

Bureau of Land Management

WIND RIVER/BIGHORN BASIN DISTRICT
Worland Field Office

East Cottonwood Allotment #00534

**Standards for Healthy Rangelands
and
Guidelines for Livestock Grazing Management**
for
Public Lands Administered by the Bureau of Land Management in the
State of Wyoming

BLM

Worland Field Office, Wind River/Bighorn Basin District, Wyoming

FY 2014/15



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1.0 INTRODUCTION

The Bureau of Land Management (BLM) grazing regulations at 43 CFR 4130.3-1(c) require that grazing permits issued by the BLM contain terms and conditions that ensure conformance with BLM regulations at 43 CFR 4180, which are the regulations under which the Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management for Public Land Administered by the Bureau of Land Management in the State of Wyoming were developed. Recently, the Worland Field Office completed an assessment of the achievement of these standards on the East Cottonwood Allotment No. 00534. The results of this assessment are presented in this report. This assessment will serve to inform the BLM's determination as to whether these standards are being met, and, if they are not met, whether existing grazing management practices contribute to their lack of attainment.

1.1 Standards

The approved standards for rangeland health are as follows:

- Standard #1: Within the potential of the ecological site (soil type, landform, climate, and geology), soils are stable and allow for water infiltration to provide for optimal plant growth and minimal surface runoff.
- Standard #2: Riparian and wetland vegetation has structural, age and species diversity characteristic of the state of channel succession and is resilient and capable of recovering from natural and human disturbance in order to provide forage and cover, capture sediment, dissipate energy, and provide ground water recharge.
- Standard #3: Upland vegetation on each ecological site consists of plant communities appropriate to the site which are resilient, diverse, and able to recover from natural and human disturbance.
- Standard #4: Rangelands are capable of sustaining viable populations and a diversity of native plant and animal species appropriate to the habitat. Habitats that support or could support threatened species, endangered species, species of special concern, or sensitive species will be maintained or enhanced.
- Standard #5: Water quality meets State standards
- Standard #6: Air quality meets State standards

2.0 Affected Environment – Allotment Description, Resource Values, and Uses

2.1 Location and Land Ownership

East Cottonwood Allotment is located in the western reaches of Hot Springs county-northwest of Thermopolis, Wyoming. The average elevation ranges from approximately 5100 feet to 4700 feet above sea level. The allotment encompasses approximately 6953 total acres including 3413 public acres and 3540 State/private land acres (Grass Creek RMP). The allotment is classified in the “C” (Custodial) category.

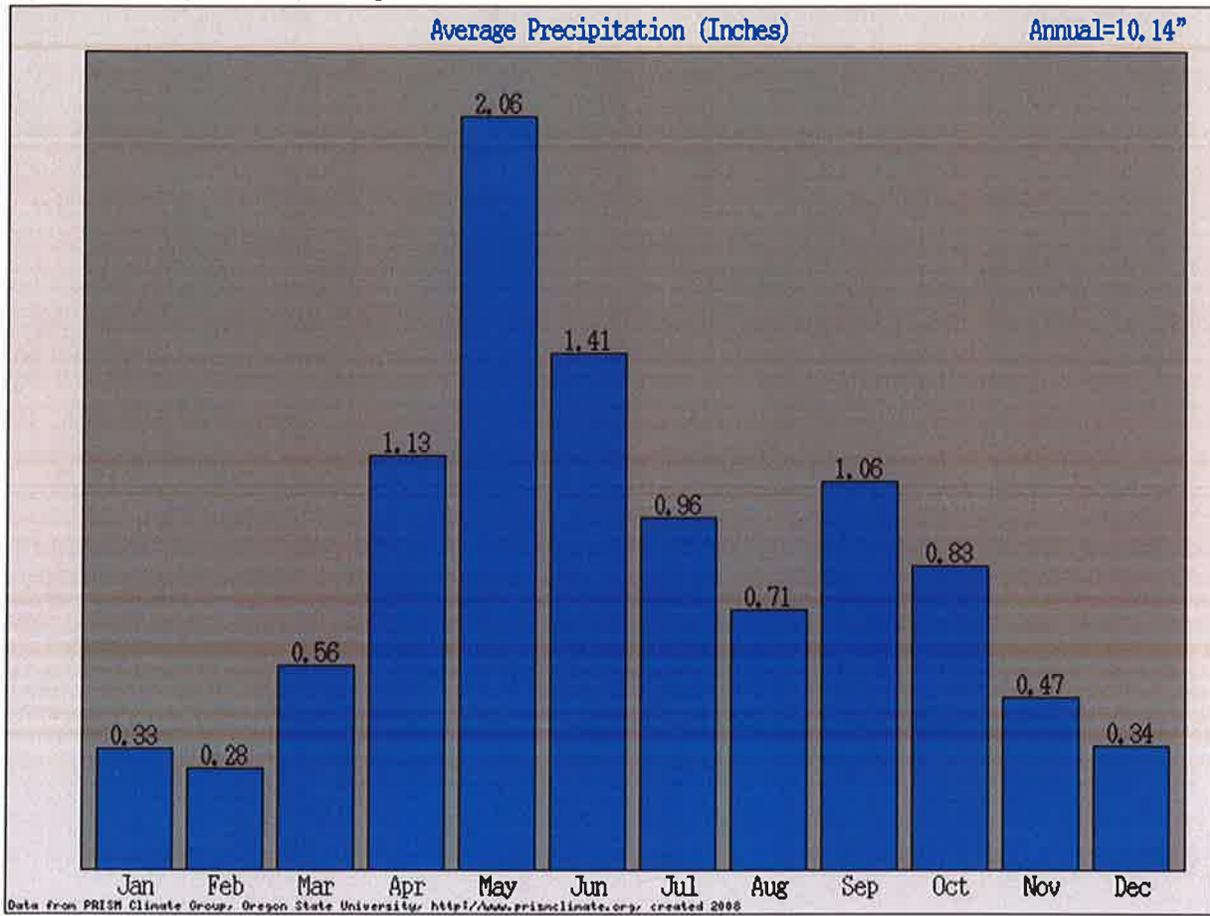
2.2 Climatic Features

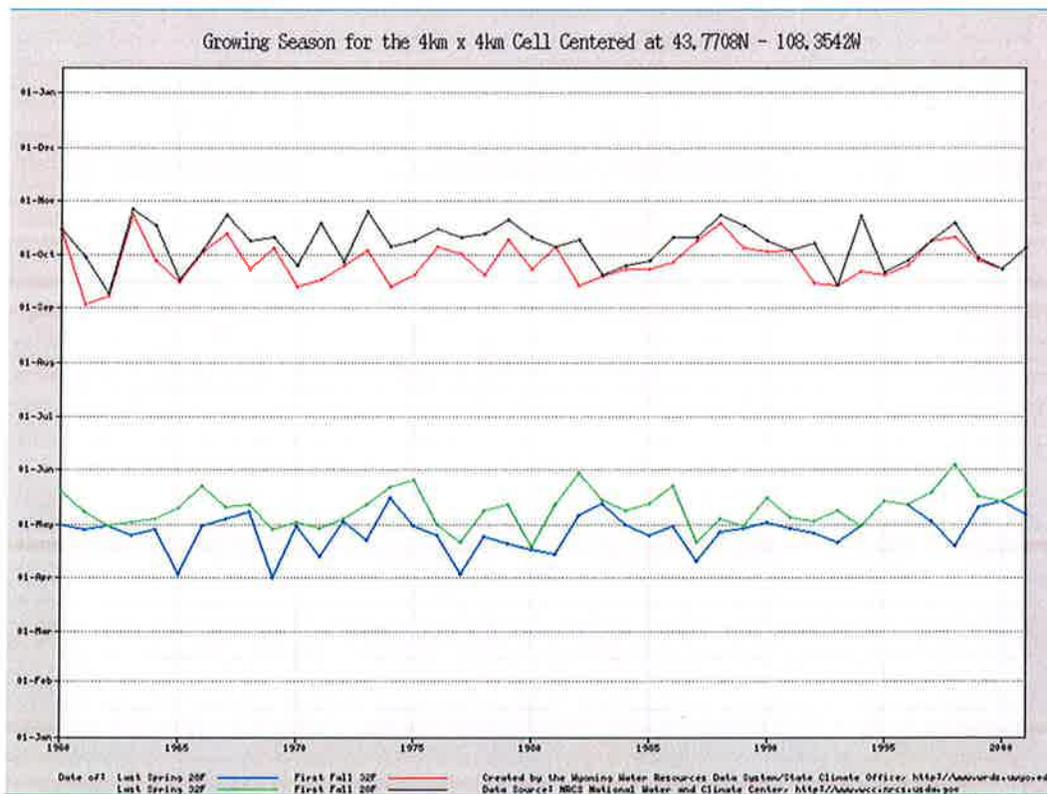
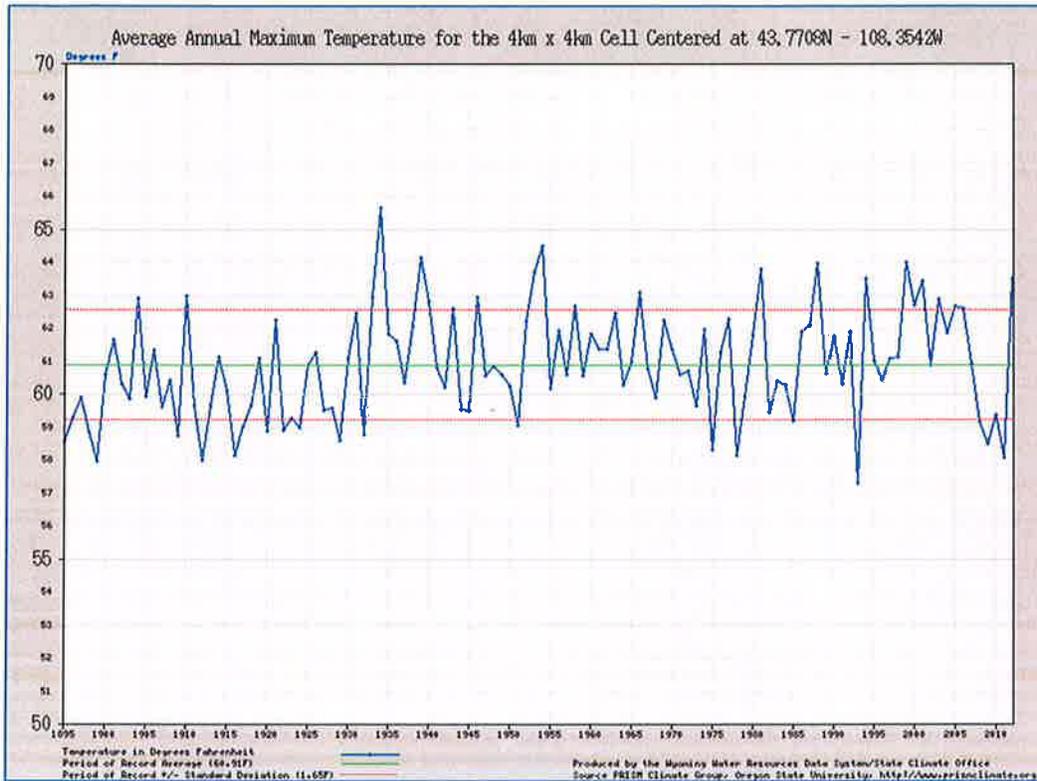
Annual precipitation ranges from 10-14 inches per year. The normal precipitation pattern shows the least amount of precipitation in December, January, and February, increasing to a peak during the latter part of May. Amounts decrease through June, July, and August and then increase some in September. Much of the moisture that falls in the latter part of the summer is lost by evaporation and much of the moisture that falls during the winter is lost by sublimation.

Average snowfall exceeds 20 inches annually. Wide fluctuations may occur in yearly precipitation and result in more dry years than those with more than normal precipitation. Temperatures show a wide range between summer and winter and between daily maximums and minimums, due to the high elevation and dry air, which permits rapid incoming and outgoing radiation. Cold air outbreaks from Canada in winter move rapidly from northwest to southeast and account for extreme minimum temperatures. Chinook winds may occur in winter and bring rapid rises in temperature. Extreme storms may occur during the winter, but most severely affect ranch operations during late winter and spring. Winds are generally not strong as compared to the rest of the state. Daytime winds are generally stronger than nighttime and occasional strong storms may bring brief periods of high winds with gusts to more than 75 mph. Growth of native cool-season plants begins about April 15 and continues to about July 15. Cool weather and moisture in September may produce some green up of cool season plants that will continue to late October. The following information is from the “Thermopolis 2” climate station: Minimum Maximum 5 yrs. out of 10 between Frost-free period (days): 74 149 May 23 – September 16 Freeze-free period (days): 112 180 May 8 – October 1 Annual Precipitation (inches): 7.6 21.9 Mean annual precipitation: 12.35 inches Mean annual air temperature: 46.2 F (30.1 F Avg. Min. to 62.3 F Avg. Max.) For detailed information visit the Natural Resources Conservation Service National Water and Climate Center at <http://www.wcc.nrcs.usda.gov/> website. Other climate station(s) representative of this precipitation zone include” Grass Creek 1E”, “Thermopolis”, Thermopolis 25NW”, “Buffalo Bill Dam” and “Black Mountain”.

An additional climate source is referenced to present overall climate data. According to the PRISM (PRISM,2012) (Parameter-elevation Regressions on Independent Slopes Model), overall averages from monthly precipitation, mean annual precipitation, mean annual air temperature, have been sampled from 4 kilometer x 4 kilometer grid cell selected that is centered at the mean elevation for the allotment. In total, 40 percent of the annual precipitation is during the months of April-June. Additionally the 30 year frost free period for 28 and 32 degree days for the watershed is displayed below along with the 30 year average maximum temperature. The modeled amount is slightly lower than the NRCS data presented above from the Thermopolis station.

Figure 1- Average Monthly Precipitation 30m Cell 43.85651;-108.44982 East Cottonwood Allotment





The maximum and minimum elevations for each allotment within the watershed were calculated along with the average slope given in percent rise for each 10 meter digital elevation grid. The East Cottonwood allotment is at the lower elevations of the Cottonwood Creek watershed with the elevations listed in the table below. The average slope is 8.4 percent and lower than adjacent allotments.

Allotment	Max Elev (ft)	Min Elev (ft)	Average Elev (ft)	Average Slope (% Rise) 10m
East Cottonwood	5270	4782	4974	8.4
West Cottonwood	6176	4942	5261	15.2
Wagonhound Bench	5769	5168	5374	7.1
Wagonhound	6229	5390	5715	17.1

2.3 Soils

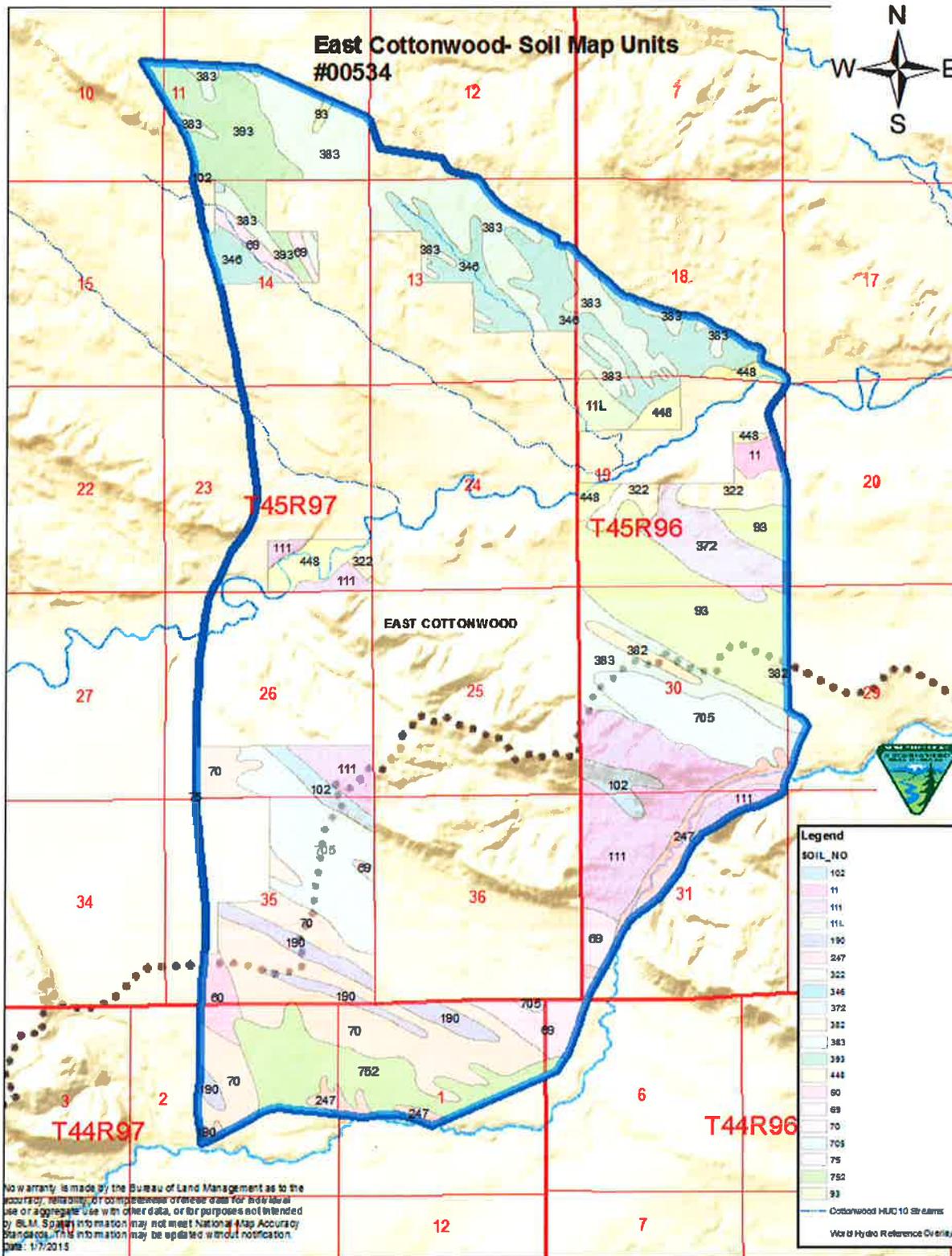
The soils reflect the desert environment in which they formed. They are highly variable, reflecting differences in parent material (shale, sandstone and/or mixed alluvium), position on the landscape, slope and aspect. Soil depth ranges from 10 inches to over 60 inches with sandstone and soft shale bedrock common below the substratum. The soils typically have a light brown surface layer. Loamy and sandy surface textures dominate most of the landscape. The subsoil often reflects an increase in clay being expressed as an argillic horizon. Increases in sodium are also common being reflected as a natric horizon in the subsoil. Slopes range from 0 to 60 percent, but are generally less than 30 percent. The average slope for the allotment as calculated above is 8.4 percent.

The East Cottonwood Allotment is situated within the 10-14 inch Big Horn Basin (BH) Precip Zone as depicted by NRSC spatial data. Based on the soil survey data for Hot Springs County, the dominant soil units, soil map and amount of acres for the allotment is listed below:

East Cottonwood Soils

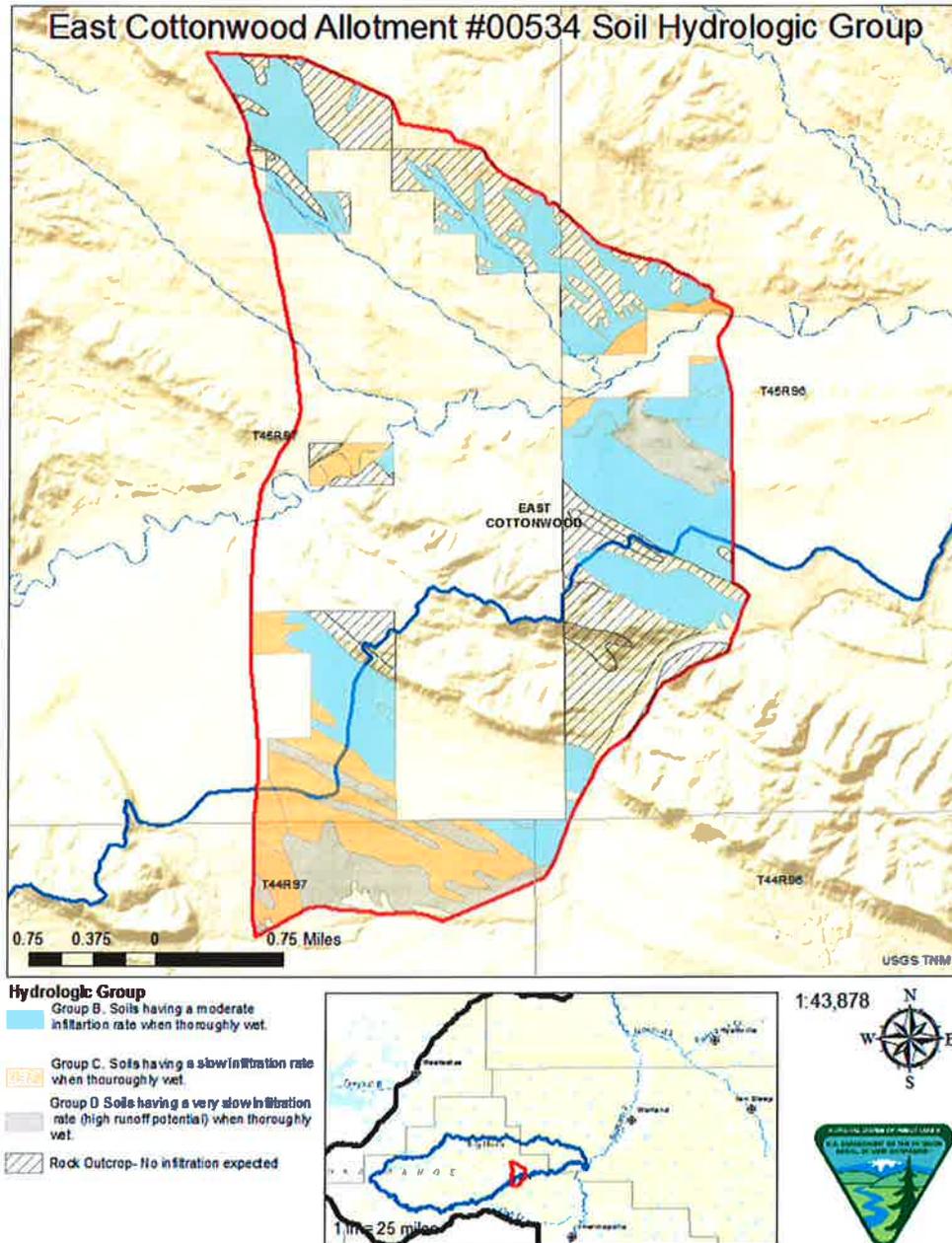
SOIL_NO	Map_Unit_N	Surface Texture	Slope	Ecological Site	Precip_Zone	Acres
11	LARIMER LOAM	l	0-8	Ly	10-14	22.39
11L	LARIMER SANDY LOAM	sl	0-8	Sy	10-14	34.67
60	CADOMA(45%)-KIM(45%) COMPLEX	sicl,l	1-10	SU,Ly(Cy)	10-14	37.97
69	KIM LOAM	l	0-10	Ly(Cy)	10-14	116.29
70	CADOMA SILTY CLAY LOAM	sicl	1-15	SU	10-14	428.37
75	ARVADA(40%)-KIM ALKLI(35%) COMPLEX	fsl,l	0-10	SU,SL	10-14	0
93	VONA(50%)-OLNEY(30%) SANDY LOAMS	sl,sl	0-10	Sy,Sy	10-14	339.54
102	ROCK OUTCROP	ro	0-100	RO	5-19	64.04
111	ROCK OUTCROP(30%)-SHINGLE(25%)-TASSLE(25%) COMPLEX	ro,l,sl	3-60	RO,SwLy,SwLy	10-14	349.77
190	EPSIE(45%)-SHINGLE(30%)-COMPLEX	sic,l	6-45	SU,SwLy	10-14	94.44
247	TORRIORTHENTS SEVERELY ERODED	all	0-15	none	5-19	94.89
322	NIHILL(45%)-SHINGLE(30%) GRAVELLY LOAMS	grl,grl	3-45	Gr,SwLy	10-14	79.61
346	NELSON(30%)-TERRY(30%)-OTERO(20%) COMPLEX	fsl,sl,fsl	3-20	Sy,Sy,Sy	10-14	285.33
372	TASSEL(50%)-NELSON(25%) SANDY LOAMS	sl,sl	3-45	SwSy,Sy	10-14	112.51
382	ROCK OUTCROP(40%)-TASSEL(40%) COMPLEX	ro,l	3-60	RO,SwSy	10-14	25.09
383	ROCK OUTCROP(30%)-TASSEL(30%)-NELSON(20%) COMPLEX	ro,sl,sl	3-60	RO,SwSy,Sy	10-14	511.86
393	OLNEY(45%)-BOWBAC(35%) FINE SANDY LOAMS	fsl,fsl	3-15	SwLy,Ly	10-14	170.99
448	TORRIFLUVENTS SALINE	none	0-6	NONE	5-19	100.53
705	KIM(50%)-THEDALUND(30%) LOAMS	l,l	3-15	Ly(Cy),Ly	10-14	339.28
752	EPSIE SILTY CLAY LAOM	sicl	3-15	SU	10-14	207.95
					Total	3415.52

sicl=silty clay, ro= rock outcrop, l= loamy, grl=gravel, c=clay, sl= sandy loam, fsl=fine sandy loam



Two rangeland health assessments utilizing the methodology described in *Interpreting Indicators of Rangeland Health, BLM Technical Reference 1734-6*, were relied upon in the analysis of the East Cottonwood allotment. The assessments were conducted at two monitoring sites selected for this analysis. The table in vegetation monitoring (section 3.1) displays the soil characteristics for each assessment site.

There are various dominant hydrologic group soils in the allotment. Group D type soils are those where the dominant soil type in the soil map unit contains very low infiltration rates, locally in the watershed these areas are located around rock outcrops and other shale type soils where infiltration rates are low or very low. The group C soils are from loamy range ecological sites in the watershed. The East Cottonwood allotment is dominantly group C soils according to NRCS weighted average of the HUC 8 watershed level. There are also some group B soils along drainages and at the base of slopes of Cretaceous Sandstone outcrops.



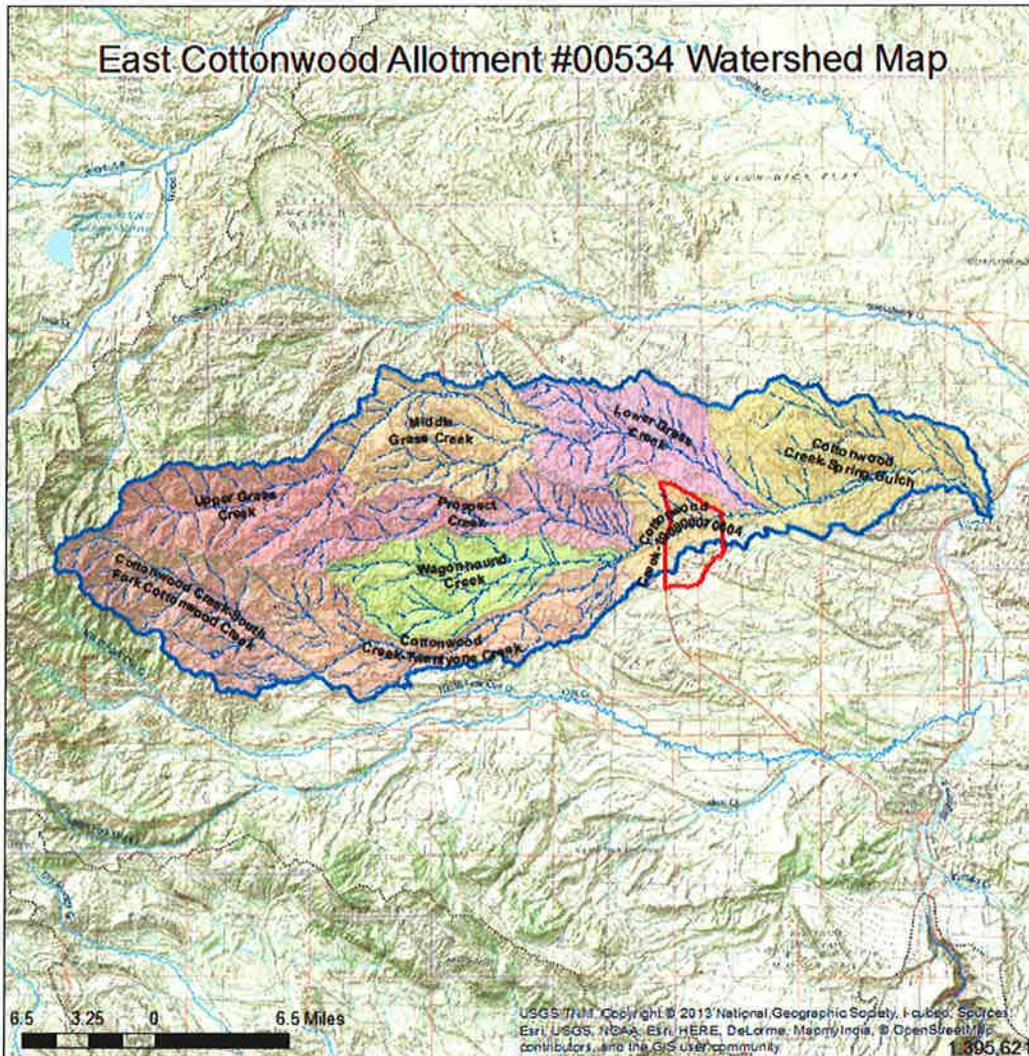
2.4 Hydrology/Riparian

2.4.1 Surface Water/Watershed

The East Cottonwood allotment falls mainly within the Cottonwood Creek sub-watershed with a 1/3 of the allotment in the Sand Draw sub-watershed to the south. Other very minor portions (<22 acres) of Spring Gulch and Lower Grass Creek are present. The amount of acres from the allotment as related to the 6th level sub- watershed as defined by the United States Geologic Survey (USGS) is found in the table below.

The topography is generally flat with some steep slopes near sandstone outcrops scattered throughout the allotment. It is in the middle range of elevations within the HUC 5th level Cottonwood Creek watershed (see watershed map below).

Watersheds			
SubWatershed (HUC) Level #6	Acres (mi²)	Acres (mi²) Within Allotment	% of Acres of Sub- Watershed in the Allotment
Cottonwood Creek 100800070604	12964 (20.3)	4668 (7.3)	36.0
Sand Draw- Bighorn River 100800070403	29039 (45.3)	2261 (3.5)	7.8
Cottonwood Creek- Spring Gulch 100800070609-	43598 (68.1)	22 (<0.03)	0.1
Lower Grass Creek-100800070608	28855 (45)	1 (<0.001)	0



The Cottonwood/Grass Creek watershed is located in Hot Springs and Washakie Counties. The watershed is comprised of the combined drainage basins of Cottonwood Creek and its main tributary, Grass Creek, and Wagonhound Creek. The majority of the main drainages are located on state or private land, with the exception of some meander segments that are located on public land throughout the reaches. The Cottonwood/Grass Creek Watershed was recently studied by the Wyoming Water Development Commission (WWDC) in 2007 under a level I study and 2011 with a more detailed level II study. The study encompasses the hydrology of the creeks and summarizes the overall water use and availability of surface water in the watershed. Another important component is the discharge of produced water into Cottonwood Creek from the Hamilton Dome oil field. This discharge has

occurred and altered the flow regime of Cottonwood Creek below the oil field since development occurred in the early 1900's.

The economy of the watershed is based on agriculture (primarily cattle ranching and associated forage production) and oil and limited natural gas extraction at two larger (Hamilton Dome and Grass Creek) and a number of smaller still active fields (SEH, 2007 p.5).

The perennial stream reaches in the watershed (including the middle and lower reaches of Cottonwood and Grass Creeks and their high elevation tributaries) are the result of higher precipitation (including greater snowpack) and greater groundwater recharge that, in turn, results in higher spring time runoff flows and sustain seep and spring discharge to these stream reaches through the summer and fall. As noted by local ranchers and other stakeholders in the watershed, the extent of the upper watershed perennial stream reaches has declined significantly over the course of the current drought, with many smaller springs ceasing to flow and greatly reduced flows in larger springs (SEH, 2007 p.32).

There are several miles of ephemeral/intermittent channels in the allotment. Rainfall patterns in arid and semi-arid regions influence when stream flow is most likely (EPA, 2008). The high amount of ephemeral channels is indicative of the arid environment of the allotment in addition to infrequent storm events.

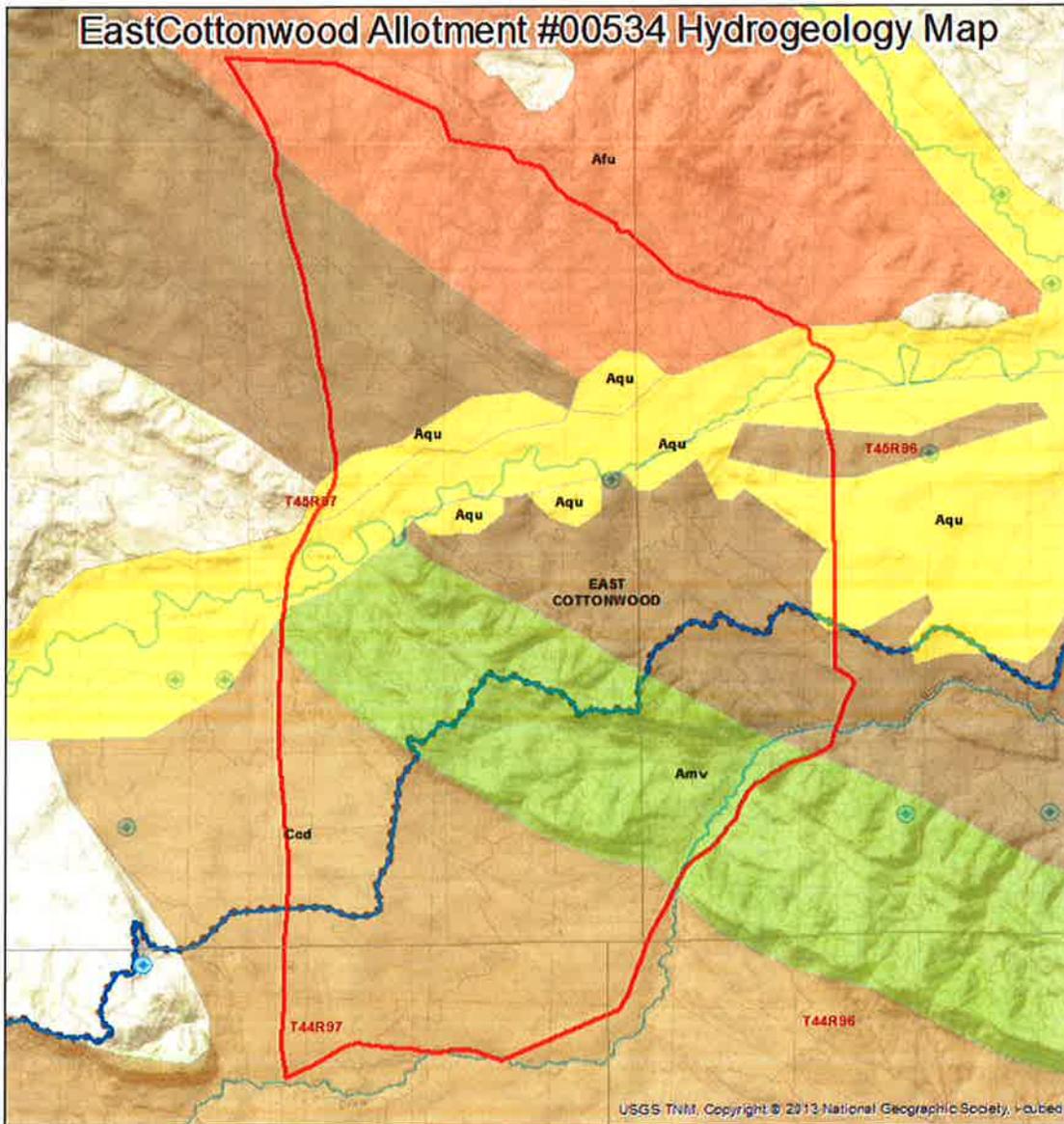
Rosgen Types- The main channel of Cottonwood Creek the flows through the center of the allotment is a Rosgen C5 type streams that are defined as (Rosgen, 1996) as a channel with a well-developed floodplain, slightly entrenched, sinuous, and a slope of less than two percent. (SEH,2007). These are formed with a broad valley and frequent access of flow to a floodplain area and active point bars.

Other type channels types found on other ephemeral drainages are G5 F5 type channels, which are also present, are described as entrenched, meandering channels which are deeply incised in valleys of relatively low relief. They contain highly weathered rock and erodible materials, and high lateral extension rates and bar deposition following infrequent storm events.

Drainage Pattern- The dominant land forming topographic process is from alluvial forces of erosion. The drainage pattern is a dendritic drainage pattern that reflects horizontal sedimentary bedrock over which it was formed. The drainage density or amount of drainages per square mile is high, and very high along steep rock outcrops of the allotment.

2.4.2 Groundwater

The area is located in an erosive area with high amounts of runoff and low permeability due to very fine grained geologic outcrops of primarily of the Cretaceous Cody Shale Formation. Other portions of the allotment are other the Mesaverde Sandstone, Tertiary Fort Union formation, and undefined Mesozoic units of sandstone and mudstone. According to Wyoming State Engineers records of 2014 there is one well in the allotment, see map below.



HydroGeology

- Cody Shale confining unit, Ccd
- Fort Union aquifer, Afu
- Mesaverde aquifer, Amv
- Quaternary unconsolidated deposit aquifers, Aqu
- undefined Mesozoic hydrogeologic units,
- WRBBD_SEO_Wells_All_2014

0.7 0.35 0 0.7 Miles



Ground-water recharge in arid and semi-arid regions has generally been viewed as the sum of several different distinct pathways including mountain-block recharge, mountain-front recharge, spatially distributed recharge, and ephemeral stream channel recharge. Recent research has expanded this view to include the mediating role of vegetation (i.e. water use by vegetation), and the greater role of ephemeral stream channel recharge in basin floors (EPA, 2008 p.22). The ground-water recharge for this watershed is likely in the form of ephemeral stream channel

recharge. In this allotment there has been historic ground water recharge from the disposal of produced ground water associated with oil fields that are located above the allotment. The produced water has recharged the surficial quaternary aquifer along the channel of Cottonwood Creek. Recently due to re-injection practices in the oil field the amount of discharged water has declined in the area.

2.4.3 Water Quality (Surface)

The following is taken from the Wyoming DEQ 2012 305b report (p.102).

2012 WY Integrated Report

Bighorn River Basin (continued)					
305(b) Identifier	Waterbody	Location	Class	Miles/Acres	Uses Supported
Cottonwood Creek	WYBH100800070609_01	From the confluence with the Bighorn River upstream to the confluence with Wagonhound Creek	2AB	29.5 mi.	Cold Water Fishery, Aquatic Life other than Fish, Wildlife, Agriculture, Industry

The associated beneficial uses for class 2AB streams are found in the table below. This is the rating given by the DEQ following a use attainability analysis and public comments. DEQ defines “these streams support drinking water, game fish, aquatic life, recreation, wildlife, agriculture, industry, and provide scenic value throughout portions of the year.

Wyoming DEQ Surface Water Use Class and TMDL Summary

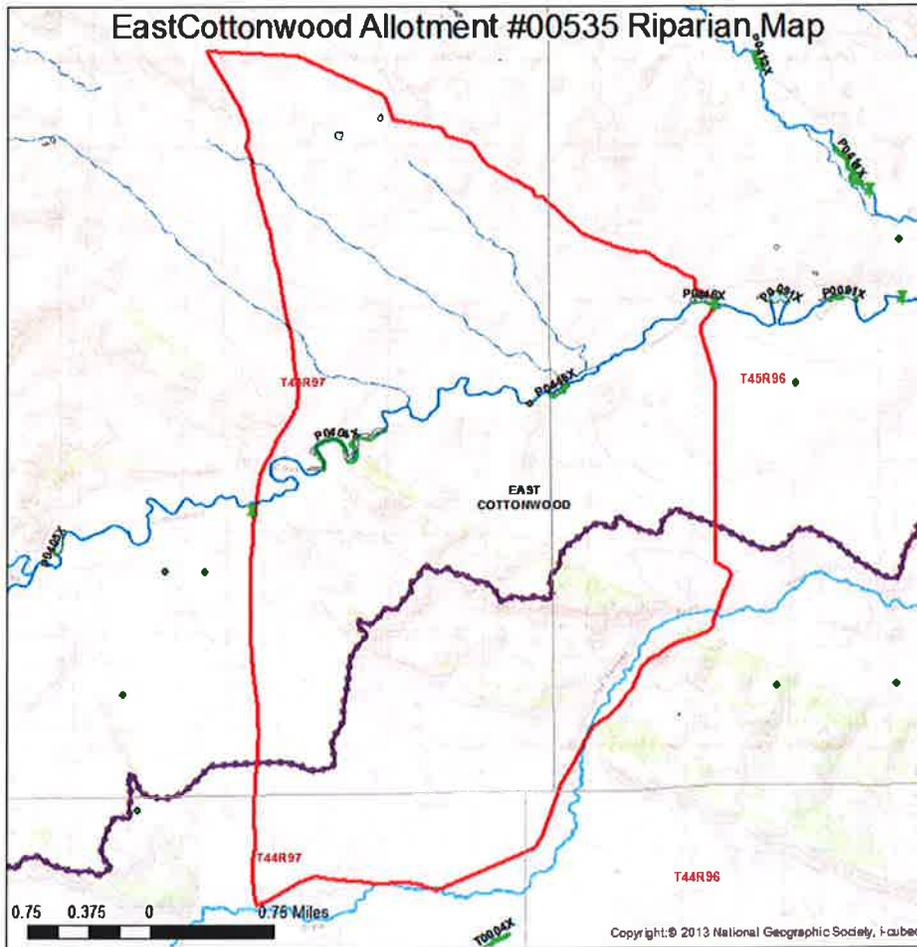
WY DEQ Use Designations										
Surface Water Classes	Drinking Water	Game Fish	Non-Game Fish	Fish Consumption	Other Aquatic Life	Recreation	Wildlife	Agriculture	Industry	Scenic Value
2AB	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2C	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3B	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes

2.4.4 Riparian

Due to land ownership patterns, there are scattered segments of Cottonwood Creek that contain riparian habitat qualities within the allotment. These areas have wetland type soils, vegetative wetland or facultative species, and sufficient water available to support varying riparian plant communities. These two segments riparian areas have been augmented or are likely enhanced as a result of produced water from Hamilton Dome oil and gas wells located upstream in the watershed.

Table 2: Riparian Areas

ID#	Riparian Area	TWN (beg)	RNG (beg)	SEC	QTR	Miles	Acres	Width	DEQ Class	Gradient
P0404X	Cottonwood Ck	045N	097W	23	SESE	0.86	6.3	60	2AB	<1
P0446X	Cottonwood Ck	045N	096W	18	SESE	0.43	3.1	60	2AB	<1
	Total					1.29	9.4			



2.5 Upland Vegetation

The native plant species identified included Needle and thread, Sandberg bluegrass, Blue grama, Textile Onion, Segó lily, Plains pricklypear cactus, Aster, Wyoming big sagebrush, biological crusts, lichens, Alkali sacaton, Bluebunch wheatgrass, phlox (*Phlox* spp.), Western wheatgrass, Woody Aster, Bottlebrush squirreltail, Scarlet globemallow, carex, vetches, prairie junegrass, rabbit brush, black sage, rose pussytoes, greasewood, junipers, winterfat, six weeks fescue, broom snakeweed, fringed sagewort, wildrye, and gardeners saltbush. This list identifies those species within transects or noted within areas of the transects but does not ensure a complete list of every plant within the allotment.

2.6 Invasive Species

Weed species noted within the allotment include saltcedar and cheatgrass. The Salt cedar is/was primarily located along Cottonwood Creek and in 2012/13 the salt cedar there was 47 acres mechanically treated within the allotment.

2.7 Livestock Grazing Management

Currently there is no active grazing permit to authorize grazing on public lands of the allotment. There has not been an active grazing permit for approximately 10 years. The most recent grazing permit for the allotment appeared as follows:

East Cottonwood No. 534	Livestock Number/kind	Grazing Begin	Grazing End	%PL	AUMS
	330	9/16	11/19	48	338

The calculated livestock grazing use was compiled from paid grazing bills, notes and actual use reports.

East Cottonwood Allotment	
Year	AUMS
	Total
1994	45
1995	382
1996	338
1997	338
1998	338
1999	323
2000	338
2001	10
2002	141
Average use	250
Average use excluding drought of 2001 and 2002	300

The grazing permit allowed for 338 fall use AUMs by cattle. From 1994 through 2002 the average use was 250 AUMs or 74% of the permitted use. The years of 2001 and 2002 were drought years and therefore use was reduced on the allotments and therefore not representative of a normal year. Excluding those two years the average use was 300 AUMs or 89% of permitted use.

2.8 Wildlife

The East Cottonwood allotment provides wildlife habitats, specifically forage and cover needs, for several big game, none game, BLM sensitive and migratory birds species, some seasonally and some yearlong. They provide yearlong and seasonal habitats for numerous species like mule deer and pronghorn antelope, and sagebrush obligate bird species like the sage-grouse, sage thrasher, sage and Brewer's sparrow. The primary vegetative communities providing wildlife forage and cover needs are the sagebrush/bunchgrass communities and juniper/limber pine breaks. These sagebrush communities are important to wintering mule deer, antelope and wintering and nesting sage grouse, as well as other sagebrush obligate passerines. Wintering big game and sage-grouse depend on the sagebrush plants for forage, and the avian sagebrush obligates depend on both the sagebrush and standing herbaceous residue for nesting cover. The northern half of the East Cottonwood allotment is mapped as crucial mule deer winter range, and the northern third is mapped as crucial antelope winter range, (see Wildlife Resources Map). The juniper/limber pine breaks provide hiding and thermal cover for mule deer, and the trees also provide valuable nesting habitat and forage in the form of cones and berries, for species like Pinyon jays, Townsend solitaire and mountain blue birds.

2.9 Threatened, Endangered, Candidate, or Sensitive Species

The sagebrush/bunchgrass communities mentioned above, in addition to providing big game winter range, provide winter, breeding, nesting and early brood rearing habitat for sage-grouse as well as breeding, nesting and foraging habitat for sagebrush obligate passerine species like the sage thrasher, sage and Brewer's sparrow. Sagebrush communities in this allotment are not likely providing sage-grouse seasonal habitats primarily because habitats were found to not be suitable, but they could be suitable for some level nesting and foraging habitat for the other sagebrush obligate passerines. The closest occupied lek within proximity to this allotment is the Cottonwood lek approximately 1.8 miles west. Therefore if nesting habitat was suitable, female sage-grouse from this lek would be expected to use them for nesting. Male sage-grouse lek attendance, as well as the peak and low male counts for the Cottonwood lek as well as other surrounding leks is provided in the Section 3.5 Table__ below. Two sage-grouse habitat assessment transects were located and run within representative sage-grouse habitats in this allotment, (see Wildlife Map _ for transect locations). Data from these assessments is summarized in Section 3.5 Table__.

Exact movements between seasonal habitats have not been documented but anecdotal observations lead biologist to believe that these nesting sage-grouse, post hatch, migrate up in elevation as green-up progresses, into upper Cottonwood and Owl creeks to the west and south. An analysis of sage-grouse nest site selection from 7 study areas in Wyoming indicates that residual grass height should be a minimum of 3.9 inches (10 cm) in Wyoming big sagebrush dominated sites (Holloran et al. 2005) compared to 7 inches (18 cm) minimum live perennial herbaceous vegetation height recommended by Connelly et al. (2000) in breeding habitats. Hens nesting in these cover conditions experience higher nest success rates than those nesting under inferior cover conditions (DeLong et al. 1995, Holloran et al. 2005). An idea of available nesting cover in the form of standing herbaceous residue can be observed in the sage-grouse habitat assessment transect data, (height and % cover of residual herbaceous) and sage-grouse habitat assessment transect photos, (see section 3.5).

There are no known threatened or endangered wildlife species within these allotments, but the sage-grouse listed as a Candidate species, sage thrasher, sage and Brewer's sparrow, are all Wyoming BLM sensitive species. And there are several other raptor and migratory bird species inhabiting these allotments, at least seasonally, that were not mentioned or analyzed.

3.0 Summary of Monitoring Data / Assessments

3.1 Monitoring Data

In the summer of 2014, 4 vegetation monitoring sites were selected in the allotment as part of the Rangeland Health Assessment process. Complimenting those locations were additional photo-points. Ecological site, soil type, vegetative community, topography, location of water sources, and livestock grazing history are some of the factors that were considered in the selection of these monitoring sites.

Line intercept cover transects were completed in each monitoring site. A summary of the cover data collected from each monitoring site is shown below:

Vegetation Monitoring Data					
Monitoring Site	Ecological Site	Basal Veg. Cover	Litter	Bare Ground	Brte presence ((hits/transect pts)*100)
North Creek Cover	Sandy 10-14		37.3	30.8	0
Farmed Cover	Saline Upland 10-14		26.4	55.7	0
North Narrow Cover	Sandy 10-14		46	14.5	0
Narrows Cover	Sandy 10-14		33.5	24	0

Cheatgrass presence is derived from total "hits" on cheatgrass, canopy or basal, throughout the transect. It is a representation of the amount times the plant was encountered along a transect in relation to the amount of points observed on the transect.

Rangeland Health Assessments were conducted at the monitoring sites by an interdisciplinary team on using the 17 Indicators of Rangeland Health as described in BLM Technical Reference 1734-6. This was not done at the Farmed Cover site because this is an area that "farmed" by the NRCS decades ago. At that time, the area was primarily planted to crested wheatgrass and a wildrye-a non native that still remains dominant today. Field observations were compared to the Reference Sheet for the Sandy 10-14 inch precipitation zone. This was done to determine departures from normal-as prescribed in the reference sheet. Individual ratings to the Rangeland Health Indicators are displayed for each monitoring site below.

Rangeland Health Indicators			
Indicator	Departure from Reference Sheet		
	North Narrows Cover	Narrows Cover	North Creek Cover
1. Rills	NS	NS	NS
2. Water-flow patterns	SM	M	M
3. Pedestals and/or terracettes	M	ME	M
4. Bare ground	NS	NS	M
5. Gullies	SM	M	SM
6. Wind-scoured, blowouts, and/or deposition areas	NS	NS	SM
7. Litter movement	SM	M	M
8. Soil surface resistance to erosion	NS	NS	SM
9. Soil surface loss or degradation	NS	M	M
10. Plant community composition and distribution relative to infiltration	SM	M	ME
11. Compaction layer	NS	NS	NS
12. Functional / structural groups	M	ME	ME
13. Plant mortality / decadence	NS	NS	NS
14. Litter amount	NS	NS	NS
15. Annual production	NS	NS	NS
16. Invasive plants	M	ME	ME
17. Reproductive capability of perennial plants	NS	NS	NS
Indicator Summary			
Soil / Site Stability (Indicators 1-9, 11)	SM	M	M
Hydrologic Function (Indicators 1-5, 8-11, 14)	SM	M	M
Biotic Integrity (Indicators 8-9, 11-17)	M	ME	ME
N-S None to Slight S-M Slight to Moderate M Moderate M-E Moderate to Extreme E-T Extreme to Total			

3.2 Soils and Site Stability

Data collected for the Rangeland Health Assessments were used to evaluate soil and site stability on the allotment. Standard 1 for Healthy Rangelands was evaluated based on the attribute ratings for Soil and Site Stability and Hydrologic Function using rangeland health indicators 1 through 11 and 14.

3.3 Hydrology

3.3.1 Surface Water

The Cottonwood Creek drainage has headwaters located further to the west and the flow in the creek through the allotment is typical of higher elevation watersheds with peak flows occurring in May through June following snow melt. During the other months of the year the flow is augmented from discharge of produced water from Hamilton Dome oil field. There are irrigation demands and diversions located throughout the segment. For full details of flow and flow conditions see the Level I and Level II watershed study as provided in the reference section.

The hydrologic and soil rangeland health indicators as outlined and discussed in the table above were assessed to determine current conditions in the allotment related to runoff and soil water retention. The overall ratings from 3 monitoring sites are found in the table above. One site recorded a slight to moderate departure from reference conditions; the other sites had an overall hydrologic rating of moderate.

Generally in areas where a moderate or greater departure was referenced for soil or hydrologic function, these areas are not currently meeting standards. The cause factors are determined below.

Human Influence

Anthropogenic uses and activities on the landscape can have significant impacts – both adverse and beneficial– on water quality and the health of a watershed. Human-related disturbances are numerous and include livestock grazing, land clearing, mining, timber harvesting, ground- water withdrawal, stream flow diversion, channelization, urbanization, agriculture, roads and road construction, off-road vehicle use, camping, hiking, and vegetation conversion. Biological stressors include habitat loss, alteration, effluent discharge, and degradation from decline in water quality, and changes in channel and flow characteristics (EPA, 2008 p.65).

The allotment was reviewed for these types of hydrologic stressors on the watershed. The only types present that were found in the allotment were from grazing and roads which are common historic and present day activities that occur in the watershed.

Many of the first order tributaries in the basin can be classified as G-Type channels, or gullies. These channels are highly erosive, generate high sediment volumes, and can result in the loss of productive lands and destabilize upland conditions. Observation of many of these channels indicates that while the major stream channels appear to have achieved a level of stability, the upper reaches of the watershed are still suffering a level of destabilization. These channels could be forming in response to one or more of numerous stimuli including but not necessarily limited to: channel realignment (straightening), road and culvert construction, rangeland management practices, or base-level lowering associated with main channel incision (Anderson,2009 p.3.100).

3.3.2 Ground Water

The estimated depth to groundwater is estimated to be greater than 100 feet in upland areas. The amount of evaporation s indicated in the Wyoming Climate Atlas is 26 inches per year for the Thermopolis area. This exceeds the annual precipitation of 10-12 inches per year, and therefore the amount of groundwater recharge into the primary Mesaverde Aquifer is minimal. The Cody Shale formation is considered an confining unit and not a primary aquifer. The only other potential recharge is along stream channels through infiltration following storm events.

3.3.3. Water Quality (Surface)

BLM Observations-

There is no direct BLM water quality data for this allotment. The majority of the data is from DEQ observations of Cottonwood Creek.

Wyoming DEQ:

Cottonwood Creek was classified as a type 2AB stream from the confluence with the Bighorn River upstream to the Wagonhound Creek confluence (in the West Cottonwood allotment). The use attainability report for the segment

indicates that diversion and flow regulation in the creek occurs. The beneficial use of agriculture is dominant throughout the creek and according to the 2012 305b report the use is currently being met.

3.3.4 Riparian

The riparian areas found in the allotment are meander segments of Cottonwood Creek and identified in the riparian table in section 2.3.4. The segments were evaluated using BLM Technical Reference Manuals 1737-15 and 1737-16 “A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lentic and Lotic Areas”

BLM ID#	Riparian Area	(mi)	Water Type	Date Monitored	Gradient (%)	Rosgen Class	Function	Trend	Rating Scale
P0404X	Cottonwood Ck	0.86	Perennial/Produced	7/23/2009	<2	C5	FAR	NA	3
P0446X	Cottonwood Ck	0.43	Perennial/Produced	7/23/2009	<2	C5	FAR	NA	4
Total:		7.82							
PFC=Proper Functioning Condition FAR=Functioning at Risk N/A= Not Apparent U=Unknown Rating Scale= 0- Non Functioning, 1-9 Functioning at Risk, 10-19-PFC, 20=Potential Natural Community.									

P0404X-

This segment was rated as FAR primarily due to the presence of weeds that are dominant throughout the Greenline area and through the active floodplain area. There was also noted bank instability and lack of sufficient riparian vegetation along the Greenline to prevent and protect the banks during high flow events. There was also extensive Tamarisk initial treatments performed by Hot Springs County that have occurred since 2009; however follow up treatments have not occurred regularly. Tamarisk has been reduced from 2009 levels, but is still present along large portions of the creek. The flow regime in the segment is augmented by discharge water from Hamilton Dome and is a contributing factor to weed problems in the area. This is beyond the scope of the BLM authority. Below is a recent overview photo (6/19/2014) of the segment. These areas are currently not meeting standard #1 (soils) due to instability or standard #2 (riparian) due to excessive amounts of weeds and lack of sufficient perennial riparian vegetation along the Greenline and floodplain areas. There has been noted improvement since 2009 and additional weed treatment will aide in making progress to achieve these standards.



P0446X-

This segment consists of two meanders on Cottonwood Creek that are located downstream from P0404X with riparian conditions, PFC rating, management, and other characteristics that are very similar to P0404X. The same rating was given to this segment as a result.

3.4 Upland Vegetation

Data from the line intercept cover transects, the 17 Indicators of Rangeland Health, and other field observations were used to evaluate the vegetative community on the allotment. Standard 3 for Healthy Rangelands was evaluated based on the attribute ratings for Biotic Integrity using rangeland health indicators 8 through 9, and 11 through 17.

The vegetative community, ground cover, and soil surface attributes for the assessment sites were noted, measured and compared to the ecological site description (ESD) and corresponding reference sheet. The sites were compared to the Sandy 10-14 precipitation zone ESD (R032XY350WY).

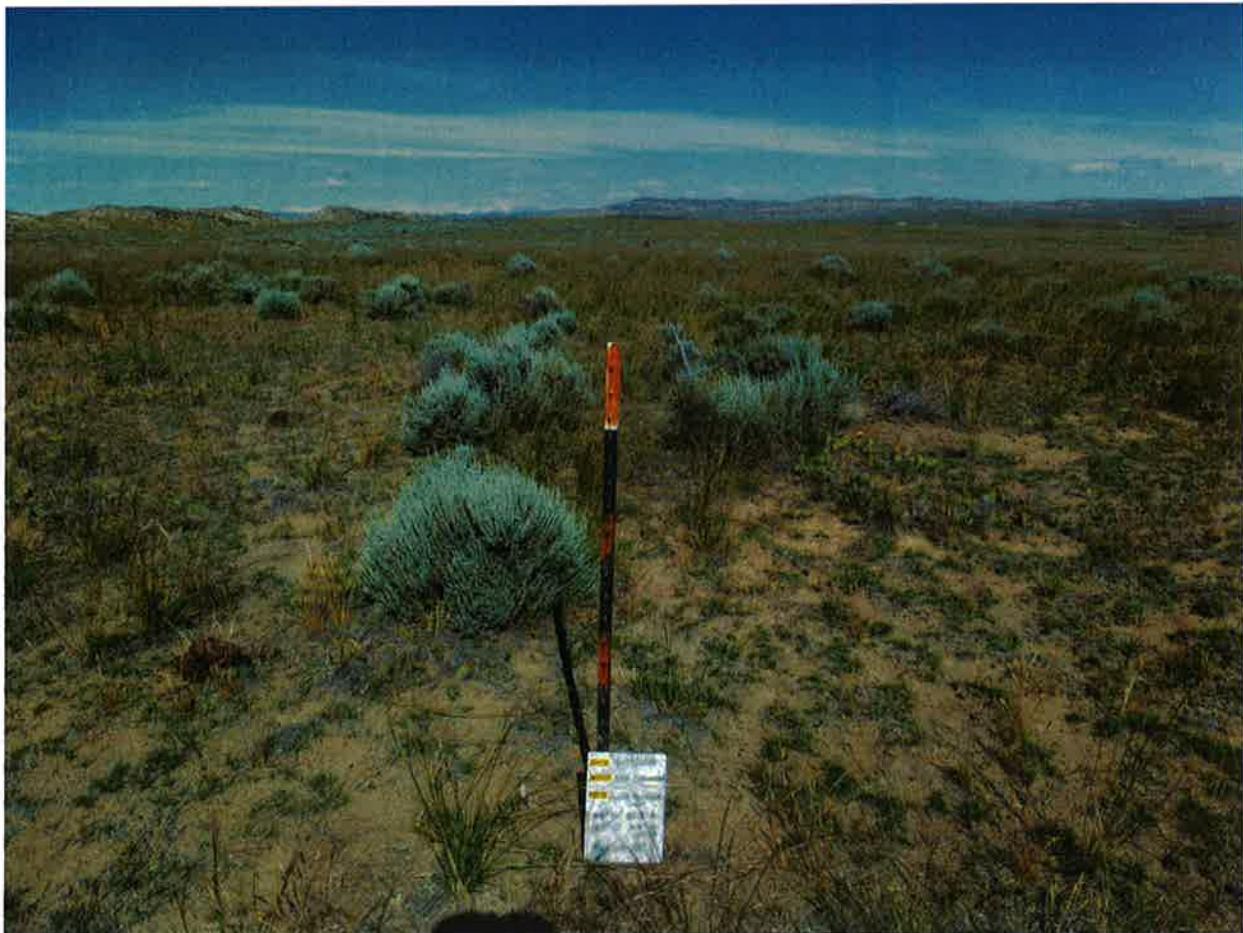
The Historic Climax Plant Community for this ecological site is a Needleandthread/Indian ricegrass plant community. This community would be dominated by cool season grasses (75%) followed by a nearly even balance of woody species (10%) and forbs (15%). With moderate continuous season long grazing or extended droughts a transition from HCPC to a Perennial Grass/Big sagebrush state may occur. This state is dominated by cool season grasses but Bluebunch may have decreased and species like Indian ricegrass would be a minor component and be in protected areas only while species such as carex spp., blue grama and cactus would have increased. The state has a hydrologic, soil, and biotic community that is stable and intact. From this state, with frequent and severe grazing,

lack of fire, extended droughts or a severe grazing in conjunction with wildfire the vegetative state can be converted to a big sagebrush/bare ground community or a threadleaf sod community.

States beyond the Perennial grass/Big sagebrush community are likely to have a biotic, soil, and hydrologic function that is at risk or not functioning. Herbaceous production will decline, the undesirable species increase as the desirable species decrease, and the ability to move towards HCPC is diminished without mechanical treatments, reseeding efforts, soil remediation efforts, and intense grazing management.

North Narrows

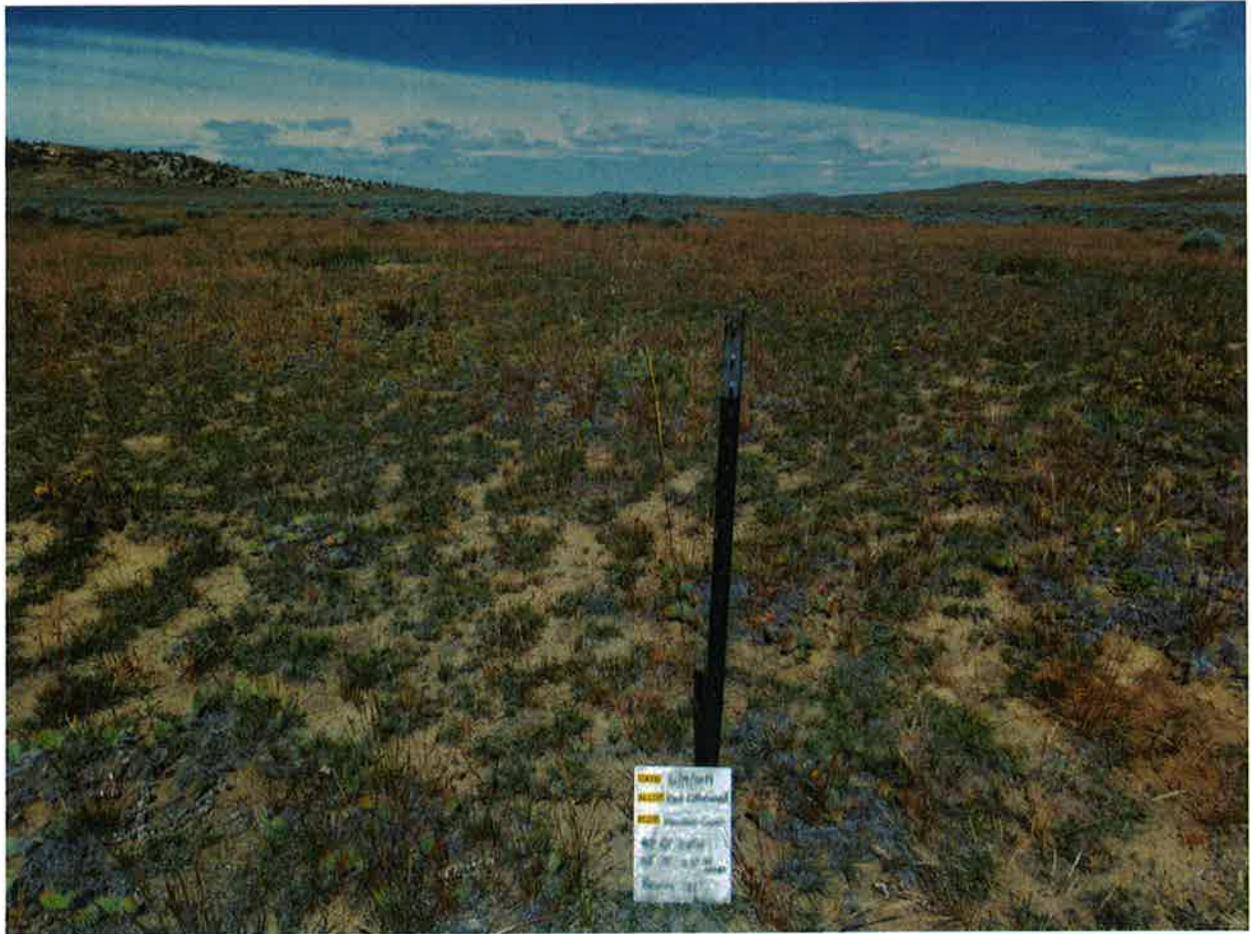
The data collected at North Narrows indicates that this site has characteristics that are most represented in the description of a Big sagebrush/bare ground community. The attribute rating justification for the Biotic Integrity at this assessment was "Moderate." The functional/structural groups are lacking in the correct species. The prominent cool season grass is sandberg bluegrass with needleandthread grass present but not in the numbers it should be. The dominant species on site is cactus and blue grama, making up approximately 40% of all basal hits. It appears that blue grama and cactus once dominated these sites and needleandthread still remains on site but is now not a dominant feature plant. The forbs were a minor component of the area and were primarily annuals. The main woody species on site is sagebrush but it makes up less than would be expected for this state in transition. The percent litter was within expected as was the amount of bare ground. The invasive plants indicator number 16 was rated as moderate because of the amount of cactus and blue grama present and found within the transect and the areas of cheatgrass are found throughout the range site. The cheatgrass is not being found within disturbed areas but actually dominates smaller polygons within the range site polygon.

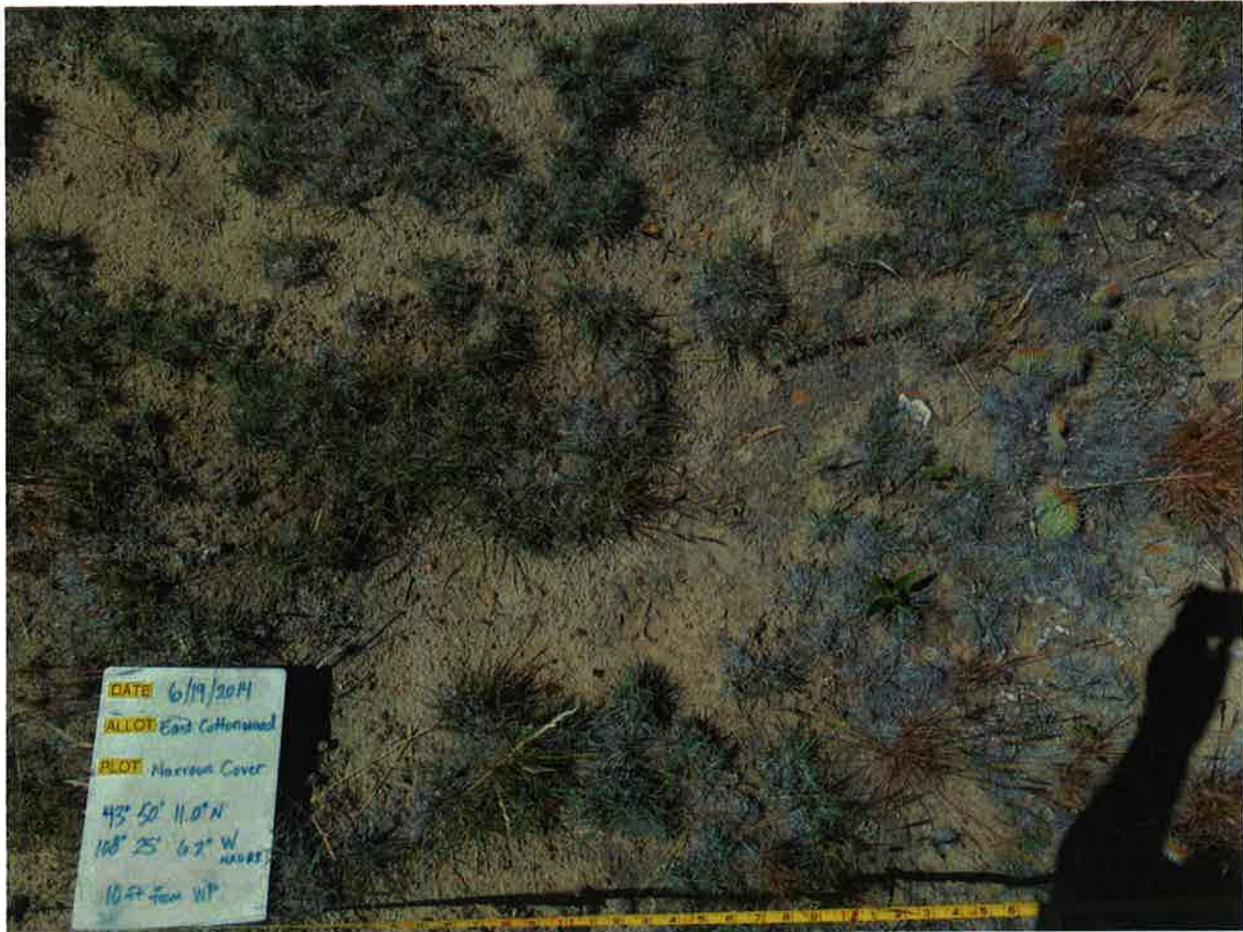




Narrows

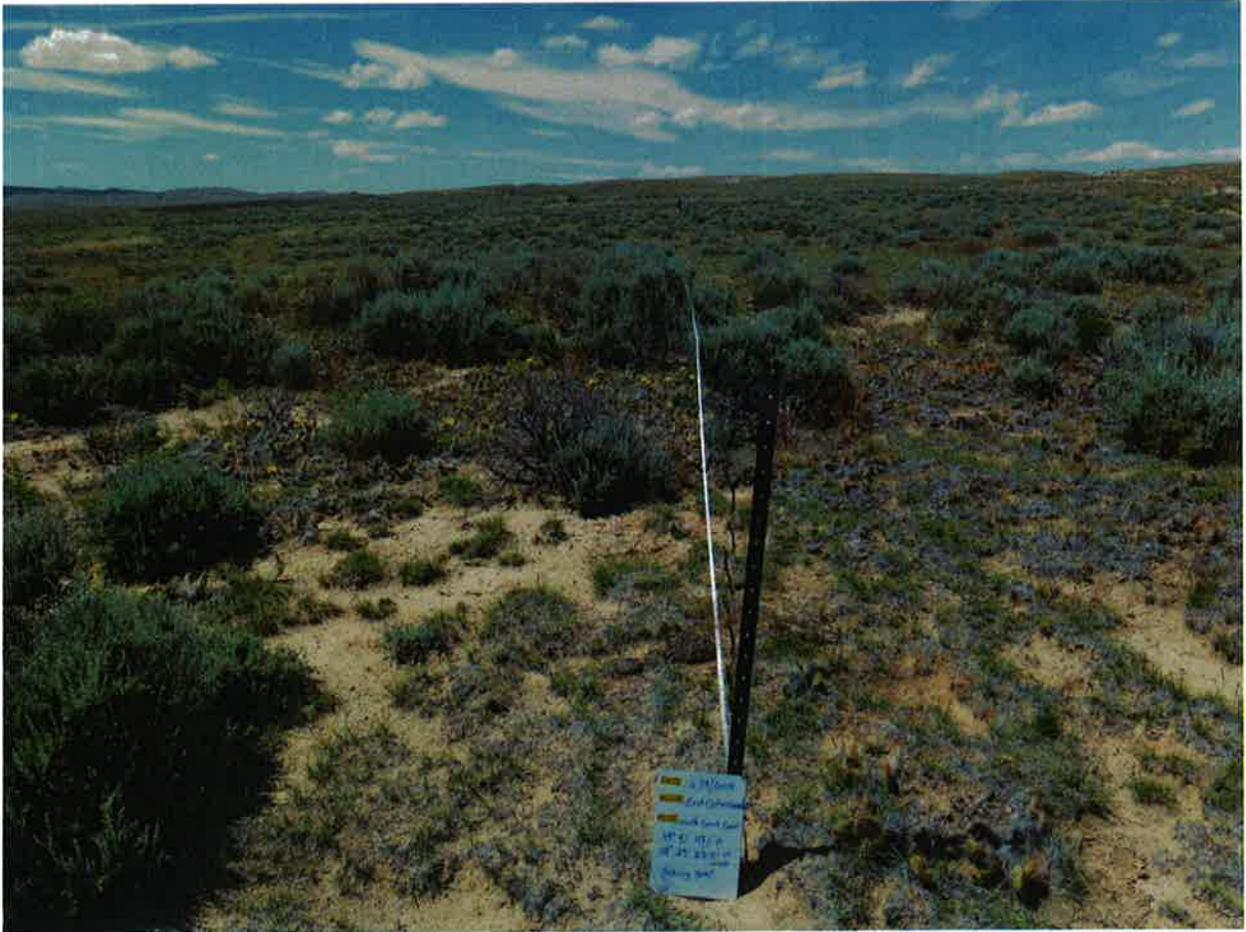
The data collected at North Narrows indicates that this site has characteristics that are most represented in the description of a Big sagebrush/bare ground community. The attribute rating justification for the Biotic Integrity at this assessment was “Moderate to Extreme.” The functional/structural groups are lacking in the appropriate species. The dominant cool season grass is sandberg bluegrass while the desirables such as needleandthread and indian ricegrass are nearly absent. The dominant species on site is cactus and blue grama, making up approximately 40% - 50% of all sample hits. The forbs were a minor component of the area and were primarily annuals. The main woody species on site is sagebrush but it makes up slightly less than would be expected for this state in transition. The percent litter was within expected as was the amount of bare ground. The invasive plants indicator number 16 was rated as moderate because of the amount of cactus and blue grama present and found within the transect and the areas of cheatgrass are found throughout the range site. The cheatgrass is not being found within disturbed areas but actually dominates smaller polygons within the range site polygon.





North Creek

The data collected at North Narrows indicates that this site has characteristics that are most represented in the description of a Big sagebrush/bare ground community. The attribute rating justification for the Biotic Integrity at this assessment was "Moderate to Extreme." The functional/structural groups are lacking in the correct species. The dominant cool season grass is sandberg bluegrass and needleandthread but are a minor component in the area. The dominant species on site is cactus and blue grama, making up approximately 50-60% of all hits. The forbs were a minor component of the area and were primarily annuals. The main woody species on site is sagebrush but it makes up slightly less than would be expected for this state in transition. The percent litter was within expected but the bare ground was rated as moderate because it was slightly higher than expected and the amount of bare ground areas were larger and connected more often than normally observed. The invasive plants indicator number 16 was rated as moderate because of the amount of cactus and blue grama present and found within the transect and the areas of cheatgrass are found throughout the range site. The cheatgrass is not being found within disturbed areas but actually dominates smaller polygons within the range site polygon.



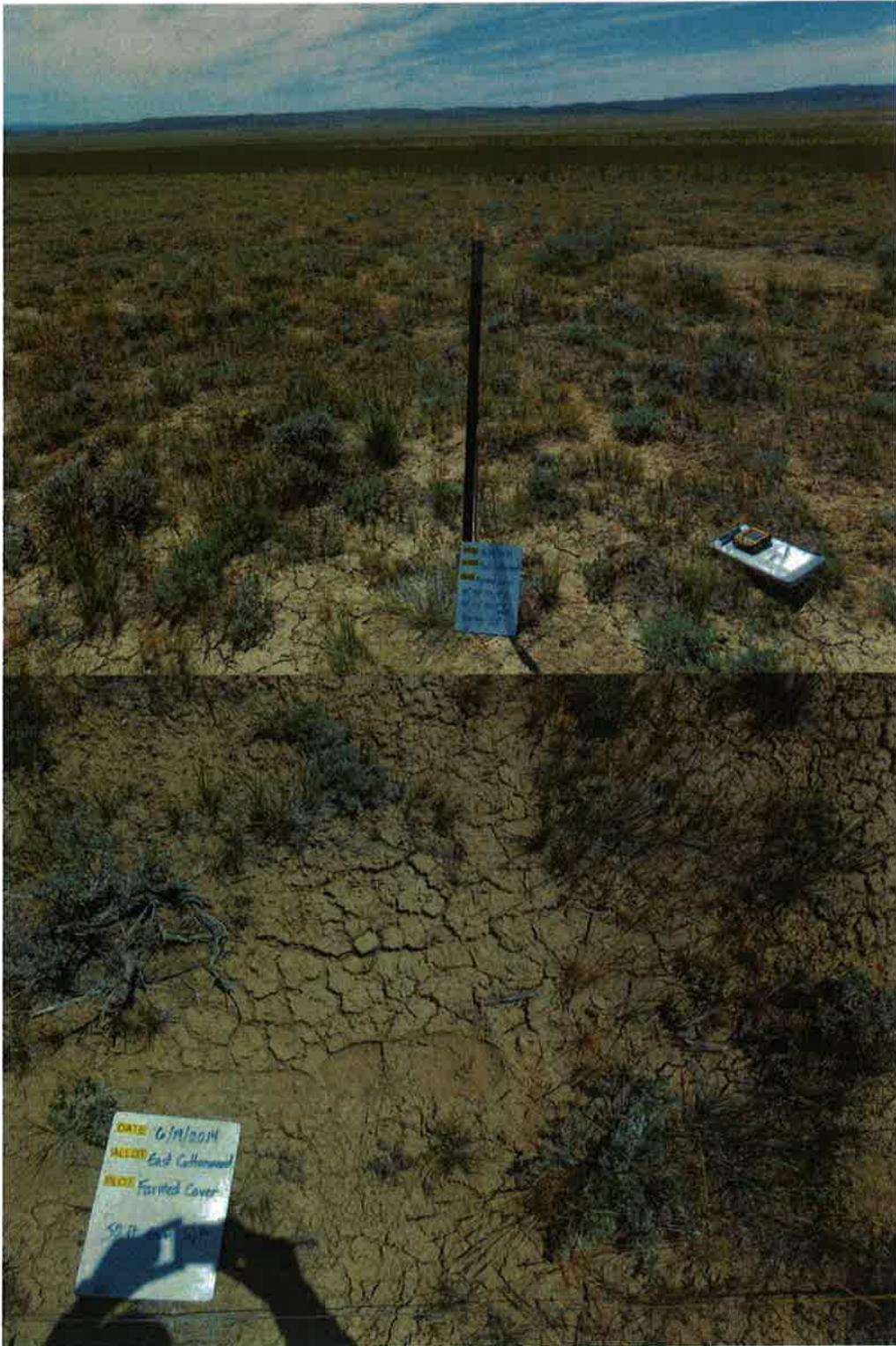




Farmed Area

The farmed area of the allotment-at the southern end- occurred in 1968. At that that time the purpose was to have contour furrowing/seeding to control runoff into the Cottonwood Creek drainage. The area was farmed and seeded with crested wheatgrass (82%), western wheatgrass (6%), green needle grass (6%), Russian wildrye (3%), alfalfa (2%), and indian ricegrass (1%) at a rate of 5 pounds per acre. The file indicates that different or multiple pieces of equipment were used in the process with adjustments to equipment and seeding rates as needed.

The monitoring completed in 2014 showed that the dominating species on site was blue grama, carex filifolia, and Russian wildrye. Crested wheatgrass did exist still but western wheatgrass was not encountered nor was green needlegrass or alfalfa. Indian ricegrass was not found within the transect. Vegetation as a whole made 17% of the cover in the area, litter accounted for 26 percent of cover and bare ground was observed as 56%. The area doesn't represent a native vegetative community and cannot be compared to the ESD's developed for the area. The site does have evident furrowing and a dominance of non-native plants. It also appears to have a stable soil stability rating in that there was an average rating of 3.8 however there wasn't much of an A horizon (1" at site) which could be attributed to the fact that the soils were furrowed. This area accounts for approximately 1004 acres of public lands within the allotment.





DATE 6/11/2014
SCOT East of Highway
SCOT Fertilized Cover
Soil from WP



DATE 6/11/2014
SCOT East of Highway
SCOT Fertilized Cover
Soil from WP



Additional Observation Photo/Location



This photo is located in the northern end of the allotment on the border of sections 10 and 11-see map of monitoring points. This site is much the same and comparable to the North Narrows monitoring site. There is needle and thread on site (a desirable) but blue grama and cactus are very evident and present.

3.5 Wildlife Habitat

Below is a summary of sage-grouse lek monitoring data of leks near this allotment, sage-grouse habitat assessment transect data and transect photos of the three transects located within representative sage-grouse habitat in this allotment, (see Wildlife Map for transect locations). These transects were run in May of 2014, to determine and record the sagebrush canopy cover, shrub height, shrub age diversity and composition, and all other vegetation cover class composition and height.

Sage-grouse Lek Data Summary for leks inside or within 2 miles of East & West Cottonwood, Wagonhound and Wagonhound Bench Allotments

Lek (C-Core Area)	Average Male Attendance	Peak Male Count & Yr	Low Male Count & Yr	Years of Monitoring
Wagonhound Cr 1 (C)	22	45 in 2009	10 in 2007	22
Cottonwood	4	20 in 1983	0 in 1996	12
Wagonhound 2 (C)	8	18 in 2010	0 in 2013	5
Putney Mine (C)	11	39 in 2006	0 in 1993	21
Kester Coulee (C)	4	19 in 1992	0 in 2006	18

Sage-grouse Habitat Assessment Transects for East and West Cottonwood Allotments, 5/22–29/2014

Line Intercept Canopy Cover					
	East Cottonwood Allotment		West Cottonwood Allotment		
	Transect 039	Transect 041	Transect 045	Transect 047	Transect 049 (Core Area)
Shrub Species					
Live Big Sagebrush	16	24	14	17	20
Dead Big Sagebrush			1.5		
Other SPP: (Fringe sage)					
Other SPP: (Shadscale)					
Other SPP: (R Rabbit B)					
Shrub Height (inches)					
Live Big Sagebrush	15.3	16.3	11.7	14.3	13.4
Other SPP: (Fringe sage)					
Other SPP: (Shadscale)					
Other SPP: (R Rabbit B)					
Belt Transect					
Species	Transect039	Transect041	Transect045	Transect 047	Transect 049
Big Sagebrush					
%Young	10	2	7	30	22
%Mature	73	82	76	61	62
%Decadent	6	11	13	9	7
%Dead	11	5	4	0	9
Daubenmire Cover Class & Vegetation Height Data					
Summary of Vegetation Height (inches)	Transect 039	Transect 041	Transect 045	Transect 047	Transect 049
New Herbacious Mean Height	7.4	3.6	11	6.9	8.4
Residual Herbacious Mean Height	T	T	7	1	0
Summary Cover Class %					
New Perennial Grass	10	7.3	5.3	8.5	6
New Annual Herbacious	2.5	3.7	8.4	2	1.8
Perennial Forb	2.5	2.5	2.5	2.5	0
Residual Herbacious	3.5	0	1.5	2.5	0
Other	64.25	74.7	69	86.5	85.5
Browse Utilization					
Species	Transect039	Transect 041	Transect045	Transect 047	Transect 049
ATTR	Low	Low	Low	Low	Low

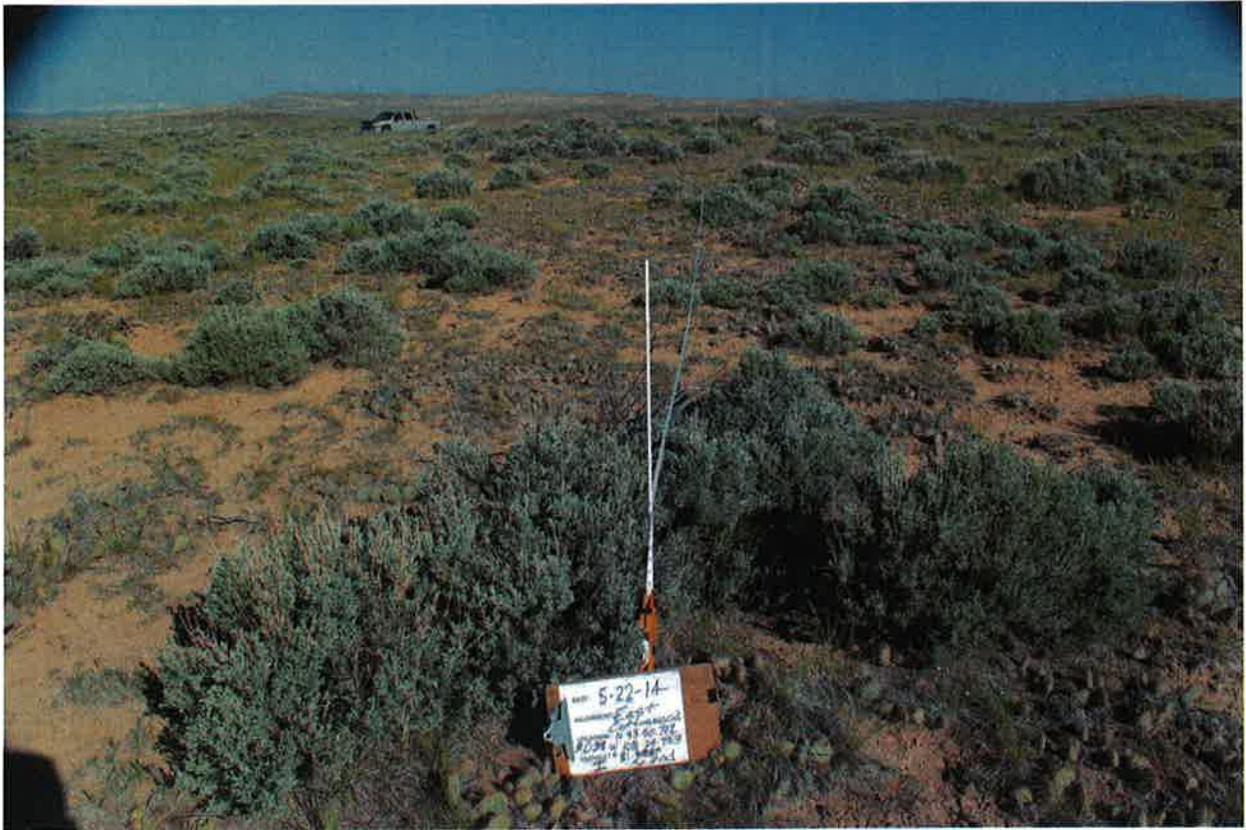


Figure 2 East Cottonwood allotment sage-grouse habitat assessment transect 039

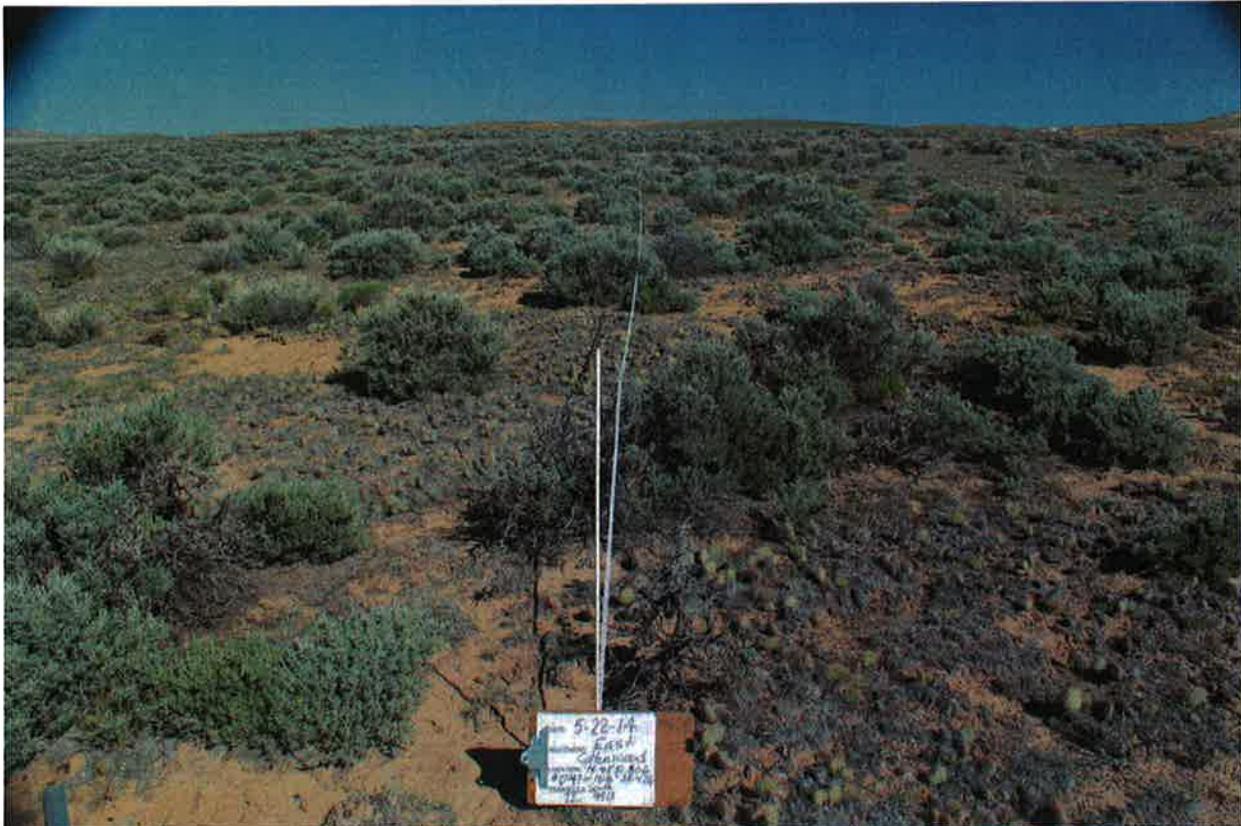


Figure 3 East Cottonwood allotment sage-grouse habitat assessment transect 041

4.0 Conclusions

This section draws conclusions and makes determinations regarding:

- A. Progress towards or attainment of the standards for rangeland health, and
- B. Whether livestock management is in conformance with the guidelines, and
- C. Whether existing grazing management or levels of grazing use are significant factors in failing to achieve the standards or conform to the guidelines.

4.1 Standard 1

Within the potential of the ecological site (soil type, landform, climate, and geology), soils are stable and allow for water infiltration to provide for optimal plant growth and minimal surface runoff. MET/Not MET

Rationale:

Met

The farmed area that was seeded has sufficiently produced litter and vegetative cover to meet this standard as outlined above. Although the plant community is considered non-native, the transect data from such areas has acceptable amounts of bare ground and evidence of runoff with the slope was acceptable for the site.

Not Met

These areas are those areas represented in the sandy range sites as described in the document. These areas had excessive amounts of runoff indicators with rills, pedestals, soil loss. This is supported by elevated amounts of bare

ground and reduced amounts of cover by vegetation as determined by the rangeland health indicator monitoring sites and channel conditions below head-cuts where alteration has occurred. These areas had an overall moderate departure from reference conditions.

EAST_COTTONWOOD_STND_1

BLM_ACRES	STANDARD_1	STANDARD_1_SIG_FCTR
1603.730936	2c	Livestock_Chan_Cond
117.21421	2c	Weeds
656.282319	3	Rock Outcrop
1003.846031	1	Met
33.938603	3	Anthropogenic

4.2 Standard 2

*Riparian and wetland vegetation has structural, age and species diversity characteristic of the state of channel succession and is resilient and capable of recovering from natural and human disturbance in order to provide forage and cover, capture sediment, dissipate energy, and provide ground water recharge. **Not Met***

Rationale:

Overall the riparian areas in the allotment are not meeting the definition provided above. The segments have rating of Functioning at Risk (FAR). The naturally occurring riparian areas along Cottonwood Creek (P0404X) are unstable and have not historically been capable of recovering from natural and human disturbances that have occurred in the allotment. The riparian areas do not have the vegetation necessary to stabilize banks, capture sediment or dissipate energy properly. This was evidenced recently following high flow events of 2010 and 2011 where the lower portions of the Creek were completely washed out. The adjacent upland terraces are also lacking sufficient cover to reduce energy following storm events. The potential to this segment is limited due to partial reliance on produced water during the late summer and fall months, and other irrigation diversions located throughout the creek.

4.3 Standard 3

*Upland vegetation on ecological site consists of plant communities appropriate to the site which are resilient, diverse, and able to recover from natural and human disturbance. **NOT MET***

RATIONALE-NOT MET: Acres that were determined to have not met the standard are those that have had a significant change or shift from the potential of the site and do not have an appropriate plant community capable of recovering or returning to a functional community without mechanical treatments, seedings, intensive grazing management, etc. These sites have little capability or probability of returning to a more desirable state.

Overall the standard is not met on these acres due to the loss of or reduction of functional structural plant groups.

Land Health Reporting Categories	Acres
Public Land Achieving Standard 3	0
Public Land Not Achieving Standard 3 (historic grazing)	1610
Public Land Not Achieving Standard 3 (introduced seeding)	1004
Public Land where Land Health Standard 3 Does Not Apply or unevaluated (rock outcrop)	722
Public Land Not Achieving Standard 3 (invasive vegetation/invasive removal project-see standard 2 description)	45
Public Land Where Standard 3 Does Not Apply: Roads/Pipelines	34
Total Public Land Acres	3415

4.4 Standard 4

Rangelands are capable of sustaining viable populations and a diversity of native plant and animal species appropriate to the habitat. Habitats that support or could support threatened species, endangered species, species of special concern, or sensitive species will be maintained or enhanced. NOT MET – see table above in Standard 3

Land Health Reporting Categories	Acres
Public Land Achieving Standard 4	0
Public Land Not Achieving Standard 4 (historic grazing)	1610
Public Land Not Achieving Standard 4 (introduced seeding)	1004
Public Land where Land Health Standard 4 Does Not Apply or unevaluated (rock outcrop)	722
Public Land Not Achieving Standard 4 (invasive vegetation/invasive removal project-see standard 2 description)	45
Public Land Where Standard 4 Does Not Apply: Roads/Pipelines	34
Total Public Land Acres	3415

RATIONALE:

Five monitoring locations were chosen in the allotment for monitoring and evaluation purposes. Two of these transects were primarily for sage-grouse habitat assessment, and the other three to measure soil and vegetative parameters for evaluating the 17 Indicators of Rangeland Health. The sage-grouse habitat assessment monitoring transect locations were in the east and northeast portions of the allotment. Both were intentionally located in representative sage-grouse habitat in the allotment with gentle topography and larger continuous sagebrush communities (see Sage-Grouse Habitat Assessment Transect Photo and Wildlife Habitat Resources map for transect location). The other monitoring locations where the 17 Indicators of Rangeland Health were assessed were more representative of the allotment in general. Sagebrush canopy cover measured at sage-grouse habitat assessment

transect ranged from 16 - 24%. Sage-grouse use of this allotment is most likely a low level of wintering with nesting or early brood rearing not anticipated. Primarily because habitats were found to not be suitable, with most of the suitability issues being the low frequency of cool season bunch grasses and high frequency of invasive plants, (see Section 3.4). Sagebrush canopy cover was found to be suitable, and within sagebrush stands used for nesting generally ranges from 15 to 25%, and winter habitat is generally defined as sagebrush stands with 10-30% canopy cover (Connelly et al. 2000a).

The three Rangeland Health monitoring sites and areas represented by North Narrows, Narrows, and North Creek were all found to be best described as Big sagebrush/bare ground communities. These communities are characterized as being sites where invasive species, including Blue Grama and Prickly Pear, have either taken over the site, and/or sites where the desirable perennial grasses have been lost from the plant community. Also the Biotic Attribute of Rangeland Health was rated “Moderate” or “Moderate to Extreme” for all three sites, meaning that they have at least moderately departed from what the potential Historic Climax Plant Community (HCPC) is for the site. These plant communities exhibit a low level of plant diversity and therefore do not provide for a diversity of wildlife habitat needs in the form of cover, forage, or nesting habitat. And most importantly these vegetation communities contain invasive species that are not appropriate for their habitats, and compete with native plant species for space and resources and in turn do not provide for a diversity of animal species, and for these reasons do not meet Standard 4.

4.5 Standard 5

Water quality meets State standards. Met

Rationale:

The use classifications defined (WYDEQ, 2001) for the drainages in the allotment are considered to be Class 2AB waters.

Class 2AB streams are those surface waters known to support game fish populations or spawning and nursery areas at least seasonally and all their perennial tributaries and adjacent wetlands and where a game fishery and drinking water uses are otherwise attainable. Such waters are additionally protected for nongame fish, fish consumption, aquatic life other than fish, primary contact recreation, wildlife, industry, agriculture, and scenic value (DEQ,2001).

Disturbance in or adjacent to riparian areas can increase sediment into channels and degrade water quality. The PFC analysis method is design to evaluate if a given riparian or wetland system is sustainable during a typical disturbance such as flooding. Therefore, if a stream channel is not meeting PFC, it is an indication that the system will contribute to water quality problems by eroding during a storm event. Riparian and wetland systems can also be an effective buffer and trap suspended sediment during storm events, therefore if they are degraded the quality of the water downstream will generally be lower than if the system was healthy. Therefore, if allotments have areas that fail PFC it can be assumed to contribute to non-point pollution in downstream water bodies.

However currently within the assessment area, water quality impairment has not been identified In any water bodies by the State of Wyoming by listing them on the State’s 303d list. The UAA performed by the DEQ have determined that the appropriate beneficial uses are currently being met for this section of Cottonwood Creek in the allotment.

4.6 Standard 6

Air quality meets State standards. UNKNOWN

Rationale:

No information is currently available to indicate that this Standard is or is not being met. An air quality monitoring station was recently established in the Bighorn Basin, but no monitoring data is available at this time. Until specific

data becomes available, the determination for this Standard is UNKNOWN, per direction from the BLM Wyoming State Office.

4.7 Guidelines for Livestock Grazing Management

Guidelines provide for, and guide the development and implementation of, reasonable, responsible, and cost-effective management practices at the grazing allotment and watershed level. These management practices will either maintain existing desirable conditions or move rangelands toward statewide standards within reasonable timeframes. Appropriate guidelines will ensure that the resultant management practices reflect the potential for the watershed, consider other uses and natural influences, and balance resource goals with social, cultural/historic, and economic opportunities to sustain viable local communities. ***COMPLIANT/NOT COMPLIANT***

RATIONALE:

To state that current management is the possible cause of acres not meeting a standard or not in compliance with the Guidelines cannot be made as there is no active grazing permit and has not been for approximately a decade. A review of the records indicates that the grazing has been dominated by fall–winter use, the dormant season for vegetation since the 1970's. Documents within the allotment files (1981 and 1988) indicate that the allotment was in “poor to fair condition” and that the vegetative community was less than desirable. It cannot be stated when the degradation of the vegetative community occurred but it does appear that it occurred decades before this analysis.

5.0 Resource Specialist Signatures

X

X

[Handwritten Signature] 5-22-15

John Elliott
Supervisory Rangeland Management Specialist

X

[Handwritten Signature]

Tim Stephens
Wildlife Habitat Biologist

X

[Handwritten Signature]

Jared Dalebout
Hydrologist

X

[Handwritten Signature] 5/26/15

Michael J. Phillips
Assistant Field Manager - Resources

6.0 DETERMINATION

Based on information provided in this assessment, I have determined that standard 1 is being met in part, standards 2 is not met, standards 3 is not met, standard 5 is met and 6 is unknown. I have determined that the acres that do not meet standard 3 are not due to the current livestock use.

X 

Rebecca Good
Worland Field Manager

X

JUN 08 2015

DATE

7.0 Factors related to nonconformance with standards:

Standard 2

Regulated Flow and weeds as described in the standard 2 rationale have been determined to be the causal factor for acres/miles not meeting standard 2. Category 2d- Current management or disturbances affect land health, but ways to achieve significant progress are unknown.

Standard 3

The historic grazing use as described above in combination with the aggressive and opportunistic nature of cheatgrass is determined to be the causal factor for acres not meeting the standard 3.

7.0 REFERENCES

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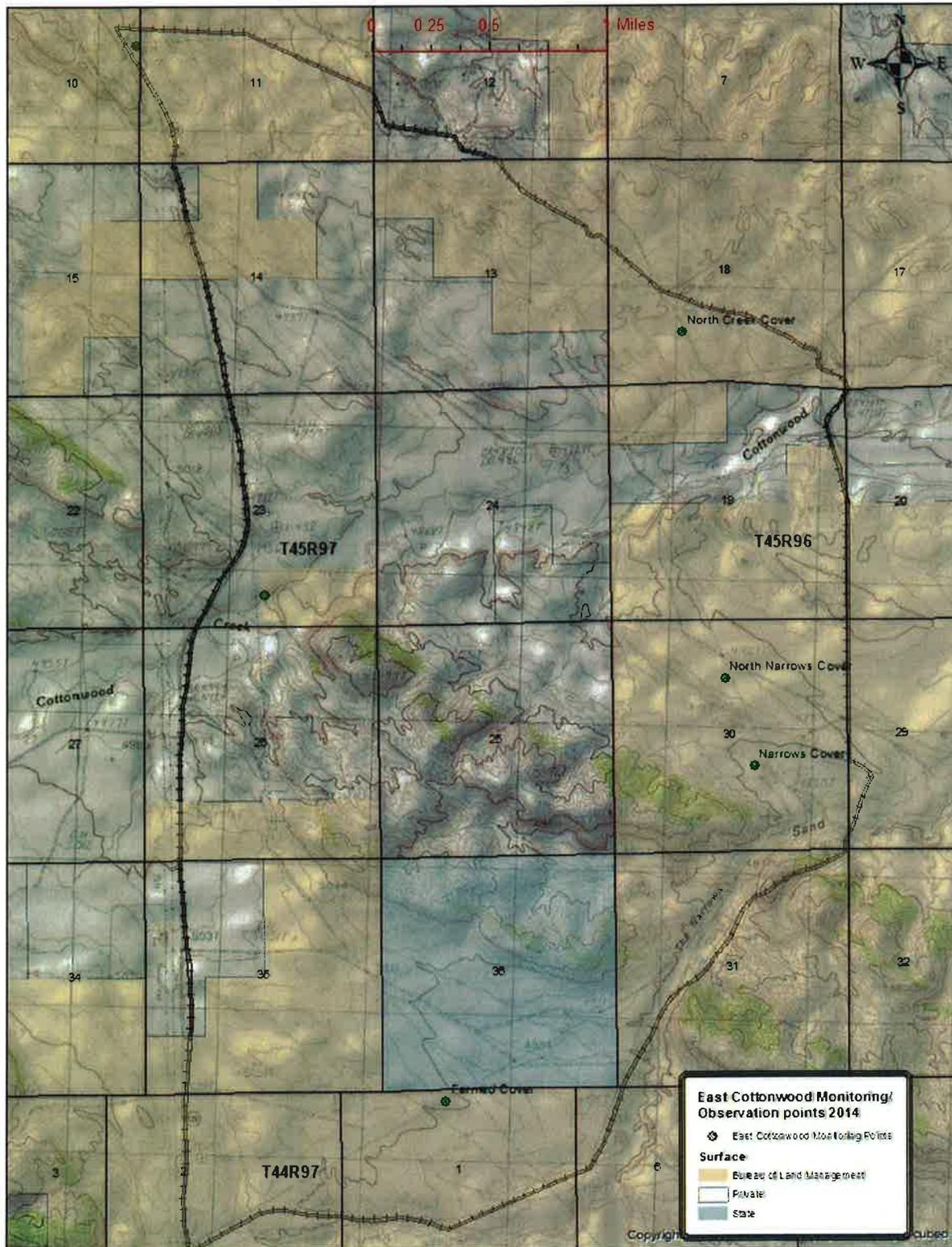
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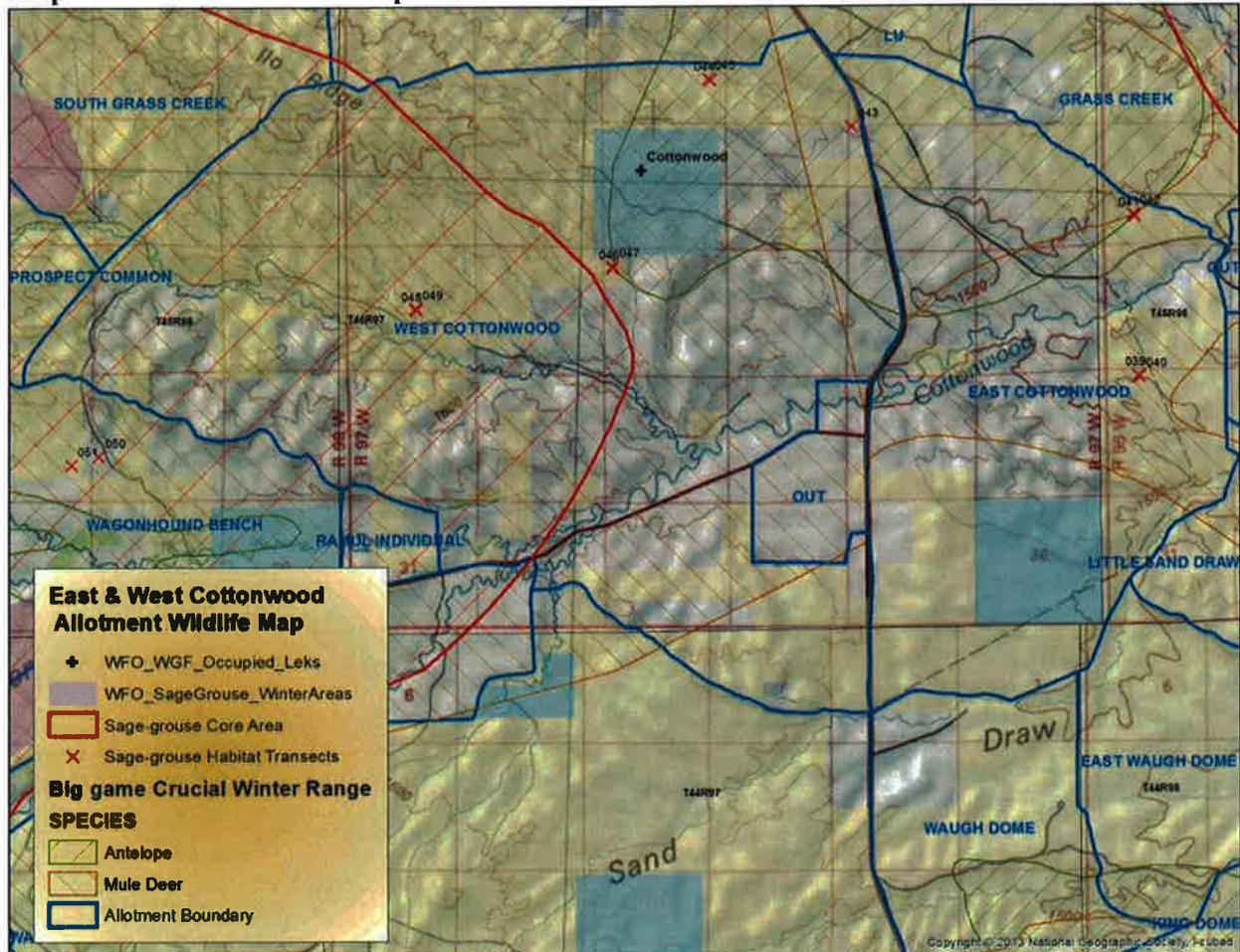
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Map 1: Allotment Map (Not to Scale)



Map 5: Wildlife Resources Map for East and West Cottonwood Allotments



Map 6: Upland Vegetation Standard Conformance (Standard 3)

