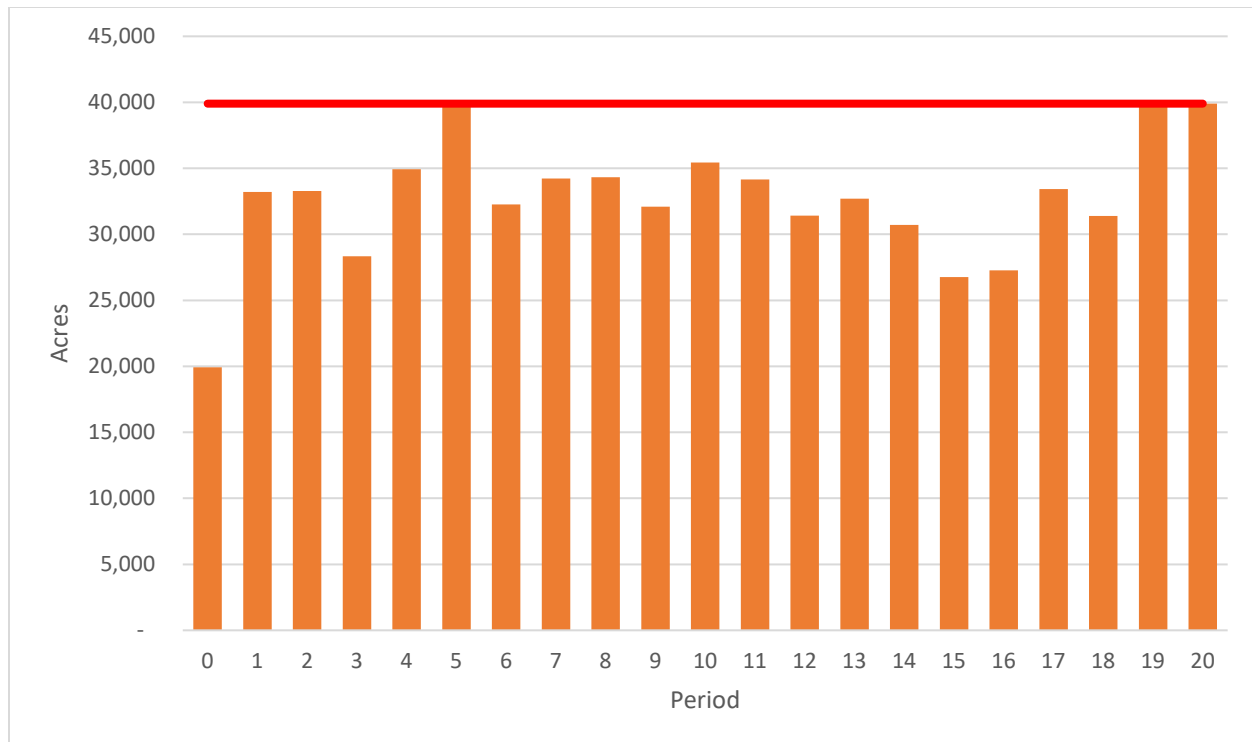
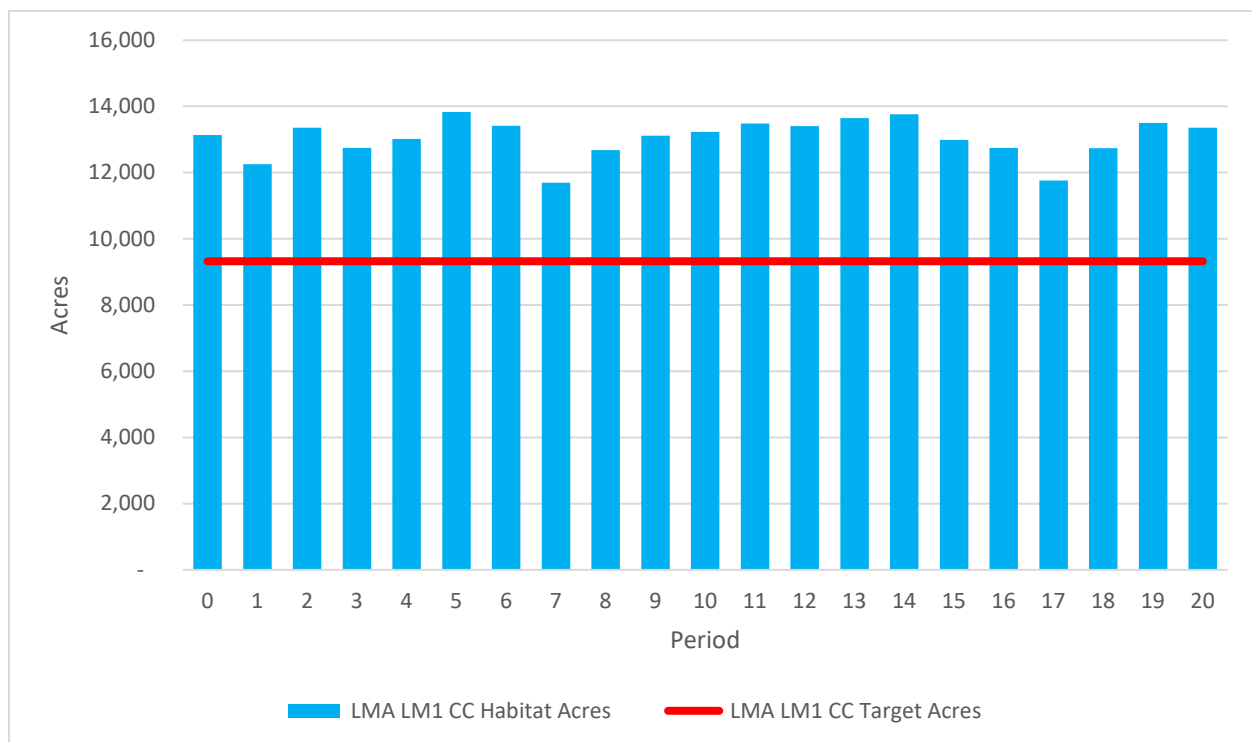


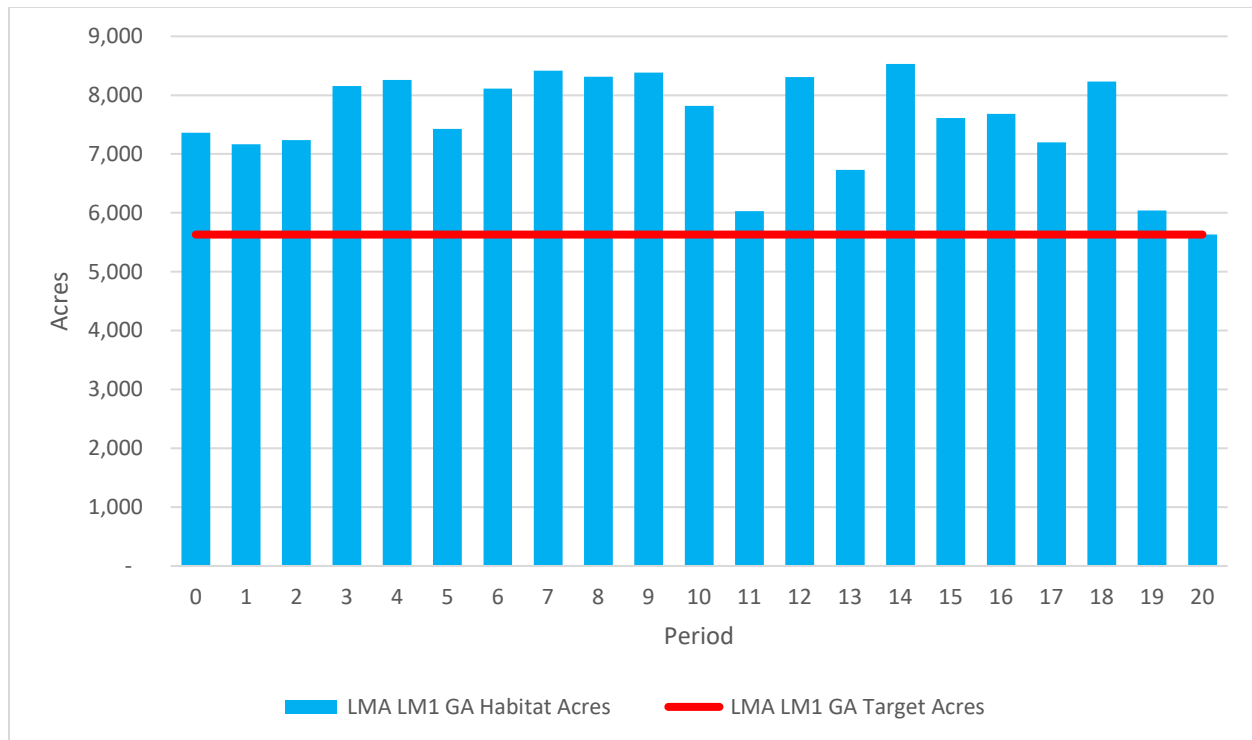
Figure 10: Average Annual Growth Rate – Fully Constrained Model



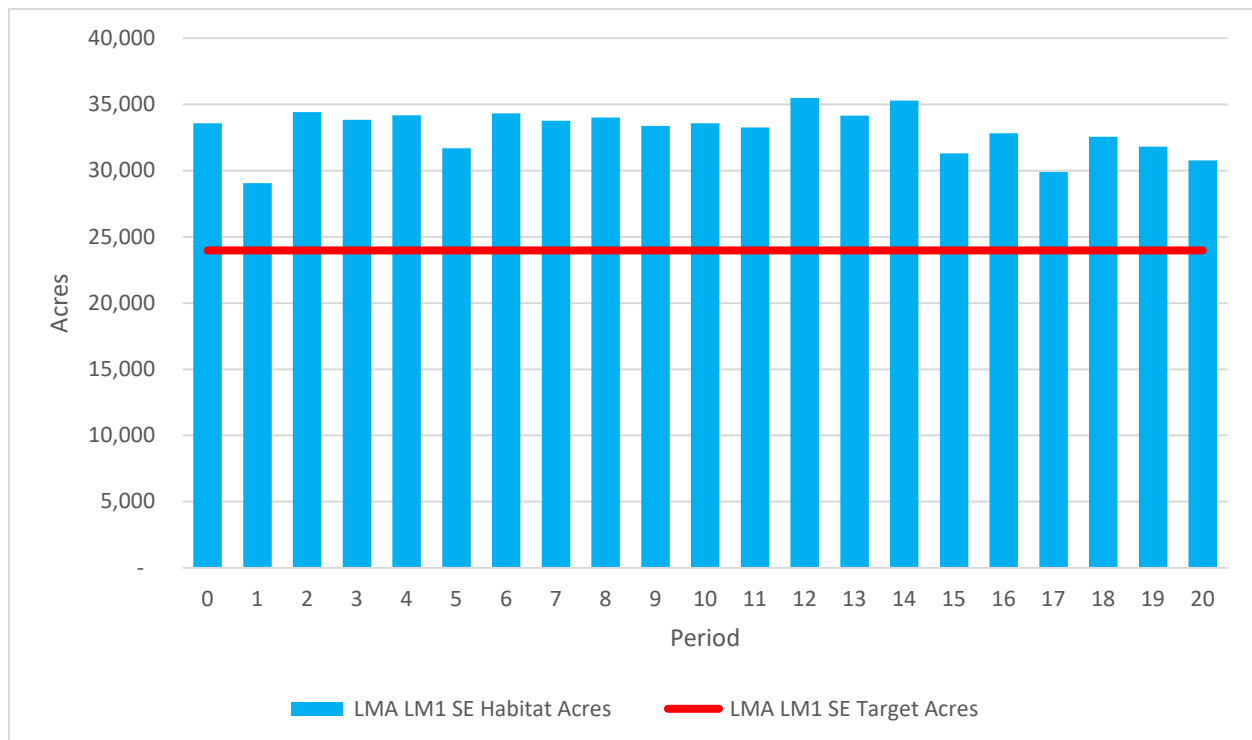
**Figure 11: Sensitive Watershed Development – Fully Constrained Model**



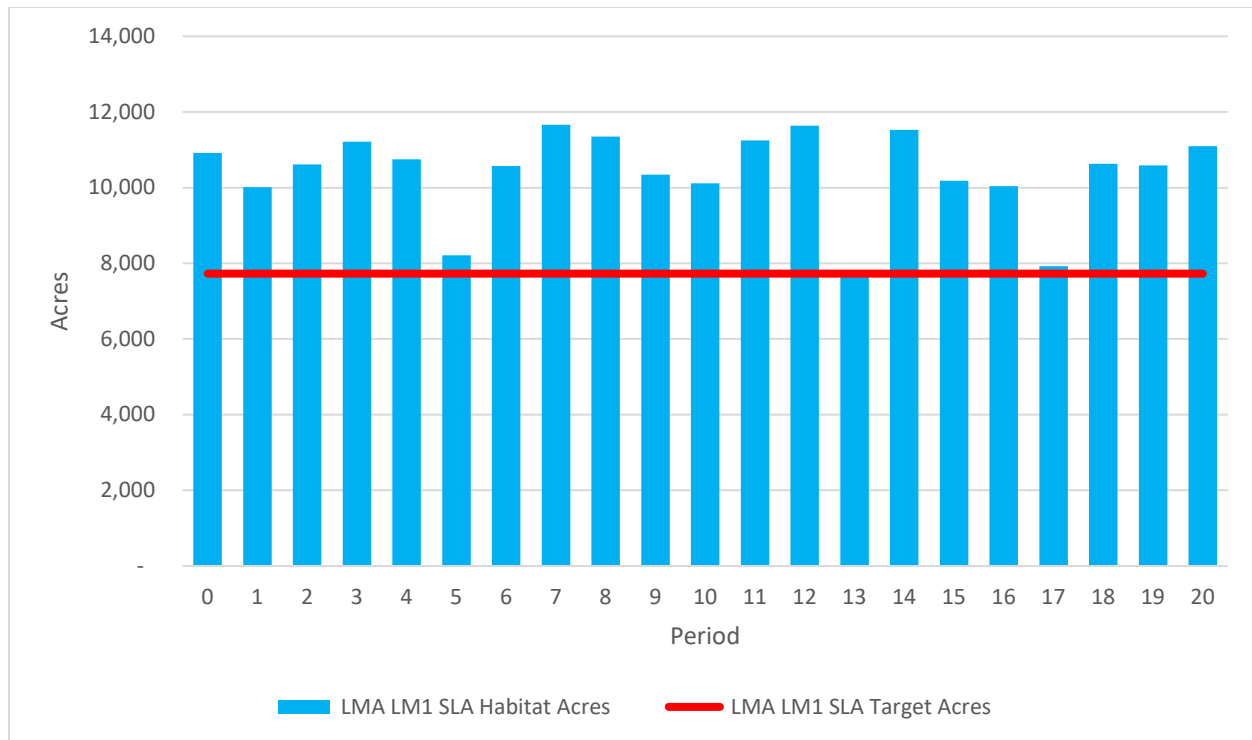
**Figure 12: LMA (Coal Creek) Cover Acres – Fully Constrained Model**



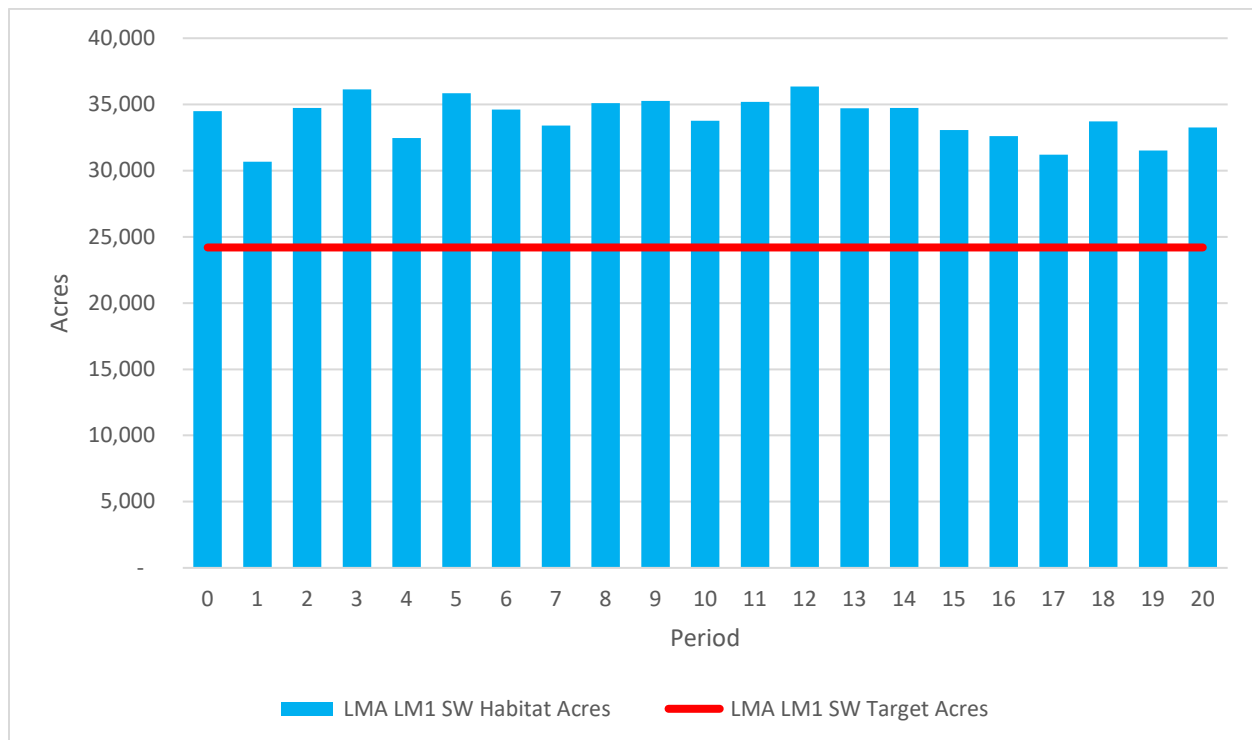
**Figure 13: LMA (Garnet) Cover Acres – Fully Constrained Model**



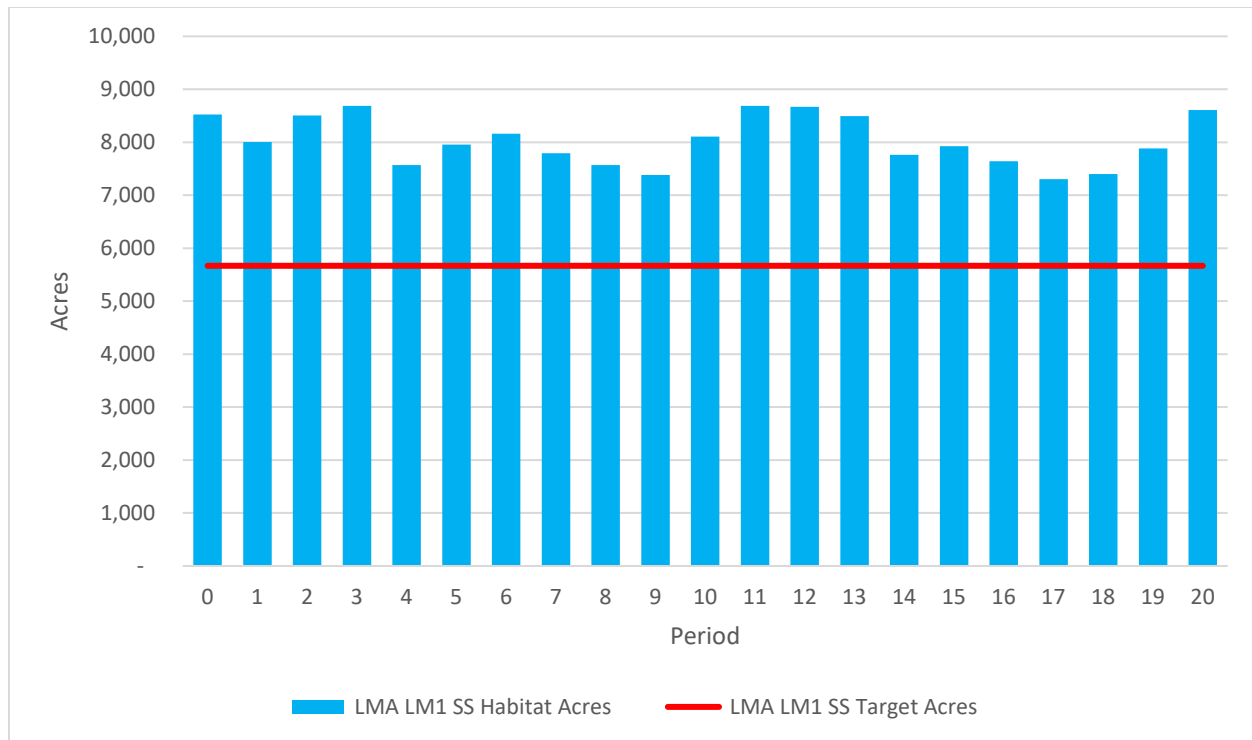
**Figure 14: LMA (Stillwater East) Cover Acres – Fully Constrained Model**



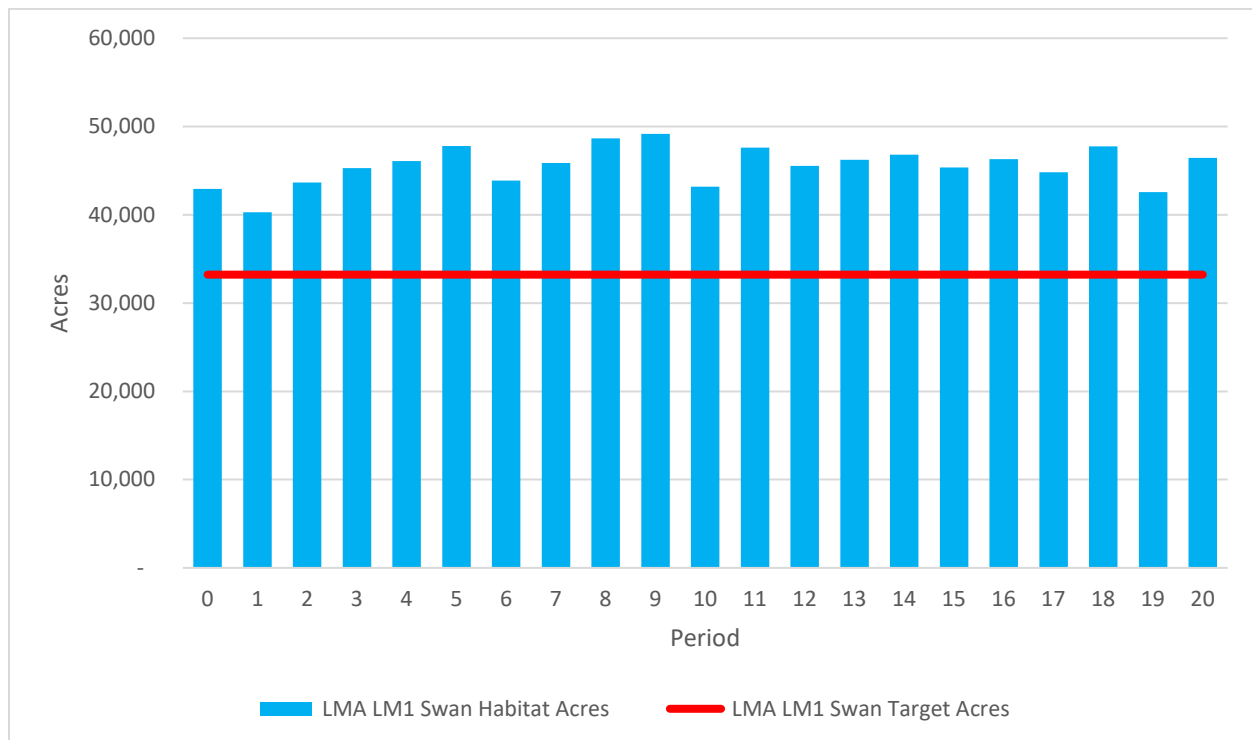
**Figure 15: LMA (Seeley Lake) Cover Acres – Fully Constrained Model**



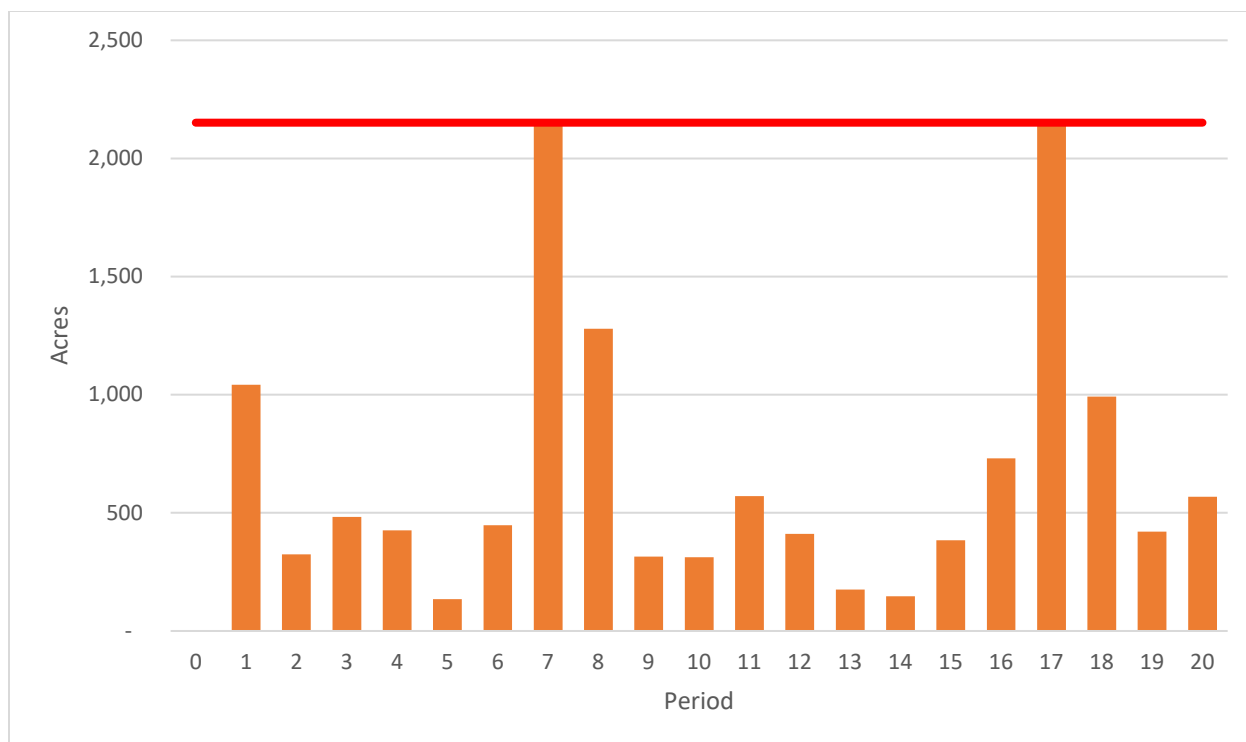
**Figure 16: LMA (Stillwater West) Cover Acres – Fully Constrained Model**



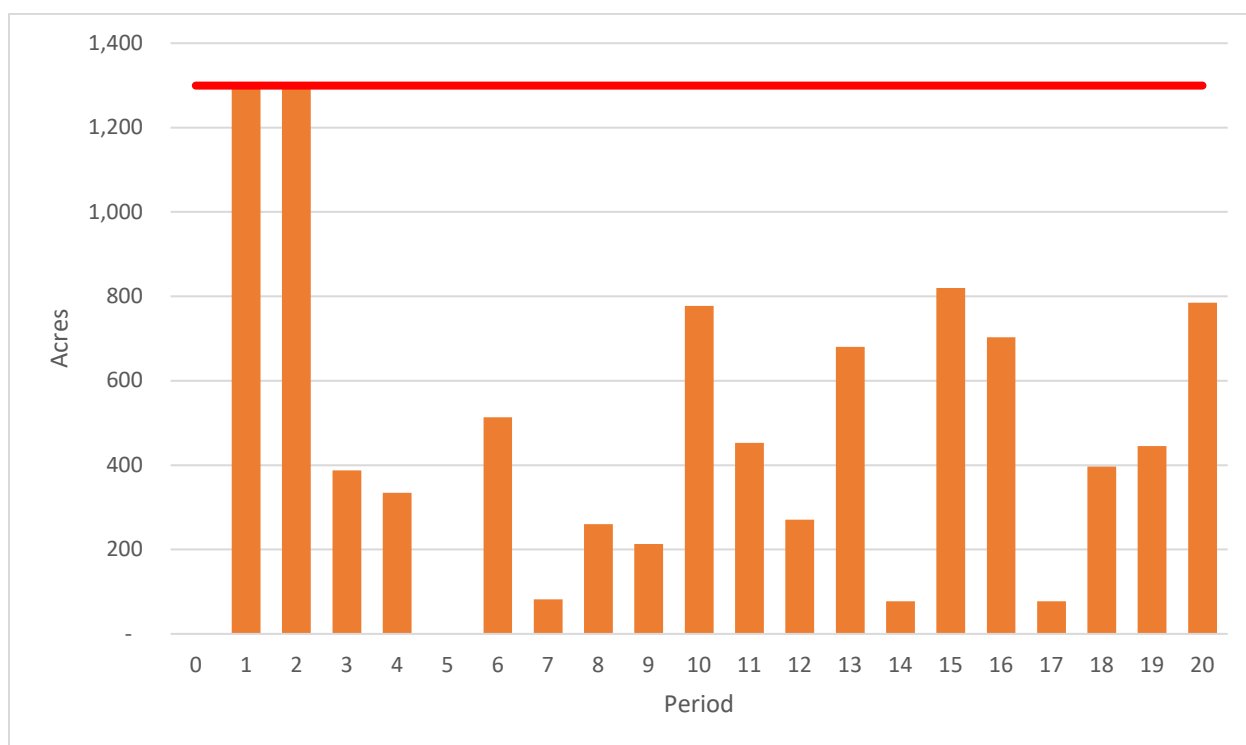
**Figure 17: LMA (Stillwater South) Cover Acres – Fully Constrained Model**



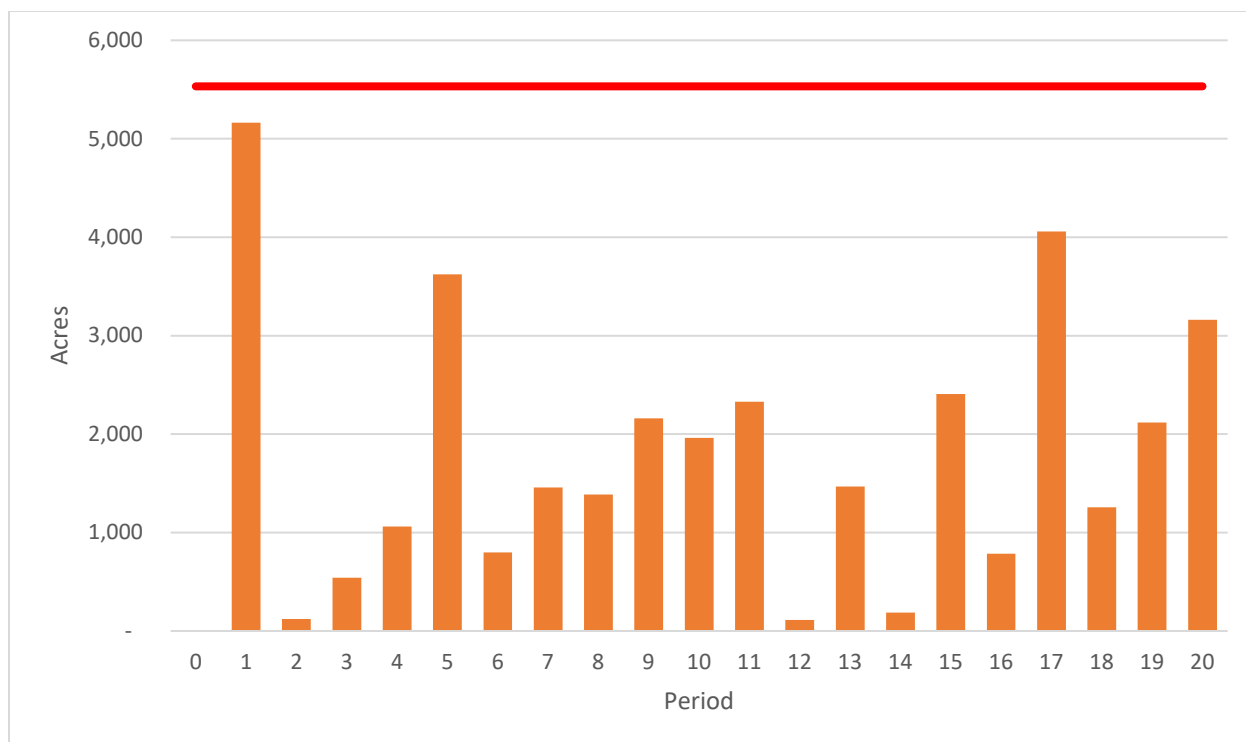
**Figure 18: LMA (Swan) Cover Acres – Fully Constrained Model**



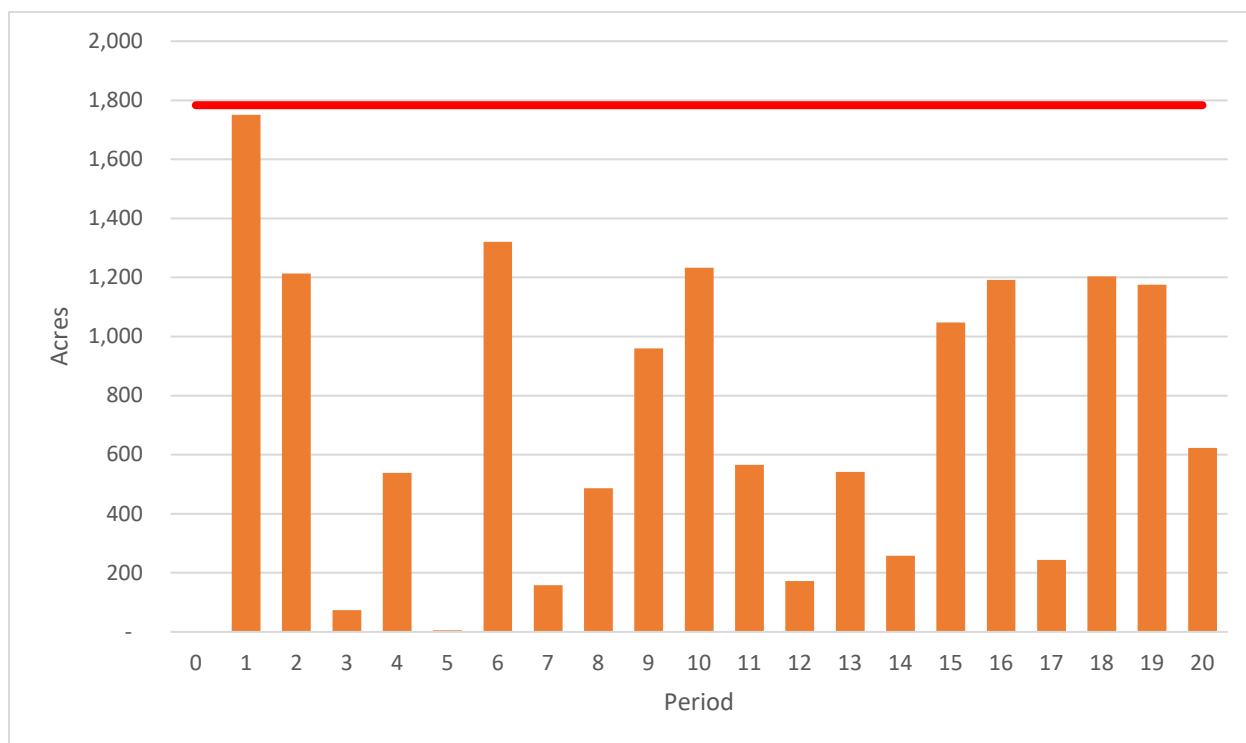
**Figure 19: LMA (Coal Creek) EA Harvest Acres – Fully Constrained Model**



**Figure 20: LMA (Garnet) EA Harvest Acres – Fully Constrained Model**

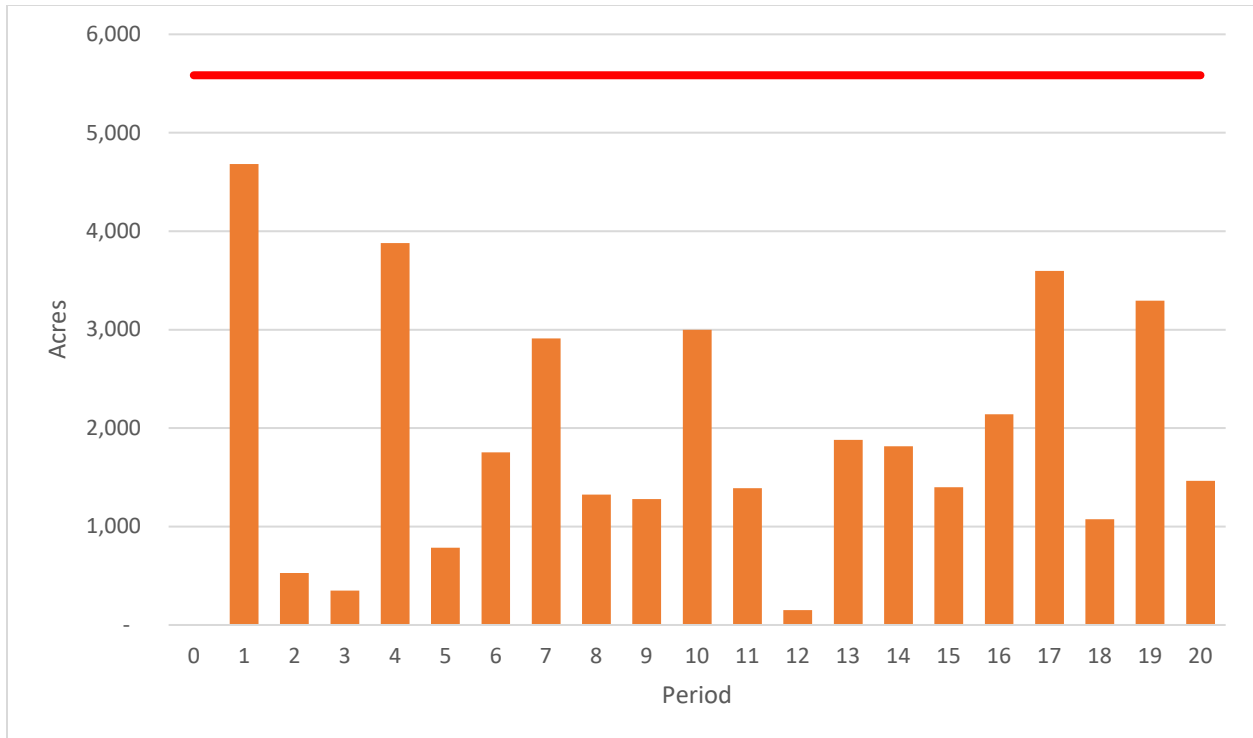


**Figure 21: LMA (Stillwater East) EA Harvest Acres – Fully Constrained Model**

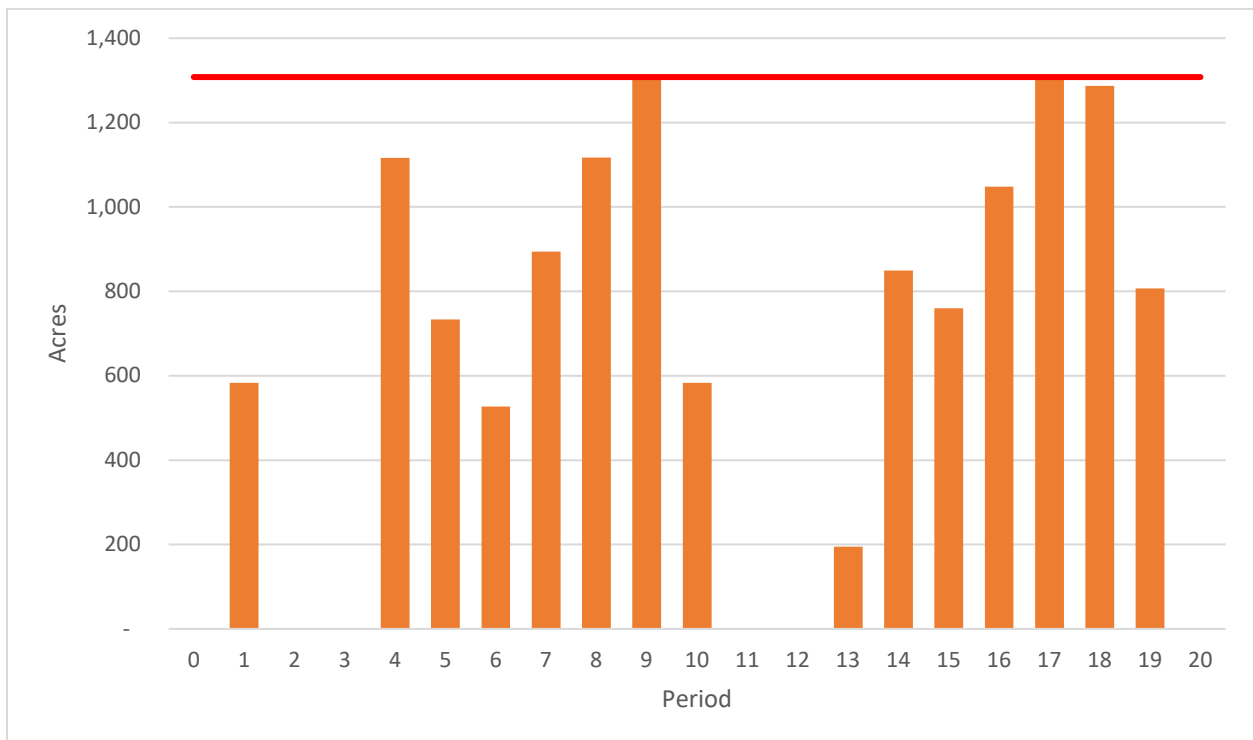


**Figure 22: LMA (Seeley Lake) EA Harvest Acres – Fully Constrained Model**

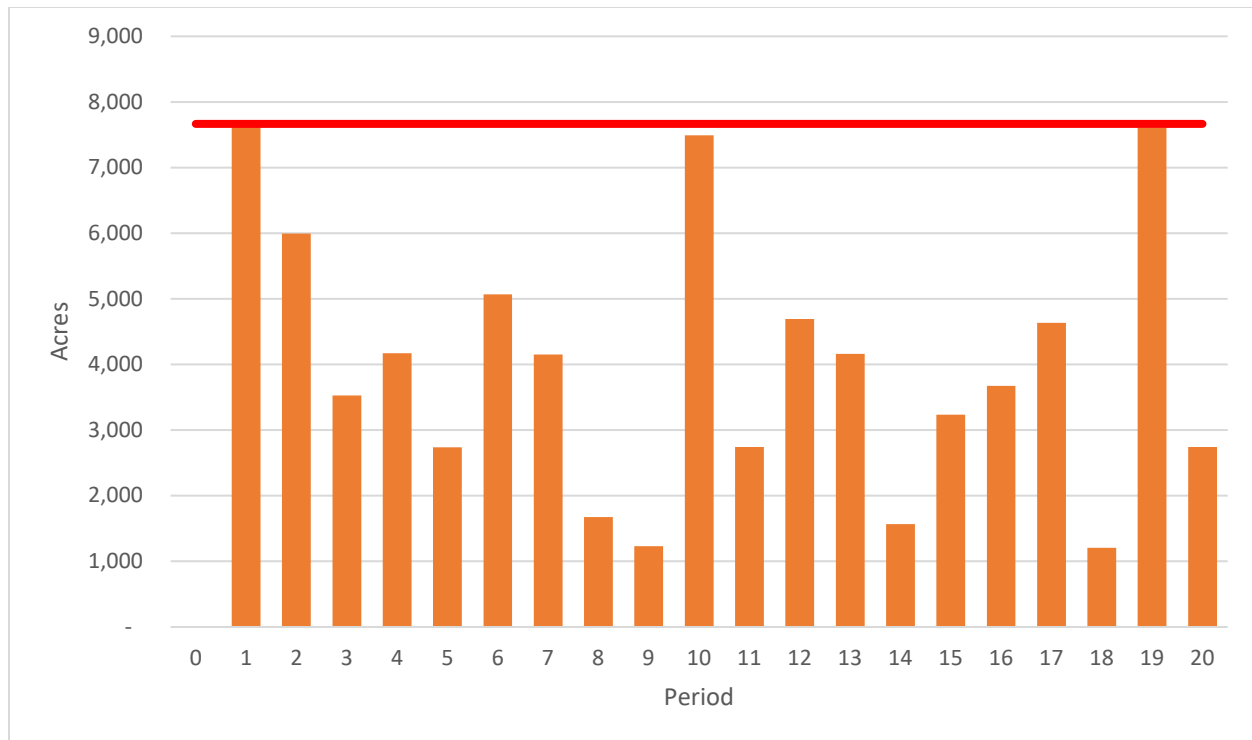




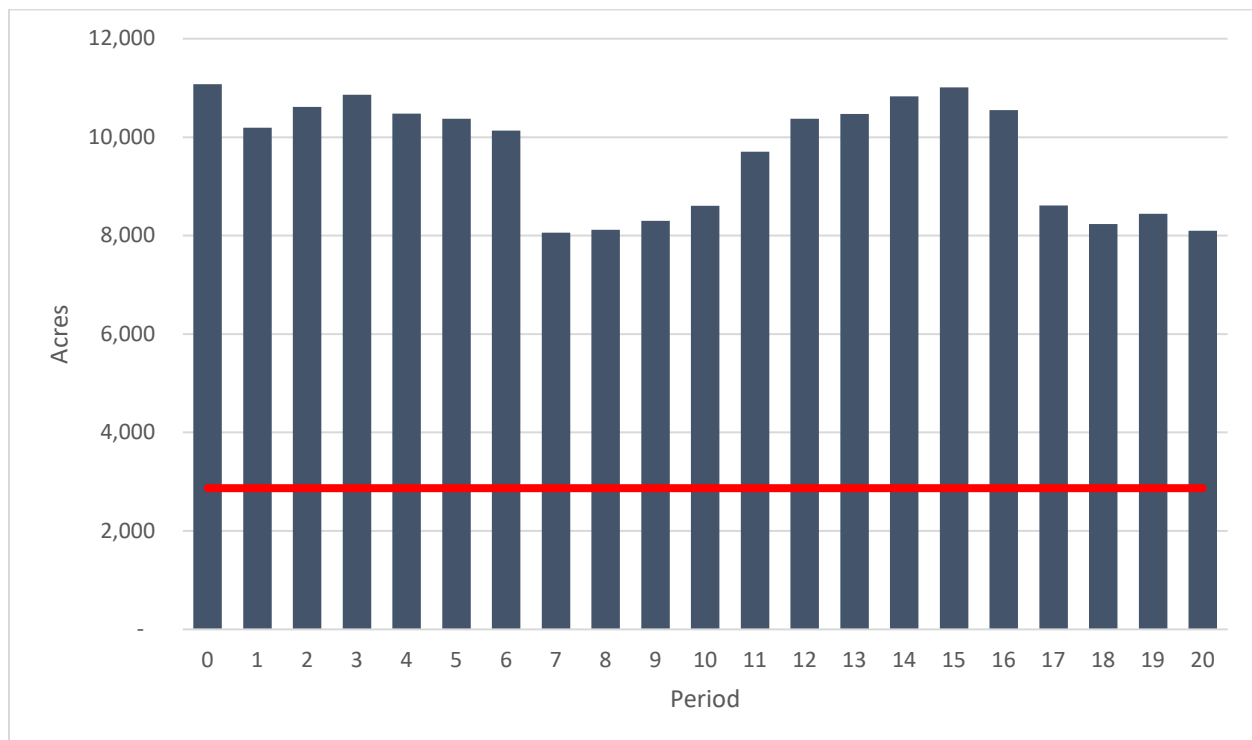
**Figure 23: LMA (Stillwater West) EA Harvest Acres – Fully Constrained Model**



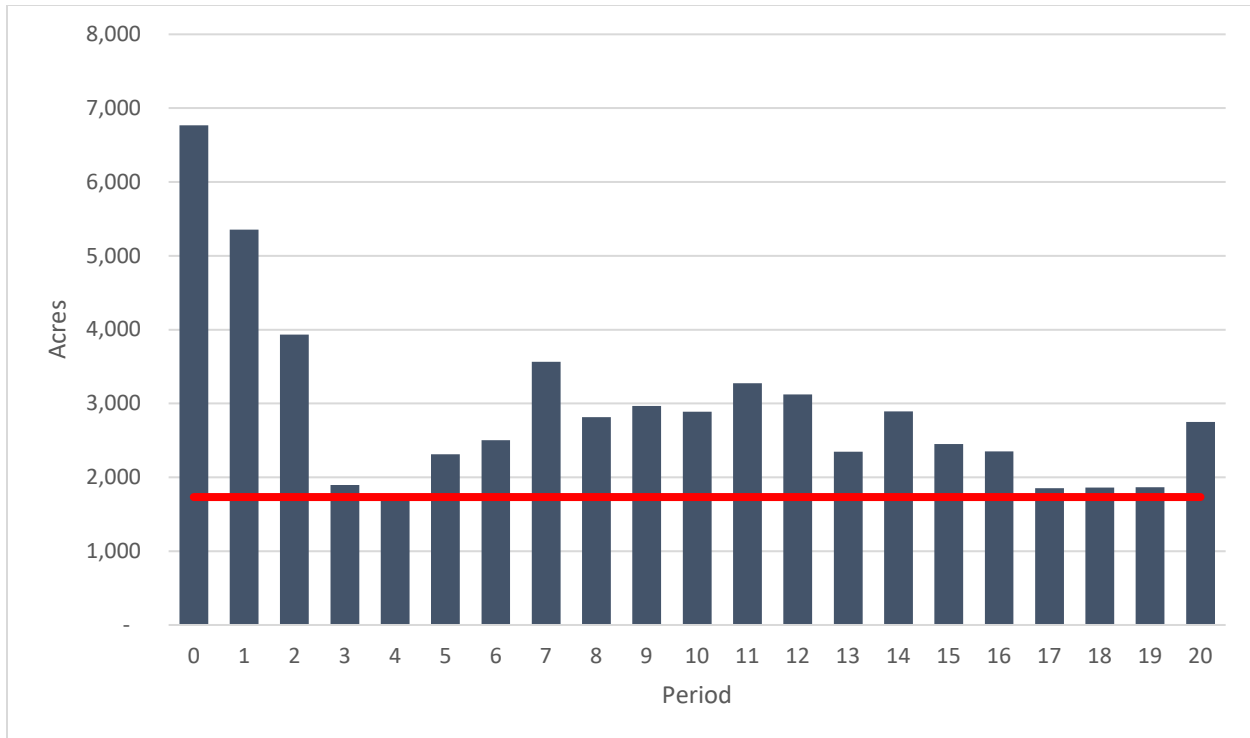
**Figure 24: LMA (Stillwater South) EA Harvest Acres – Fully Constrained Model**



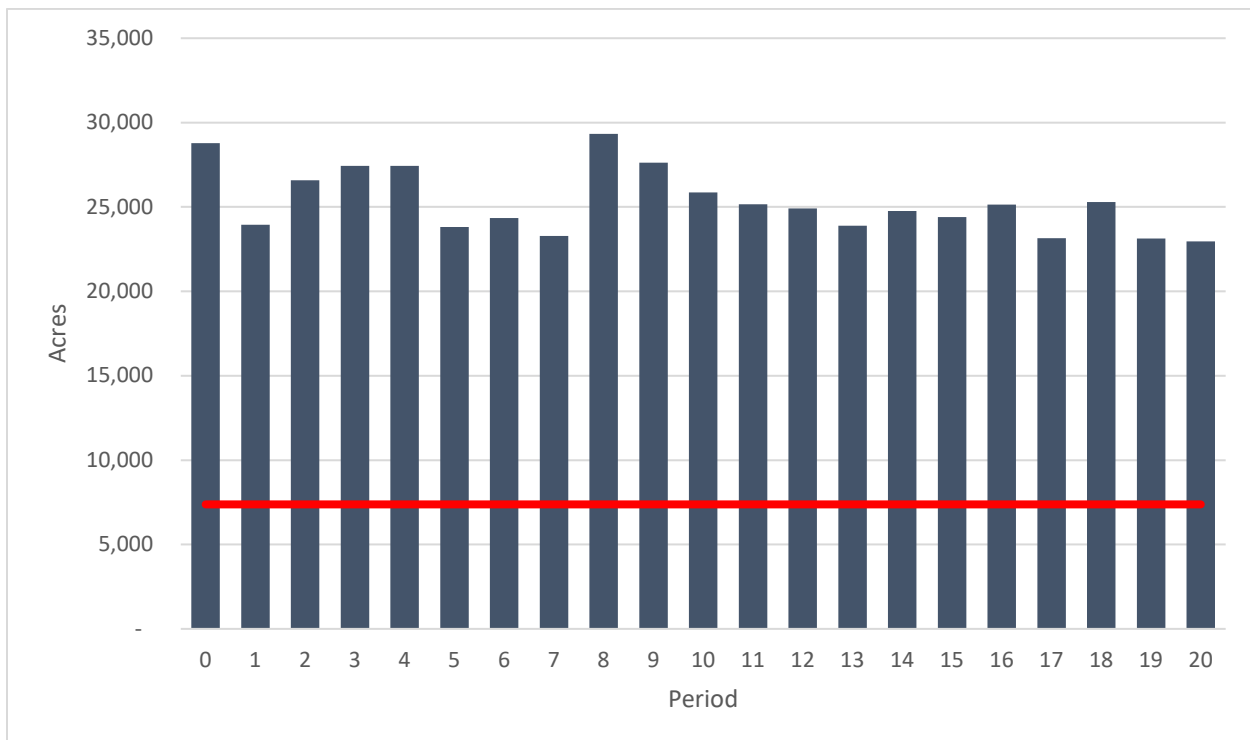
**Figure 25: LMA (Swan) EA Harvest Acres – Fully Constrained Model**



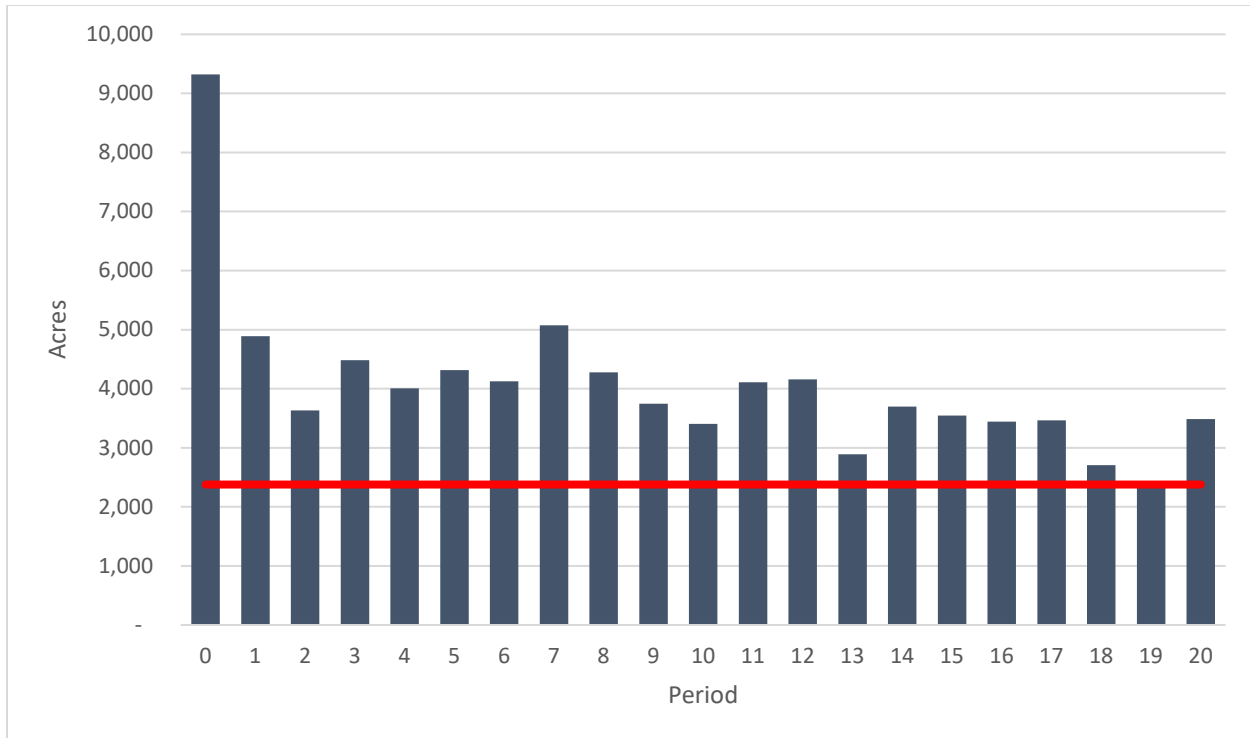
**Figure 26: LMA (Coal Creek) Saw-Timber Acres – Fully Constrained Model**



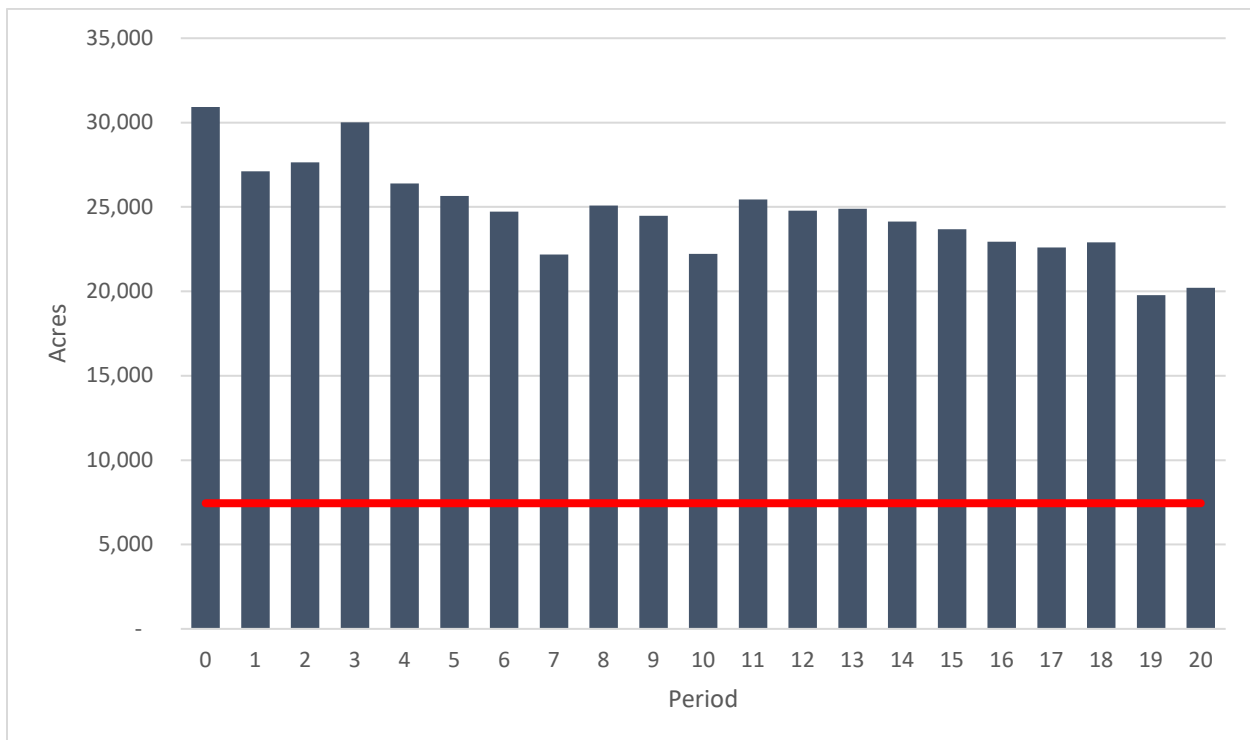
**Figure 27: LMA (Garnet) Saw-Timber Acres – Fully Constrained Model**



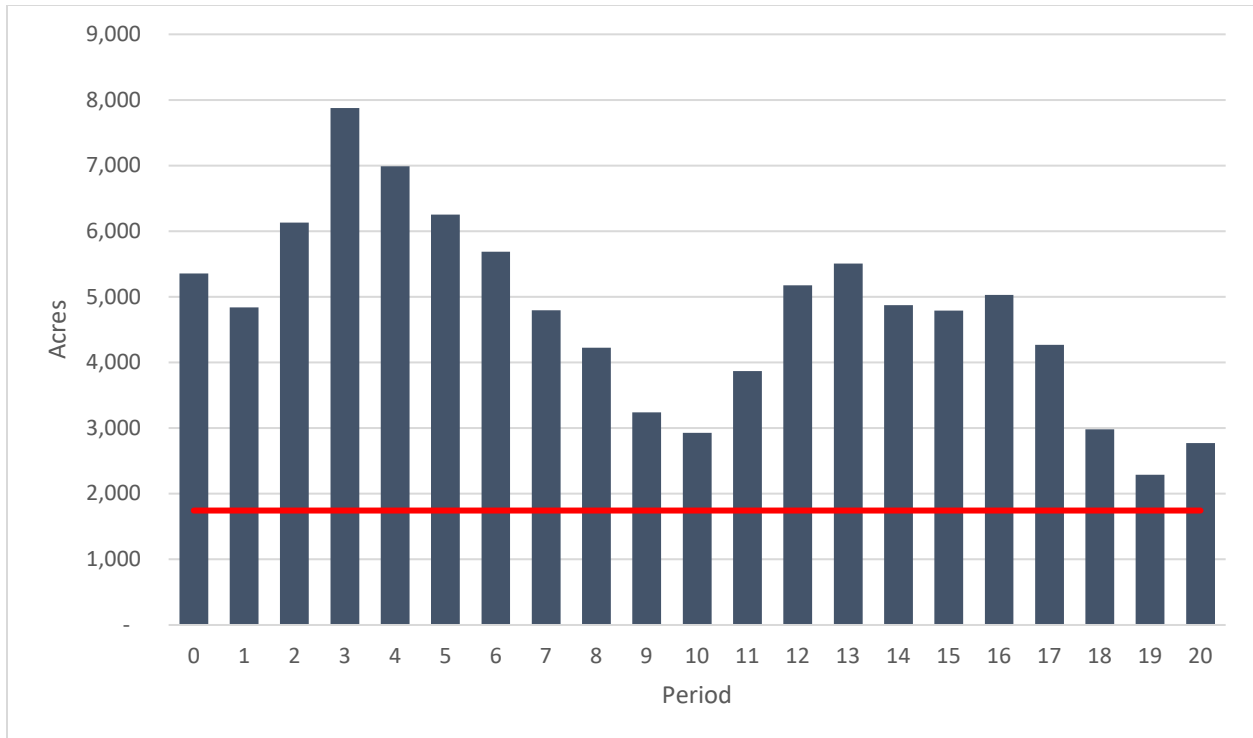
**Figure 28: LMA (Stillwater East) Saw-Timber Acres – Fully Constrained Model**



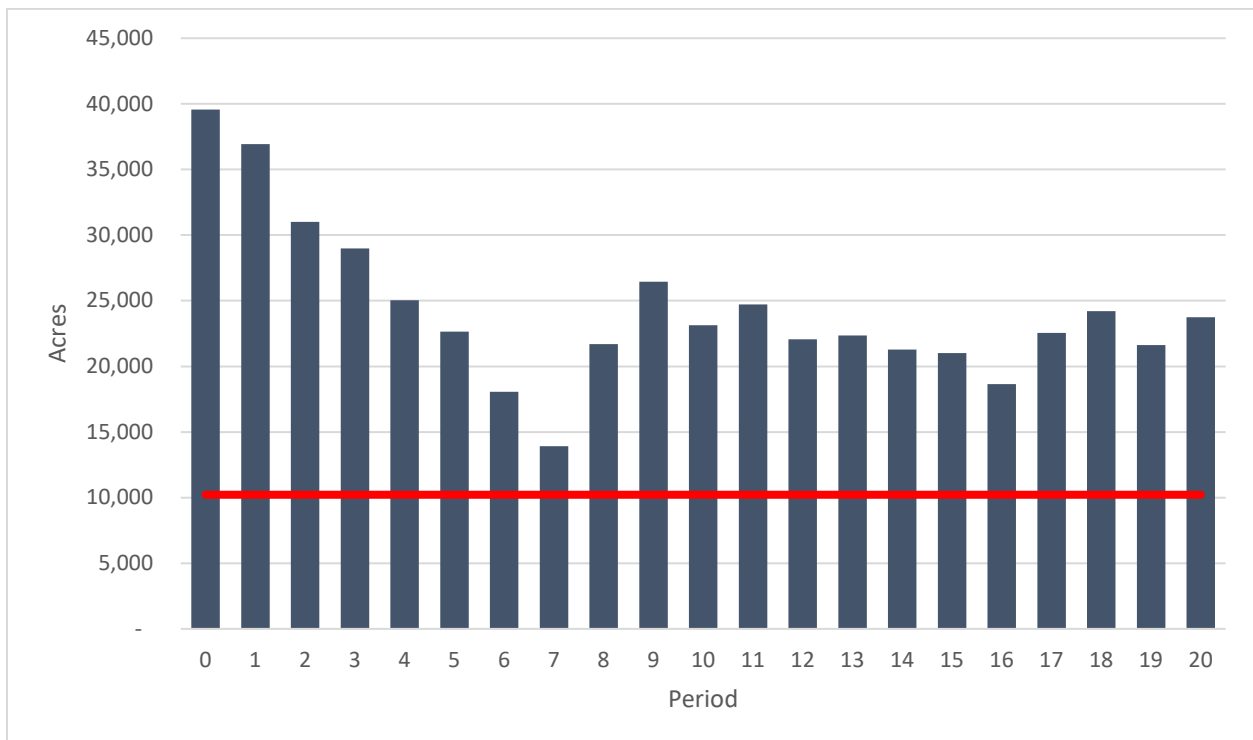
**Figure 29: LMA (Seeley Lake) Saw-Timber Acres – Fully Constrained Model**



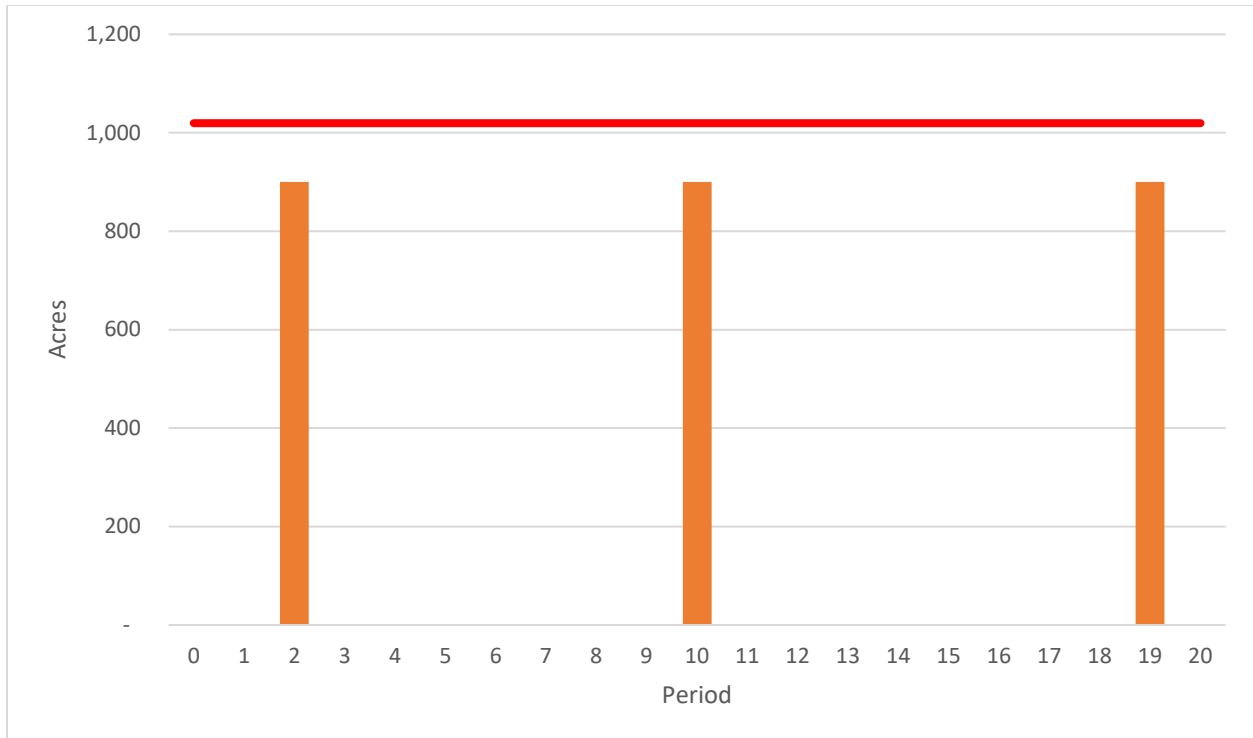
**Figure 30: LMA (Stillwater West) Saw-Timber Acres – Fully Constrained Model**



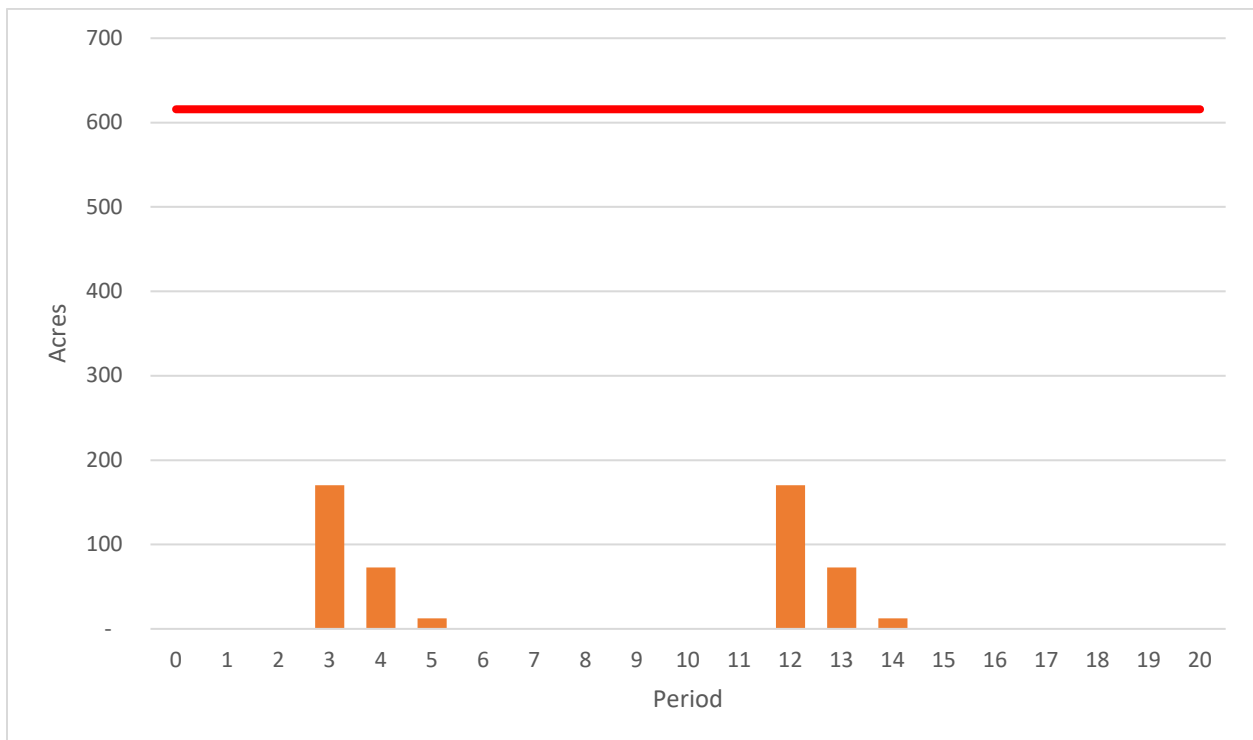
**Figure 31: LMA (Stillwater South) Saw-Timber Acres – Fully Constrained Model**



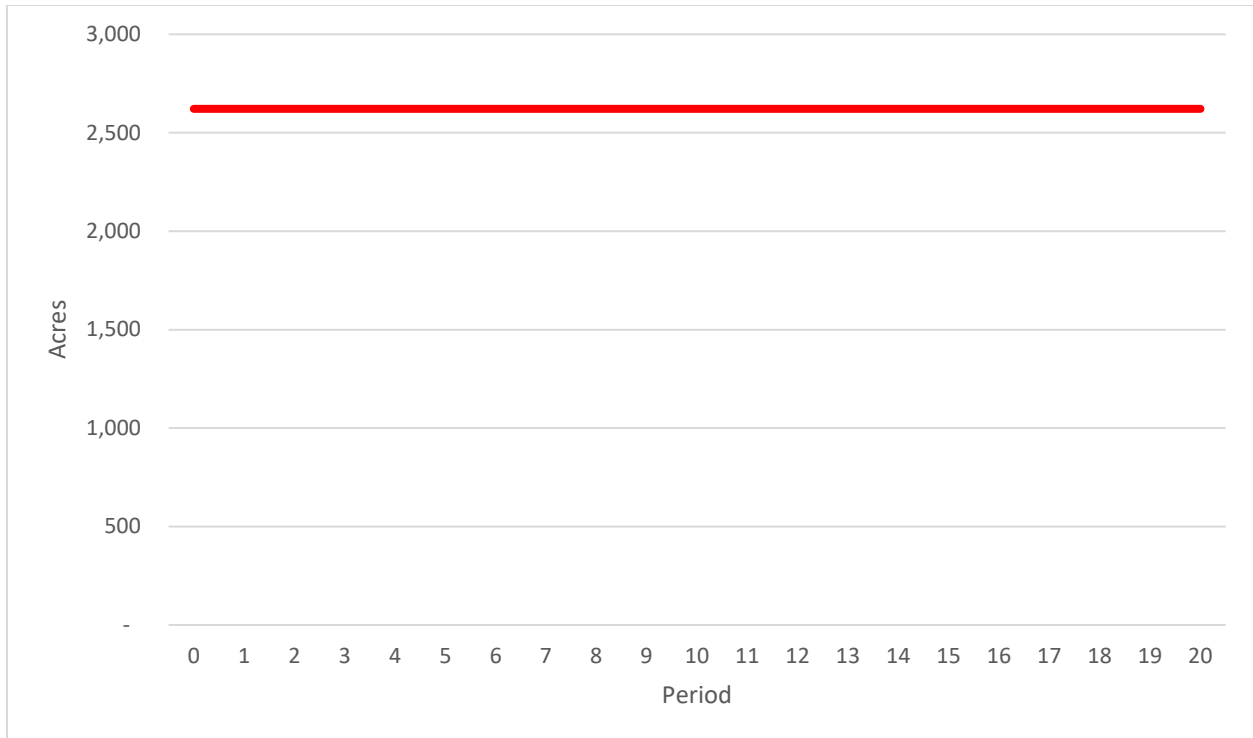
**Figure 32: LMA (Swan) Saw-Timber Acres – Fully Constrained Model**



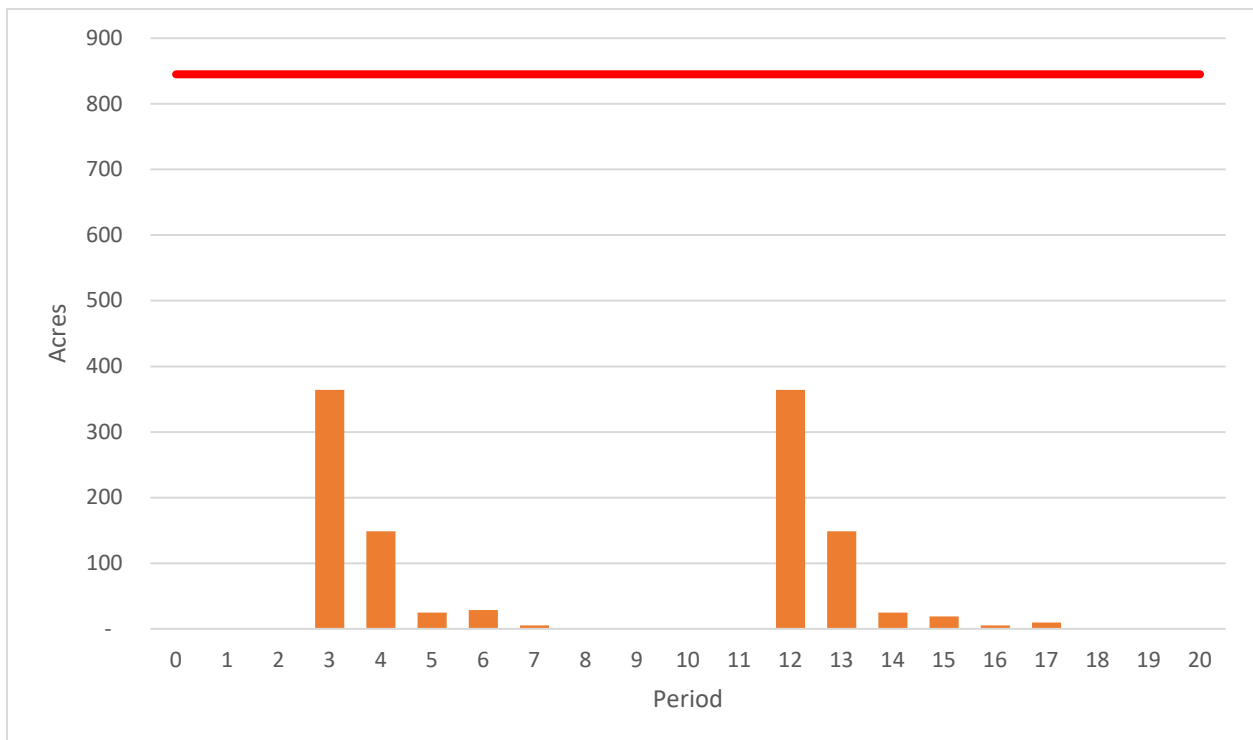
**Figure 33: LMA (Coal Creek) PCT Acres – Fully Constrained Model**



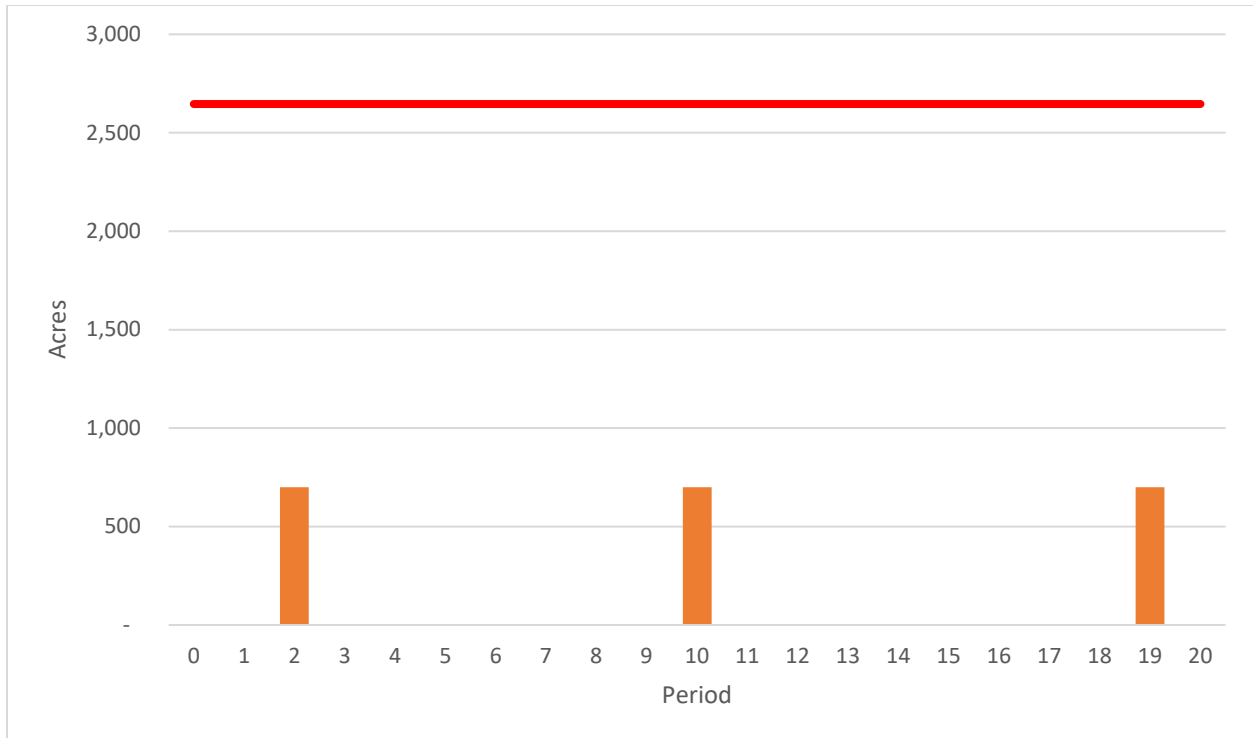
**Figure 34: LMA (Garnet) PCT Acres – Fully Constrained Model**



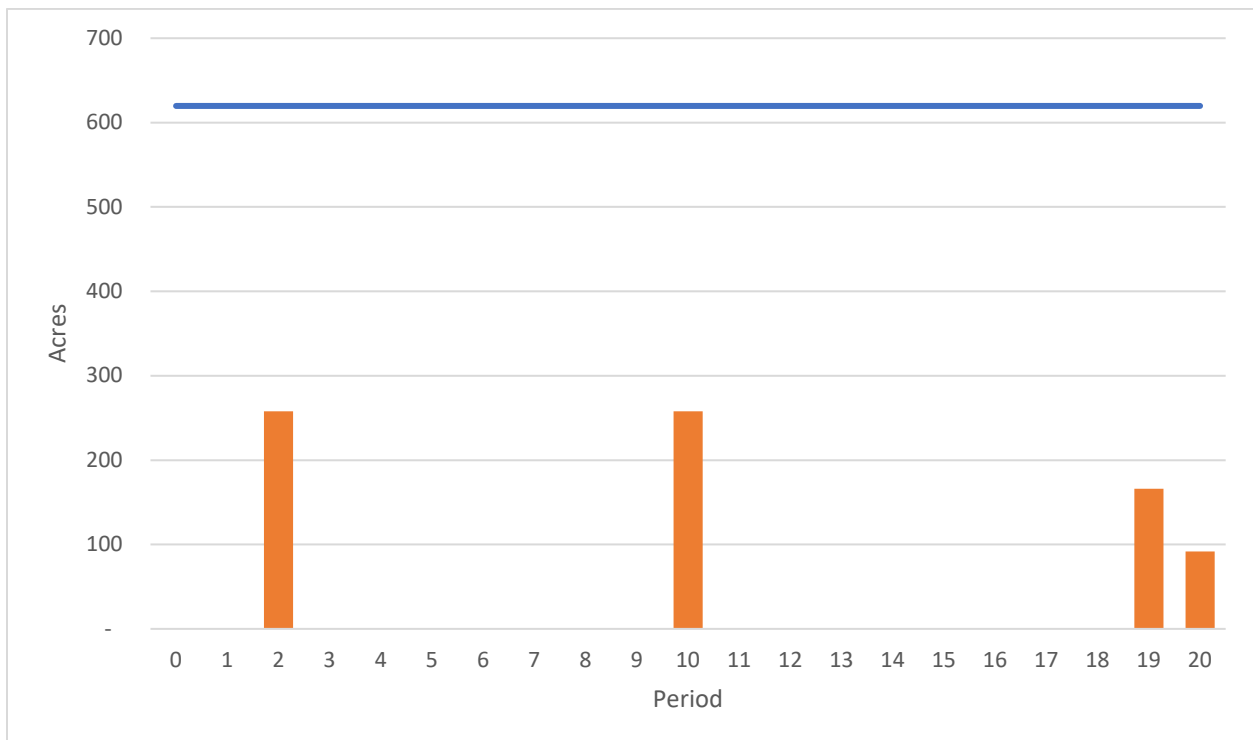
**Figure 35: LMA (Stillwater East) PCT Acres – Fully Constrained Model**



**Figure 36: LMA (Seeley Lake) PCT Acres – Fully Constrained Model**

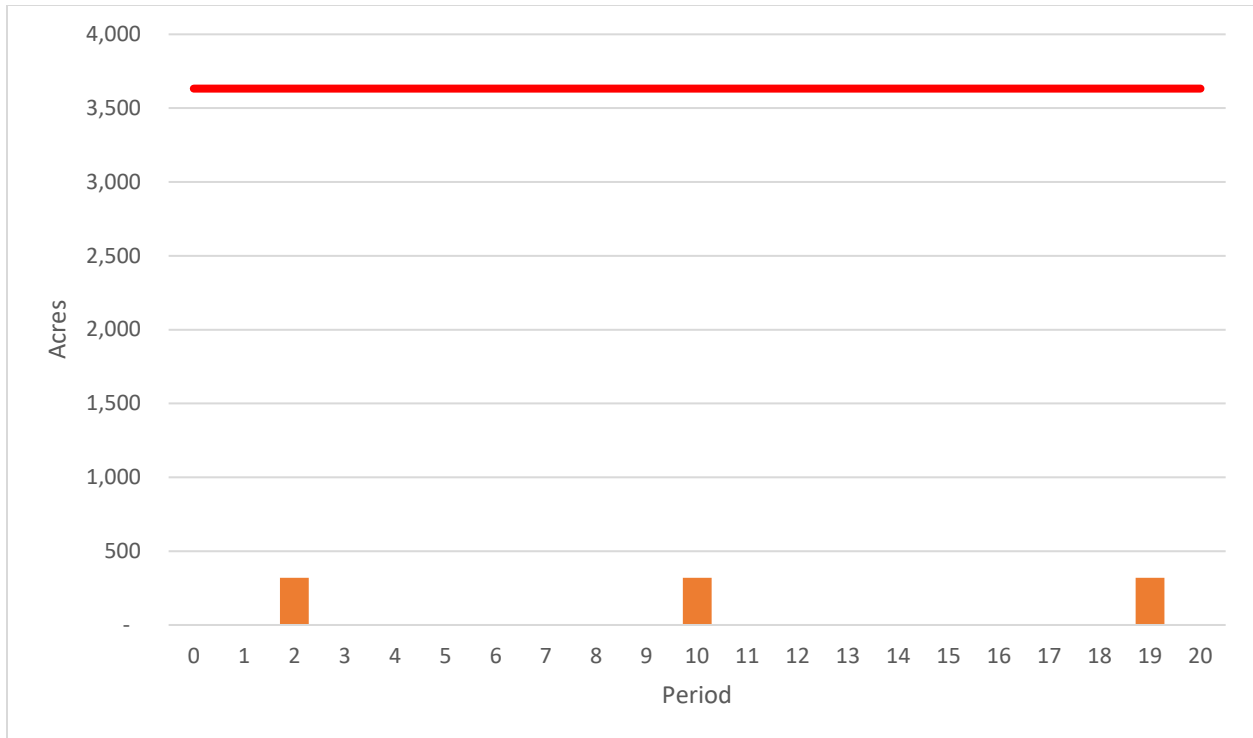


**Figure 37: LMA (Stillwater West) PCT Acres – Fully Constrained Model**

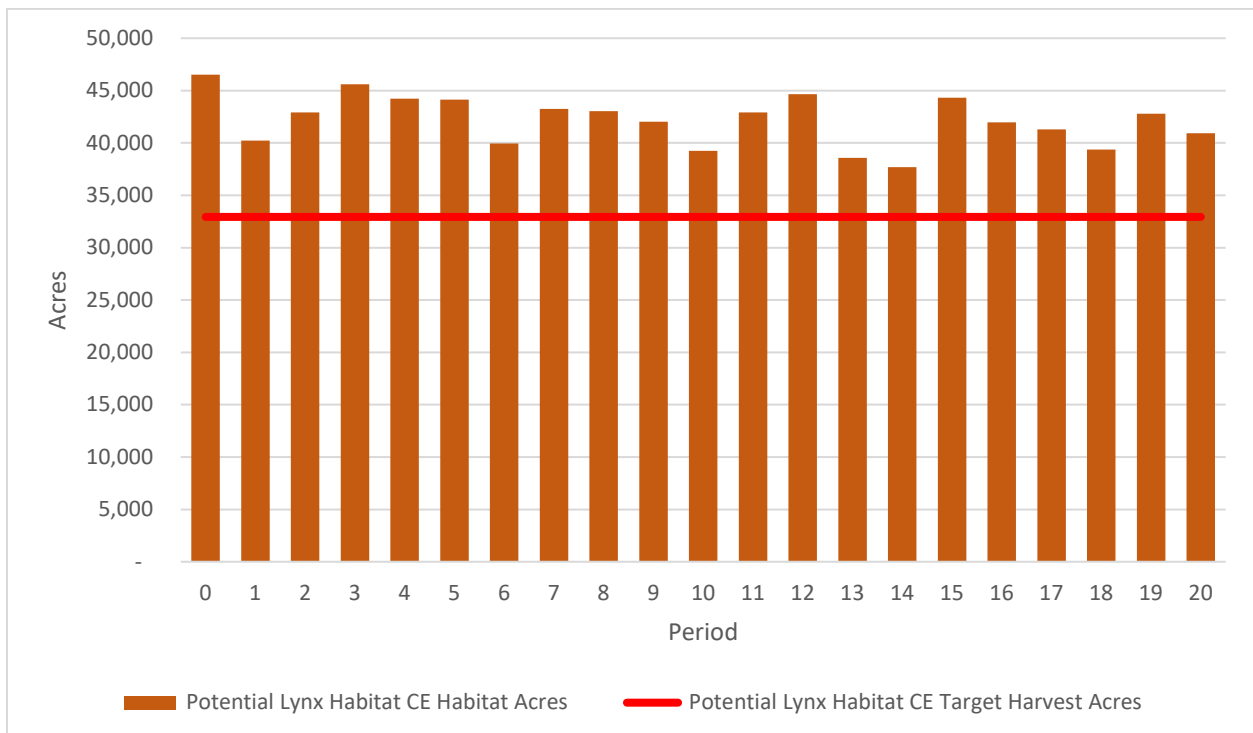


**Figure 38: LMA (Stillwater South) PCT Acres – Fully Constrained Model**

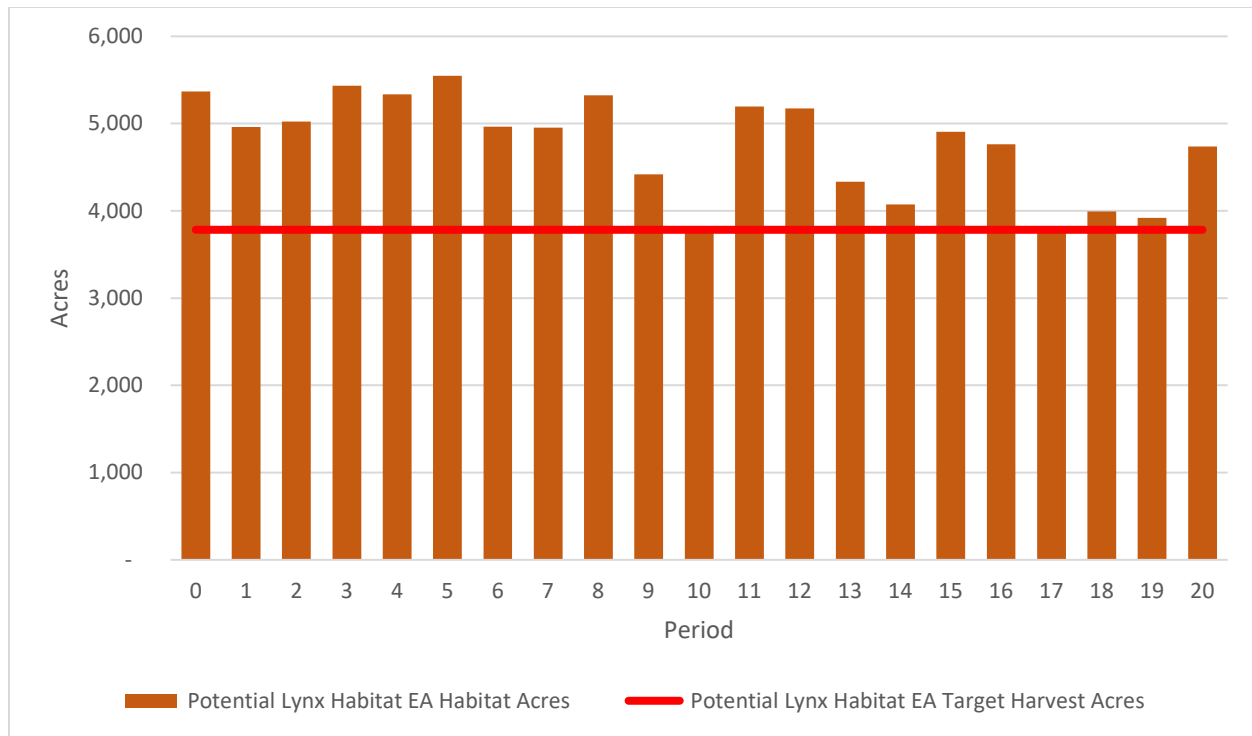




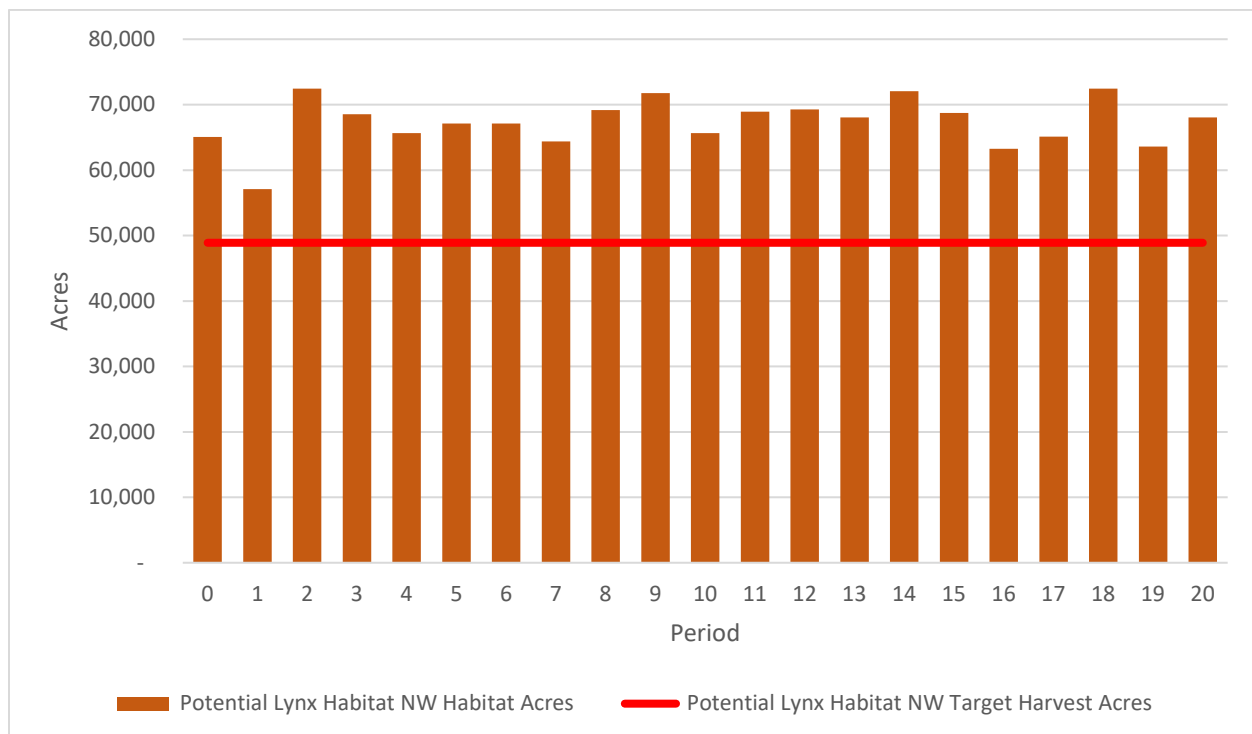
**Figure 39: LMA (Swan) PCT Acres – Fully Constrained Model**



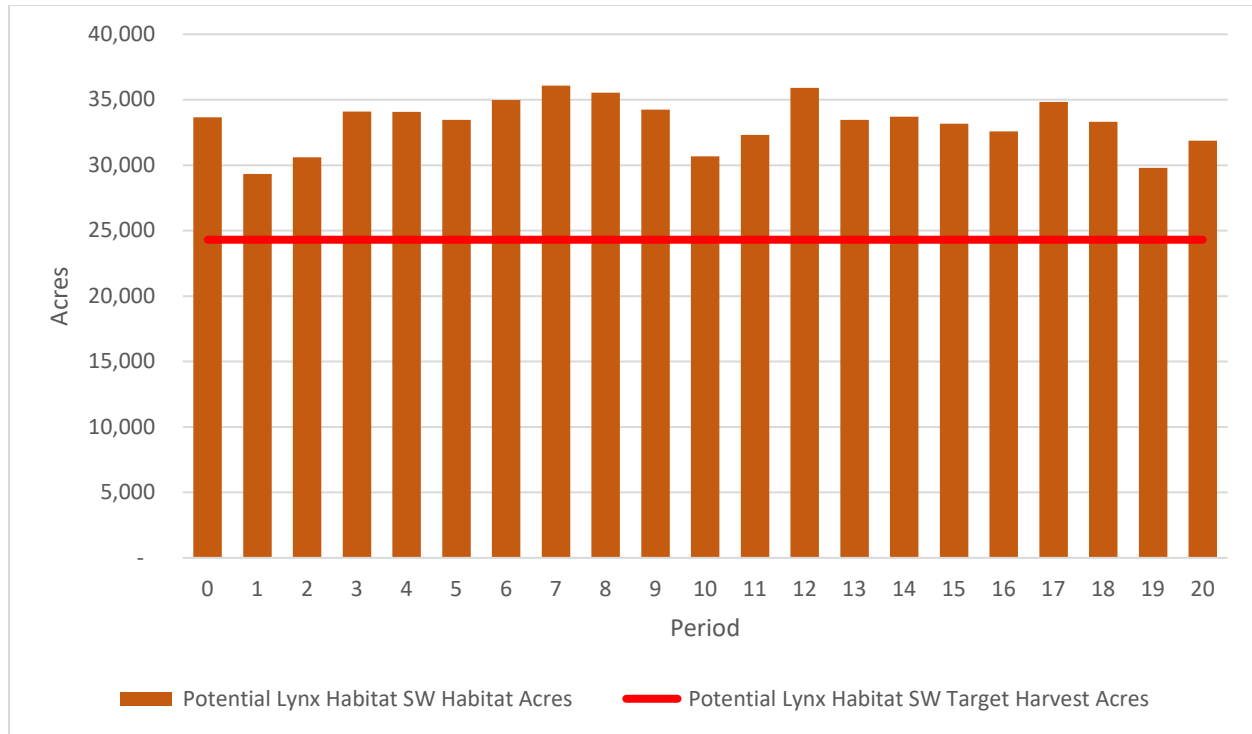
**Figure 40: Potential Lynx Habitat Development (CE) – Fully Constrained Model**



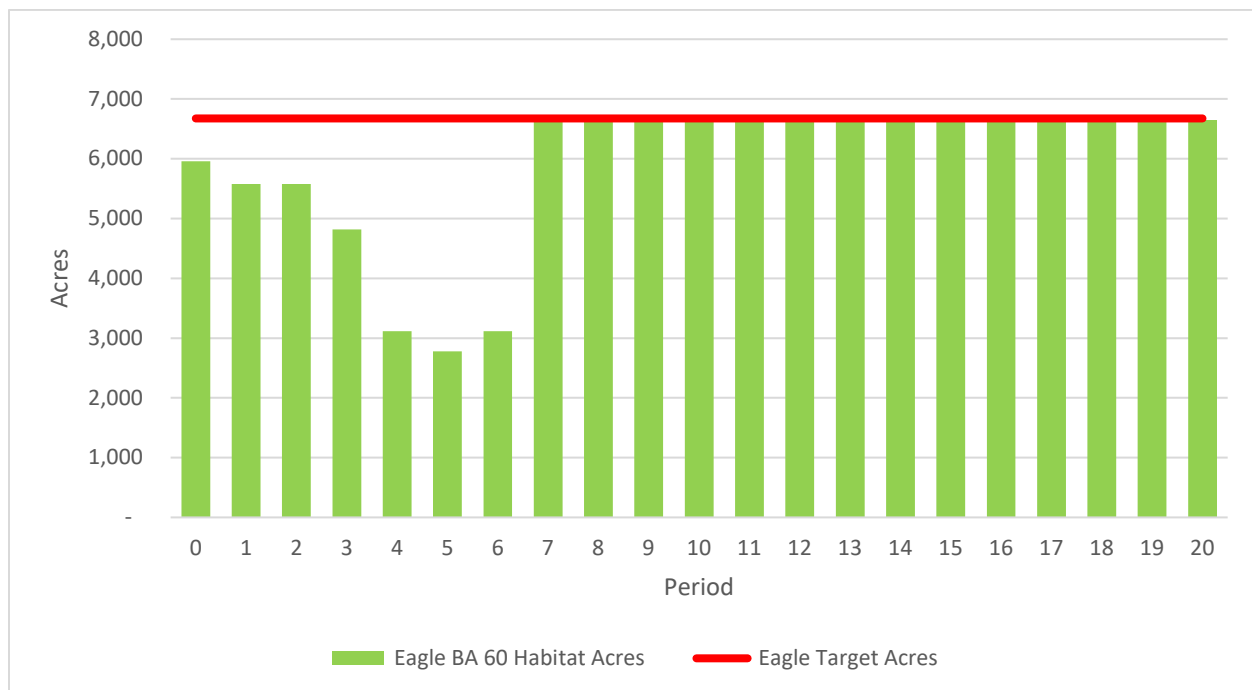
**Figure 41: Potential Lynx Habitat Development (EA) – Fully Constrained Model**



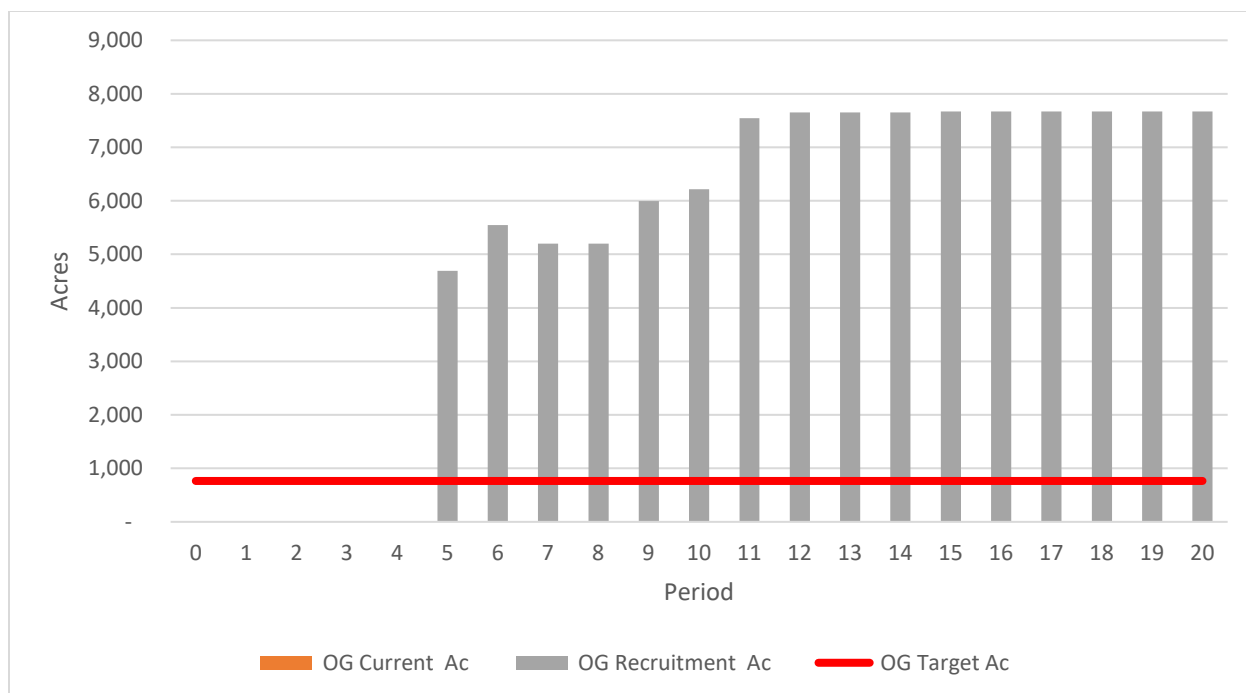
**Figure 42: Potential Lynx Habitat Development (NW) – Fully Constrained Model**



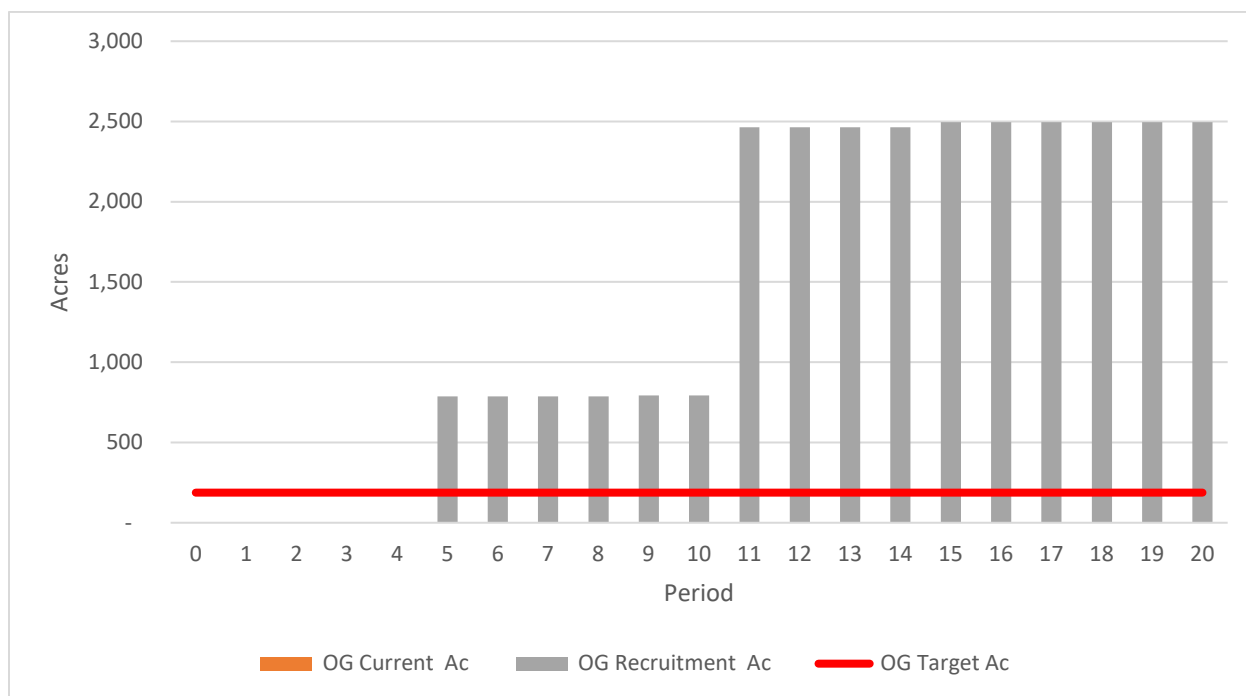
**Figure 43: Potential Lynx Habitat Development (SW) – Fully Constrained Model**



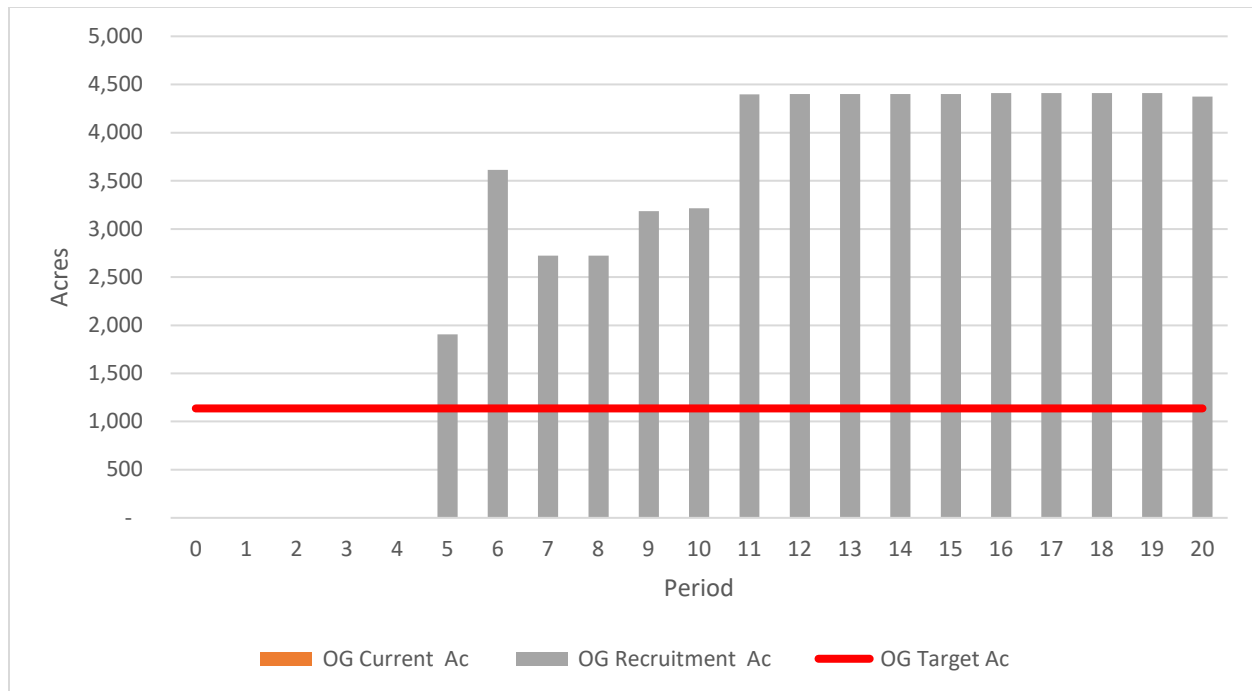
**Figure 44: Bald Eagle Habitat Acres – Fully Constrained Model**



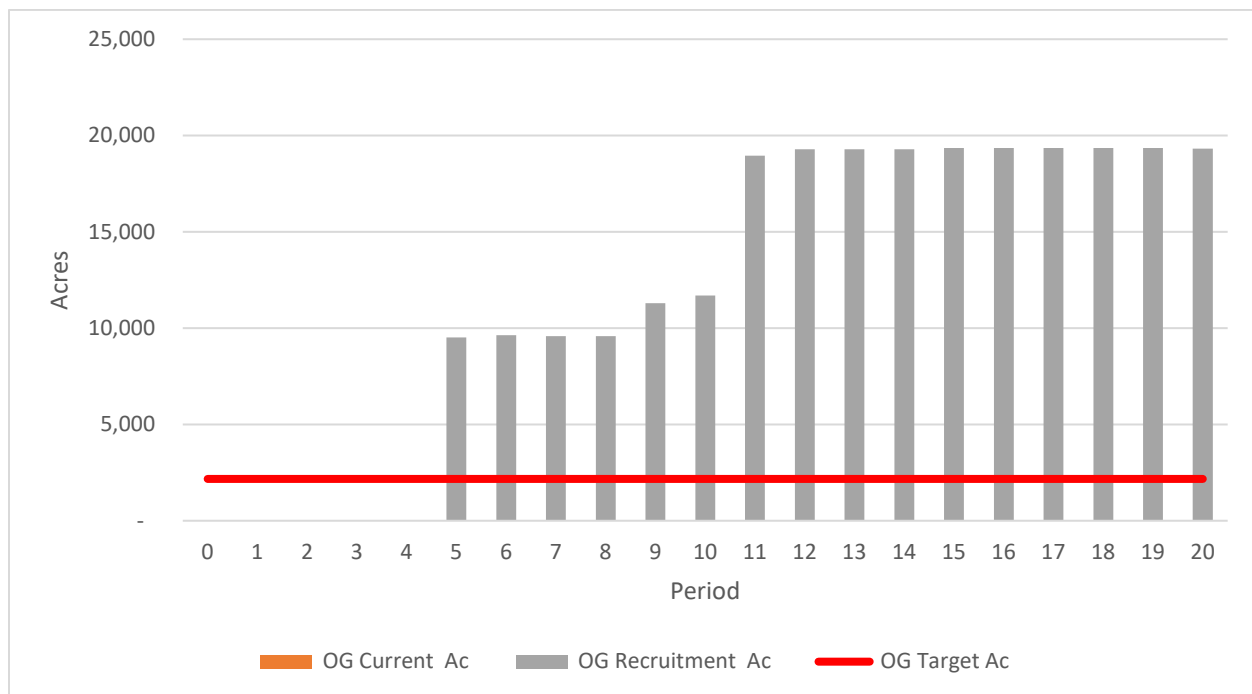
**Figure 45: CE Old Growth Acres (Bozeman) – Fully Constrained Model**



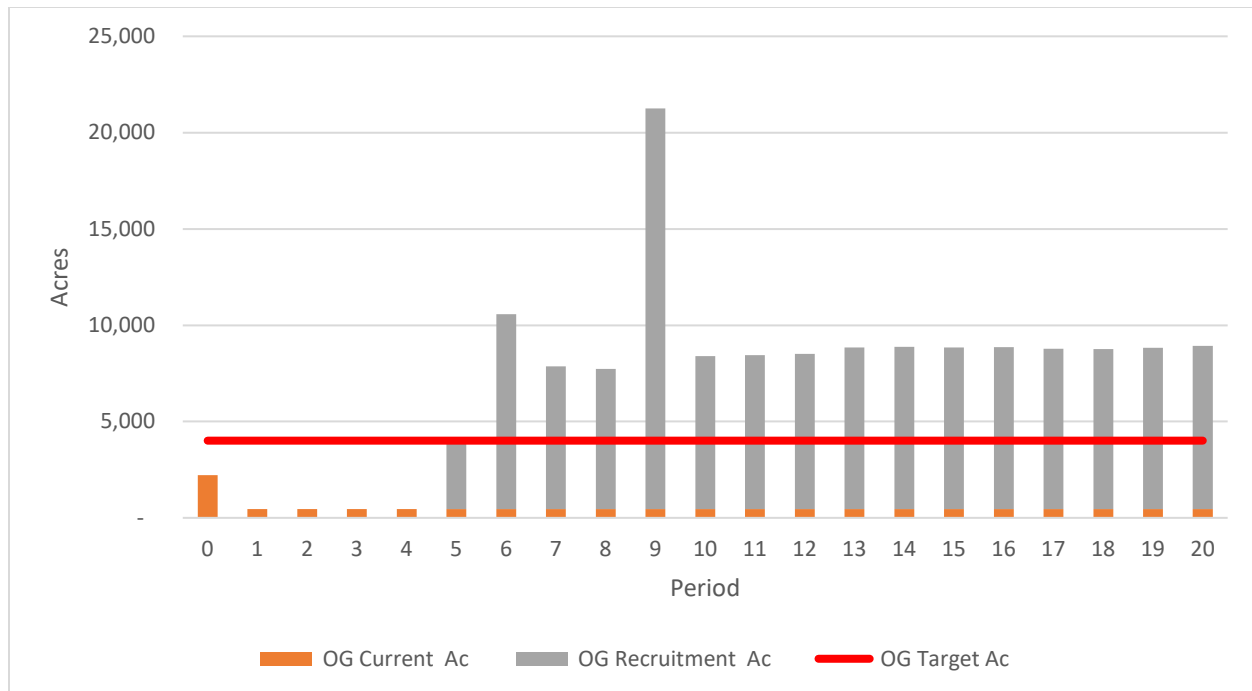
**Figure 46: CE Old Growth Acres (Conrad) – Fully Constrained Model**



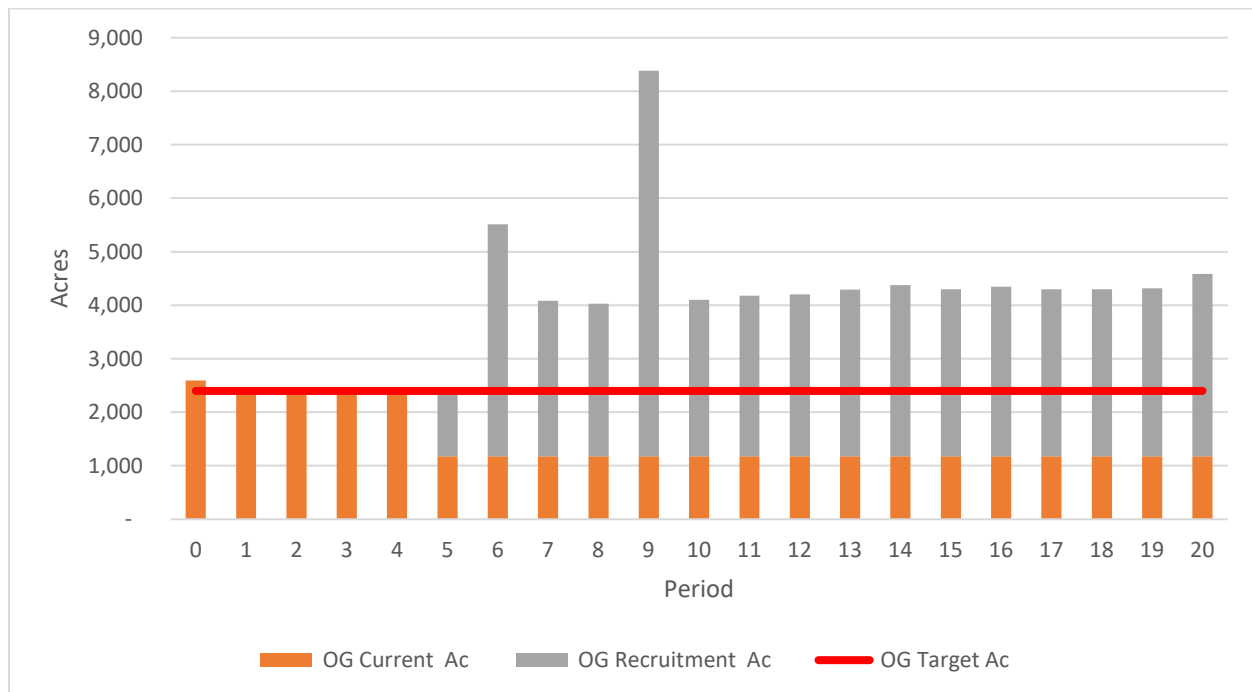
**Figure 47: CE Old Growth Acres (Dillon) – Fully Constrained Model**



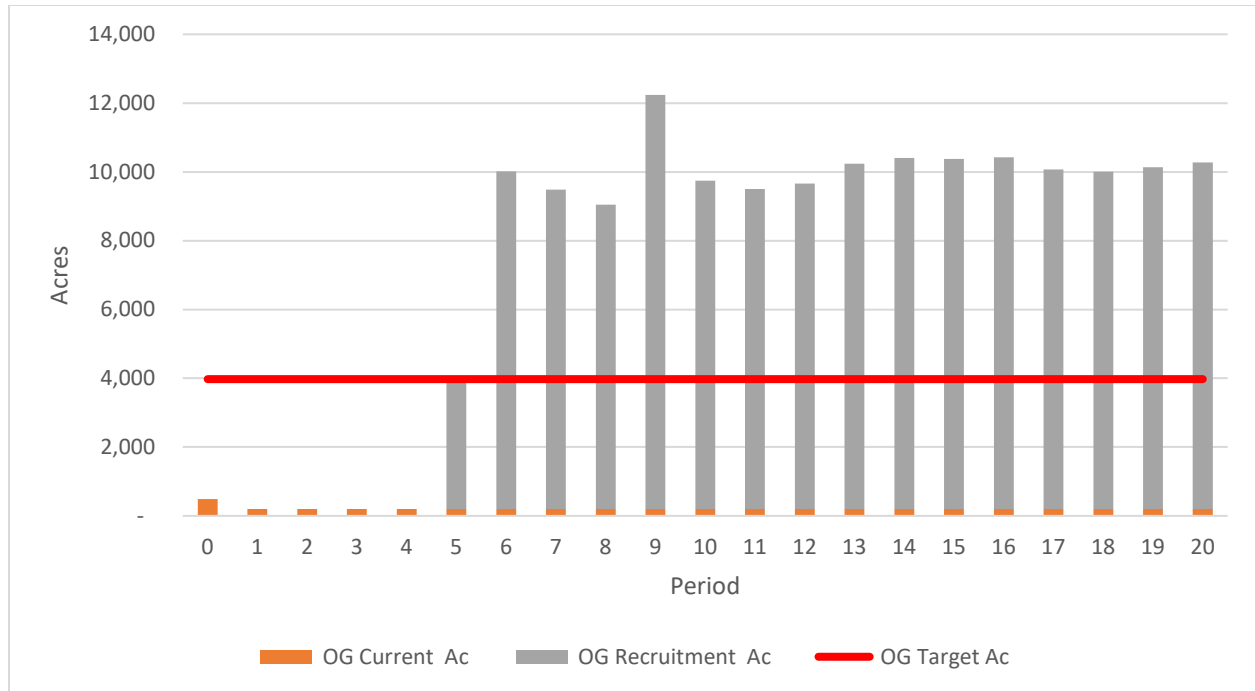
**Figure 48: CE Old Growth Acres (Helena) – Fully Constrained Model**



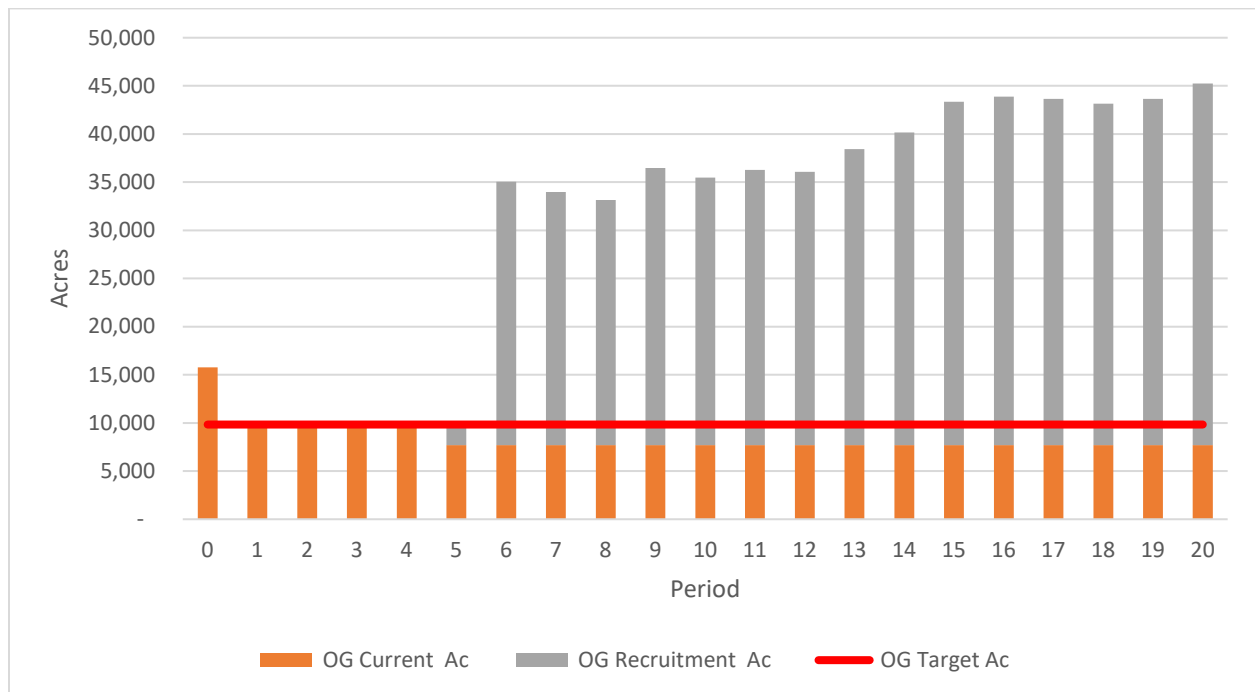
**Figure 49: NW Old Growth Acres (Kalispell) – Fully Constrained Model**



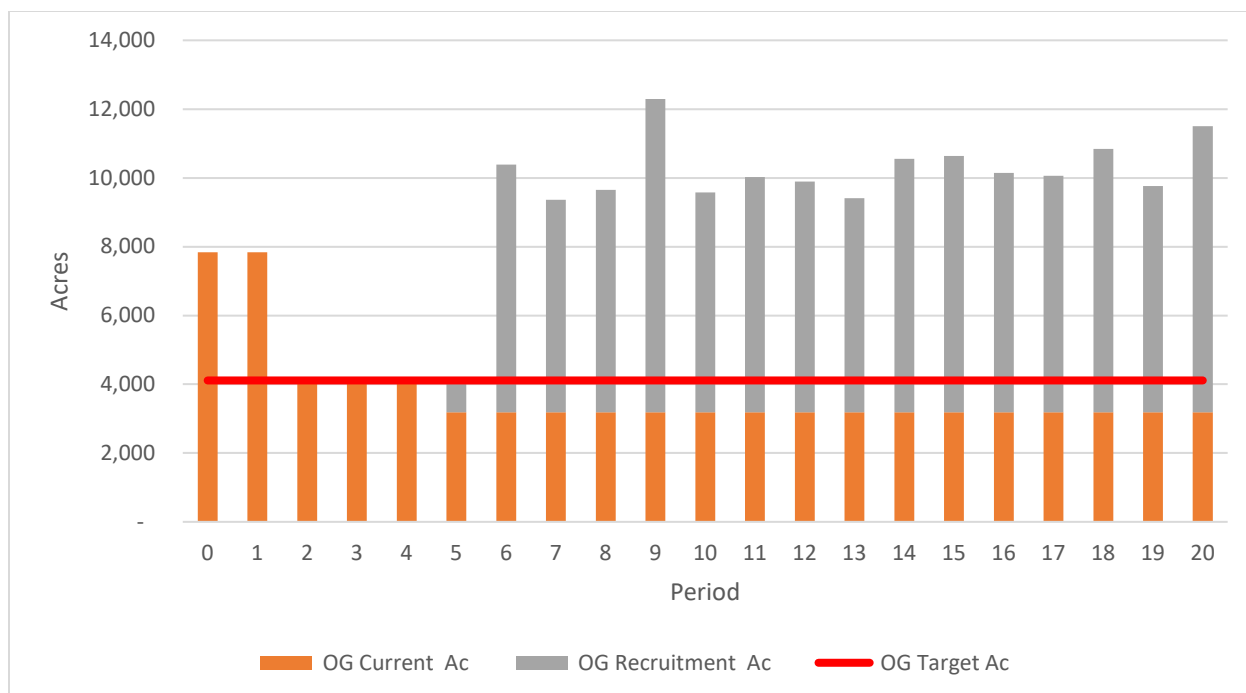
**Figure 50: NW Old Growth Acres (Libby) – Fully Constrained Model**



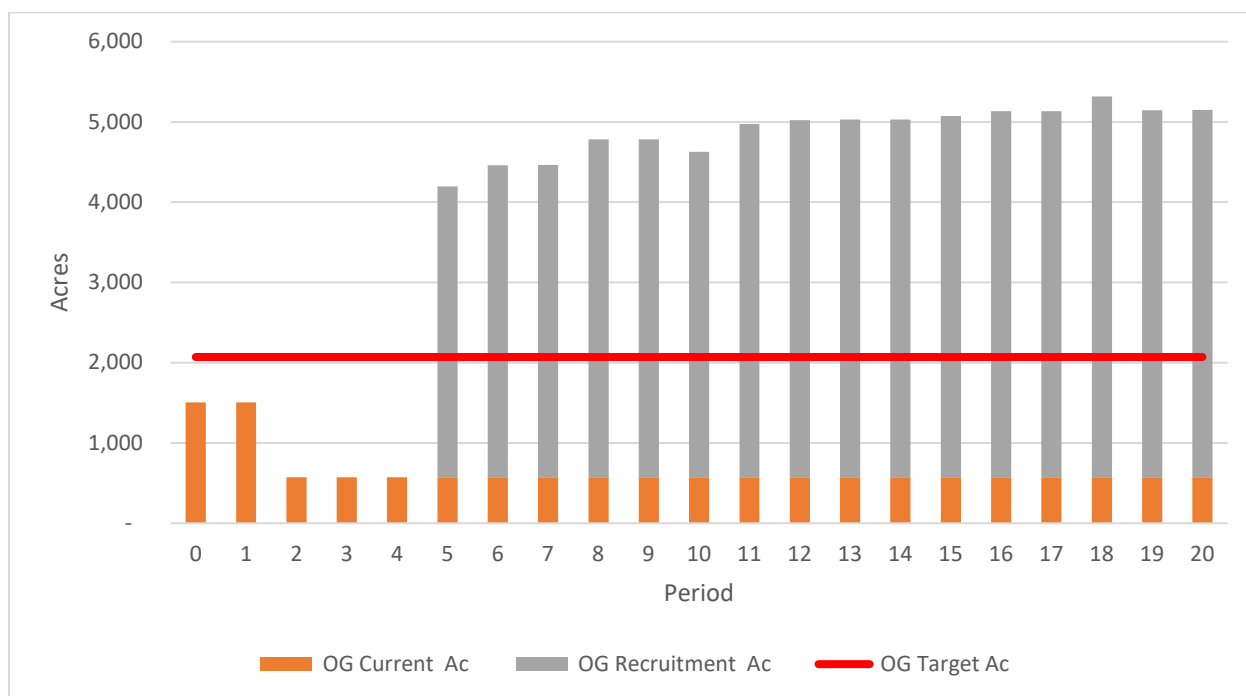
**Figure 51: NW Old Growth Acres (Plains) – Fully Constrained Model**



**Figure 52: NW Old Growth Acres (Stillwater) – Fully Constrained Model**

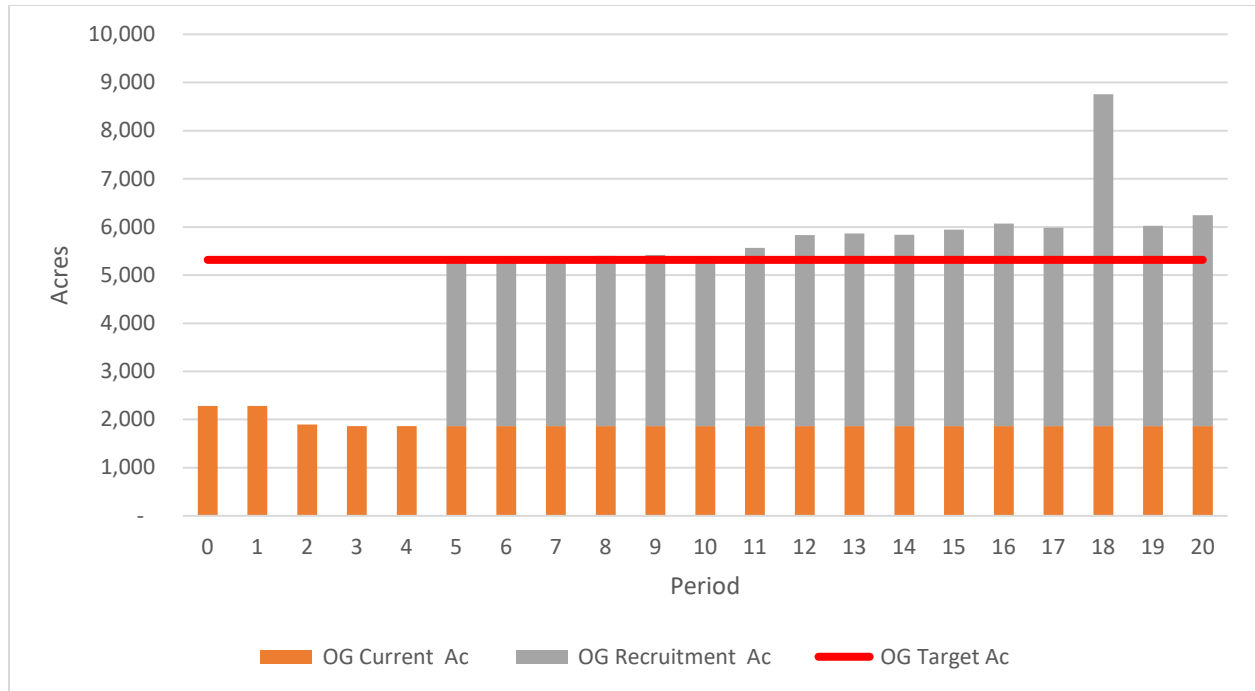


**Figure 53: NW Old Growth Acres (Swan) – Fully Constrained Model**

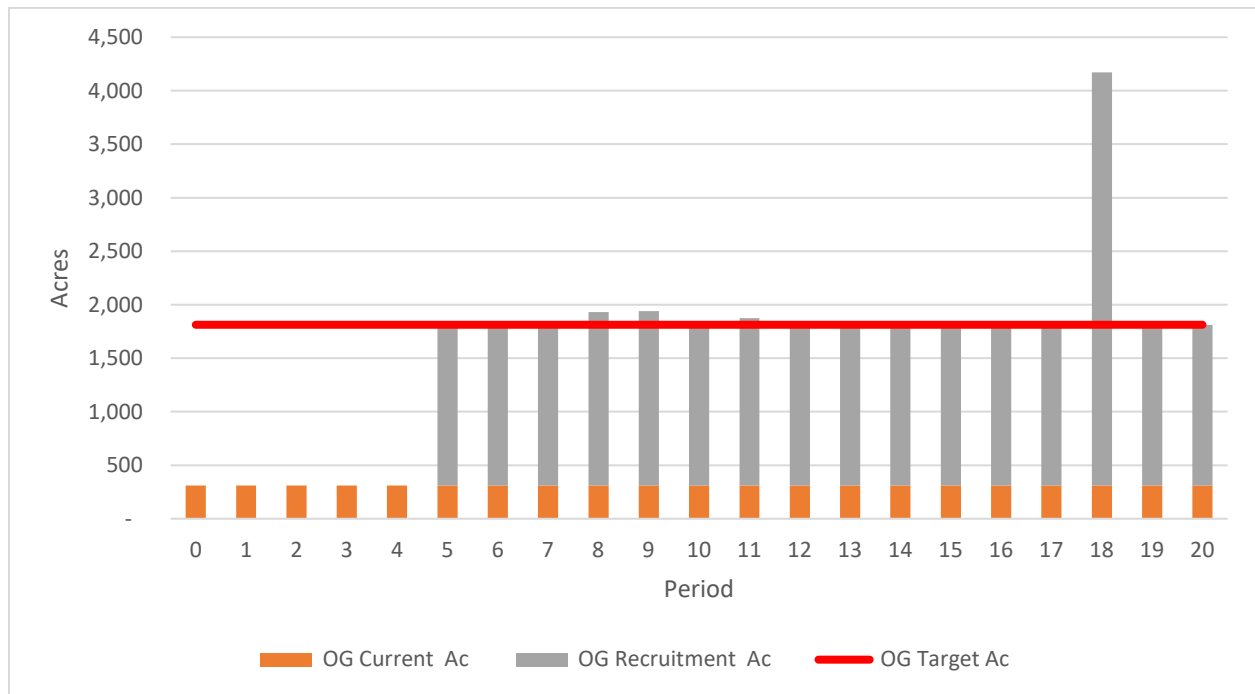


**Figure 54: SW Old Growth Acres (Anaconda) – Fully Constrained Model**

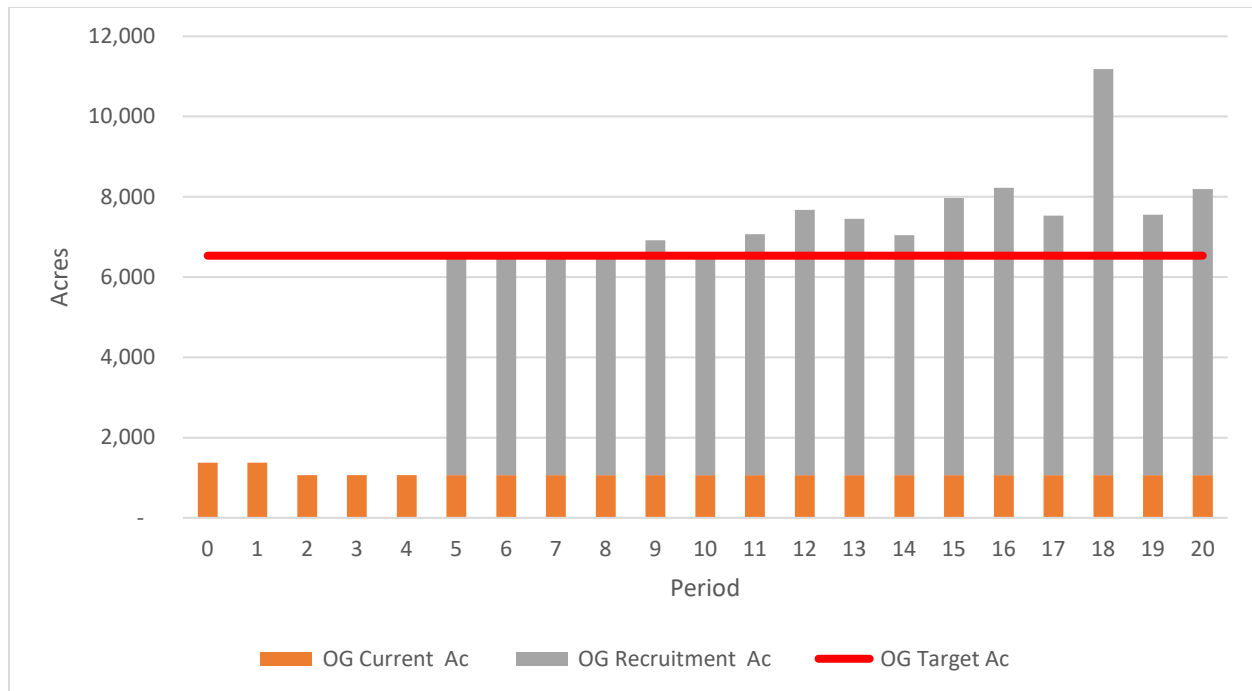




**Figure 55: SW Old Growth Acres (Clearwater) – Fully Constrained Model**



**Figure 56: SW Old Growth Acres (Hamilton) – Fully Constrained Model**



**Figure 57: SW Old Growth Acres (Missoula) – Fully Constrained Model**

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## 18 Appendix K: Silvicultural Regime Acre Constraints

The following table shows the percentage of acres that was allowed to be allocated towards CCRX, STRX, SWRX and UERX for each unique combination of unit and species. These percentages were used by the silvicultural regime constraint in the LP model to set a threshold value for each management pathway type.

**Table 30: Silvicultural Regime Constraint Percentages**

Species	Regime	Unit				
		ANA, CLW, HAM, MSO	EA/CE:BIL,LEW,HAV,GLA,MIL	CE: DIL	KAL, LIB, PLN	STW, SWN
PPDF	CC					
	ST	20%	20%		5%	5%
	SW	60%	60%		25%	20%
	Uneven	20%	20%		70%	75%
DPMC	CC					
	ST	44%	60%	40%	49%	53%
	SW	36%	20%	40%	11%	12%
	Uneven	20%	20%	20%	40%	45%
WLDF, OGW4	CC					
	ST	42%	0%	0%	45%	33%
	SW	38%	0%	0%	10%	7%
	UM	20%	0%	0%	45%	60%
LP	CC	100%	100%	100%	100%	100%
	ST					
	SW					
	Uneven					
GFRC	CC					
	ST	44%	60%	40%	45%	33%
	SW	36%	20%	40%	10%	7%
	Uneven	20%	20%	20%	45%	60%
SF, SFM, SFC, OGW6	CC	16%	5%	10%	16%	17%
	ST	48%	35%	32%	53%	56%
	SW	16%	40%	38%	16%	17%
	Uneven	20%	20%	20%	15%	10%
W1	CC					
	ST	20%			5%	53%
	SW	60%			25%	12%
	Uneven	20%			70%	35%
NS	CC					
	ST		60%	40%	45%	33%
	SW	25%	20%	40%	10%	7%
	Uneven	75%	20%	20%	45%	60%

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## 19 Appendix L: Calibration Keyfiles, Habitat Types, Substitute Tree Lists, and Substitute Yield Tables

FVS variants, calibration keyfiles, and habitat types used to differentiate among high, low, and moderate productivity classes are shown in Table 31. For strata that did not have associated cruise data or insufficient cruise data, the stratum whose tree list and/or yield table served as substitute are also listed. Habitat type codes in Table 31 refer to the habitat types and codes as described in Pfister et al. (1977).

**Table 31: FVS Calibration Keyfile, Habitat Types, Substitute Tree Lists, and Substitute Yield Table for each Stratum**

Land Office	Stratum	FVS			Substitution For:
		Variant	keyfile	Habitat	
CE	DPMC7AH	IE	Default	330	---
CE	DPMC7AH	FV	FVSkey_ie_WRD_h2rl	330	---
CE	DPMC7AL	FV	FVSkey_ie_WRD_h2rl	170	CE-DPMC8LL
CE	DPMC7AM	IE	Default	170	CE-DPMC8LM
CE	DPMC7AM	IE	Default	170	CE-DPMC8LM
CE	DPMC7AM	FV	FVSkey_ie_WRD_h2rl	170	CE-DPMC8LM
CE	DPMC7LH	FV	FVSkey_em_CGN	470	---
CE	DPMC7LL	FV	FVSkey_em_CGN	330	CE-LP7LL, CE-LP7LM, CE-LP8LL
CE	DPMC7LM	FV	FVSkey_em_CGN	260	CE-LP8LM
CE	DPMC8AH	FV	FVSkey_ie_WRD_h2rm	330	---
CE	DPMC8AM	FV	FVSkey_ie_WRD_h2rm	170	---
CE	DPMC8AM	FV	FVSkey_ie_WRD_h2rm	170	---
CE	DPMC9AH	FV	FVSkey_ie_WRD_h2rl	330	---
CE	DPMC9AM	FV	FVSkey_ie_WRD_h2rl	260	---
CE	DPMC9AM	FV	FVSkey_ie_WRD_h2rl	260	---
CE	DPMC9LH	FV	FVSkey_ie_WRD_h2rl	260	---
CE	DPMC9LM	FV	FVSkey_ie_WRD_h2rl	330	---
CE	DPMC9LM	FV	FVSkey_ie_WRD_h2rl	330	---
CE	LP7AL	FV	FVSkey_ie_HLC_h2rm	280	CE-NS6NL, CE-NS6NM, CE-SF7LL, CE-SF8AL, CE-SF8AM, CE-SF8LL
CE	LP7AM	FV	FVSkey_ie_HLC_h2rm	690	CE-SF8LM, CE-SF8LM
CE	LP8AL	FV	FVSkey_ie_HLC_h2rh	280	CE-SF9AL, CE-SF9AM, CE-SF9LL
CE	LP8AM	FV	FVSkey_ie_HLC_h2rh	170	CE-SF9LM, EA-LP7AH, EA-LP7AL, EA-LP7AM
CE	LP9AL	FV	FVSkey_ie_HLC_h2rm	140	EA-LP7LL, EA-LP7LM, EA-LP8AH, EA-LP8AL, EA-LP8AM, EA-LP8LL, EA-LP9AH, EA-LP9AL
CE	LP9AM	FV	FVSkey_ie_HLC_h2rm	170	CE-SF8AM, CE-SF8LL, CE-SF8LM, CE-SF8LM
CE	NS6NL	FV	FVSkey_em_CGN	330	---

Land Office	Stratum	FVS			Substitution For:
		Variant	keyfile	Habitat	
CE	NS6NL	FV	FVSkey_ie_WRD_h2rl	330	---
CE	NS6NM	IE	Default	670	---
CE	NS6NM	FV	FVSkey_ie_WRD_h2rl	670	---
CE	SF8AL	FV	FVSkey_ie_WRD_h9rm	470	EA-NS6NM
CE	SF8AM	FV	FVSkey_ie_WRD_h9rm	690	---
CE	SF9AL	FV	FVSkey_ie_WRD_h9rm	470	---
CE	SF9AM	FV	FVSkey_ie_WRD_h9rm	690	---
EA	DPMC7AL	FV	FVSkey_em_CGN	170	---
EA	DPMC7AM	FV	FVSkey_em_CGN	280	---
EA	DPMC7LL	FV	FVSkey_em_CGN	170	---
EA	DPMC7LM	FV	FVSkey_em_CGN	280	---
EA	DPMC8AL	FV	FVSkey_em_CGN_h2rm	170	---
EA	DPMC8AM	FV	FVSkey_em_CGN_h2rm	280	---
EA	DPMC8LL	FV	FVSkey_em_CGN_h2rm	170	---
EA	DPMC8LM	FV	FVSkey_em_CGN_h2rm	280	---
EA	DPMC9AL	FV	FVSkey_em_CGN_h2rm	170	---
EA	DPMC9AM	FV	FVSkey_em_CGN_h2rm	280	---
EA	DPMC9LL	FV	FVSkey_em_CGN_h2rm	170	---
EA	DPMC9LM	FV	FVSkey_em_CGN_h2rm	280	---
EA	LP7AL	EM	Default	310	---
EA	LP7AM	EM	Default	290	---
EA	NS6NL	EM	Default	170	---
EA	NS6NM	EM	Default	280	---
NW	GFRC7AH	FV	FVSkey_ie_WRD_h7rl	520	---
NW	GFRC7AM	FV	FVSkey_ie_WRD_h7rl	510	CE-SF9AM, CE-SF9LL
NW	GFRC8AH	FV	FVSkey_ie_WRD_h7rm	520	---
NW	GFRC8AM	FV	FVSkey_ie_WRD_h7rm	510	CE-SF9LM, EA-LP7AH
NW	GFRC9AH	FV	FVSkey_ie_WRD_h7rh	620	---

Land Office	Stratum	FVS			Substitution For:
		Variant	keyfile	Habitat	
NW	GFRC9AM	FV	FVSkey_ie_WRD_h7rh	660	---
NW	GFRC9LH	FV	FVSkey_ie_WRD_h7rh	620	---
NW	GFRC9LM	FV	FVSkey_ie_WRD_h7rh	660	---
NW	LP7AH	FV	FVSkey_ie_WRD_h9rl	590	---
NW	LP7AH	FV	FVSkey_ie_WRD_h9rm	590	---
NW	LP7AL	FV	FVSkey_ie_WRD_h9rl	280	EA-LP7AL, EA-LP7AM
NW	LP7AL	FV	FVSkey_ie_WRD_h9rm	280	EA-LP7AL, EA-LP7AM
NW	LP7AM	FV	FVSkey_ie_WRD_h9rl	690	NW-LP7LM
NW	LP7AM	FV	FVSkey_ie_WRD_h9rm	690	NW-LP7LM
NW	LP8AH	FV	FVSkey_ie_WRD_h9rm	590	---
NW	LP8AL	FV	FVSkey_ie_WRD_h9rm	280	EA-LP7LM, EA-LP8AH, EA-LP8AL, EA-LP8AM, EA-LP8LL
NW	LP8AM	FV	FVSkey_ie_WRD_h9rm	690	CE-NS6NL, CE-NS6NM
NW	NS6NH	FV	FVSkey_ie_WRD_h7rl	670	---
NW	NS6NH	FV	FVSkey_ie_WRD_h7rm	670	---
NW	NS6NL	FV	FVSkey_ie_WRD_h7rl	330	---
NW	NS6NL	FV	FVSkey_ie_WRD_h7rm	330	---
NW	NS6NM	FV	FVSkey_ie_WRD_h7rl	520	---
NW	NS6NM	FV	FVSkey_ie_WRD_h7rl	520	---
NW	NS6NM	FV	FVSkey_ie_WRD_h7rm	520	---
NW	OGW1W1L	FV	FVSkey_ie_WRD_h2rh	130	---
NW	OGW1W1L	FV	FVSkey_ie_WRD_h2rm	130	---
NW	OGW1W1M	FV	FVSkey_ie_WRD_h2rh	170	---
NW	OGW1W1M	FV	FVSkey_ie_WRD_h2rm	170	---
NW	OGW4W4H	FV	FVSkey_ie_WRD_h7rl	670	---
NW	OGW4W4H	FV	FVSkey_ie_WRD_h7rm	670	---
NW	OGW4W4H	FV	FVSkey_ie_WRD_h7rm	670	---
NW	OGW4W4M	FV	FVSkey_ie_WRD_h7rl	690	---
NW	OGW4W4M	FV	FVSkey_ie_WRD_h7rm	690	---



Land Office	Stratum	FVS			Substitution For:
		Variant	keyfile	Habitat	
NW	OGW4W4M	FV	FVSkey_ie_WRD_h7rm	690	---
NW	OGW6W6H	FV	FVSkey_ie_WRD_h9rm	670	---
NW	OGW6W6L	FV	FVSkey_ie_WRD_h9rm	690	---
NW	OGW6W6L	FV	FVSkey_ie_WRD_h9rm	690	---
NW	OGW6W6M	FV	FVSkey_ie_WRD_h9rm	690	---
NW	OGW6W6M	FV	FVSkey_ie_WRD_h9rm	690	---
NW	PPDF7AH	FV	FVSkey_ie_WRD_h2rl	260	---
NW	PPDF7AH	FV	FVSkey_ie_WRD_h2rm	260	---
NW	PPDF7AL	FV	FVSkey_ie_WRD_h2rl	170	CE-SF8LM, CE-SF9AL
NW	PPDF7AL	FV	FVSkey_ie_WRD_h2rm	170	CE-SF8LM, CE-SF9AL
NW	PPDF7AM	FV	FVSkey_ie_WRD_h2rl	280	NW-SFC7LL
NW	PPDF7AM	FV	FVSkey_ie_WRD_h2rm	280	NW-SFC7LL
NW	PPDF8AH	FV	FVSkey_ie_WRD_h2rm	260	---
NW	PPDF8AL	FV	FVSkey_ie_WRD_h2rm	170	CE-SF9LL, CE-SF9LM
NW	PPDF8AM	FV	FVSkey_ie_WRD_h2rm	280	---
NW	PPDF9AH	FV	FVSkey_ie_WRD_h2rm	260	---
NW	PPDF9AL	FV	FVSkey_ie_WRD_h2rm	170	---
NW	PPDF9AM	FV	FVSkey_ie_WRD_h2rm	280	---
NW	PPDF9LH	FV	FVSkey_ie_WRD_h2rm	520	---
NW	PPDF9LL	FV	FVSkey_ie_WRD_h2rm	170	---
NW	PPDF9LM	FV	FVSkey_ie_WRD_h2rm	520	---
NW	SFC7AL	FV	FVSkey_ie_WRD_h9rm	830	EA-LP7AH, EA-LP7AL
NW	SFC7AM	FV	FVSkey_ie_WRD_h9rm	690	---
NW	SFC9AL	FV	FVSkey_ie_WRD_h9rm	690	EA-LP7AM, EA-LP7LL, EA-LP7LM, EA-LP8AH, EA-LP8AL, EA-LP8AM, EA-LP8LL, EA-LP9AH
NW	SFC9AM	FV	FVSkey_ie_WRD_h9rm	830	---
NW	SFM7AH	IE	Default	620	---
NW	SFM7AH	FV	FVSkey_ie_WRD_h9rm	620	---

Land Office	Stratum	FVS			Substitution For:
		Variant	keyfile	Habitat	
NW	SFM7AL	IE	Default	830	---
NW	SFM7AL	FV	FVSkey_ie_WRD_h9rm	830	---
NW	SFM7AM	IE	Default	690	SW-GFRC8AH
NW	SFM7AM	FV	FVSkey_ie_WRD_h9rm	690	SW-GFRC8AH
NW	SFM7LH	FV	FVSkey_ie_WRD_h9rl	620	EA-LP9AM, EA-LP9LL
NW	SFM7LL	FV	FVSkey_ie_WRD_h9rl	830	---
NW	SFM7LM	FV	FVSkey_ie_WRD_h9rl	660	---
NW	SFM8AH	FV	FVSkey_ie_WRD_h9rm	620	SW-GFRC8LM
NW	SFM8AL	FV	FVSkey_ie_WRD_h9rm	830	SW-LP7LH
NW	SFM8AM	FV	FVSkey_ie_WRD_h9rm	690	EA-NS6NM, NW-GFRC7LH, NW-GFRC7LM
NW	SFM9AH	FV	FVSkey_ie_WRD_h9rh	620	SW-LP8LL
NW	SFM9AL	FV	FVSkey_ie_WRD_h9rh	830	---
NW	SFM9AM	FV	FVSkey_ie_WRD_h9rh	690	SW-LP8LM
NW	SFM9LH	FV	FVSkey_ie_WRD_h9rh	620	---
NW	SFM9LL	FV	FVSkey_ie_WRD_h9rh	830	---
NW	SFM9LM	FV	FVSkey_ie_WRD_h9rh	690	SW-LP9AH
NW	WLDF7AH	FV	FVSkey_ie_WRD_h2rl	520	---
NW	WLDF7AH	FV	FVSkey_ie_WRD_h7rl	520	---
NW	WLDF7AH	FV	FVSkey_ie_WRD_h7rm	520	---
NW	WLDF7AM	FV	FVSkey_ie_WRD_h2rl	640	CE-LP8LM, CE-LP9LL
NW	WLDF7AM	FV	FVSkey_ie_WRD_h7rl	640	CE-LP8LM, CE-LP9LL
NW	WLDF7AM	FV	FVSkey_ie_WRD_h7rm	640	CE-LP8LM, CE-LP9LL
NW	WLDF8AH	FV	FVSkey_ie_WRD_h2rm	520	SW-LP9LH
NW	WLDF8AM	FV	FVSkey_ie_WRD_h2rm	640	CE-NS6NL, CE-NS6NM, CE-SF7LL
NW	WLDF9AH	FV	FVSkey_ie_WRD_h2rh	520	---
NW	WLDF9AM	FV	FVSkey_ie_WRD_h2rh	640	---
NW	WLDF9LH	FV	FVSkey_ie_WRD_h2rh	520	---
NW	WLDF9LM	FV	FVSkey_ie_WRD_h2rh	640	---

Land Office	Stratum	FVS			Substitution For:
		Variant	keyfile	Habitat	
SW	GFRC7AH	FV	FVSkey_ie_WRD_h9rl	660	---
SW	GFRC7AH	FV	FVSkey_ie_WRD_h9rm	660	---
SW	GFRC7AH	FV	FVSkey_ie_WRD_h9rm	660	---
SW	GFRC7AL	FV	FVSkey_ie_WRD_h9rl	280	---
SW	GFRC7AL	FV	FVSkey_ie_WRD_h9rm	280	---
SW	GFRC7AM	FV	FVSkey_ie_WRD_h9rl	640	CE-SF8AL, CE-SF8AM
SW	GFRC7AM	FV	FVSkey_ie_WRD_h9rm	640	CE-SF8AL, CE-SF8AM
SW	GFRC9AH	FV	FVSkey_ie_WRD_h9rh	590	---
SW	GFRC9AL	FV	FVSkey_ie_WRD_h9rh	170	---
SW	GFRC9AM	FV	FVSkey_ie_WRD_h9rh	280	---
SW	GFRC9LH	FV	FVSkey_ie_WRD_h9rh	590	---
SW	GFRC9LL	FV	FVSkey_ie_WRD_h9rh	170	---
SW	GFRC9LM	FV	FVSkey_ie_WRD_h9rh	280	CE-SF8LL, CE-SF8LM
SW	LP7AH	FV	FVSkey_ie_WRD_h2rm	590	---
SW	LP7AL	FV	FVSkey_ie_WRD_h2rm	280	CE-SF8LM, CE-SF9AL, CE-SF9AM
SW	LP7AM	FV	FVSkey_ie_WRD_h2rm	250	SW-PPDF8LM
SW	LP8AH	FV	FVSkey_ie_WRD_h2rm	590	SW-SFC7AL
SW	LP8AL	FV	FVSkey_ie_WRD_h2rm	280	EA-LP7AH, EA-LP7AL, EA-LP7AM, EA-LP7LL
SW	LP8AM	FV	FVSkey_ie_WRD_h2rm	250	EA-LP7LM, EA-LP8AH, EA-LP8AL
SW	NS6NH	FV	FVSkey_ie_WRD_h2rl	310	---
SW	NS6NH	FV	FVSkey_ie_WRD_h2rm	310	---
SW	NS6NH	FV	FVSkey_ie_WRD_h5rl	310	---
SW	NS6NL	FV	FVSkey_ie_WRD_h2rl	170	---
SW	NS6NL	FV	FVSkey_ie_WRD_h2rm	170	---
SW	NS6NL	FV	FVSkey_ie_WRD_h5rl	170	---
SW	NS6NM	FV	FVSkey_ie_WRD_h2rl	280	---
SW	NS6NM	FV	FVSkey_ie_WRD_h2rm	280	---
SW	NS6NM	FV	FVSkey_ie_WRD_h5rl	280	---

Land Office	Stratum	FVS			Substitution For:
		Variant	keyfile	Habitat	
SW	OGW1W1L	FV	FVSkey_ie_WRD_h2rl	170	---
SW	OGW1W1L	FV	FVSkey_ie_WRD_h2rm	170	---
SW	OGW1W1L	FV	FVSkey_ie_WRD_h2rm	170	---
SW	OGW1W1M	FV	FVSkey_ie_WRD_h2rl	280	---
SW	OGW1W1M	FV	FVSkey_ie_WRD_h2rm	280	---
SW	OGW1W1M	FV	FVSkey_ie_WRD_h2rm	280	---
SW	OGW4W4H	FV	FVSkey_ie_WRD_h7rm	520	---
SW	OGW4W4H	FV	FVSkey_ie_WRD_h9rl	520	---
SW	OGW4W4H	FV	FVSkey_ie_WRD_h9rm	520	---
SW	OGW4W4M	FV	FVSkey_ie_WRD_h7rm	660	---
SW	OGW4W4M	FV	FVSkey_ie_WRD_h9rl	660	---
SW	OGW4W4M	FV	FVSkey_ie_WRD_h9rm	660	---
SW	OGW6W6H	FV	FVSkey_ie_WRD_h9rm	670	---
SW	OGW6W6L	FV	FVSkey_ie_WRD_h9rm	830	---
SW	OGW6W6M	FV	FVSkey_ie_WRD_h9rm	690	---
SW	PPDF7AH	FV	FVSkey_ie_WRD_h2rl	310	---
SW	PPDF7AH	FV	FVSkey_ie_WRD_h2rm	310	---
SW	PPDF7AL	FV	FVSkey_ie_WRD_h2rl	170	---
SW	PPDF7AL	FV	FVSkey_ie_WRD_h2rm	170	---
SW	PPDF7AM	FV	FVSkey_ie_WRD_h2rl	280	---
SW	PPDF7AM	FV	FVSkey_ie_WRD_h2rm	280	---
SW	PPDF7LH	FV	FVSkey_ie_WRD_h2rl	310	---
SW	PPDF7LL	FV	FVSkey_ie_WRD_h2rl	170	---
SW	PPDF7LM	FV	FVSkey_ie_WRD_h2rl	280	---
SW	PPDF8AH	FV	FVSkey_ie_WRD_h2rl	520	---
SW	PPDF8AL	FV	FVSkey_ie_WRD_h2rl	280	EA-LP8AM, EA-LP8LL
SW	PPDF8AM	FV	FVSkey_ie_WRD_h2rl	310	---
SW	PPDF9AH	FV	FVSkey_ie_WRD_h2rl	310	---

Land Office	Stratum	FVS			Substitution For:
		Variant	keyfile	Habitat	
SW	PPDF9AL	FV	FVSkey_ie_WRD_h2rl	170	---
SW	PPDF9AM	FV	FVSkey_ie_WRD_h2rl	280	---
SW	PPDF9LH	FV	FVSkey_ie_WRD_h2rl	310	SW-SFM8LM
SW	PPDF9LL	FV	FVSkey_ie_WRD_h2rl	170	---
SW	PPDF9LM	FV	FVSkey_ie_WRD_h2rl	280	SW-SFM9AH
SW	SFC7AL	FV	FVSkey_ie_WRD_h9rm	830	---

## 20 Appendix M: Strata Starting Age

Age is difficult to determine stands on DNRC land, since most of them are uneven-aged. However, age is an important element in structuring the management pathway and compiling the linear programming model; therefore a starting age was assigned to each stratum by land office, size class, and productivity class as shown in Table 32.

**Table 32: Starting Age by Land Office, Size and Productivity Class**

Land Office	Size	Productivity Class		
		Low	Medium	High
CE	6	0	0	0
CE	7	15	15	0
CE	8	65	65	0
CE	9	115	115	115
EA	6	0	0	0
EA	7	15	15	0
EA	8	55	55	0
EA	9	95	95	0
NW	6	0	0	0
NW	7	35	25	15
NW	8	65	55	45
NW	9	115	115	115
NW	W1	155	155	---
NW	W4	---	155	155
NW	W6	165	165	165
SW	6	0	0	0
SW	7	15	15	15
SW	8	55	55	55
SW	9	115	115	115
SW	W1	155	145	---
SW	W4	---	155	155
SW	W6	165	165	165

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## 21 Appendix N: Wildlife Habitat Constraints

The DNRC has an obligation towards maintaining and creating habitat for various wildlife species through a number of administrative rules. The following tables list the constraints applied or considered, along with the relevant ARMs and HCP commitments, as well as the rationale behind their inclusion or exclusion from the modeling effort.

**Table 33: Wildlife Constraints Developed from Forest Management ARM's and DNRC HCP**

<b>Species</b>	<b>ARM or HCP Measures</b>	<b>Constraint Description Summary</b>	<b>Related Data Available</b>	<b>Geographic Area Applicable</b>	<b>Notes</b>
<b>Grizzly Bear</b>	HCP, GB-PR6 also east side land offices covered under rule: 36.11.434(1)(d)	Hiding cover in riparian areas -- Apply constraints for riparian harvest strategy. All RMZs associated with class 1 streams deferred.	Stream layer(s) and SLI stand data	All forest lands including both HCP and non-HCP lands	Constraint parameters are those defined for aquatic buffers -- taken out of commercial SLI acres and not included as operable. All Class 1 aquatic buffers deferred. Widths: 120 ft. SWN, STW, LIB; 100 ft. MSLA, KU, CLW, PLNS, HAM; 80 ft. East Side and ANA. Class 2 and 3 -- 25 ft. deferrals with the remaining 25 ft. of the 50 ft. buffer harvested.
<b>Grizzly Bear</b>	HCP, GB-RZ2	100 ft. Visual Screening buffers along open roads - no clear-cut or seed-tree treatments may occur in these buffers.	Road layer, SLI stand data, recovery zone boundary, and NROH CYE boundary	All Recovery Zone lands and CYE NROH.	No notes
<b>Grizzly Bear</b>	ARM 36.11.432(1)(d)	34,363 commercial acres of Core deferred from harvest.	Grizzly Bear Core polygon layer and SLI stand data	Stillwater Block	No notes
<b>Canada Lynx</b>	HCP, LY-HB2(2) and ARM 36.11.411	In lynx habitat, retain average of 2 snags and 2 live recruitment tree/acre >21 inches DBH on warm and moist, and wet habitat type groups; and 1 snags and 1 live recruitment tree/acre.	SLI stand data and/or forest stand polygon layer.	All forested state trust lands	Uses constraint approach similar to 2004. Base constraint on expected trees/ac and volume retained in live recruitment trees by prescription applied in model. Constraint applied to green trees given high defect in most large, dead snags that are retained.



Species	ARM or HCP Measures	Constraint Description Summary	Related Data Available	Geographic Area Applicable	Notes
Canada Lynx	HCP, LY-HB6	At each Land Office, retain at least 65% total potential class lynx habitat in the suitable habitat condition. Suitable habitat consists of stands in appropriate habitat types that possess at least 40% total canopy closure in sapling, pole and/or saw-timber classes.	Modeled lynx habitat fields in SLI and forest stand polygon layer.	All forested scattered lands outside of lynx LMA's	Because the model could not grow canopy cover for in-growth over time in a manner that would closely reflect reality, a basal area requirement of 60 square feet was used in lieu of the 40% canopy cover requirement.
Canada Lynx	HCP, LY-LM1	At scale of <u>each</u> LMA, retain at least 65% total potential class lynx habitat in the suitable habitat condition. Suitable habitat consists of stands in appropriate habitat types that possess at least 40% total canopy closure in sapling, pole and/or saw-timber classes.	Modeled lynx habitat fields in SLI and forest stand polygon layer, and LMA polygon layer.	Applies to lynx habitat on DNRC lands within lynx LMA's	Because the model could not grow canopy cover for in-growth over time in a manner that would closely reflect reality, a basal area requirement of 60 was used in lieu of the 40% canopy cover requirement.
Canada Lynx	HCP, LY-LM2	No more than 15% of total potential habitat class may be converted to non-suitable class in each decade.	Modeled lynx habitat fields in SLI and forest stand polygon layer, and LMA polygon layer.	Applies to lynx habitat on DNRC lands within lynx LMA's	Also viewed as a limit on even-aged harvest acres per decade. Once that limit is hit, only uneven-aged regimes can be selected.

Species	ARM or HCP Measures	Constraint Description Summary	Related Data Available	Geographic Area Applicable	Notes
Canada Lynx	HCP, LY-LM3(1)	At scale of <u>each LMA</u> , retain at least 20% total potential class lynx habitat in the winter foraging habitat condition. Winter foraging habitat consists of saw-timber stands that possess at least 40% total stand canopy closure and contain AF, SP, and/or GF.	Modeled lynx habitat fields in SLI and forest stand polygon layer, and LMA polygon layer.	Applies to lynx habitat on DNRC lands within lynx LMA's	Because the model could not grow canopy cover for in-growth over time in a manner that would closely reflect reality, a basal area requirement of 60 was used in lieu of the 40% canopy cover requirement.
Canada Lynx	ITP constraint	No more than 1,200 acres of lynx habitat can be pre-commercially thinned annually.	Modeled lynx habitat fields in SLI and forest stand polygon layer, and LMA polygon layer.	Applies to lynx habitat on DNRC lands within lynx LMA's	No notes
Bald Eagle	36.11.429 (1)(c)(ii) and (d)(ii)	Allow no harvest prescriptions that would result in residual basal areas lower than 60 sq. feet.	Nest tree point locations and SLI data	Buffer out from nest point to 800m on DNRC lands.	This simplified constraint requires a moderate threshold of cover retention across the entire primary use area. This approach "averages" the harvest across the entire 800m buffer area and would take into account required heavy retention in nest site areas, but allows for more volume removal at greater distance from the nest site area.

Species	ARM or HCP Measures	Constraint Description Summary	Related Data Available	Geographic Area Applicable	Notes
Snags	36.11.411	Retain average of 2 snags and 2 live recruitment tree/acre >21 inches DBH on warm and moist, and wet habitat type groups; and 1 snags and 1 live recruitment tree/acre.	NA	NA	Uses constraint approach similar to 2004. Base constraint on expected trees/ac and volume retained in live recruitment trees by prescription applied in model. Constraint applied to green trees given high defect in most large, dead snags that are retained.

**Table 34: Species and Associated Conservation Measures Not Considered**

Species	ARM or HCP Measures	Constraint Description Summary	Related Data Available	Geographic Area Applicable	Notes
Grizzly Bear	HCP, GB-ST2	19,000 acres of class A lands under 4 year active/8 year rest mgmt.	Class A lands polygon layer and SLI stand data	Stillwater Block	A constraint for this requirement was not applied in 2015 or 2004. The SYC team discussed the need for a constraint to address HCP, GB-ST2 and concluded that given the presence of interspersed deferred acres in these zones and ability to manage in commercial 4-year windows, no constraint was necessary.
Grizzly Bear	ARM 36.11.431(1)(a)	55,000 of grizzly bear management units under 3 year active/6 year rest mgmt.	Grizzly bear subunit polygon layer and SLI stand data	Swan River State Forest	Did not include a constraint for this in 2015 or 2004. The SYC team discussed the need for a constraint to address this ARM and concluded that given the ability to manage in commercial 3-year windows

Species	ARM or HCP Measures	Constraint Description Summary	Related Data Available	Geographic Area Applicable	Notes
					and winter period, no constraint was necessary.
<b>Grizzly Bear</b>	HCP, GB-SC2	33,300 acres of scattered parcels in recovery zones and CYE NROH under 4 year active/8 year rest mgmt.	Scattered parcels recovery zone layer, CYE NROH, and SLI stand data	All HCP scattered lands in recovery zones and CYE NROH	The SYC team discussed the need for a constraint to address HCP, GB-SC2 and concluded that given the ability to manage in commercial 4-year windows and winter period, no constraint was necessary. The smaller geographic area of "a parcel" compared to a larger subunit makes it inherently less necessary to revisit a section within an 8 year rest window.
<b>Canada Lynx</b>	HCP, LY-HB5 and Fisher ARM 36.11.440( c )	Provide for habitat connectivity of mature forest cover across 3rd order drainages.	DEM, SLI stand data, forest stand polygon layer.	Ridgetops associated with DNRC forest land.	Considerable subjective analysis would be required for a minimal number of acres constrained. The team concluded that this measure typically would be met in deferrals, RMZs, and through application of allowable prescription percentages by cover type.

Species	ARM or HCP Measures	Constraint Description Summary	Related Data Available	Geographic Area Applicable	Notes
<b>Canada Lynx</b>	HCP, LY-LM3(2)	For any treated PCT stand in lynx habitat in LMAs, retain 20% of each project area (i.e., total of all PCT units identified for treatment) in an un-thinned condition until they meet saw-timber size class.	Modeled lynx habitat fields in SLI and forest stand polygon layer, and LMA polygon layer.	Applies to lynx habitat on DNRC lands within lynx LMA's	This constraint was deemed unnecessary given that annual budgetary constraints have a predominant functional limit on thinning in DNRC's program. Also, PCT would be allowed unconstrained on all non-lynx forest types, and the minor acreages of retained patches were deemed to have minimal influence on long-term yield.
<b>Fisher</b>	36.11.440	Apply constraints for riparian harvest strategy, old growth, and snags to cover this species. All RMZs associated with class 1 streams deferred.	NA	NA	Addressed through coarse filter management and general application of allowable harvest regimes, riparian harvest strategies, and snag requirements. No additional specific constraint required.
<b>Flammulated Owl</b>	36.11.437	No Constraint Necessary	NA	NA	Addressed through coarse filter management, old growth, and general application of allowable harvest regimes and snag requirements.
<b>Black-Backed Woodpecker</b>	36.11.438	No Constraint Necessary	NA	NA	Addressed through coarse filter management and general application of allowable harvest regimes. The measure is typically met by retaining desirable live and dead trees in burned areas

Species	ARM or HCP Measures	Constraint Description Summary	Related Data Available	Geographic Area Applicable	Notes
					and intensively burned acreages on inoperable or deferred ground.
<b>Pileated Woodpecker</b>	36.11.439	No Constraint Necessary	NA	NA	Addressed through coarse filter management, old growth, and general application of allowable harvest prescriptions by cover type and snag requirements.
<b>Common Loon</b>	36.11.441	No Constraint Necessary	NA	NA	Harvest-related mitigation requirements are rare and affect a very small number of acres annually on average (i.e., <50 ac per yr.).
<b>Peregrine Falcon</b>	36.11.442	No Constraint Necessary	NA	NA	Harvest-related mitigation requirements are rare and affect a very small number of acres annually on average (i.e., <50 ac per yr.).
<b>Gray Wolf</b>	36.11.430	No Constraint Necessary	NA	NA	No specific forest cover requirements for this species.
<b>Wolverine</b>	n/a	No Constraint Necessary	NA	NA	No specific forest cover requirements for this species, and most limiting habitat areas are relatively non-forested, high elevation zones with persistent snow late into spring.

Species	ARM or HCP Measures	Constraint Description Summary	Related Data Available	Geographic Area Applicable	Notes
<b>Yellow-Billed Cuckoo</b>	n/a	No Constraint Necessary	NA	NA	Suitable habitat for this species in Montana is comprised of cottonwood river bottoms where active timber harvest is not economical and is generally prohibited.
<b>Big Game</b>	36.11.443	No Constraint Necessary	NA	NA	Addressed through coarse filter management and general application of allowable harvest prescriptions by cover type.

## 22 Appendix O: Growth Rates by Land Office

In this section, the estimated growth rates in board feet per acre per year determined by the calculation are displayed for each Land Office. Growth rates from other published sources are also included for purposes of comparison.

**Table 35: Estimated and Historic Growth Rates (bf/ac/yr)**

Area	2020 SYC Grow Only	2020 SYC Bio Gross	2014 FIA <sup>25</sup>	1989 FIA <sup>26</sup>	Timber Resources Publications <sup>27</sup>
Statewide	123	123	72	126	111
NW	171	176	129	151	146
SW	117	105	51	148	97
CE	52	72	10	53	97
EA	85	73	60	90	69

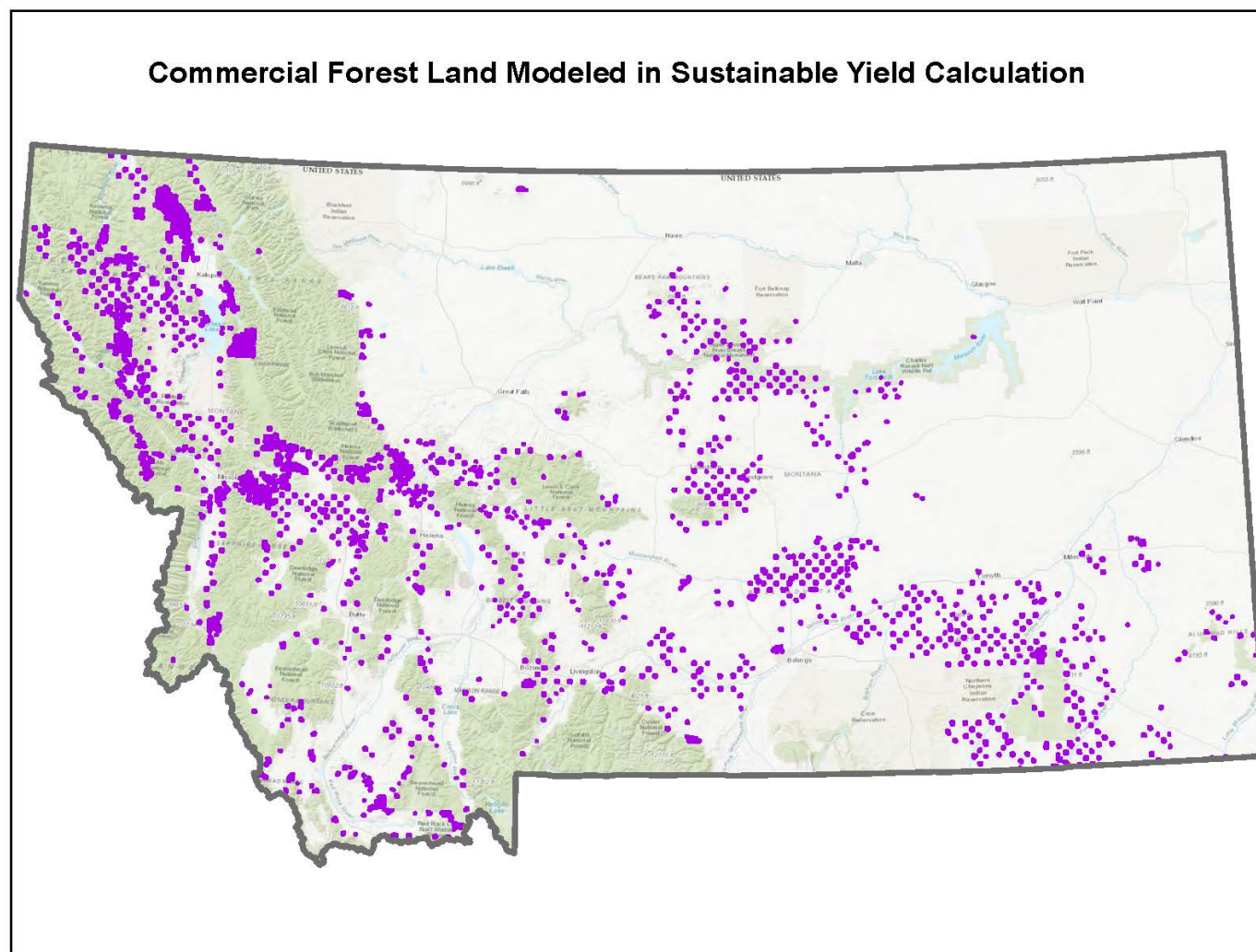
<sup>25</sup> Figures shown are for growing stock on State and Local Government ownership; data queried from USFS Forest Inventory and Analysis (FIA), Forest Inventory Data Online (FIDO)

<sup>26</sup> Figures shown are for growing stock on State and Local Government ownership; data queried from USFS Forest Inventory and Analysis (FIA), Forest Inventory Data Online (FIDO)

<sup>27</sup> Figures shown are average annual net growth per acre for State/Other Public ownership reported in the following publications: NW—Timber Resources of Lincoln, Sanders, Flathead, and Lake Counties, Montana Dept. of State Lands, Forestry Division, and Forest Survey, Intermountain Forest and Range Experiment Station, Region 1, USDA Forest Service, 1982; SW—Timber Resources of Mineral, Missoula, and Ravalli Counties, Montana Dept. of State Lands, Forestry Division and Forest Survey, Intermountain Forest and Range Experiment Station, Region 1, USDA Forest Service, 1983; CE—Timber Resources of the Headwater Counties, Montana Dept. of State Lands, Forestry Division and Forest Survey, Intermountain Forest and Range Experiment Station, Region 1, USDA Forest Service, 1984; EA—Timber Resources of Eastern Montana, Montana Dept. of State Lands, Forestry Division and Forest Survey, Intermountain Forest and Range Experiment Station, Region 1, USDA Forest Service, 1984.



## 23 Appendix P: Map of Commercial Forest Acres Included in the Calculation



**Figure 58: Location of Commercial Forest Acres Included in the Calculation**

# 0720-5

## LAND EXCHANGE:

### Preliminary Approval for MDC Boulder Land Exchange



**Land Board Agenda Item  
July 20, 2020**

**0720-5 Land Exchange: Preliminary Approval for MDC Boulder Land Exchange**

**Location:** Jefferson County

**Trust Benefits:** School for the Deaf and Blind

**Trust Revenue:** N/A

**Item Summary**

The Department of Natural Resources and Conservation (DNRC) requests preliminary approval of a land exchange proposal with Department of Health & Human Service involving 31.9 acres of state trust land for 154 acres of non-trust state land managed by Department of Corrections (DOC) all located in Jefferson County. The trust lands portion is located within the former MDC Campus in Boulder and the non-trust lands is located approximately 1 mile southeast of Boulder.

The proposed land exchange has been determined to be the best method to resolve a trust lands inholding within the state's non-trust lands Boulder MDC Campus. When researching the ownership of the land that includes the MDC Campus, a previously unknown tract of trust land was discovered. The records search produced an 1895 warranty deed that conveyed a portion of the current campus site to the State of Montana for the use and benefit of the former State Deaf and Dumb Asylum, currently known as the School for the Deaf and Blind.

**Acres:**

<b>State Trust Land (DNRC)</b>			
<b>County</b>	<b>Legal Description</b>	<b>Trust</b>	<b>Acres</b>
Jefferson	The SE1/4 NW1/4 excepting therefrom any portion of the Boulder Lagoons Minor Subdivision within the SE1/4 NW1/4, Section 33, T6N-R4W	School for the Deaf & Blind	31.9±
<b>State Non-Trust Land (DOC)</b>			
<b>County</b>	<b>Legal Description</b>	<b>Acres</b>	
Jefferson	W1/2NW1/4, Section 3, T5N-R4W	80±	
Jefferson	That portion lying North of HWY 69, Section 4, T5N-R4W	74±	
	Acreage subject to final survey	154±	

**Location:** Jefferson County

**Beneficiary** School for the Deaf and Blind

## **PUBLIC INVOLVEMENT PROCESS AND RESULTS**

A scoping letter requesting public comment was sent out May 26, 2020, and the comment period ran through June 30, 2020. The letter was sent to neighboring landowners, interested parties and the Jefferson County Commissioners. In addition, a public scoping notice was posted on the DNRC website and published in the *Boulder Monitor* and *Helena Independent Record*. DNRC attempted to hold a virtual public hearing to accept comments regarding the proposed land exchange on June 10, 2020 at 6:00 p.m. via Zoom; however, this meeting had to be rescheduled for June 24, 2020. Updated public notices addressing the rescheduling of the virtual public hearing were published in the *Boulder Monitor* and *Helena Independent Record*, as well as posted on the DNRC website.

A virtual public hearing via Zoom was held on June 24, 2020. At the meeting, five attendees spoke in support of the exchange, including two Jefferson County Commissioners, the Boulder City Council President, and members of the Jefferson Local Development Corporation. In addition, the Helena Unit received written comments from four supporters of the exchange, with support from a state senator and the mayor of the City of Boulder.

DNRC has received written comments from two opponents to this proposed land exchange. The main areas of concern addressed in the comments include the resource areas of vegetation cover, including the poor weed management history on the MDC Campus and its effect on adjacent property, and water distribution, specifically concern that water rights should be kept together on the agricultural land. In addition, concern was raised about the transparency of the exchange process and the appraisal process of the MDC Campus land, particularly that the appraised value of the land does not include the value of the improvements.

## **EXCHANGE CRITERIA ANALYSIS**

The following preliminary review documents how the land exchange meets or exceeds the land exchange criteria and accrues benefits for the School of the Deaf and Blind Trust Beneficiaries.

### **1. EQUAL OR GREATER VALUE**

Both the Trust and Non-Trust State lands were appraised to determine actual values to determine the number acres of Non-Trust land needed for the land exchange and proposed to the Land Board for preliminary approval. A Montana State Certified Appraisal of the 31.9 acres of State Trust land estimated a value with legal access at approximately \$10,200 an acre totaling \$325,000. The appraised value of the 154 acres of Non-Trust Land estimated a value with legal access at \$2,300 an acre totaling \$354,200.

*Preliminarily Meets Criteria*

### **2. STATE LAND BORDERING ON NAVIGABLE LAKES AND STREAMS**

There are no navigable lakes or streams bordering on either the trust land or the exchange parcels.

*Preliminarily Meets Criteria*

### **3. EQUAL OR GREATER INCOME TO THE TRUST**

The state trust land has not generated any income.

The Department of Corrections currently manages the existing Ag and Grazing lease and will continue to do so until the lease terms on December 31, 2024. The DNRC will receive lease revenues of approximately \$1,378 annually for lands to be acquired by Trust Lands. At that time the acquired Ag lands will be offered for competitive bid and are projected to generate income from Ag and grazing leases that would total \$6,412.28 annually.

*Preliminarily Meets Criteria*

#### **4. EQUAL OR GREATER ACREAGE**

The Land Exchange proposes exchanging 31.9 acres of Trust land for approximately 154 acres of Non-Trust Land. A net gain for the State Trust lands of 122 acres.

*Preliminarily Meets Criteria*

#### **5. CONSOLIDATION OF STATE LAND**

This exchange proposal takes the Trust Land out of the middle of DPHHS MDC Campus allowing DPHHS to consolidate the ownership of their lands. It would provide 154 acres Trust Land accessible to the public and adjacent to other State Land.

*Preliminarily Meets Criteria*

#### **6. POTENTIAL FOR LONG-TERM APPRECIATION**

Both parcels involved have the potential for long-term appreciation. The State Trust land parcels are encumbered by surface improvements (buildings that are not owned by trustee). DNRC has no ownership or management authority over these structures. The Non-Trust Land agricultural contiguous parcels are irrigated productive hay ground which have state highway exposure and are unencumbered by improvements.

*Preliminarily Meets Criteria*

#### **7. ACCESS**

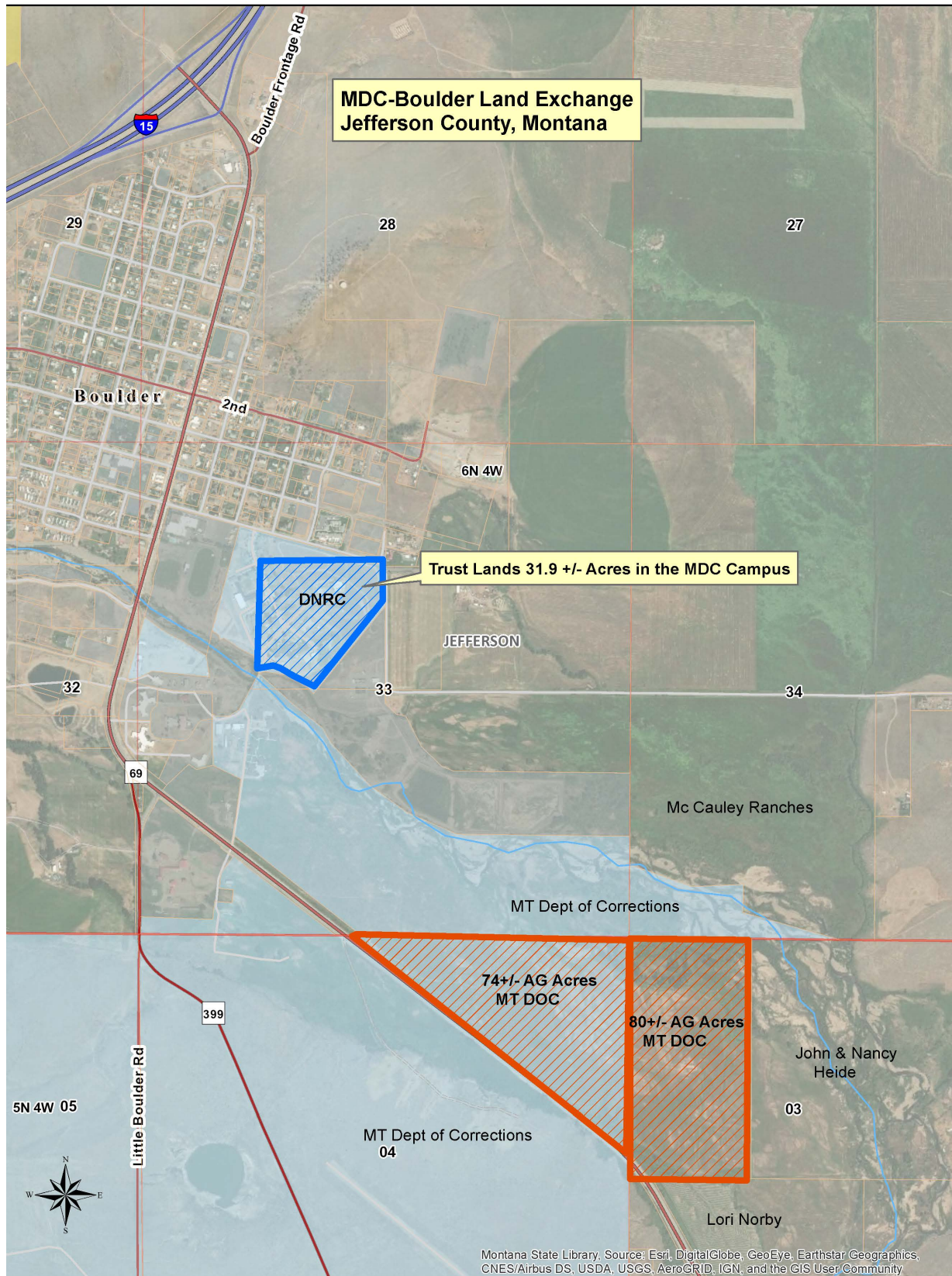
The State currently has legal access to the MDC Campus Site. This exchange would provide public access to the state trust lands to be acquired and will provide future recreational opportunities to the public on 154 acres.

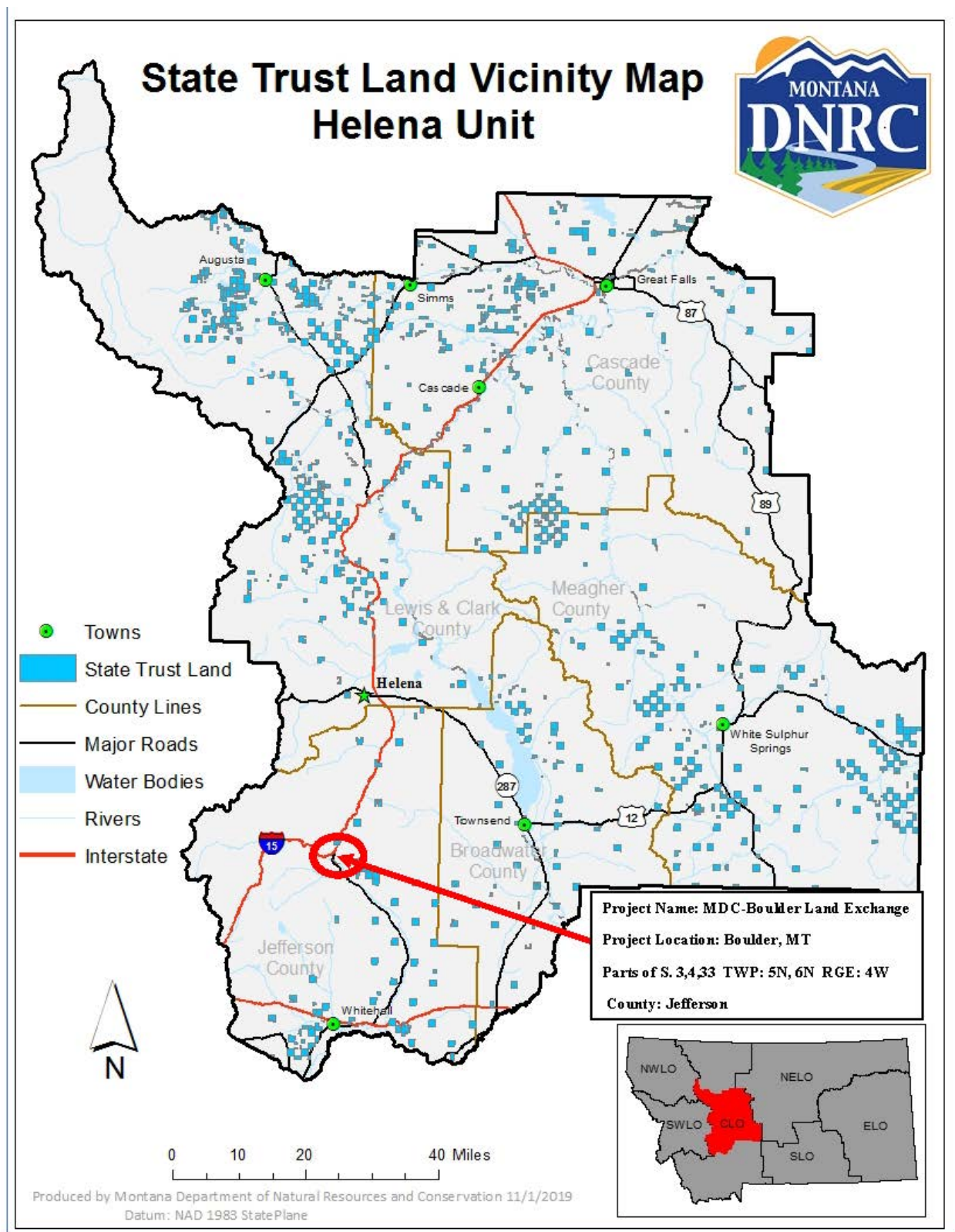
*Preliminarily Meets Criteria*

### **AGENCY RECOMMENDATIONS**

This land exchange preliminarily meets the seven criteria set by the land board. The director believes this proposed land exchange would benefit the Trust beneficiaries and the State of Montana. The director requests that this exchange receive preliminary approval from the Board.











# 0720-6

CABIN AND HOME SITES:  
FINAL APPROVAL FOR SALE

A. Chouteau County

B. Flathead County



**Land Board Agenda Item  
July 20, 2020**

**0720-6A Cabin and Home Sites: Final Approval for Sale  
A. Chouteau County**

**Location:** Chouteau County  
**Trust Benefits:** Common Schools  
**Trust Revenue:** \$27,000

**Item Summary**

The Department of Natural Resources and Conservation (DNRC) is requesting final approval for sale of one cabin site nominated for sale in Chouteau County. This sale was nominated by the lessees in conjunction with the Cabin and Home Site Sale Program.

<b>Sale No.</b>	<b>Acres</b>	<b>Legal Description</b>	<b>Nominator</b>	<b>Trust</b>
<b>1012</b>	6.00±	Tract 2 of COS 208B, T22N-R11E, Sec. 36	Charles A. Tonne	Common Schools

This sale is currently leased as a cabin site and produces an average income for residential leases statewide.

The parcel will be sold with the access currently provided under its lease agreement.

**Economic Analysis**

Short term – The average rate of return for this sale parcel is 3.629%.

Long term – The funds from the sale of this parcel would be combined with other sale funds to purchase replacement lands through DNRC's Land Banking program. Lands purchased are required to have an equal or greater rate of return than the combined lands that generated the sale funds used for the purchase. To date, the average annual rate of return on acquisitions has been 2.91% on acquisitions with income generated from annual lease payments.

**Cultural/Paleontological Resources**

A Class I level of cultural resource inventory was conducted for the proposed sale. Home sites typically contain numerous structures, and the ground surfaces within most home sites have been variously disturbed over the course of many years of occupation and development. This sale will have no effect to state-owned heritage properties.

**Background**

This sale was granted preliminary approval in May 2018 to proceed through the Cabin and Home Site Sale Program. The Land Board set the minimum bid for the land and the maximum value of compensation for the improvements in May 2020.

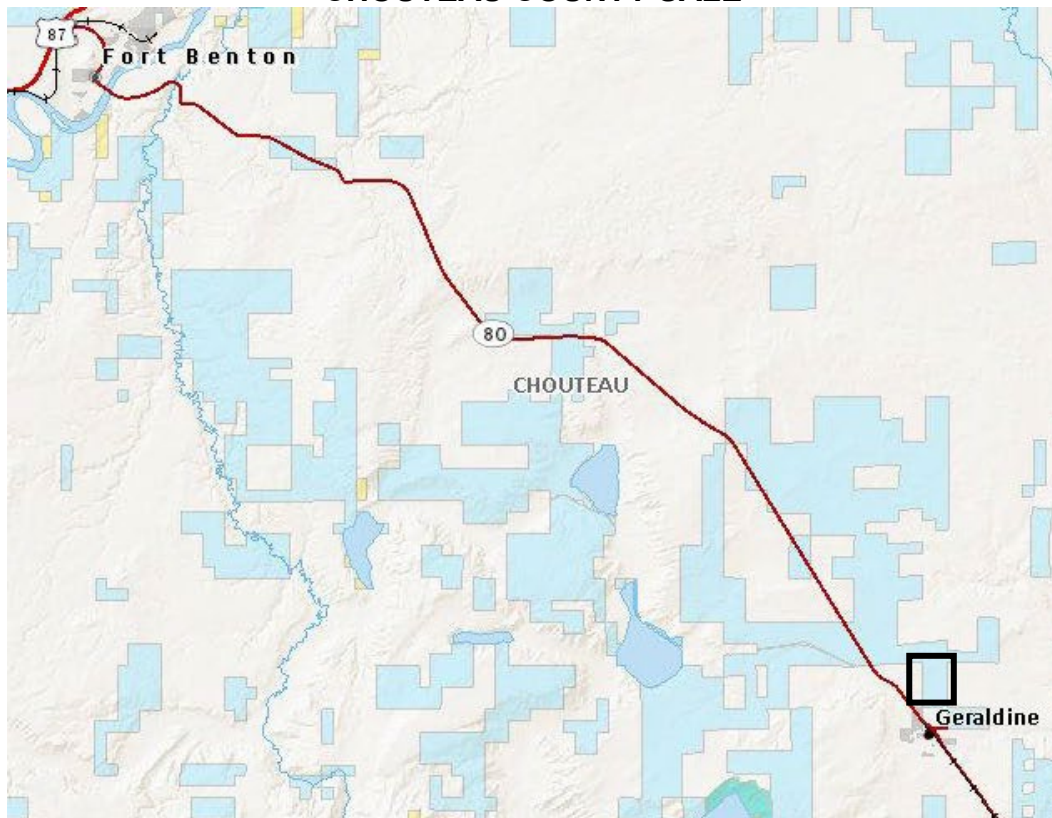
<b>Sale No.</b>	<b>Appraised Land Value</b>	<b>Appraised Improvements Value</b>	<b>Final Sale Price</b>
<b>1012</b>	\$27,000	\$128,000	\$27,000

**Sale Price**

This sale sold at public auction on June 30, 2020. DNRC received a bid deposit from one qualified bidder for this sale who was the current lessee. The site sold for the final sale price listed above.

**DNRC Recommendation**

The director recommends the Land Board grant final approval for the sale of this cabin site at the value shown above. The sale will close within 30 days of final approval by the Land Board.

**CHOUTEAU COUNTY SALE****Sale #1012**

Tract 2 of COS 208B, T22N-R11E, Sec. 36



**Land Board Agenda Item  
July 20, 2020**

**0720-6B Cabin and Home Sites: Final Approval for Sale  
B. Flathead County**

**Location:** Flathead County  
**Trust Benefits:** School for the Deaf & Blind  
**Trust Revenue:** \$107,000

**Item Summary**

The Department of Natural Resources and Conservation (DNRC) is requesting final approval for sale of two cabin sites nominated for sale in Flathead County. These sales were nominated by the lessees in conjunction with the Cabin and Home Site Sale Program.

Sale No.	Acres	Legal Description	Nominator	Trust
1023	1.036±	Lot 3, Olney Townsite, COS 21331, T32N-R23W, Sec. 7	David & Amanda Snavelly	School for the Deaf & Blind
1024	1.058±	Lot 5, Olney Townsite, COS 21331, T32N-R23W, Sec. 7	Shawn Roy	School for the Deaf & Blind

These sales are currently leased as a cabin site and produce an average income for residential leases statewide.

The parcels will be sold with the access currently provided under their lease agreements.

**Economic Analysis**

Short term – The average rates of return on these sale parcels are below. The parcels will continue to receive these rates of return if they remain in state ownership.

Sale No.	Rate of Return
<b>1023</b>	2.686%
<b>1024</b>	2.879%

Long term – The funds from the sale of these parcels would be combined with other sale funds to purchase replacement lands through DNRC's Land Banking program. Lands purchased are required to have an equal or greater rate of return than the combined lands that generated the sale funds used for the purchase. To date, the average annual rate of return on acquisitions has been 2.91% on acquisitions with income generated from annual lease payments.

**Cultural/Paleontological Resources**

A Class I level of cultural resource inventory was conducted for the proposed sales. Home sites typically contain numerous structures, and the ground surfaces within most home sites have been variously disturbed over the course of many years of occupation and development. These sales will have no effect to state-owned heritage properties.

**Background**

These sales were granted preliminary approval in May 2018 to proceed through the Cabin and Home Site Sale Program. The Land Board set the minimum bid for the land and the maximum value of compensation for the improvements in May 2020.

<b>Sale No.</b>	<b>Appraised Land Value</b>	<b>Appraised Improvements Value</b>	<b>Final Sale Price</b>
1023	\$53,000	\$63,000	\$53,000
1024	\$54,000	\$88,000	\$54,000

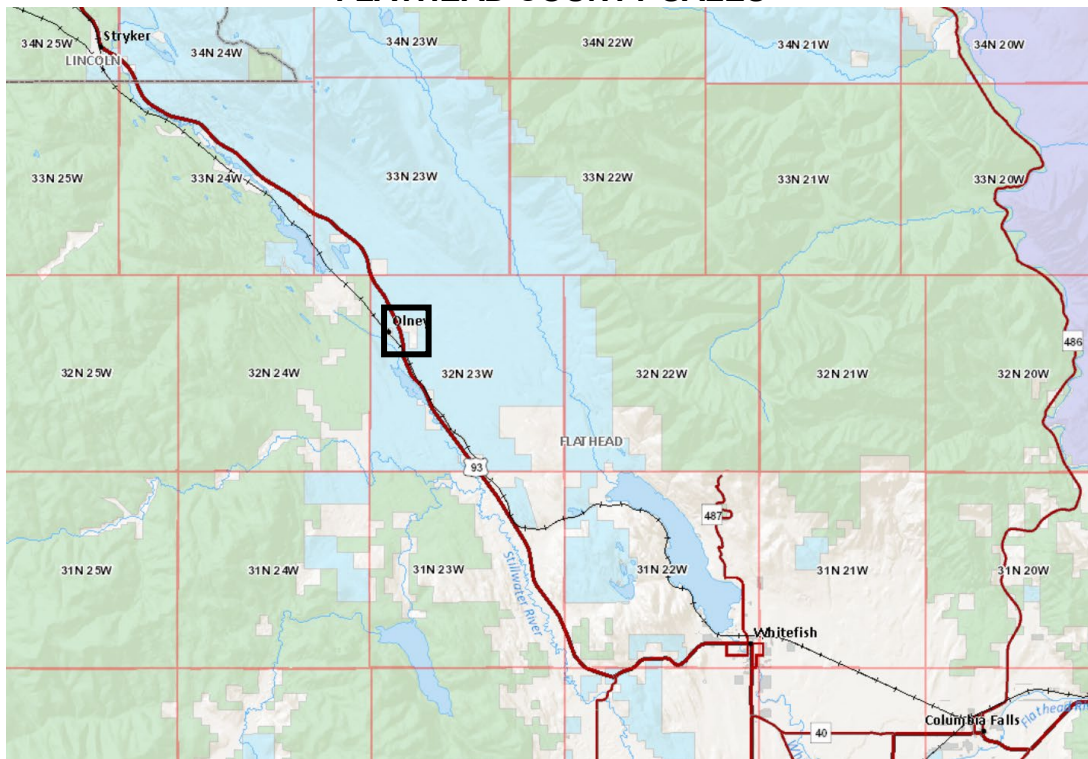
**Sale Price**

These sales sold at public auction on June 30, 2020. DNRC received bid deposits from one qualified bidder for each sale who was the current lessee. These sites sold for the final sale prices listed above.

**DNRC Recommendation**

The director recommends the Land Board grant final approval for the sale of these cabin sites at the values shown above. The sales will close within 30 days of final approval by the Land Board.



**FLATHEAD COUNTY SALES**

**Olney Townsite**  
COS 21331, T32N-R23W, Sec. 7



# 0720-7

## EASEMENTS:



**Land Board Agenda Item  
July 20, 2020**

**0720-7    Easements**

**Location:** Blaine, Cascade, Madison, Phillips, Powell, Stillwater, Sweet Grass, Valley

**Trust Benefits:** Common Schools, Public Land Trust – Nav. River

**Trust Revenue:** Common Schools = \$34,094  
Public Land Trust = \$1,668

**Item Table of Contents**

<b>Applicant</b>	<b>Right-of-Way Purpose</b>	<b>Term</b>	<b>Page(s)</b>
Northwestern Corporation	Overhead Electrical Distribution. Line	Permanent	287-288
Terry and Brenda Mohar	Private Access Road	Permanent	289-291
Big Flat Electric Coop. Inc.	Buried Electrical Distribution. Line	Permanent	292-293
Triangle Telephone Coop.	Buried Telecommunications Cable	Permanent	294-304
Andrea Hastings	Private Access Road	Permanent	305-306
NorVal Electric Coop. Inc.	Buried Electrical Distribution. Line	Permanent	307-310
Spectrum Pacific West, LLC	Buried and Overhead Telecommunications Cable	Permanent	311-315
Montana Department of Transportation	Highway Construction and Maintenance	Permanent	316-317

## APPLICANTS AND RIGHTS OF WAY INFORMATION

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Applicant:	Northwestern Corporations 11 East Park St. Butte, MT 59701
Application No.:	18908
R/W Purpose:	an overhead 14.4/24kV electric distribution line
Lessee Agreement:	N/A (Navigable River)
Acreage:	0.05
Compensation:	\$100.00
Legal Description:	20-foot strip across the Clark Fork River in NW4SW4, Sec. 5, Twp. 9N, Rge. 10W, Powell County
Trust Beneficiary:	Public Land Trust - Nav. River

### Item Summary

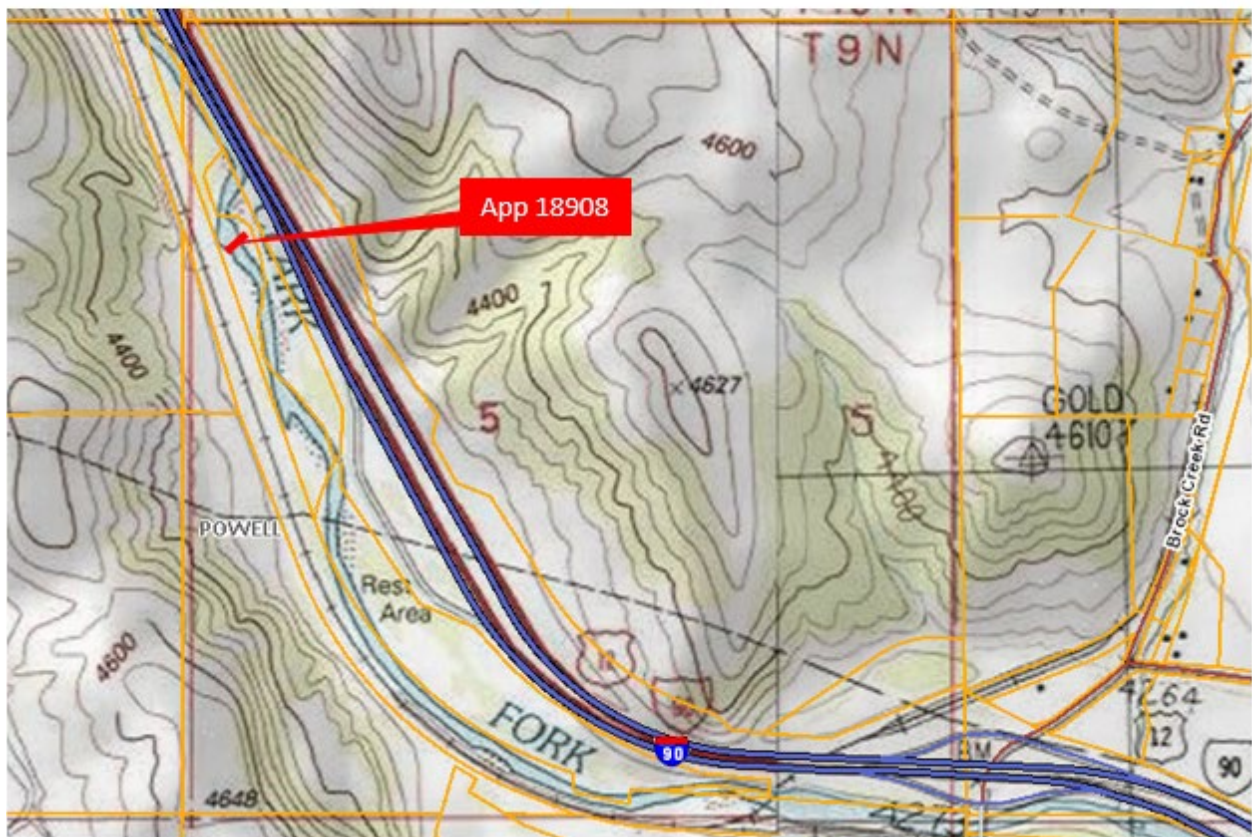
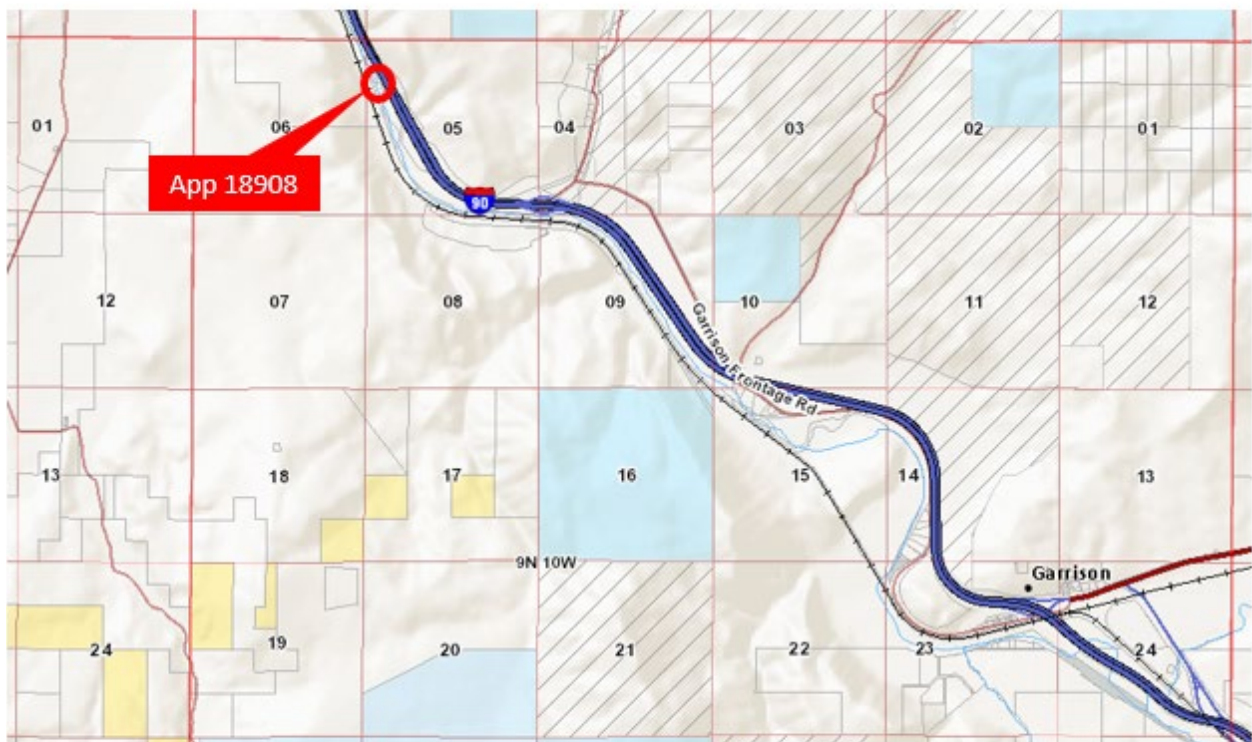
Northwestern Corporation is requesting an easement to install an overhead electric distribution line across the Clark Fork River. Montana Rail Link has requested the service for power to a signal light/heating project associated with rail operations. The new distribution line will come from an existing transformer location to a new power pole and span the Clark Fork River to provide serve to the rail line.

### DNRC Recommendation

The director recommends approval of the easement request by Northwestern Corporation.



## R/W Application 18908



## APPLICANTS AND RIGHTS OF WAY INFORMATION

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Applicant:	Terry & Brenda Mohar 17960 Turner Road Hogeland, MT 59529
Application No.:	18919
R/W Purpose:	a private access road to conduct normal farming and ranching operations
Lessee Agreement:	N/A (Historic)
Acreage:	0.61
Compensation:	\$232.00
Legal Description:	20-foot strip through NW4NW4, Sec. 2, Twp. 33N, Rge. 24E, Blaine County
Trust Beneficiary:	Common Schools

### Item Summary

Terry and Brenda Mohar have made application for the use of an existing road to access their property to conduct normal farming and ranching operations. The road has been in place for many years and authorization for continued use is being requested pursuant to §77-1-130, MCA, which allows for recognition of such historic access. The block of State parcels affected have legal public access through County roads. The private property to be accessed is described as:

- E2, Sec. 33, Twp. 34N, Rge. 24E, Blaine County
- All, Sec. 34, Twp. 34N, Rge. 24E, Blaine County
- W2SW4, N2N2, Sec. 35, Twp. 34N, Rge. 24E, Blaine County

### DNRC Recommendation

The director recommends approval of the applications of Terry and Brenda Mohar.

APPLICANTS AND RIGHTS OF WAY INFORMATION

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Applicant: Terry & Brenda Mohar  
17960 Turner Road  
Hogeland, MT 59529

Application No.: 18920  
R/W Purpose: a private access road to conduct normal farming and ranching operations

Lessee Agreement: N/A (Historic)  
Acreage: 1.21  
Compensation: \$460.00  
Legal Description: 20-foot strip through N2NE4, Sec. 3, Twp. 33N, Rge. 24E, Blaine County

Trust Beneficiary: Common Schools

Item Summary

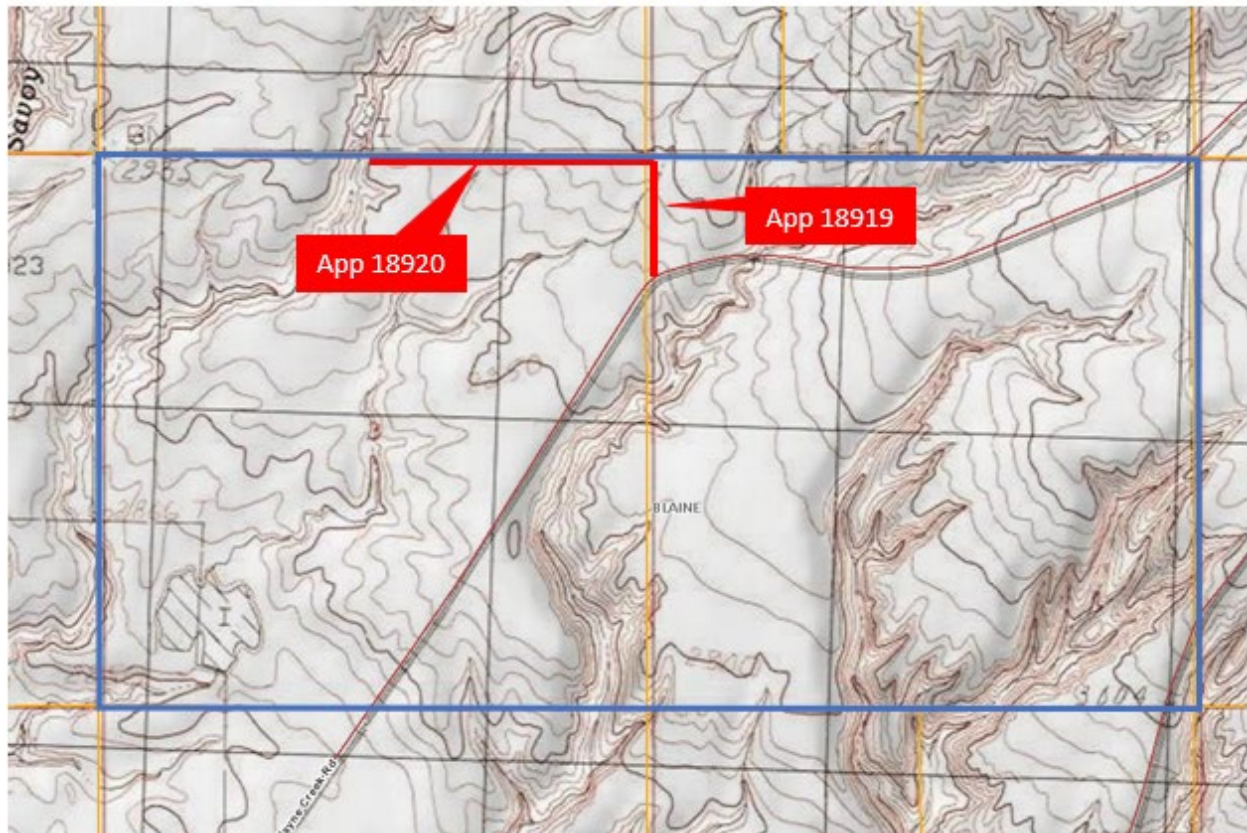
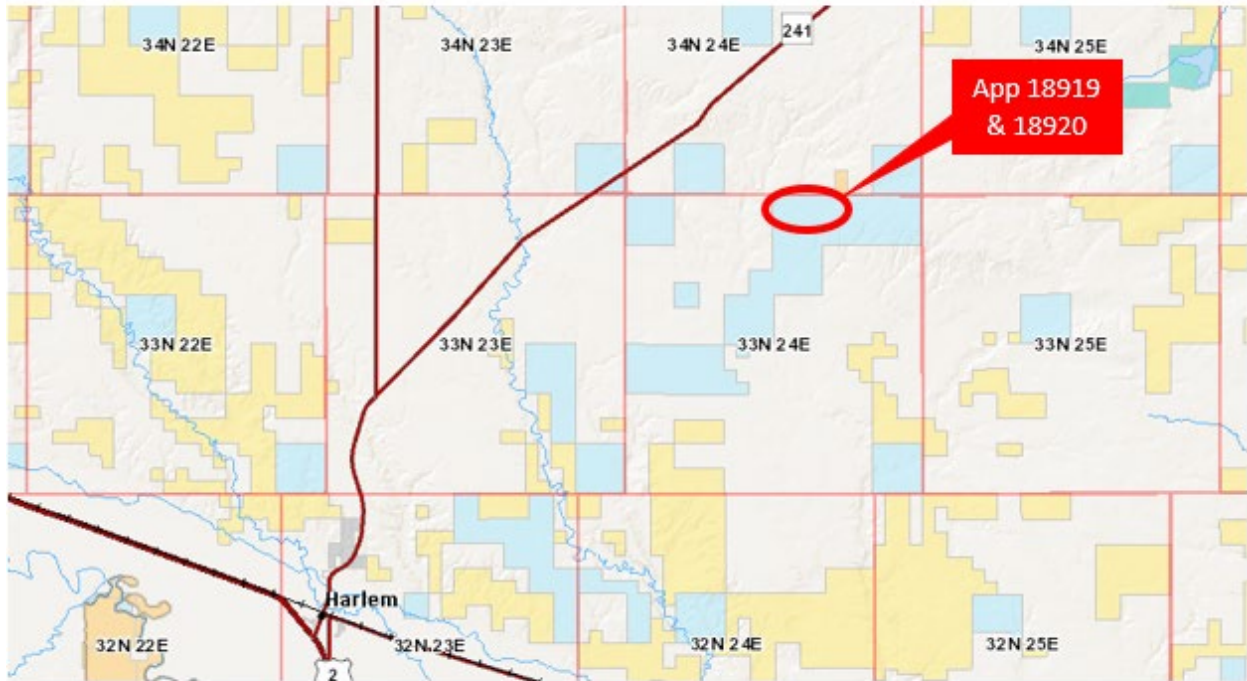
See summary on page 289.

DNRC Recommendation

See recommendation on page 289.



## R/W Application 18919 &amp; 18920



## APPLICANTS AND RIGHTS OF WAY INFORMATION

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Applicant:	Big Flat Electric Cooperative, Inc PO Box 229 Malta, MT 59538
Application No.:	18924
R/W Purpose:	a buried 14.4kV electrical distribution line
Lessee Agreement:	ok
Acreage:	0.44
Compensation:	\$307.00
Legal Description:	20-foot strip through NW4NW4, Sec. 9, Twp. 37N, Rge. 32E, Phillips County
Trust Beneficiary:	Common Schools

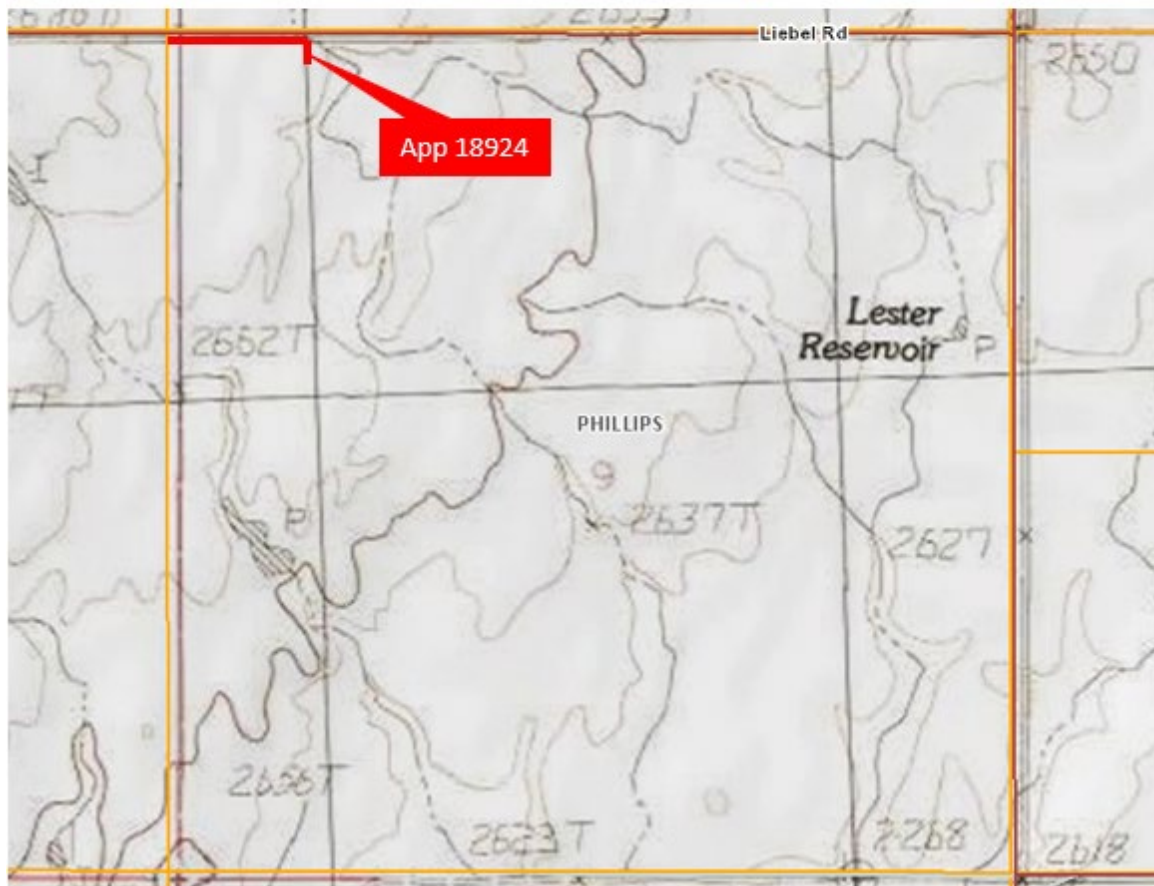
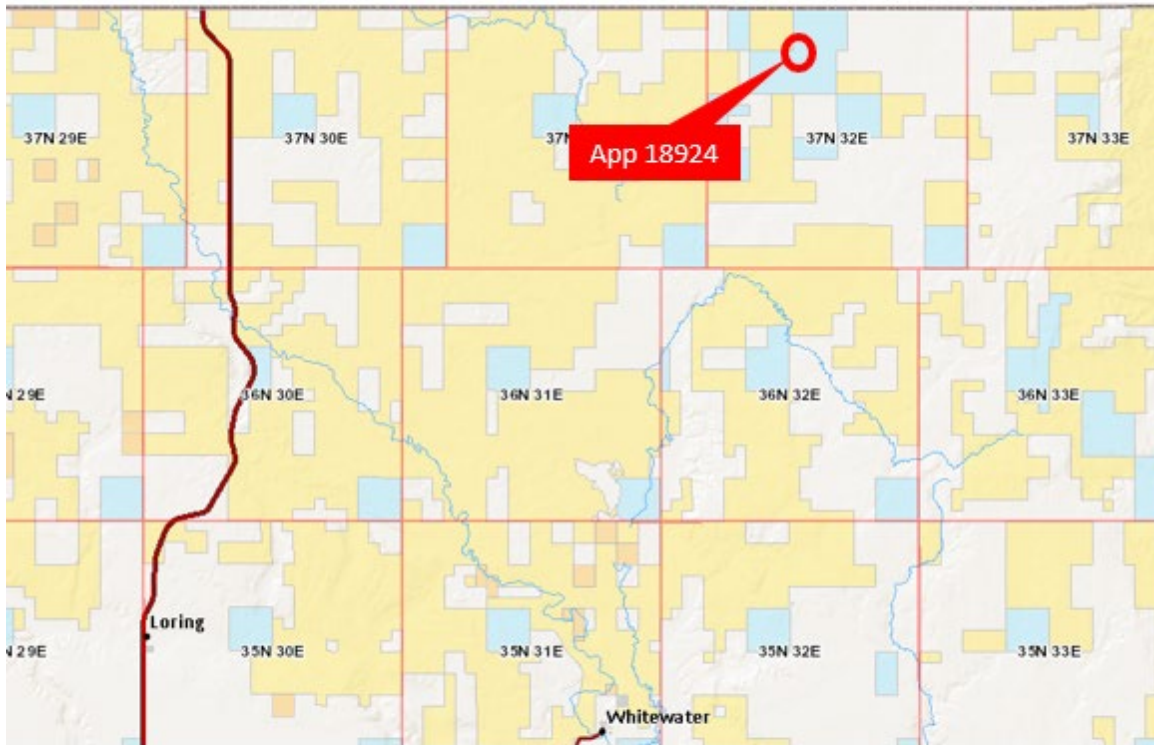
### Item Summary

Big Flat Electric is requesting an easement to install a buried electric distribution line to provide electrical service to the TC Energy pump station site in Section 9. The route chosen is the shortest route available from the existing overhead distribution infrastructure. The project is located within general Sage Grouse habitat and consultation has taken place with the Sage Grouse Program. Minimal disturbance will occur, causing little impact to the State Land.

### DNRC Recommendation

The director recommends approval of the easement request by Big Flat Electric Cooperative.

## R/W Application 18924



## APPLICANTS AND RIGHTS OF WAY INFORMATION

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Applicant:	Triangle Telephone Cooperative Association, Inc. PO Box 1220 Havre, MT 59501
Application No.:	18926
R/W Purpose:	a buried telecommunications cable
Lessee Agreement:	ok
Acreage:	1.14
Compensation:	\$3,420.00
Legal Description:	20-foot strip through SE4SW4, S2SE4, Sec. 29, Twp. 1N, Rge. 15E, Sweet Grass County
Trust Beneficiary:	Common Schools

### Item Summary

Triangle Telephone Cooperative is proposing to install new telecommunications cable through approximately 112.2 miles in the Big Timber Exchange area. The project will provide state-of-the-art broadband telecommunications to rural areas in Sweet Grass County. This project required consultation with the Sage Grouse program, however only one State Land section is impacted and within general habitat (Sec. 32, Twp. 1N, Rge. 15E). Installation of the new cable will occur generally along existing roads and disturbed ground, causing minimal impacts.

### DNRC Recommendation

The director recommends approval of the applications of Triangle Telephone Cooperative.

APPLICANTS AND RIGHTS OF WAY INFORMATION

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Applicant: Triangle Telephone Cooperative Association, Inc.  
PO Box 1220  
Havre, MT 59501

Application No.: 18927  
R/W Purpose: a buried telecommunications cable  
Lessee Agreement: ok  
Acreage: 1.75  
Compensation: \$5,250.00  
Legal Description: 20-foot strip through N2NW4, SW4NW4, Sec. 32, Twp. 1N,  
Rge. 15E, Sweet Grass County  
Trust Beneficiary: Common Schools

Item Summary

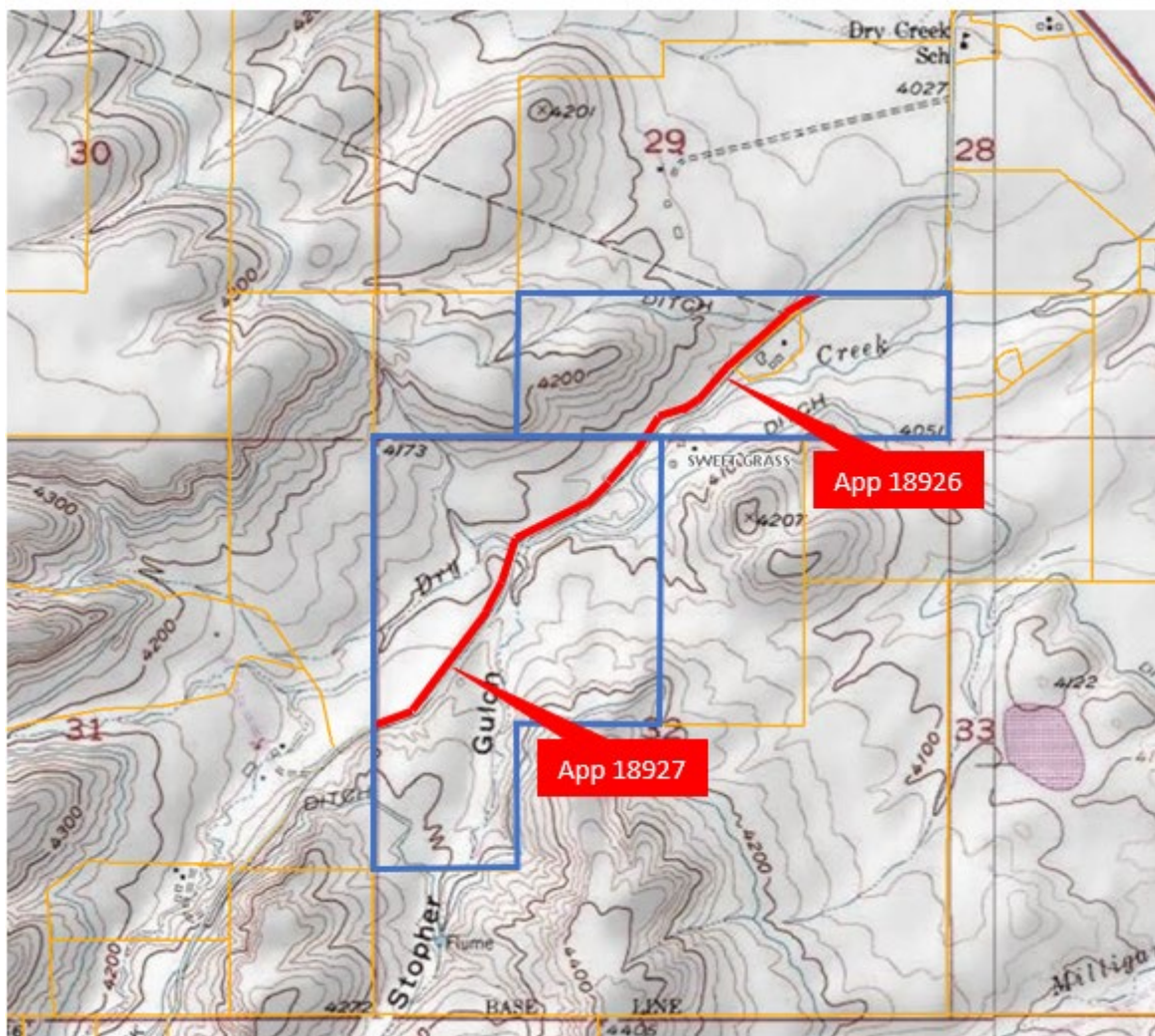
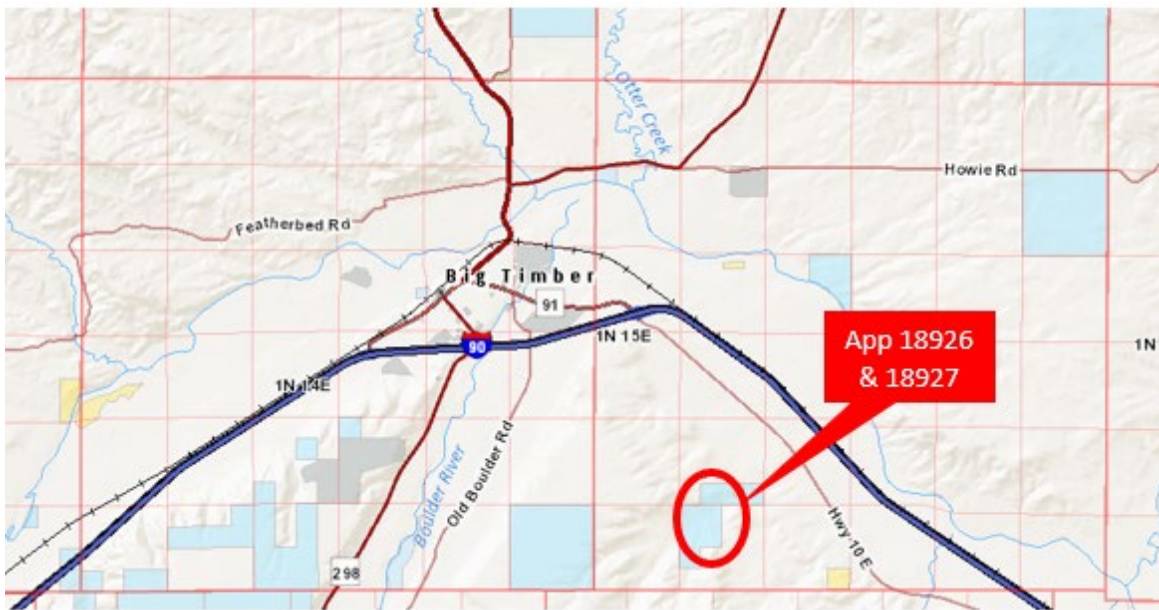
See page 294 for summary.

DNRC Recommendation

See page 294 for recommendation.



## R/W Application 18926 &amp; 18927



APPLICANTS AND RIGHTS OF WAY INFORMATION

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Applicant: Triangle Telephone Cooperative Association, Inc.  
PO Box 1220  
Havre, MT 59501

Application No.: 18928  
R/W Purpose: a buried telecommunications cable  
Lessee Agreement: ok  
Acreage: 4.23  
Compensation: \$5,076.00  
Legal Description: 20-foot strip through N2NE4, E2NW4, SW4NW4, W2SW4,  
Sec. 16, Twp. 1S, Rge. 17E, Sweet Grass County  
Trust Beneficiary: Common Schools

Item Summary

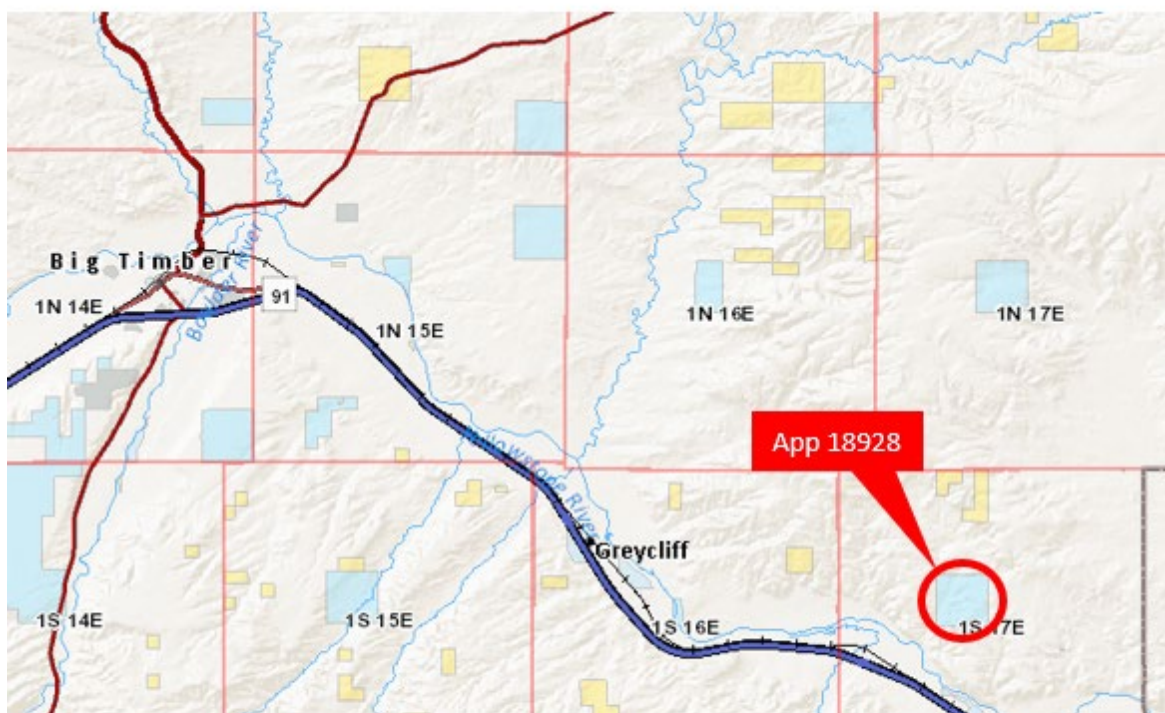
See page 294 for summary.

DNRC Recommendation

See page 294 for recommendation.



## R/W Application 18928





APPLICANTS AND RIGHTS OF WAY INFORMATION

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Applicant: Triangle Telephone Cooperative Association, Inc.  
PO Box 1220  
Havre, MT 59501

Application No.: 18929  
R/W Purpose: a buried telecommunications cable  
Lessee Agreement: ok  
Acreage: 2.45  
Compensation: \$2,940.00  
Legal Description: 20-foot strip through SE4NW4, N2SW4, SW4SW4,  
Twp. 1S, Rge. 17E, Sweet Grass County  
Trust Beneficiary: Common Schools

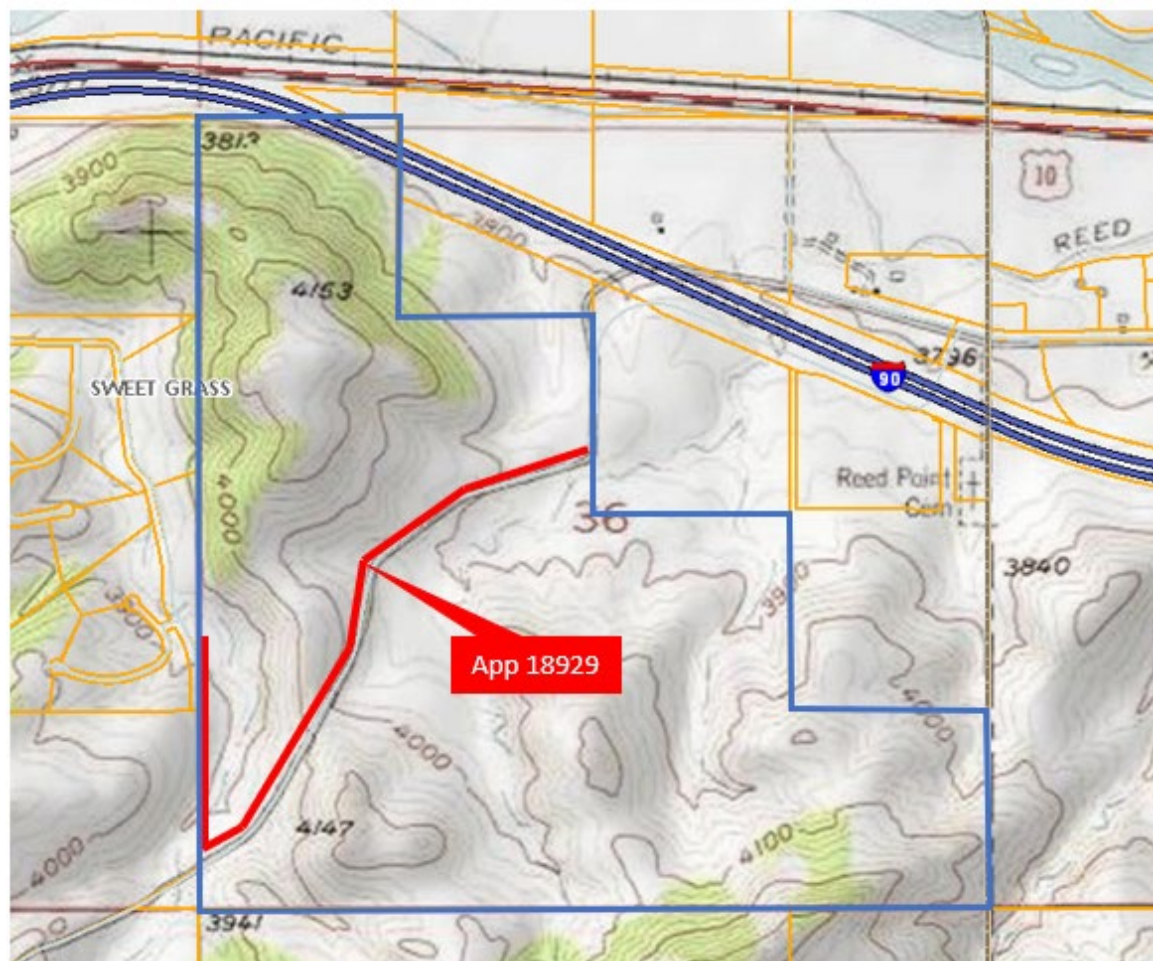
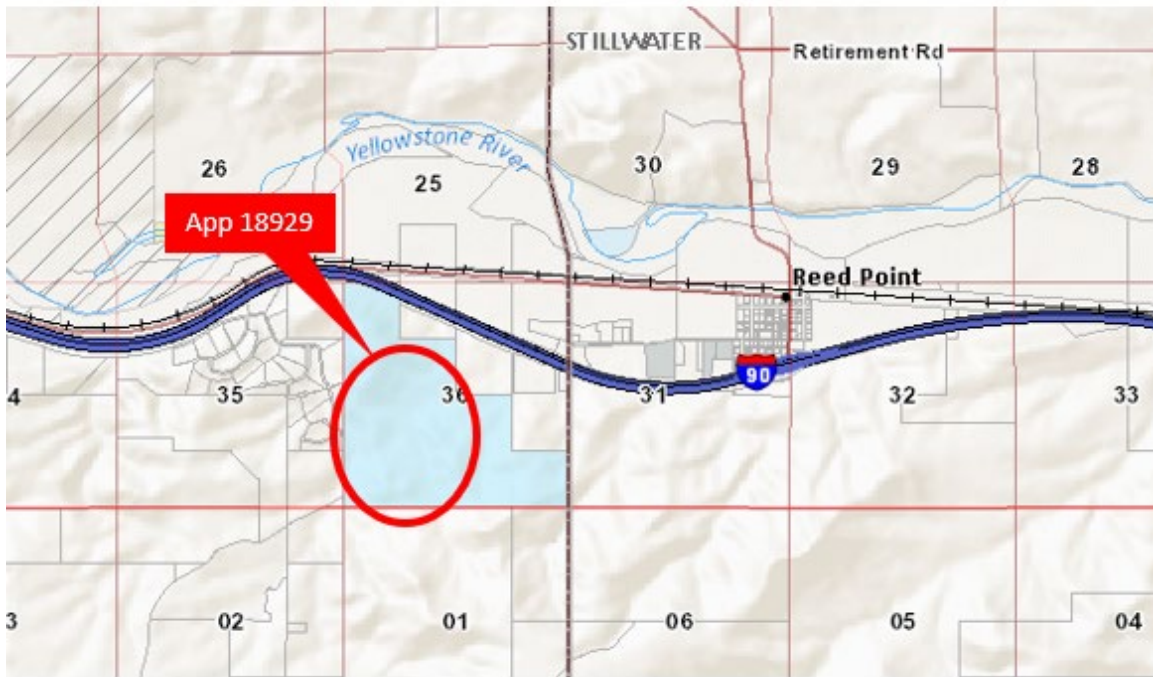
Item Summary

See page 294 for summary.

DNRC Recommendation

See page 294 for recommendation.

## R/W Application 18929



APPLICANTS AND RIGHTS OF WAY INFORMATION

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Applicant: Triangle Telephone Cooperative Association, Inc.  
PO Box 1220  
Havre, MT 59501

Application No.: 18930  
R/W Purpose: a buried telecommunications cable  
Lessee Agreement: ok  
Acreage: 0.01  
Compensation: \$100.00  
Legal Description: 20-foot strip through SE4NE4, Sec. 36, Twp. 2N, Rge. 18E,  
Stillwater County  
Trust Beneficiary: Common Schools

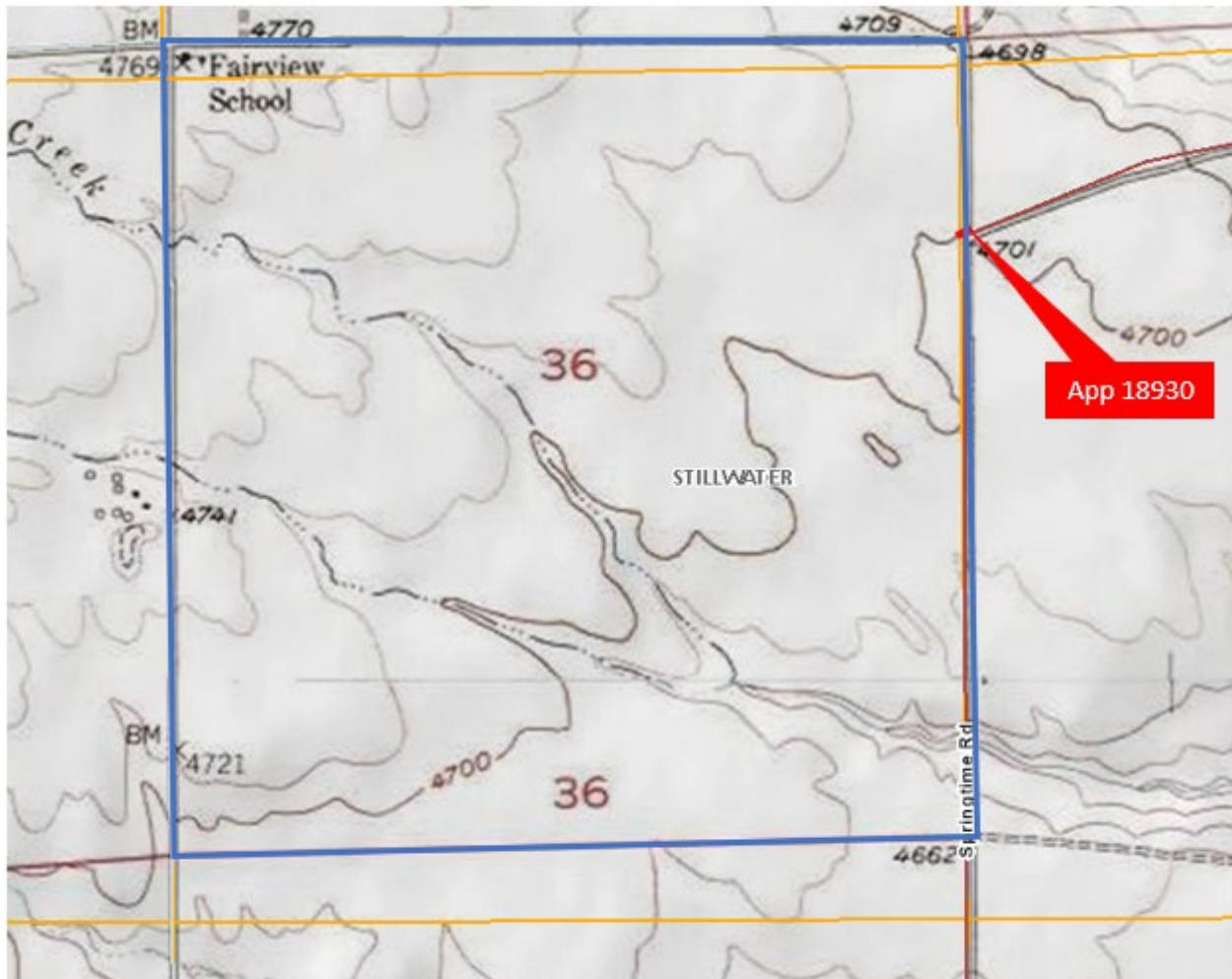
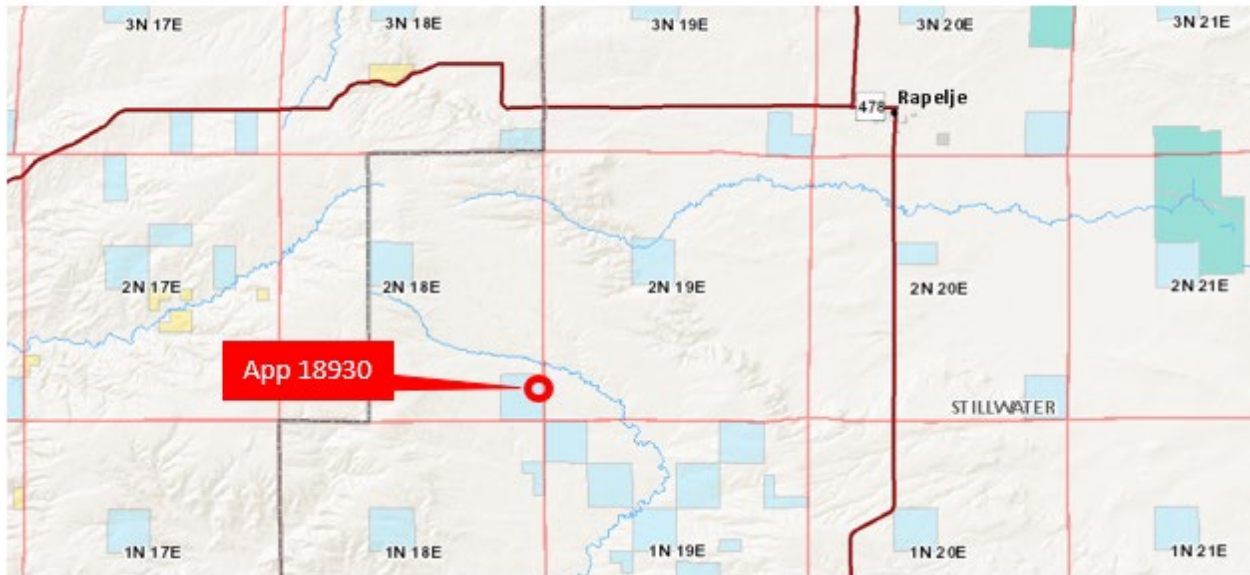
Item Summary

See page 294 for summary.

DNRC Recommendation

See page 294 for recommendation.

## R/W Application 18930



APPLICANTS AND RIGHTS OF WAY INFORMATION

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Applicant: Triangle Telephone Cooperative Association, Inc.  
PO Box 1220  
Havre, MT 59501

Application No.: 18931  
R/W Purpose: a buried telecommunications cable  
Lessee Agreement: ok  
Acreage: 1.61  
Compensation: \$4,830.00  
Legal Description: 20-foot strip through W2NW4, SW4NW4, Sec. 16, Twp. 2S,  
Rge. 16E, Sweet Grass County  
Trust Beneficiary: Common Schools

Item Summary

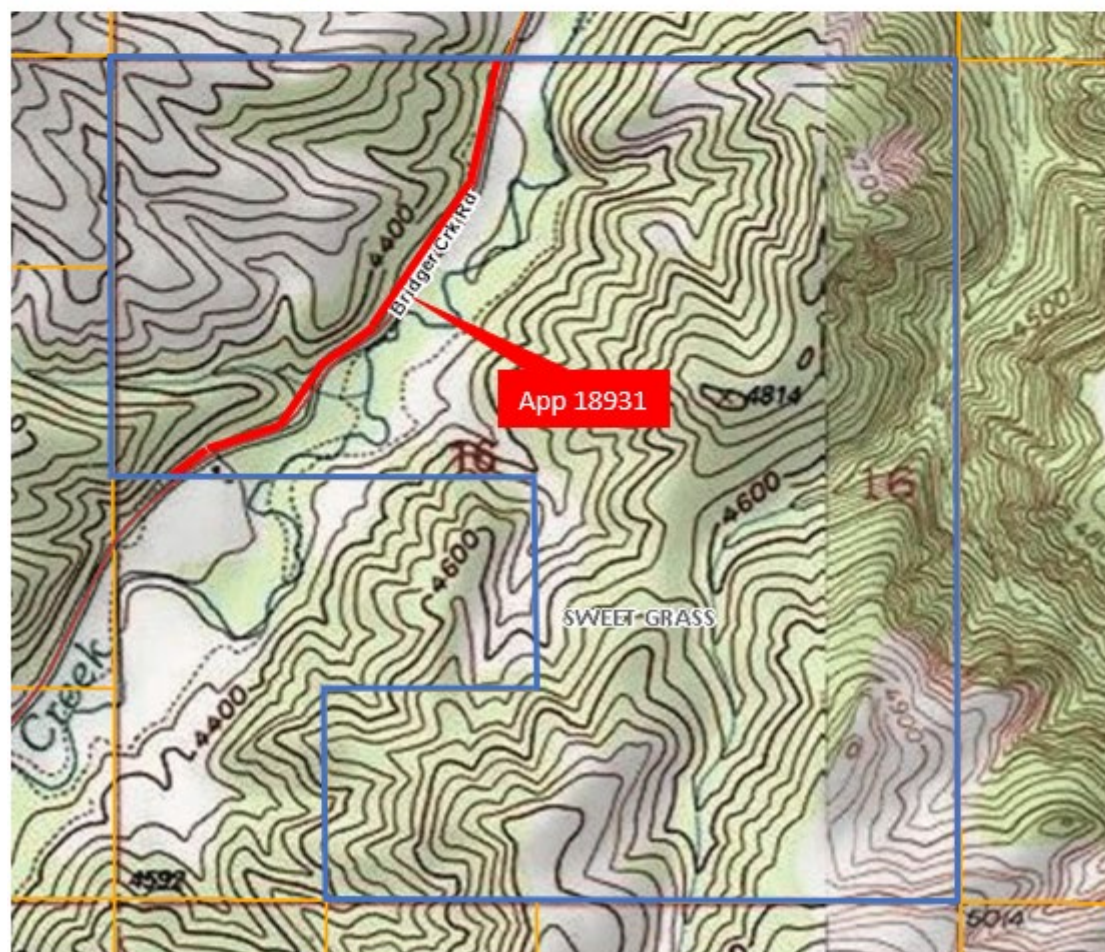
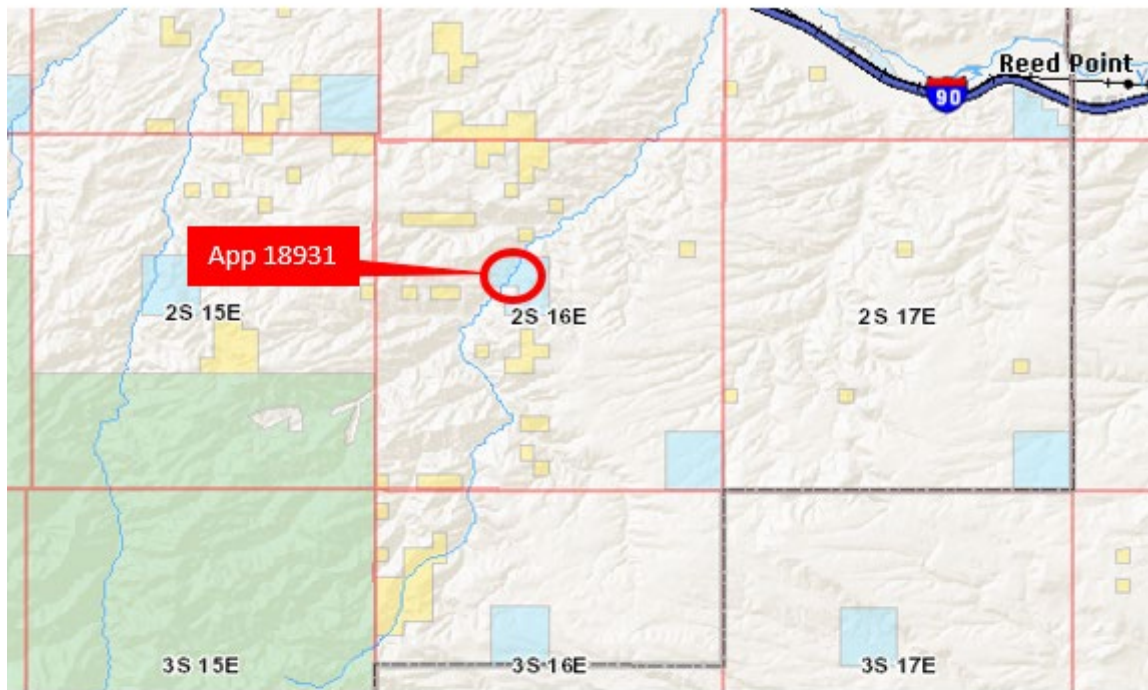
See page 294 for summary.

DNRC Recommendation

See page 294 for recommendation.



## R/W Application 18931



## APPLICANTS AND RIGHTS OF WAY INFORMATION

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Applicant:	Andrea Hastings PO Box 583 Ketchum, ID 83340
Application No.:	18933
R/W Purpose:	a private access road to a single-family residence
Lessee Agreement:	N/A (Historic)
Acreage:	1.21
Compensation:	\$2,420.00
Legal Description:	40-foot strip through Gov. Lot 3, Sec. 36, Twp. 11S, Rge. 1E, Madison County
Trust Beneficiary:	Common Schools

### Item Summary

Andrea Hastings has made application for the use of an existing road to access a single-family residence. The road has been in place for many years and authorization for continued use is being requested pursuant to §77-1-130, MCA, which allows for recognition of such historic access. The private property to be accessed is described as:

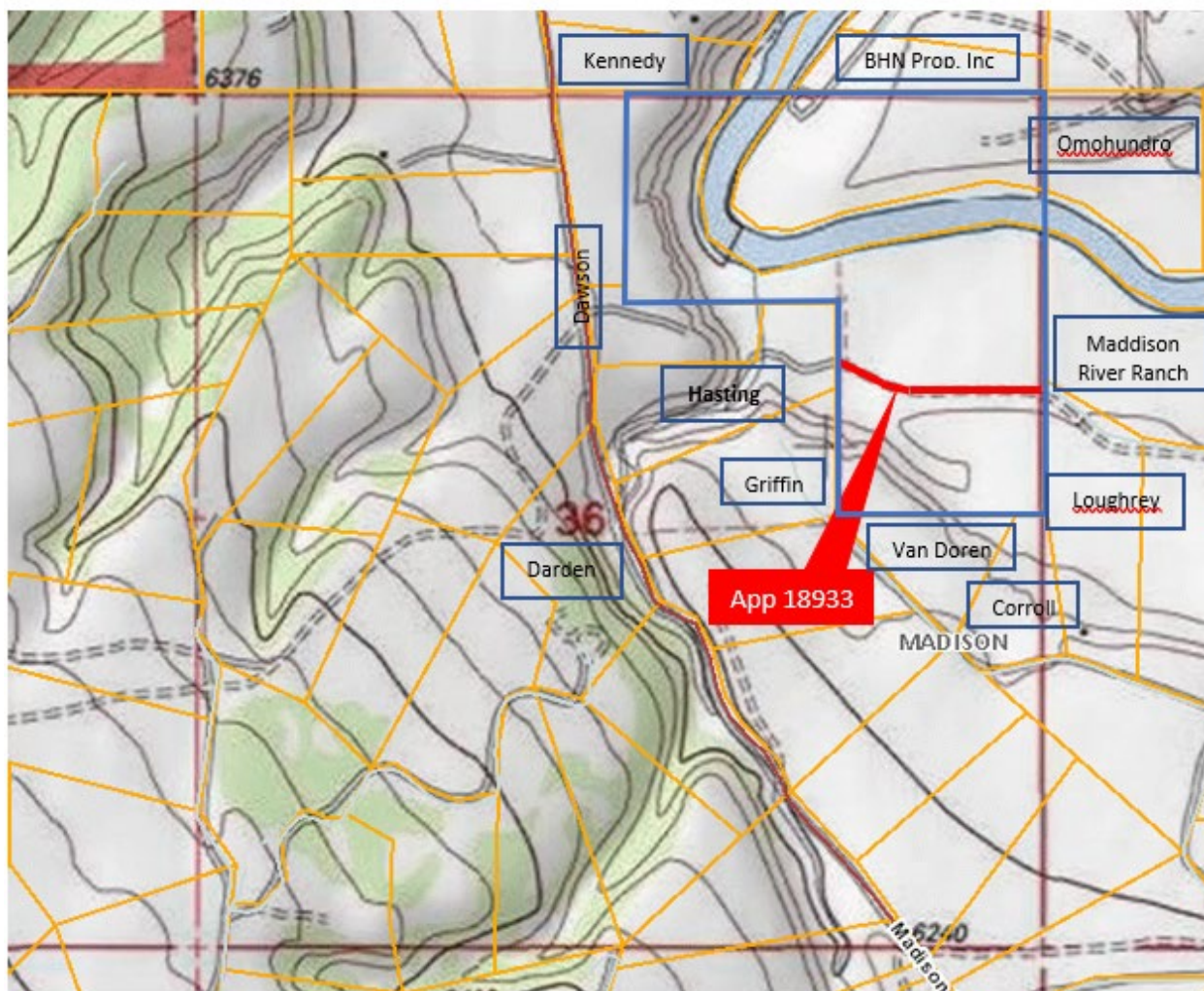
- Lot 63 Madison River Ranches COS# 7/859A, Sec. 36, Twp. 11S, Rge. 1E,  
Madison County

### DNRC Recommendation

The director recommends approval of the application of Andrea Hastings.



## R/W Application 18933





## APPLICANTS AND RIGHTS OF WAY INFORMATION

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Applicant:	NorVal Electric Cooperative Inc. PO Box 951 Glasgow, MT 59230
Application No.:	18934
R/W Purpose:	a buried 25kV electric distribution line
Lessee Agreement:	ok
Acreage:	1.01
Compensation:	\$354.00
Legal Description:	two 20-foot strips through NW4SW4, Sec. 21, Twp. 32N, Rge. 37E, Valley County
Trust Beneficiary:	Common Schools

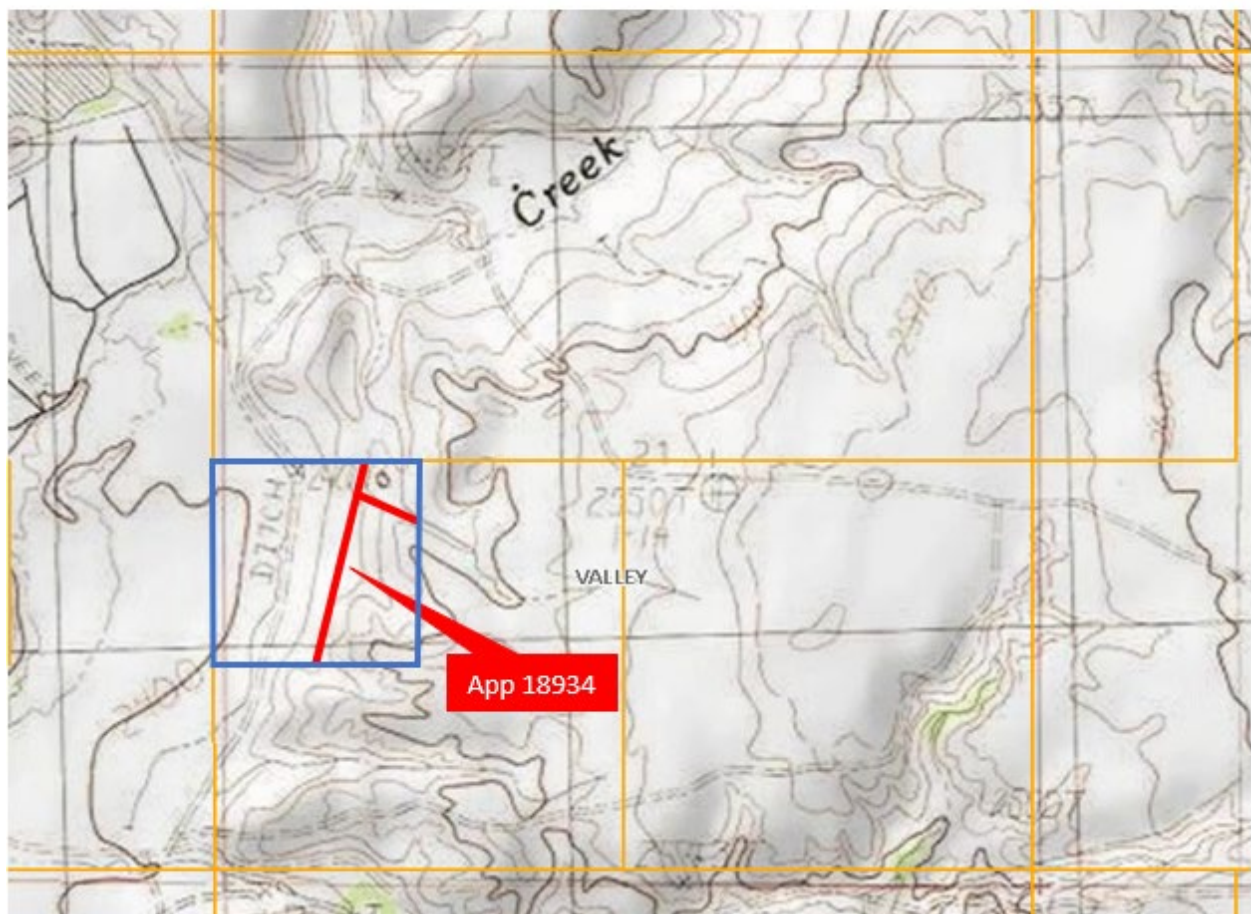
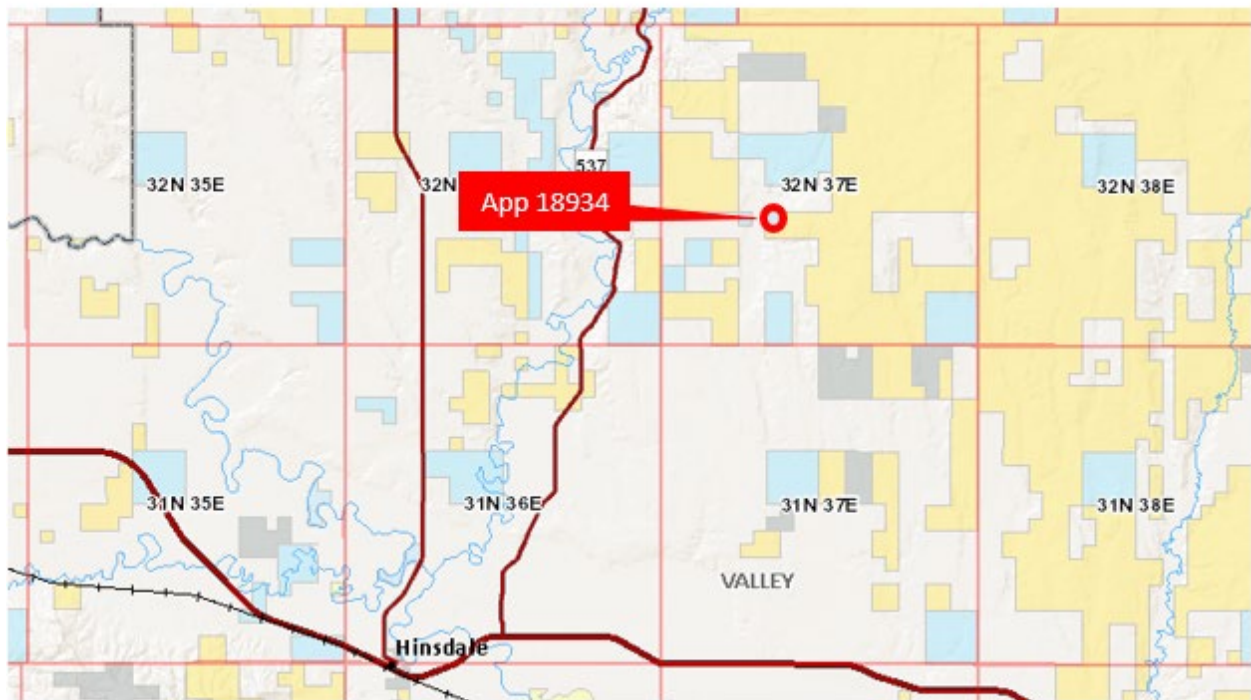
### Item Summary

NorVal Electric Cooperative is proposing to install new underground 25kV electrical distribution line to replace an existing overhead line. This upgrade will provide better quality service to the area as well as reduce the impacts to the Sage Grouse species. This project of conversion of overhead to buried facilities received approval from the Sage Grouse Program in 2018, with some portions of the entire project being completed in 2019. Installation of the new electrical line will occur generally along existing disturbed ground, causing minimal impacts.

### DNRC Recommendation

The director recommends approval of the application of NorVal Electric Cooperative.

## R/W Application 18934



APPLICANTS AND RIGHTS OF WAY INFORMATION

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Applicant: NorVal Electric Cooperative Inc.  
PO Box 951  
Glasgow, MT 59230

Application No.: 18935  
R/W Purpose: a buried 25kV electric distribution line  
Lessee Agreement: ok  
Acreage: 2.43  
Compensation: \$851.00  
Legal Description: 20-foot strip through W2W2, Sec. 16, Twp. 32N, Rge. 37E,  
Valley County  
Trust Beneficiary: Common Schools

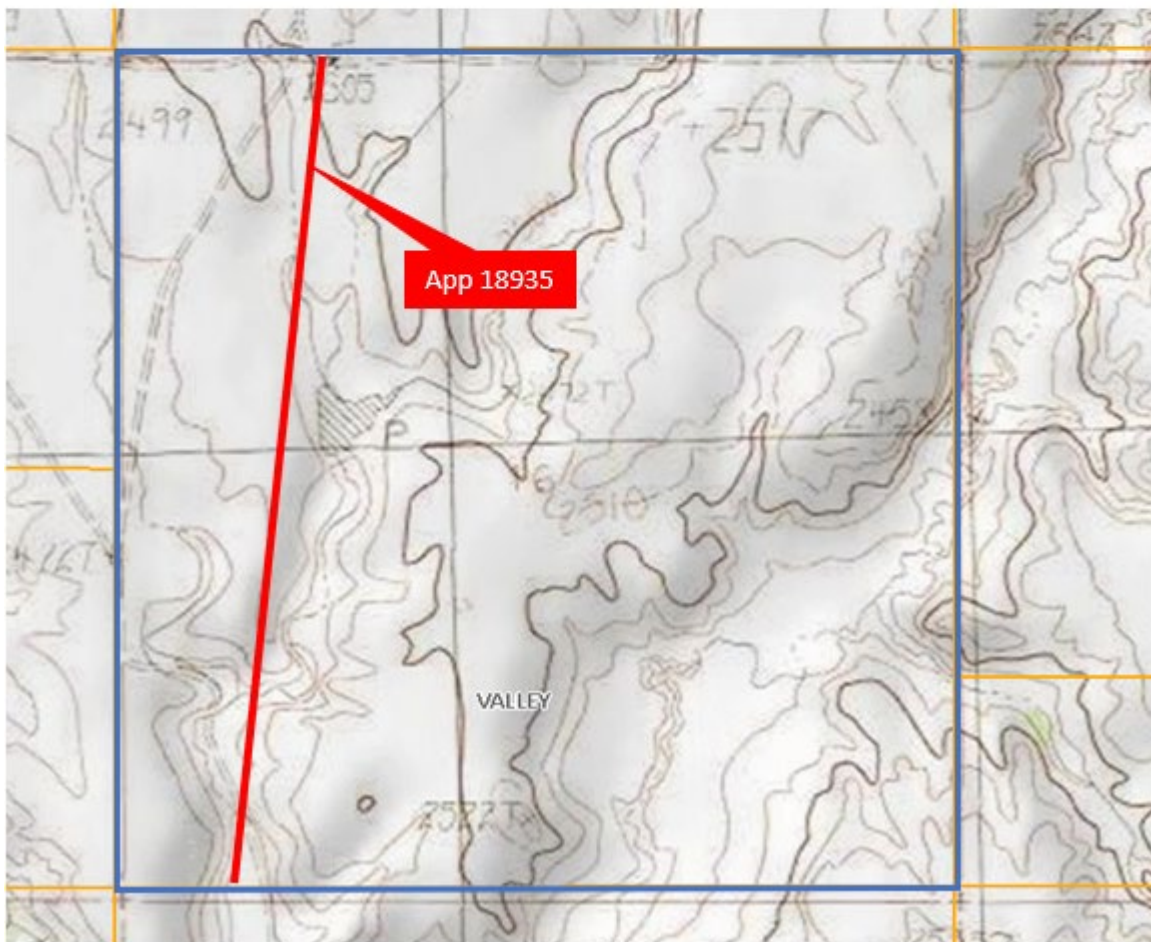
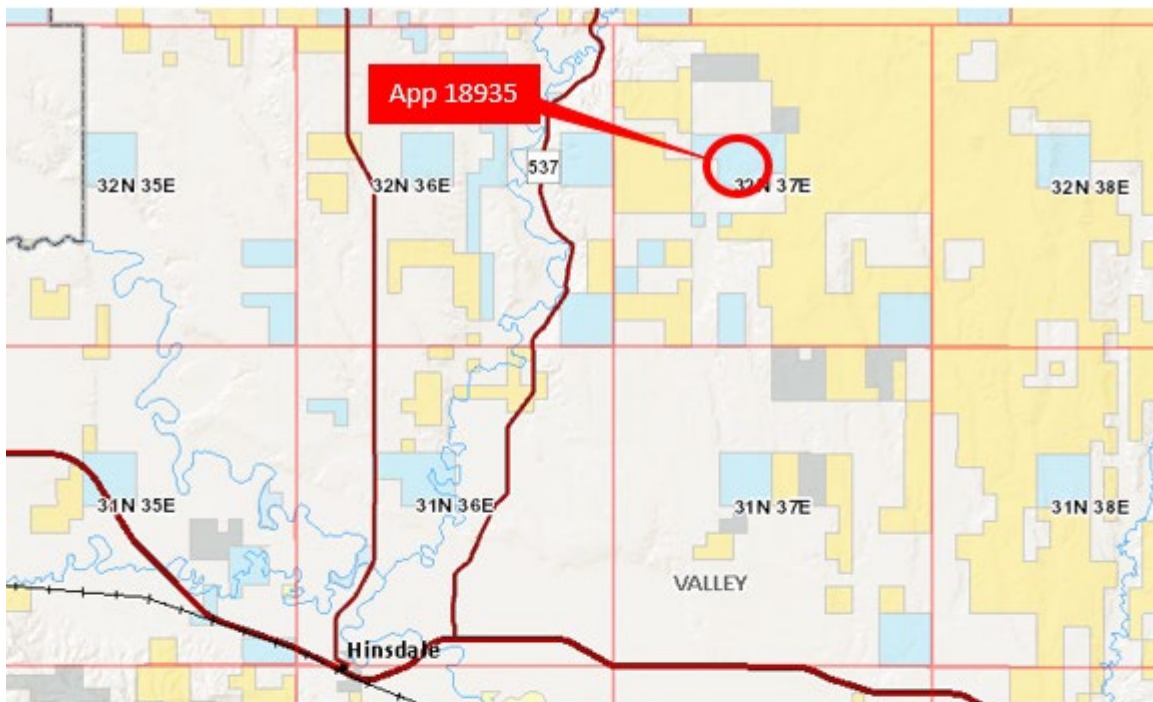
Item Summary

See page 307 for summary.

DNRC Recommendation

See page 307 for recommendation.

## R/W Application 18935



## APPLICANTS AND RIGHTS OF WAY INFORMATION

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Applicant:	Spectrum Pacific West, LLC 12405 Powerscourt Drive St. Louis, MO 63131
Application No.:	18936
R/W Purpose:	a buried telecommunications cable
Lessee Agreement:	ok
Acreage:	1.14
Compensation:	\$1,140.00
Legal Description:	20-foot strip through Gov. Lots 5 & 6, Sec. 3, Twp. 18N, Rge. 1E, Cascade County
Trust Beneficiary:	Common Schools

### Item Summary

Spectrum Pacific West is proposing to install new telecommunications cable from Great Falls to Cascade in Cascade County. The project will provide state-of-the-art broadband telecommunications to rural areas and allow for future network capabilities. Installation of the new cable will occur generally along existing railroads and disturbed ground, causing minimal impacts.

### DNRC Recommendation

The director recommends approval of the application of Spectrum Pacific West.

APPLICANTS AND RIGHTS OF WAY INFORMATION

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Applicant: Spectrum Pacific West, LLC  
12405 Powerscourt Drive  
St. Louis, MO 63131

Application No.: 18937  
R/W Purpose: a buried telecommunications cable  
Lessee Agreement: ok  
Acreage: 1.50  
Compensation: \$1500.00  
Legal Description: 20-foot strip through Gov. Lots 5 & 7, NE4SW4, Sec. 4, Twp. 18N,  
Rge. 1E, Cascade County  
Trust Beneficiary: Common Schools

Item Summary

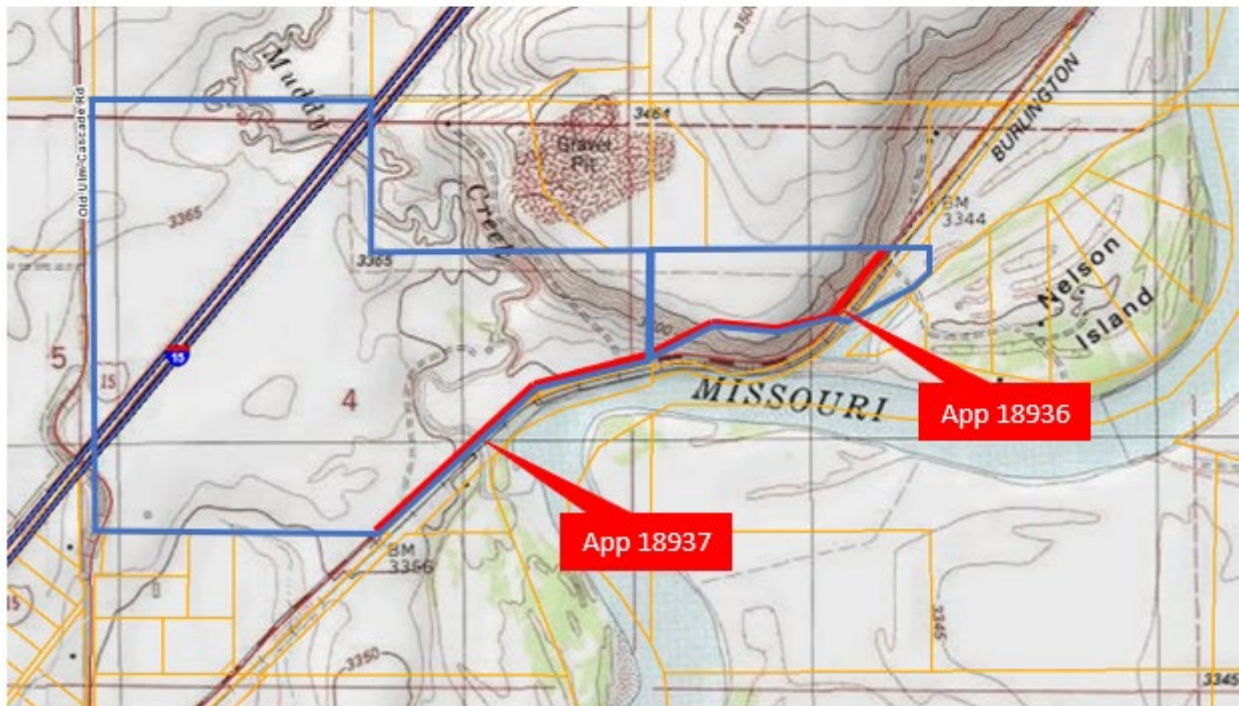
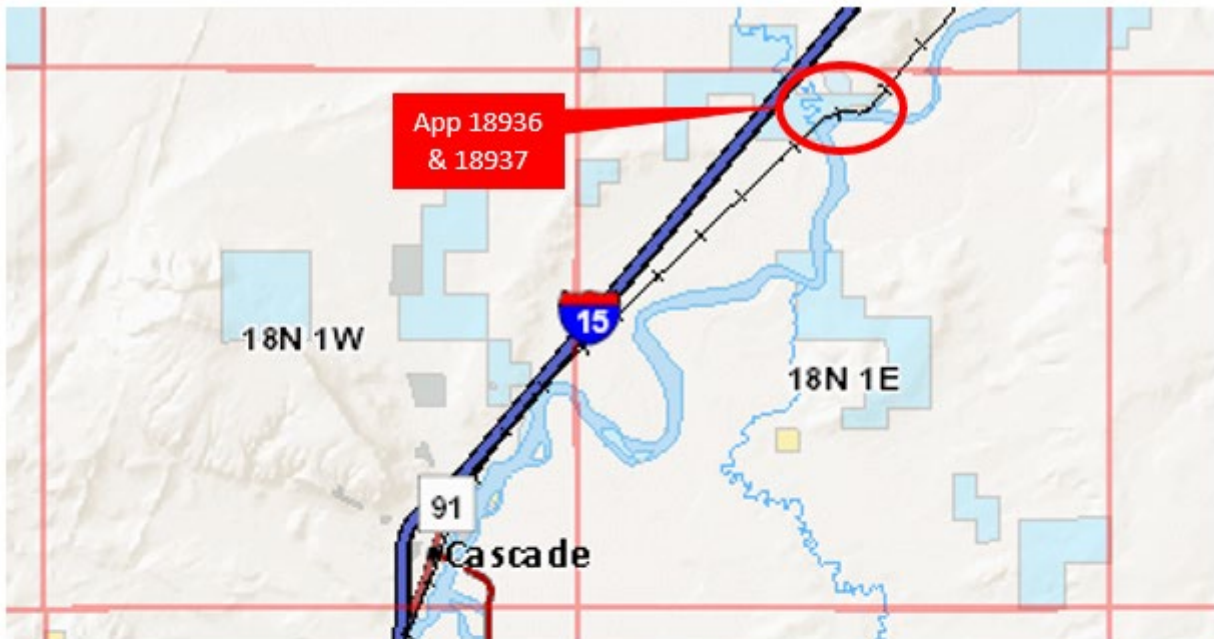
See page 311 for summary.

DNRC Recommendation

See page 311 for recommendation.



## R/W Application 18936 &amp; 18937



APPLICANTS AND RIGHTS OF WAY INFORMATION

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Applicant: Spectrum Pacific West, LLC  
12405 Powerscourt Drive  
St. Louis, MO 63131

Application No.: 18938  
R/W Purpose: an overhead telecommunications cable  
Lessee Agreement: ok  
Acreage: 0.80  
Compensation: \$6,282.00  
Legal Description: 20-foot strip across the Missouri River and through Gov. Lots 1 & 4, Sec. 23, Twp. 20N, Rge. 3E, Cascade County  
Trust Beneficiary: Common Schools and Public Land Trust - Nav. River

Item Summary

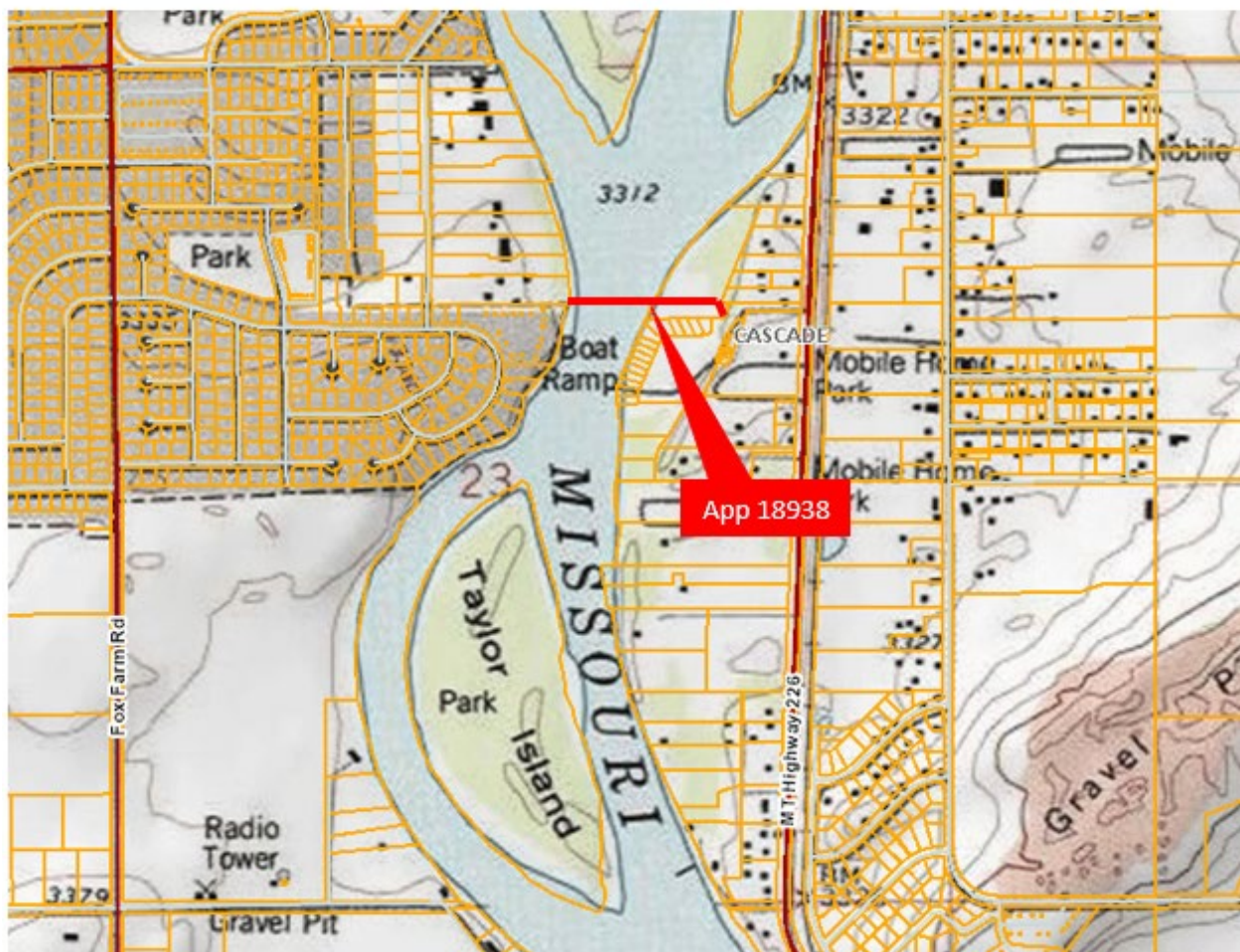
See page 311 for summary.

DNRC Recommendation

See page 311 for recommendation.



## R/W Application 18938



## APPLICANTS AND RIGHTS OF WAY INFORMATION

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Applicant:	Montana Department of Transportation PO Box 201001 Helena, MT 59620-1001
Application No.:	18939
R/W Purpose:	highway construction and maintenance, including occupancy by public utilities as defined in §69-4-101 MCA
Lessee Agreement:	ok
Acreage:	0.44
Compensation:	\$500.00
Legal Description:	a tract of land in the SW4SW4, NW4SW4, Sec. 16, Twp. 35N, Rge. 48E, Garfield County
Trust Beneficiary:	Common Schools

### Item Summary

Montana Department of Transportation (MDT) is proposing to remove an existing county bridge structure and construct a new bridge over the Poplar River. The scope of the project involves minor road work to tie the new bridge into the existing roadway. New guardrail, signage and pavement markings to improve the safety and drivability of the roadway.

### DNRC Recommendation

The director recommends approval of this easement request by MDT.

## R/W Application 18939

