

Draft Compatibility Determination

Title

Draft Compatibility Determination for Grazing and Haying, Malheur National Wildlife Refuge

Refuge Use Category

Agriculture, Aquaculture, and Silviculture

Refuge Use Type(s)

Grazing and Haying or ensilage

Refuge

Malheur National Wildlife Refuge (MNWR)

Refuge Purpose(s) and Establishing and Acquisition Authority(ies)

“ ... a refuge and breeding ground for migratory birds and other wildlife ... ” Executive Order 7106, dated July 19, 1935, as modified by Public Land Order 1511, dated September 24, 1957

“... for use as an inviolate sanctuary, or for any other management purpose, for migratory birds.” 16 U.S.C. 715d (Migratory Bird Conservation Act)

“ ... for the development, advancement, management, conservation, and protection of fish and wildlife resources ... ” 16 U.S.C. 742f(a)(4)

“... for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude ... ” 16 U.S.C. 742f(b)(1) (Fish and Wildlife Act of 1956)

“ ... conservation, management, and ... restoration of the fish, wildlife, and plant resources and their habitats ... for the benefit of present and future generations of Americans ... ” 16 U.S.C. 668dd(a)(2) (National Wildlife Refuge System Administration Act)

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System, otherwise known as Refuge System, is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and

future generations of Americans (Pub. L. 105-57; 111 Stat. 1252).

Description of Use

Is this an existing use?

Yes. This compatibility determination (CD) updates and replaces the January 2013 compatibility determination for the Grazing and Haying which was prepared concurrently with the Malheur National Wildlife Refuge Comprehensive Conservation Plan (CCP; USFWS 2013).

The Hay and Grazing uses have been conducted on the refuge since 1935.

What is the use?

Grazing. The feeding on vegetation by domestic livestock. This includes trailing and watering of livestock.

- Rake-Bunch Grazing (RBG) is a mowing treatment of wet meadow habitat that begins on August 10th and is implemented annually. The mowed vegetation is then rake-bunched, followed by livestock (cattle) turnout from September 1 through January 31. Infrastructure needed to implement RBG includes fences and drinking water (wells with troughs or access to irrigation canals).
- Growing Season Grazing (GSG) is implemented in fields containing wet or dry meadow habitats where objectives are not being met (e.g., formation of reed canarygrass or smooth brome monocultures) (CCP 2-30, 2-36&37). Livestock management will utilize infrastructure associated with RBG fields, virtual fencing (collars), electric fences, or other suitable methods of containment. Use dates will typically occur from April through August.
- Late Winter Grazing (LWG) may occur in some years when climatic conditions limit the effectiveness of wet meadow grazing during the standard treatment window. When this occurs, a short extension of grazing into February may be necessary to remove remaining thatch and piles of vegetation before spring flooding. Reducing this accumulated material helps prevent clogging of irrigation ditches and water-control infrastructure, improves spring water movement across managed wetlands, and reduces the likelihood of decaying vegetation contributing to aspergillosis risk for feeding waterbirds. LWG would continue to be applied adaptively, with attention to wildlife use, soil conditions, and site-specific management objectives.

Haying or ensilage. The cutting or mowing of vegetation for fodder.

- Hay Only (HO) is a mowing treatment of wet meadow habitats that begins on August 10th and is implemented annually. The mowed vegetation is baled and removed by October 10th. Infrastructure needed to implement HO includes

viable access for mowers but most importantly balers and semi-trucks with flat-bed trailers.

- Growing Season Hay Only (GSHO) although analyzed in the CCP it has not been implemented. GSHO would be implemented only on fields dominated by reed canarygrass where wet meadow habitat objectives are not being achieved (CCP 2-30). Use dates will typically occur from April through August.

Both uses are a refuge management economic use where permittees pay a fee either by Animal Unit Months (AUMs) or by the tonnage.

Is the use a priority public use?

No

Where would the use be conducted?

The primary habitats where grazing and haying are used are wet and dry meadows. RBG, LWG, HO, and GSHO would occur in wet meadow habitat, while GSG would occur in either wet or dry meadow habitats. Approximately 15,000 acres of Refuge lands are treated annually through existing grazing and haying activities. In addition, up to 2,000 acres of GSG will occur to address emerging invasive plant concerns, including reed canarygrass and smooth brome. The specific acreage treated by GSG will be determined through ongoing studies, site-specific conditions, treatment needs, and monitoring results; not all areas will be treated simultaneously or within the same year. The specific Refuge areas or units treated include Double-O or Unit 1, North Blitzen Valley or Unit 7, Mid-Blitzen Valley or Units 8, 9, and 10, and South Blitzen Valley or Units 11 and 12 (CCP K-2, 3 & 4). Key wildlife species that depend on treated wet meadows for particular life history stages include American avocet (nesting/foraging), black-necked stilt (nesting/foraging), bobolink (nesting/foraging), Canada goose (foraging), mallard (foraging), sandhill crane (foraging), savannah sparrow (nesting), white-faced ibis (foraging), Wilson's phalarope (nesting/foraging), and Wilson's snipe (nesting/foraging). Desired wet meadow characteristics include: >75% cover of perennial grasses, sedges and rushes; 15-20% cover of forbs, <20% cover of reed canarygrass; and <5% cover of noxious weeds (Objective 4a; CCP 2-30). Dry meadow habitat supports nesting migratory birds such as cinnamon teal, northern pintail, and savannah sparrow, as well as small mammals. Desired dry meadow characteristics include 50-70% cover of live native grasses, at least 20% cover of plant litter, <10% cover of invasive plants, and a disturbance regime generally occurring at five- to ten-year intervals to rejuvenate nesting cover (Objective 4d; CCP 2-36 & 37).

Refuge acres that represent wet meadow habitat are approximately 25,000 or 13% of Refuge lands (CCP 2-30 & CCP B-82). Of this acreage 60% is treated on designated fields by permittees under a Cooperative Agriculture Agreement (CAA) between USFWS and permittees at MNWR (CCP K-1, 2, 3 & 4). Of the acres treated under CAAs,

approximately 35%, or 5,250 acres, receive HO and approximately 65%, or 9,750 acres, receive RBG. However, actual treatment acres vary on a field-by-field basis depending on area-specific objectives for focal species (CCP 2-30 & 31 and B-82).

Other habitat types that may be affected incidental to the specific use but where refuge management has mitigated those potential impacts are cold and hot springs, dune, playa, riparian shrub, riverine and associated riparian zone, sagebrush lowland, sagebrush-steppe, and salt desert scrub.

When would the use be conducted?

Dormant season HO begins on or after August 10, with bales removed by October 10.

Dormant season RBG begins with mowing on or after August 10. Cattle are turned out on or after September 1 and removed from Refuge units by January 31.

The dormant season treatment dates are intended to avoid disturbance to nesting birds and reduce mortality risk to young birds, such as sandhill crane colts, at the start of the season, while also avoiding impacts to wildlife returning to the meadows in late winter. These dates may be adjusted in response to drought and associated wildfire risk, mild winters that require additional time to make use of treated vegetation, abnormal flooding, or other extenuating circumstances. Any extension of grazing into February would be implemented as LWG.

How would the use be conducted?

Refuge Meadows:

The majority of wet meadow habitats under RBG and HO will be mowed when most meadow plant species are mature (quiescent) and preparing to enter into senescence (when aboveground biomass dies). From a wildlife standpoint, postponing mowing until this time reduces mortality rates of crane colts and other late-maturing species; mowing before this date is discouraged under the Greater Sandhill Crane Management Plan (Central Valley Population) (Pacific Flyway Council 1997).

Mowing will be followed either by RBG or HO treatment. RBG is a form of treatment where meadow hay is mowed and raked into windrows but left in place to be consumed by livestock during the late fall and winter. Refuge staff will annually direct permittees in the amount of rake-bunch feed to prepare and its location before or during the August haying season. No windrows remain under HO, as all mowed vegetation is baled and removed from the Refuge.

In grazed meadows, permittees have the responsibility to ensure that all fences are intact, and gates closed before turning out livestock.

In hayed meadows, all operations must be conducted from dawn to dusk only. Hay or other feed may not be brought onto or fed out on the Refuge unless authorized by the Refuge Manager, in order to reduce the risk of introducing weed seed or other propagules from outside sources onto Refuge lands. When livestock have grazed or

consumed vegetation from Refuge areas with known or suspected weed concerns, the Refuge Manager may allow a temporary on-Refuge holding or quarantine period to allow weed seeds or other propagules to pass through the animals before they are transported to private lands. Any such quarantine will last no longer than 5 days.

Growing Season Hay Only (GSHO) and Growing Season Grazing (GSG) Treatment (CCP B-83 & 84)

GSHO and GSG will be used in wet meadows to meet the desired characteristics of wet meadows across the Refuge as specified in Objective 4a (CCP 2-30) by encouraging successional shifts in plant community composition where designated attributes (i.e., >75% cover of perennial grasses, rushes, and sedges; 15-20% cover of forbs such as lupine, clover, and cinquefoils; <20% cover of reed canarygrass; <5% cover of noxious weeds) are not being met and by maintaining desired habitat heterogeneity at larger spatial scales (e.g., conditioning reed canarygrass monocultures for fall migrating waterfowl or encouraging a compositional shift from a reed canarygrass association to that of aquatic sedge). GSG may also be used in dry meadows when Objective 4d characteristics are not being achieved, including 50-70% cover of live native grasses, at least 20% residual litter cover, and <10% cover of invasive plants, while retaining the generally infrequent disturbance regime needed to rejuvenate nesting cover (CCP 2-36 & 37). GSHO will be used as needed to control or eradicate noxious weed populations in wet meadows that have exceeded designated site-specific thresholds based on plant community attributes and associated abiotic resources (e.g., soil type). GSHO can prevent the maturation of viable weed seed (e.g., in mid-June), thus reducing further enhancement of the soil seed bank. An example of this is the mowing of pepperweed in mid-June, before the production of viable seed.

Manipulation of vegetation during the growing season (GSG and GSHO) can have negative effects on wildlife due to disturbance/displacement and nest destruction. Littlefield (1989) documented sandhill crane nest desertion and trampling with spring and summer grazing. Therefore, growing season treatments will be pursued only when the need for a shift in vegetative community attributes or structural heterogeneity is necessary within a particular unit to meet overall long-term wet or dry meadow habitat objectives. In dry meadows, GSG prescriptions will retain at least 20% litter cover and account for the CCP's generally infrequent, five- to 10-year disturbance regime (CCP 2-36 & 37) unless the treatment of invasive grass monocultures makes this impractical.

Ancillary Equipment and Infrastructure Necessary for the Use:

GSG may use existing infrastructure but will most commonly use electric fencing, virtual fencing and/or other temporary fencing to control livestock movement. Temporary water will be provided as needed.

Livestock Trailing

When the movement of livestock is necessary, routes will be carefully selected to prevent damage to cultural resources, sensitive soils, wildlife habitat availability and integrity, and plant community health. A description of prescribed livestock movement will be included within individual cooperative land management agreements (CLMAs) but now classified as CAAs.

Corrals

Corrals facilitating livestock movement on- and off-Refuge (Diamond and Nine Mile) by Refuge permittees are also used by BLM permittees using neighboring BLM allotments. The existing cooperative agreement with BLM, which assigns BLM responsibility for maintenance of the associated corrals and related infrastructure, would be extended.

Upland Grazing

Under a Refuge/BLM MOU, upland grazing on approximately 646 acres of Refuge-owned checkerboard parcels within the Bridge Creek Area allotment complex would be administered through a coordinated interagency framework. BLM administers the grazing permits, applies and enforces the applicable permit terms and conditions, conducts routine allotment-level field inspections, and implements the Bridge Creek Area grazing management framework, including standards for upland vegetation, greater sage-grouse habitat, riparian areas, streambank condition, and livestock trailing. The Refuge retains jurisdiction over Refuge-owned lands and remains responsible for ensuring that the use is compatible with Refuge purposes and the mission of the National Wildlife Refuge System.

The MOU would establish the following coordination and accountability measures for Refuge parcels within the allotment:

- Annual coordination: The Refuge and BLM will meet before the grazing season to review planned use, pasture rotation, special resource concerns, access needs, and any site-specific issues affecting Refuge parcels.
- Permit administration and compliance: BLM will administer grazing permits and enforce terms and conditions that apply across the mixed-ownership allotment, including those intended to protect riparian areas, stream channels, upland vegetation, sage-grouse habitat, and sensitive wildlife resources.
- Upland vegetation and sage-grouse habitat monitoring: BLM will monitor grazing use and vegetation conditions under the Bridge Creek Area decision and associated allotment management framework, including utilization thresholds and habitat objectives related to perennial grasses, forbs, residual herbaceous cover, invasive annual grasses, and fuel conditions.
- Riparian and stream monitoring: BLM will conduct field inspections of riparian condition, streambank stability, Proper Functioning Condition

indicators, and livestock use in sensitive creek corridors, including Krumbo Creek.

- Trailing and access management: Livestock trailing, crossings, and access through or near Refuge parcels will be managed under BLM permit terms and the MOU to reduce repeated or prolonged livestock use in sensitive riparian and streamside areas.
- Reporting to the Refuge: BLM will provide monitoring results, inspection findings, and relevant compliance information to the Refuge's Supervisory Ecologist or designated Refuge contact. The Refuge will also share any observed resource concerns with BLM for follow-up.
- Timing of use: Grazing on Refuge-owned parcels within the Bridge Creek Area allotment may occur at different times of year depending on pasture rotation, annual forage conditions, plant phenology, access, weather, utilization levels, and resource-protection needs. Use may be directed toward crested wheatgrass or cheatgrass-affected areas where targeted grazing can reduce fine fuels or invasive annual grass competition, while native bunchgrass areas may receive deferment, rotation, or growing-season rest to maintain plant vigor and residual cover important to sage-grouse habitat. Riparian and streamside areas may require additional timing restrictions, shortened duration of use, or avoidance during sensitive periods to protect streambanks, riparian vegetation, water quality, and aquatic habitat. Timing decisions will be made through the BLM-administered allotment framework, in coordination with the Refuge under the MOU, and adjusted as needed based on monitoring results and applicable permit terms and conditions.
- Corrective action: If monitoring or field observations document resource damage on Refuge parcels, such as streambank sloughing, widening, excessive vegetation removal, repeated livestock concentration, or failure to meet applicable standards, BLM and the Refuge will coordinate promptly on corrective actions. These may include changes to timing, duration, pasture use, livestock distribution, trailing routes, access controls, or other measures available under BLM permit authorities and Refuge requirements.
- Settlement-related coordination: Where litigation settlement commitments or Bridge Creek Area decision requirements apply to Krumbo Creek Pasture or related upland and riparian habitats, the Refuge and BLM will coordinate to ensure those commitments are incorporated into implementation, monitoring, and restoration planning affecting Refuge parcels.

This coordinated approach recognizes that the Refuge parcels are small, scattered, and intermingled with BLM and private lands, making separate Refuge-only fencing and independent day-to-day administration impractical. Coordinated management through the MOU allows the parcels to be monitored and managed within the larger allotment-level system while preserving Refuge oversight, compatibility

responsibilities, and the ability to seek corrective action when resource concerns are identified.

Why is this use being proposed or reevaluated?

Grazing and Haying at Malheur NWR was previously determined to be compatible (USFWS 2013). This use is being reevaluated due to the 10-year renewal period ending This use is being reevaluated for renewal in accordance with the U.S. Fish and Wildlife Service policy (603 FW 2.11 H).

The continued purpose and intent of this use as a management tool has been used in the past at Malheur NWR and will be used in the future as tools to provide optimum conditions for wildlife (specifically, foraging areas for waterfowl, waterbirds, and shorebirds; pairing habitat for waterfowl; nesting habitat for shorebirds; and nesting habitat for certain passerines) and, where possible, to improve biological integrity (native plant diversity; hereafter, restoration) in Refuge plant communities.

Availability of Resources

To comply with the Refuge Recreation Act (Public Law 87-714), the Project Leader must determine whether sufficient resources—financial, staffing, facilities, or other infrastructure—are available to support the proposed use without materially interfering with the refuge purpose(s) or the mission of the National Wildlife Refuge System. This determination should be informed by a review of current capacity and, where applicable, the refuge’s Comprehensive Conservation Plan (CCP).

Assessment of current resources and capacity

The haying and grazing CAA program contributes to achieving Refuge purposes and goals as identified in the CCP and the Refuge System mission by providing valuable foraging, resting, pairing, nesting, and brood-rearing areas and conditions for the sandhill crane, bobolink, cinnamon teal, and other meadow-dependent species. It also contributes by economically providing weed control and other habitat maintenance functions that are not feasible for limited Refuge staff to accomplish. Grazing and haying are desirable means of maintaining this type of habitat because its area is too large for annual prescribed burning and repeated mowing of the meadows is beyond the capability of the Refuge staff.

Table 1. Costs to Administer and Manage Haying and Grazing

Category and Itemization	One-time Cost	Recurring Annual Expenses
Staff time (LE, administration, and management)	\$0	\$35,000
Maintenance (fence, troughs, wells, etc.)	--	\$40,000

Monitoring	--	\$10,000
Total one-time expenses	\$0	
Offsetting revenues	-\$0	-\$334,000
Total expenses	\$0	-\$160,000

Grazing and Haying occurs through the use of existing staff, funding, equipment, and facilities (Table 1). Existing resources such as monitoring are made possible through extensive help of staff, volunteers, and partners.

Refuge staff are needed to administer activities such as permit review, monitoring, law enforcement, as well as to ensure that the stipulations are met, and to monitor and evaluate impacts of the refuge use. We estimate that these functions require fifty percent of one FTE and ten percent of three FTEs. The refuge typically supports twenty meetings annually at an estimated recurring cost of \$2,000 for the annual review and creation of annual Special Use Permits that fall under Cooperative Agriculture Agreements.

Impacts of changes to resources and capacity

The availability of resources is subject to change and the level of use provided may vary based on current staffing, partner support, funding, or infrastructure conditions. Costs may increase over time, in relation to changes in the costs for equipment, maintaining facilities, etc. A substantial increase to the number of requests may also create the need for additional resources to administer the use. The Project Leader will use sound professional judgment in evaluating whether the refuge or its partners can develop, operate, and maintain the use in a compatible manner.

For other refuge uses, if resource conditions shift such that the refuge can no longer sustain the use in a compatible manner, the Project Leader may modify or suspend the use pursuant to 50 CFR 25.21 (or 50 CFR 36.42 for Alaska). The public will be notified of any changes to refuge uses, including temporary modification or suspension, re-evaluation of compatibility and/or discontinuing of refuge uses.

Anticipated Impacts of the Use

Potential impacts of a proposed use on the refuge's purpose(s) and the Refuge System mission

This Haying and Grazing CD is a renewal of the original expired CD analyzed in the Malheur National Wildlife Refuge CCP/EIS and ROD. This CD continues to comply with the existing CCP's goals and objectives for the refuge's purpose and mission to

provide valuable wildlife habitat.

The effects and impacts of the proposed use to refuge resources, whether adverse or beneficial, are those that are reasonably foreseeable and have a reasonably close causal relationship to the proposed use. This CD includes the written analyses of the environmental consequences on a resource only when the impacts on that resource could be more than negligible and therefore considered an “affected resource” (see Table 2).

Table 2. Potential for Adverse or Beneficial Impacts from the Proposed Use

Resources	Not Applicable: Resource does not exist in project area	No/Negligible Impacts: Exists but no or negligible impacts	More than Negligible Impacts: Impacts analyzed in this CD
Wildlife and Aquatic Species			X
Threatened and Endangered Species (T&E) and Other Special Status Species (SSS)	X (T&E)		X (SSS)
Habitat and Vegetation (including veg. of special management concern)			X
Geology and Soils			X
Air Quality		X	
Water Quality		X	
Floodplains		X	
Wilderness	X		
Visitor Use and Experience		X	
Cultural Resources			X
Refuge Management and Operations			X
Socioeconomics			X

Air quality, water quality, floodplains, and visitor use and experience will not be more than negligibly impacted by the action and have been dismissed from further analyses.

Short-term impacts

Refuge Meadows: Short-term impacts that occur on annual basis begin August 10 are mowing, raking, and baling of hay on the designated fields for this use, and completed with all equipment and bales removed by October 10. Short-term impacts are analyzed for each resource with more than negligible impacts.

Wildlife and Aquatic Species and Special Status Species

Displacement of terrestrial wildlife can be temporary, and species may move to non-treated wet meadow and/or other habitats during this time when noise producing equipment such as tractors, swather or rotary mowers, rakes, and other potential equipment may cause localized disturbance to wildlife during this period of use. Adjacent non-treated habitats provide sanctuary during the treatment of each field. No Aquatic Species are impacted in refuge meadows because at time of treatment these areas are dry.

Potential for injury is based on Malheur data for greater sandhill cranes, 75 percent of crane chicks are fledged by August 10. The remaining 25 percent unfledged chicks (typically five chicks per year) are vulnerable to haying mortality. Haying attracts coyotes and other predators, and unfledged chicks around hayed fields tend to be taken by predators (Ivey 2011). For other wildlife species there will be negative impacts to some small mammals, reptiles, and amphibians. Not only are these species subject to mortality from machinery, but the conversion of tall pasture grasses to mowed grasses results in temporary habitat loss. However, at any one time, approximately 40 percent of the wet meadow habitat will be in an idle (untreated) condition, which allows for habitat use by species dependent on this condition.

In general, use of equipment will occur in late summer to early fall and thus occurs outside of the sensitive breeding period for wildlife species. In addition, most of the areas that will be accessed with equipment would be dry at this time of year, with reduced wildlife densities. Therefore, there would be negligible impacts to wildlife populations.

Habitat and Vegetation

Above ground biomass and cover is temporarily altered by removal of standing vegetation. Fall precipitation can lead to plant regrowth in treated wet meadows providing high quality forage for wildlife and a slight increase in cover. This short-term effect results in more long-term impacts to habitat quality and vegetation composition analyzed in the section below.

Therefore, there would be negligible impacts to habitat and vegetation.

Geology and Soils, and Cultural

Equipment used are equipped with large, inflated tires that reduce soil compaction and rarely impact soils throughout the treatment area. Most evident impacts (long-term) are localized entry and exit points to the treatment areas, which make up an

insignificant fraction of soils and habitat, <0.10-acre impact per treated field (50 fields of wet meadow designated for use = 5 acres impacted).

Cultural sites are avoided by either equipment using designated access areas where concentrated travel occurs such as dirt roads and levees, wet meadows have none to limited sites, and machinery used for mowing and baling have minimal impacts similar to the discussion on soil compaction.

With mitigation measures and type of equipment used impacts are negligible.

BLM Upland Grazing Allotment

Potential short-term impacts of grazing depend heavily on timing, location, and whether livestock use is kept within utilization thresholds. In the short term, grazing can provide benefits by reducing fine fuels and standing dead vegetation, especially in annual grass or crested wheatgrass areas, which can lower wildfire risk, reduce annual grass dominance, and improve conditions for native vegetation over time. Early-season or targeted use can also help direct grazing pressure toward more grazing-tolerant vegetation and away from periods when native perennial grasses are most vulnerable.

If grazing is not carefully managed. Short-term impacts could include temporary reductions in herbaceous cover, risk of overuse of native perennial grasses and forbs, trampling of riparian vegetation and streambanks, and disturbance to wildlife habitat, including sage-grouse habitat and redband trout spawning or rearing areas. Livestock concentrating in riparian areas could lead to increased bank alteration, reduced stubble height, and localized habitat degradation if cattle remain too long in sensitive pastures or creek corridors. The BLM will rely on thresholds, rotation, fencing, controlled access, and monitoring-based adjustments to keep these short-term effects from becoming more persistent resource damage.

Long-term impacts

Refuge Meadows:

Wildlife and Aquatic Species and Special Status Species

Aquatic species are not present on wet meadows during the Hay Only and RBG treatments when the fields are dry from August 10 through January 31, and therefore no long-term adverse effects would occur for these populations. If GSG were used in wet meadow habitat, the treatment area would need to be dried before livestock use, resulting in conditions similar to RBG meadow treatment. Dry meadow GSG would not require dewatering and would be prescribed to ultimately maintain Objective 4d vegetation and litter characteristics (CCP 2-36 & 37). As for water quality concerns in the Blitzen River from Page Springs Dam to Sodhouse Dam, that could be influenced by livestock manure left in the RBG use areas the previous CD measured *E. coli* and found that total concentrations were well below the state standard not to be exceeded of 126 organisms per 100 mL (CCP B-100, Mayer et al. 2007). The study also

examined nutrient loading for irrigated wet meadow areas. Based on the Westside P Ranch area examined in the study, the authors concluded that return flows from seasonally flooded wet meadow habitat contribute to phosphorus concentrations in the river, and possibly to nitrogen. However, the study authors did not identify cattle as the source of this nutrient loading. It could result from the wetting/drying cycle and/or the prevalence of thousands of defecating waterbirds and waterfowl associated with these wetlands. Current information shows that long-term impacts to water quality would be negligible.

Wildlife and Special Status Species that readily use wet meadow habitats rely on the diverse plant community described in Objective 4a (CCP 2-30: USFWS 2013). Wet meadow habitat associated with HO and RBG provides important benefits to migratory birds within the Pacific Flyway and to invertebrate pollinators. These habitats support spring foraging during migration and provide breeding habitat, including pairing, nesting, and brood-rearing areas (David and Ivy 1995, Rule et al. 1990, Eldridge and Krapu 1988, Eldridge 1992, Epperson et al. 1999, Donnelly et al. 2024). Dry meadow habitat provides nesting cover for migratory birds, including cinnamon teal, northern pintail, and savannah sparrow, and supports a diverse assemblage of other species; GSG in this habitat would be prescribed to achieve and maintain Objective 4d characteristics, including native grass and residual litter cover (CCP 2-36 & 37). Wildlife species analyzed further are MNWR focal species for these habitat types, special status-species, and candidate species for listing.

Greater Sandhill Cranes are a focal species for MNWR and are members of the Central Valley Population and their management needs are addressed in a Pacific Flyway plan (Pacific Flyway Council 1997). They are also identified as a priority species in the Intermountain West Waterbird Conservation Plan (Ivey and Herziger 2006). Malheur Refuge supports a significant portion of Oregon's population of breeding greater sandhill cranes, with over 20 percent of the state's pairs found there during surveys in 1999 (Ivey and Herziger 2000). Three essential ingredients for a crane nesting territory were outlined by Littlefield and Ryder (1968); a feeding meadow "wet," nesting cover, and water. Territories averaged 43 acres at Malheur Refuge and contained irrigated meadow for feeding and flooded marsh cover for nesting. An ideal territory contains a shallow marsh with residual emergent vegetation in close proximity to foraging meadows (Littlefield and Ryder 1968, Donnelly et al. 2024).

Feeding cranes prefer mowed meadow habitats when compared with unmowed (Littlefield 1975). These intensive treatments remove ground cover, allowing solar radiation to warm the soil, causing earlier green-up of vegetation and earlier invertebrate availability (Epperson et al. 1999; Rule et al. 1990).

A study was conducted at Ash Creek Wildlife Area in California, where habitat is similar to the Blitzen Valley's (Epperson et al. 1999). That study compared bird use on

hayed (previous summer) versus idle plots and documented significantly higher numbers of individuals and species of birds as well as significantly higher numbers of sandhill cranes on hayed plots during June and July. The study also reported that cranes in hayed plots spent significantly more time foraging and less time in vigilant behaviors as haying likely increased their ability to see approaching predators. They reported that because vegetation was less dense in the hayed plots, travel, foraging, and vigilance by cranes would be more efficient and the reduced litter and vegetation cover enhanced the ability of cranes to find and capture prey, supporting the idea that providing short-stubble habitat benefits cranes and other wildlife foraging.

These findings and refuge observations confirm that HO and RBG uses are a more than negligible beneficial long-term impact for this species.

Bobolink are identified as a SSS for Oregon, focal species for both MNWR and the Partners in Flight conservation plan for eastern Oregon and Washington (Altman and Holmes 2000). Malheur Refuge supports the largest local breeding population in the western United States. Bobolinks are a wet meadow-dependent landbird species and tend to nest in intermediate-height herbaceous meadow vegetation.

Malheur Refuge bobolink populations were monitored annually from 1984 to 1998 (Malheur Refuge, unpublished data). A preliminary review of the data indicates that bobolinks select treated wet meadows in suitable areas of the Refuge with a high composition of forbs such as cinquefoils and clovers. Such fields that were placed in idle status were abandoned by bobolinks, and the data suggest that they respond positively to haying and grazing (dormant season). Other studies have found similar relationships to increased Bobolink use of haying treatments of wet meadows and hayland than those habitats left idle (Dale et al. 1997, Dechant et al. 1999, Dechant et al. 2003, Renfrew and Ridic 2001).

These findings and refuge observations confirm that HO and RBG uses are a more than negligible beneficial long-term impact for this species.

Shore birds – American avocet, Black-necked stilt, white-faced ibis, Wilson's phalarope, and Wilson's snipe readily use wet meadow habitats for either breeding, foraging, or both (CCP B-87, 88, 89, and 90). The short structure of treated meadows is attractive to nesting shorebirds such as Wilson's snipe, Wilson's phalarope, American avocet, and black-necked stilts. Most shorebird species select very short cover or barren sites for nesting (Eldridge 1992).

Studies have found high densities of nesting shorebirds when wet meadow habitats were grazed by livestock, mowed, or burned (Foster 1985, Eldridge 1992, Helmers 1992). These authors recommend using livestock grazing or mowing to enhance attractiveness of that vegetation type to nesting shorebirds.

HO and RBG would have more than negligible beneficial long-term impact for shore birds mentioned for breeding and foraging habitat.

GSG would target reed canarygrass monocultures and would likely have a negligible impact to these species.

Western Monarch Butterfly is a Special Status Species for Oregon and a candidate for listing under the Endangered Species Act. MNWR supports a small population of this species with minimal breeding habitat approximately 2 acres of cumulative showy milkweed (143 patches identified and measured), but there are large acreages of foraging habitat during spring/summer and fall migration. Wet meadow habitats are important source of nectar producing forbs for monarchs during their spring migration and their observed arrival date in the month of June. MNWR breeding population surveys, three years conducted 2015, 2021 & 2023, found larvae counts averaged 30 individuals and adults averaged 14.

HO, RBG, and GSG would have negligible impacts to breeding monarchs because most milkweed patches occur on levees adjacent to canals and the Blitzen River and are unaffected by grazing and haying treatments.

HO, RBG, and GSG would have negligible impacts to spring and summer foraging, nectar-producing forbs because HO and RBG occur following wet meadow bloom; wet meadow GSG occurs in reed canarygrass monocultures; and dry meadow GSG would be prescribed to attain and maintain native grass and litter objectives and minimize invasive plants

The monarch can be used as an umbrella species for the use types and impacts would also be negligible as described above.

BLM Allotment Upland Grazing:

Long-term adverse impacts can occur if grazing pressure is poorly timed, concentrated, or not adjusted when standards are not being met. In that circumstance, repeated overuse could reduce vigor and abundance of native perennial bunchgrasses, favor invasive annuals such as cheatgrass, degrade riparian vegetation, increase streambank instability, and diminish habitat quality for species such as redband trout and sage-grouse.

Long-term concerns include loss of residual cover, simplified plant communities, continued livestock attraction to sensitive riparian areas, and cumulative habitat degradation if monitoring and corrective actions are not effective. The BLM relies on adaptive management, utilization and riparian thresholds, pasture rotation, fencing, and controlled access to avoid those longer-term negative outcomes and steer grazing toward a net protective or restorative effect over time.

Habitat and Vegetation

The desired condition for habitat and vegetation are outlined in the CCP, which has a specific habitat goal and objective for wet meadows (CCP 2-30, 31, and 32, USFWS 2013).

Goal 4. Enhance, protect, and/or maintain primary habitats essential to the conservation of a diversity of aquatic and terrestrial wildlife species.

Objective 4a. Palustrine Emergent (seasonally flooded wet meadow). Key indicators for the desired function and health of a wet meadow are: >75% cover of perennial grasses, rushes, and sedges; 15% - 20% cover of forbs such as lupine, clover, and cinquefoil; <20% cover of reed canarygrass; <5% cover of noxious weeds....

Dormant season HO and RBG will be used to meet desired wet meadow characteristics of wet meadows across the Refuge as specified in Objective 4a, including grass, sedge, and rush stubble heights of less than 6 inches by October 1 (CCP 2-30). HO and RBG treatments during this time also play a vital role in maintaining site vigor by preventing excessive litter accumulation from hindering plant species diversity and expression (Foster and Gross 1998; Xiong et al. 2003). Plant species composition and the response of those species to site-specific conditions that may change annually due to climate or Refuge management strongly influence biomass production and subsequent litter production. RBG and HO treatments will be adjusted spatially each year to account for these dynamics according to information gleaned from inventory and monitoring efforts. In contrast, dry meadow Objective 4d calls for at least 20% residual litter and generally infrequent disturbance at five- to ten-year intervals; and GSG in dry meadow habitat will be prescribed to achieve this objective in the long-term as invasive grass monocultures are addressed (e.g., smooth brome).

A MNWR wet meadow monitoring study conducted by Dustin D. Johnson, Professor, OSU-EORAC, for Objective 4a compared treated and non-treated sites over 8 years (2013-2020). Findings showed that treated and non-treated were similar for grass, rush, and sedge cover and met the >75 cover of perennial grasses, rushes, and sedges objective; forbs met or exceeded the cover objective for both treatments and was at or below objective for non-treated; invasive forbs met objective in both treatments but exceeded the <5% target in all non-treated sites. Johnson states "Habitat structure, as expressed through % live biomass, was greatly maintained or enhanced in treatment areas as opposed to exclosures."

The timing of dormant season HO and RBG treatments would have a more than negligible beneficial long-term impact on habitat and vegetation through the expression of new growth, nutrition, and forb abundance for wildlife species.

GSG and GSHO are treatments designed to target areas that no longer meet desirable meadow objectives. In wet meadows, these treatments target areas that have transitioned to reed canarygrass and no longer meet Objective 4a (CCP 2-30). GSG may also target dry meadows that have transitioned to smooth brome and no longer meet Objective 4d characteristics (CCP 2-36 & 37). Treatments will typically occur from April through August but may extend past the period of senescence depending on site-specific objectives. Manipulation of vegetation during the growing season can have a negative effect on wildlife through disturbance, displacement, and nest destruction. Littlefield (1989) documented sandhill crane nest desertion and trampling with spring and summer grazing. Therefore, growing season treatments will be pursued only when the need for a shift in vegetative community attributes or structural heterogeneity is necessary within a particular unit to meet overall long-term wet or dry meadow habitat objectives.

A current preliminary MNWR study funded through OWEB and partnered with Oregon Bird Alliance and Wet Meadow Partners is looking at reed canarygrass monocultures and bird and macroinvertebrate response to cover and height of this invasive grass. The ideal is to then morph this study into a growing season treatment protocol to help inform management actions and wildlife response.

Treatments occurring only in reed canarygrass monocultures will likely have more than negligible beneficial long-term impact to habitat and vegetation.

Geology and Soils

Soils play a critical role in the management of wildlife habitat because they provide the substrate by which plant communities express themselves. Consideration of soil resources is not only important to produce vegetation, but also to meet water quality and geomorphic objectives as well. Concerns related to soil resources relative to the use of grazing and haying include the potential for increased erosion, compaction, and/or changes in fertility.

Within the Refuge's wet meadows, two soils dominate the areas targeted for haying, RBG, or GSG. The Skidoosprings series consists of sandy loam within 11 inches of the soil surface, while the Fury series consists of silty-clay loam within the top 10 inches. More attention is merited for the Fury series because of its finer texture class that are more vulnerable to an increase of bulk density that is often caused by compaction. However, typical of mollisols, these wet meadow soils are high in organic matter content and host plant species with high root length density (RLD) and biomass. This organic horizon of the soil profile is much more resilient and resistant to compaction (Wheeler et al. 2002). Before GSG is authorized in dry meadow habitat, site-specific soil texture, moisture, and susceptibility to compaction will be considered together with Objective 4d vegetation and litter requirements (CCP 2-36 & 37).

Long-term impacts considered to have the potential for more than negligible adverse effects are the relationship between soils and RBG/GSG treatments that could increase bulk density caused by compaction. The way soils respond to the presence of livestock depends on the following prevailing factors: soil texture, on-site soil conditions (wet versus dry, frozen versus thawed), and plant community type (e.g., sedges versus bunchgrasses).

RBG occurs during the fall and winter months when soils are dry and often frozen limiting physical compaction of soils under this use. Vegetation in these treatment areas are comprised of plant communities dominated by rhizomatous sedges and grasses with a developed organic layer and research has found minimal impacts soils and rapid recovery if compaction does occur (Wheeler et al. 2002). This use would have negligible long-term impact.

GSG that has not been used on the Refuge for two or more decades, with the exception of the current pilot study. In wet and dry meadows, it is proposed primarily where habitat has transitioned to reed canarygrass and smooth brome, respectively. Monitoring or research for this use and its probable impacts on the MNWR physical environment are limited. A literature review of livestock effects on wet montane meadows in the Sierra Nevada found more than negligible adverse impacts from compaction and increased bulk density (Vernon et al. 2022). That physical environment is not directly comparable to MNWR wet or dry meadows, making it difficult to predict impacts, especially in reed canarygrass-dominated wet meadows. Monitoring compaction and bulk density will be important if GSG is implemented. Site-specific prescriptions will avoid use when soils are vulnerable to damage. With these measures, long-term impacts are expected to be negligible.

Cultural Resources

MNWR Goal 10 – Manage prehistoric and historic cultural resources for their educational, scientific, and cultural values for the benefit of present and future generations of refuge users and for the communities that are connected to these resources (CCP 2-57); Goal 11 – Identify and protect prehistoric and historic resources on the Refuge that are eligible for or listed on the National Register of Historic Places (CCP 2-59).

MNWR is rich in cultural resources and surveys conducted have identified hundreds of sites throughout the refuge. Sites of concern in relation to treatment areas are predominately found on upland habitats adjacent to wet meadow habitats such as sagebrush lowland, salt desert scrub, and sagebrush steppe.

Long-term impacts are considered to have more than negligible adverse impacts that

can occur under the RBG and GSG use types. Site damage is caused by cattle hoof impact through trampling and hoof shear. This can damage sites by breaking and crushing artifacts or rubbing up against petroglyphs.

Refuge mitigation measures are to protect these sites in areas designated for RBG and GSG uses where fences are designed to exclude cattle but still provide safe movement for wildlife. Fence design and layout either encompass the entirety of the wet meadow used for each use (most cases) or an enclosure protecting sites. Mitigation measures change this impact to negligible.

Refuge Management and Operations

The refuge administers the CAAs authorized under 50 CFR 29.2 and establishes the standard operating procedures (SOPs) for each use type. These agreements will allow Refuge staff and permittees to effectively work together to meet habitat objectives (e.g., feeder ditch maintenance, noxious weed management).

CAAs for dormant season treatments will be 5 years in duration. CAAs for growing season treatments will be 1 year in duration.

Fees for all use types will be by tonnage and AUMs and fees will be utilized to fund (1) noxious weed management (2) third-party entities that will be active in Refuge land management research, inventory, and monitoring and (3) infrastructure for irrigation, fence, and livestock water.

The resources and working relations gained are more than a negligible beneficial long-term impact for MNWR management of habitat and wildlife.

Socioeconomics

Under the CAA, twelve were issued to local ranch families in Harney Co. Cumulatively the permittees harvest approximately 40,000 Animal Unit Months (AUMs) from the designated use areas on MNWR each year. These AUMs can be translated to the amount of jobs/employment of the local area and other revenues to the local economy of Harney Co. This analysis is based on estimates generated by Bureau of Land Management's Jarbridge RMP/EIS (BLM 2014) and Bridge Creek EIS (2024) where each AUM for total ranch production of a grazing system (private and public lands), generates 0.00407 jobs and \$68.92 in labor earnings. As a result, the 40,000 AUMs could be expected to generate 160 jobs and \$2,756,800 in labor earnings (2020 dollars). Jobs and revenue benefit each ranching operation, local businesses such as Big R, non-profit such as High Desert Partnership, research such as Oregon State University, county such as Weed Control and Cooperative Weed Management Area, contractors such as fence and heavy equipment, and other.

Resources generated through this program provide MNWR funds to address threats

to wildlife habitat by supporting invasive weed treatments, research, monitoring, and maintain operations. These actions are necessary for long-term sustainable management of our goals and objectives for wildlife and habitat and maintaining professional relationships with our constituents. This value is more than negligible beneficial long-term impact to MNWR.

Public Review and Comment

The draft compatibility determination will be available for public review and comment for 14 days. The State of Oregon and Burn Paiute Tribe have been asked directly to review and comment on the draft compatibility determination. The public will be made aware of this comment opportunity through the Refuge website and social media. A hard copy of this document will be posted at the Refuge Headquarters at 36391 Sodhouse Lane Princeton, OR 97721. It will be made available electronically on the refuge website <https://www.fws.gov/refuge/malheur>. Please let us know if you need the documents in an alternative format. Concerns expressed during the public comment period will be addressed in the final determination.

Determination

Is the use compatible?

Yes

Stipulations Necessary to Ensure Compatibility

Adaptive Management and Monitoring

- Grazing use on refuge lands shall operate under an adaptive management framework tied to measurable ecological objectives and annual monitoring results.
- Grazing prescriptions, timing, livestock numbers, pasture rotations, and duration of use shall be modified annually as needed to meet refuge habitat objectives.
- Refuge staff shall retain authority to reduce or suspend grazing use if monitoring indicates unacceptable impacts to refuge resources.
- Monitoring shall include utilization, stubble height, streambank alteration, riparian condition, native vegetation response, invasive species response, sage-grouse habitat conditions, and wildlife habitat indicators.

Riparian and Wetland Protection

- Livestock shall be excluded from riparian areas, springs, wet meadows, and restoration areas where grazing is incompatible with refuge objectives.

- Water gaps, crossings, and trailing routes shall be limited to designated locations and managed to minimize bank trampling, sedimentation, and degradation of aquatic habitat.
- Refuge staff may require immediate livestock removal when riparian standards are not being achieved or when wet soil conditions increase damage risk.

Wildlife Protection

- Grazing operations shall avoid or minimize disturbance during critical nesting, brood-rearing, fawning, and migration periods where needed to meet refuge wildlife objectives except where targeted, site-specific invasive species management is occurring.
- Grazing management shall maintain habitat conditions suitable for migratory birds, native fish, sage-grouse, and other trust species.
- Supplemental feeding shall not occur in areas where it would concentrate livestock and increase trampling, weed spread, disease risk, or wildlife displacement.
- Refuge lands shall not be used in a manner that increases risks to special status species or sensitive habitats.

Invasive Species and Ecological Health

- Livestock use shall not contribute to spread of noxious weeds or invasive plant species.
- Permittees shall cooperate in invasive species prevention measures, including cleaning equipment, livestock quarantines, and using approved weed-free feed where required.

Infrastructure and Developments

- Any fences, troughs, pipelines, water developments, or range improvements on refuge lands must be approved by the Refuge Manager and designed to minimize impacts to refuge resources and wilderness characteristics.
- New structural developments shall only occur where clearly necessary to achieve ecological objectives and where less intrusive alternatives are not feasible.

Justification

The stipulations outlined in Figure 1 would help ensure that the use is compatible at Malheur National Wildlife Refuge. Grazing and Haying, as outlined in this compatibility determination, would not conflict with the national policy to maintain the biological diversity, integrity, and environmental health of the refuge. Based on available science and best professional judgement, the Service has determined that the Haying and Grazing at Malheur National Wildlife Refuge, in accordance with the stipulations provided here, would not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purpose of the

Malheur National Wildlife Refuge. Rather, appropriate and compatible Hay and Grazing would be the use of the Malheur National Wildlife Refuge through which the public can develop an appreciation for wildlife and wild lands.

Signature of Determination

Refuge Manager Signature and Date

Signature of Concurrence

Assistant Regional Director Signature and Date

Mandatory Reevaluation Date

2036

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Figure(s)

Figure 1. Special Use Permit (SUP) Special Conditions

Appendix 1

SPECIAL USE PERMIT (SUP) SPECIAL CONDITIONS COOPERATIVE AGRICULTURAL AGREEMENT (CAA) HAYING AND RAKE-BUNCH GRAZING

Conditions Applying to Haying:

1. Hay cutting may begin no earlier than August 10. Baled hay (including broken bales) **must** be removed from the Refuge by October 10. If any broken bales remain in the field after this date, a separate invoice will be issued (*\$200.00 penalty fee will apply in addition to calculated average bale weight for the number of broken bales remaining multiplied by the annual cost rate per ton of hay*).
2. All haying operations (mowing and raking, baling, bale loading, and transportation) **must** be conducted from dawn to dusk to reduce wildlife mortality. Night baling and/or treatment windows (e.g., baling prior to 1:00 pm) may apply under wildfire conditions and directed by Refuge personnel.
3. All haying equipment used in haying operations, except swathers and other mowing equipment, are required to have USDA Forest Service approved spark arresters (exhaust driven turbochargers are exempt), and all haying equipment (including swathers and other mowing equipment) **must** have a #5 type ABC fire extinguisher.
4. All cut hay **must** be baled. Loose hay may not be stacked on the Refuge.
5. Hay harvested on the Refuge is for the Cooperators use only and **may not** be sold, traded, nor used as a bartering item by the Cooperator.
6. Cooperator **must** cut emergent vegetation (e.g., cattail) at least one header width (at least 14 feet) in each treated field where encroachment into wet meadows is occurring or as specified in the Annual Operating Plan. Cut emergent vegetation is not required to be baled and removed.
7. A 20-foot buffer **must** be left when swathing adjacent to uplands except as otherwise directed by Refuge personnel.

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8. Cooperator **must** clean all haying equipment before entering the Refuge and departing each meadow unit to prevent the spread of invasive plants. Mobile pressure washers will be provided by the Refuge.
9. Cooperator **must** give Refuge personnel an advance notice before removing haying equipment from each treated field to enable for assessment of field by Refuge personnel.
10. Cooperator (including hired contractors) is responsible for any damage caused to Refuge lands and infrastructure.
11. Cooperator **must** maintain a clean worksite (e.g., equipment staging area).
12. Cooperator is responsible for the immediate cleanup of any type of spills (e.g., gas, diesel, oil), regardless of the quantity involved. Spills **must** be reported to Refuge personnel immediately. Cooperator **must** follow all State and Federal regulations for spills meeting reporting requirements.
13. A representative sample of 5% of the hay baled **must** be weighed for each treated field. Bale counts **must** be given to Refuge personnel prior to removing hay from the field.
14. All personal property **must** be removed from the Refuge by October 31.

Conditions Applying to Rake-Bunch Grazing:

1. All special conditions for haying are incorporated by reference and included as special conditions for rake-bunch grazing.
2. The rake-bunch grazing period is September 1 through January 31. Cattle **must** be removed earlier than January 31 when rake-bunch hay is fully consumed. If any unauthorized cattle remain on the Refuge after January 31, a separate invoice will be issued *(based on number of cattle, not AUMs, still present per day multiplied by \$3.00)*.
3. All hay in rake-bunch graze units **must** be rake-bunched unless a specific waiver is granted by Refuge personnel (e.g., no raking).
4. Fences, H-braces, and gates **must** be inspected by the Cooperator before cattle are turned into rake-bunch graze units. Cooperator is required to perform routine maintenance

Appendix 1

(normal wear and tear) based on Refuge specifications on all fences bordering the unit including electric fences. All fencing material will be provided by the Refuge. The labor required for installing and maintaining field fences (permanent or electric) is a condition of the CAA.

5. It is the responsibility of the Cooperator to provide at least 14-day advance notice to Refuge personnel to ensure that water will be available before cattle are turned in.
6. Cooperator **must** provide to Refuge personnel all cattle brands (include any waddles or ear notches) used. Cattle not bearing recorded brands will be considered as trespass and will need to be removed by the Cooperator. If listed brands are not registered to the Cooperator in the Oregon Brand Book, proof of ownership will need to be provided before cattle are turned in.
7. Subleasing of Refuge rake-bunch grazing units is not permitted.
8. Random cattle count and/or brand inspections may be conducted and recorded by Refuge personnel in fields to ensure the accurate reporting of cattle numbers.
9. Cooperator **must** comply with the livestock regulations of the State of Oregon relating to health and sanitation requirements.
10. Cooperator **must** check cattle on a regular basis. The Refuge is not responsible for the welfare of cattle or water is available.
11. Stock water well pumps are operated at the Cooperator expense from August 1 - January 31. Refuge personnel are responsible for turning the breaker switch on/off to operate the stock water well pumps for the rake-bunch grazing period.
12. Hay cannot be fed to cattle on the Refuge unless authorized by Refuge personnel for the purpose of invasive plants prevention.
13. All supplements **must** be moved at least 100 yards from the nearest road, stream bank, or watering area, moved 100 yards every four weeks during the grazing season, and placed in cattail patches (when available) to reduce impacts to meadow areas. All supplement containers **must** be removed from the Refuge no later than two weeks after cattle are removed.

Appendix 1

14. All cattle carcasses **must** be moved to non-hayed areas that are out of the public's view and no closer than 100 feet to a waterway or ditch.
15. Off-road vehicle use is authorized only for cattle management purposes. Dogs may be used for cattle management purposes but **must** always be in the presence of the Cooperator and kept under control.
16. Trailing of cattle **must** be determined prior to cattle being turned in. Detailed routes and associated conditions will be included in the Annual Operating Plan.
17. Corrals facilitating cattle movement on-and off-Refuge (Diamond and Nine-Mile) are also used by BLM permittees on neighboring BLM allotments. The Refuge is not responsible for maintenance/coordination of improvements and repairs on related infrastructure.
18. Trespass cattle are to be removed within three (3) days of notification. If trespass cattle are determined to be a public safety hazard (cattle or on a public highway) or a hazard to Refuge operations, the Cooperator will be required to remove the cattle within 12 hours.