MEMORANDUM OF AGREEMENT REGARDING THE MANAGEMENT AND ALLOCATION OF DISCRETIONARY MORTALITY OF GRIZZLY BEARS IN THE GREATER YELLOWSTONE ECOSYSTEM

Among

Wyoming Game and Fish Commission, Wyoming Game and Fish Department, Montana Fish and Wildlife Commission, Montana Fish, Wildlife and Parks, Idaho Fish and Game Commission, and Idaho Department of Fish and Game

This Memorandum of Agreement (MOA) is made and entered into by and among the Wyoming Game and Fish Commission and the Wyoming Game and Fish Department (collectively WGFD), the Montana Fish and Wildlife Commission and Montana Fish, Wildlife and Parks (collectively MFWP), and the Idaho Fish and Game Commission and the Idaho Department of Fish and Game (collectively IDFG), collectively referred to as the Parties.

I. Purpose

The purpose of this MOA is to define the process by which the Parties will coordinate the management and allocation of discretionary mortality of grizzly bears in the Greater Yellowstone Ecosystem (GYE). The Parties enter into this MOA in support of the re-designation of the Distinct Population Segment (DPS) of GYE grizzly bears and delisting of this DPS under the federal Endangered Species Act. The Parties intend this MOA to be consistent with the 2007 interagency *Final Conservation Strategy for the Grizzly Bear in the Greater Yellowstone Area* (Strategy) and individual state management plans, and with revisions to these documents made in conjunction with the delisting process.

II. Background

The Interagency Conservation Strategy Team, with the participation of the Parties and various federal agencies, developed the Strategy to implement regulatory mechanisms, interagency cooperation, and population and habitat management and monitoring, and other actions to ensure continued recovery of the GYE grizzly bear. The Strategy was subject to public comment and scientific peer review. The Strategy's key mechanisms for maintaining a recovered GYE grizzly population are its population and habitat standards, which are based on the recovery criteria originally set forth in the USFWS Recovery Plan. The Strategy incorporated the Parties' individual state management plans that have different, but compatible, management objectives. USFWS has published for public comment draft revisions to the Strategy. The signatories to the Strategy, including representatives of the Parties and federal agencies, will finalize revisions to the Strategy in conjunction with the delisting process.

On February 19, 2016, USFWS approved a draft Supplement to Demographic Recovery Criteria for obtaining public comment. For purposes of this MOA, the Parties assume adoption of the Demographic Monitoring Area (DMA) identified in the 2016 draft

Supplement as the geographic area used to monitor continued achievement of GYE population and distribution objectives. The Interagency Grizzly Bear Study Team (IGBST) and the Yellowstone Ecosystem Subcommittee (YES) of the Interagency Grizzly Bear Committee (IGBC) have recommended the use of the DMA for population monitoring, including mortality monitoring.

USFWS' draft 2016 Supplement would use a recovery criterion for a conservative total population size of at least 500 GYE bears. This minimum population size includes a conservative buffer in addition to the recommendation of Miller and Waits (2003) for a minimum population size of at least 400 bears to adequately mitigate the potential effects of genetic drift and inbreeding depression in light of the relative isolation of the GYE population. This draft 2016 recovery criterion would also reflect a goal of at least 48 females with cubs in the DMA. For purposes of this MOA, the Parties assume the conservative criterion for minimum population size and number of females with young will apply.

USFWS' draft 2016 Supplement would keep in place the conservative recovery criterion for female occupancy standards in the Primary Conservation Area (PCA). For purposes of this MOA, the Parties assume this conservative criterion will remain in place.

The demographics and vital rates of the GYE population have changed over time. USFWS' draft 2016 Supplement proposes a revision to mortality standards to reflect changes in these rates to ensure a total GYE population of at least 500 bears and to meet the occupancy standard for female bears. For purposes of this MOA, the Parties identified adjustable mortality rates (see Paragraph IV. 2) to manage human-caused mortality within the DMA to levels that will sustain a population range based on the 2002-2014 model-averaged Chao2 population estimate of 674 grizzly bears within the DMA (95% Confidence Interval = 600 to 747).

Adjustable mortality levels allow for higher or lower mortality rates and correspond to the upper and lower 95% confidence intervals of the 2002-2014 model-averaged Chao2 estimate. Adjustable mortality rates enable the Parties to address higher human-bear conflict levels that may occur when the bear population is well above the population recovery criterion. They also ensure the population stays above the recovery criterion of a minimum population size of 500 animals in the GYE. The Parties will review the population vital rates and demographics (compiled by IGBST) a minimum of every 5 years to recommend appropriate adjustments to mortality rates.

From 2002 to the present, the IGBST has used the Chao2 estimator and model averaging process to calculate population size on an annual basis. As the bear population has grown, the model-averaged Chao2 estimates have become increasingly conservative (i.e., prone to underestimation). The IGBST has also made population estimates more recently using a mark-resight based technique (IGBST Report, 2012). The mark-resight approach has no known density-associated bias, and should better reflect actual bear abundance; however, current implementation of the approach is less precise than Chao2 at tracking population trend. For purposes of this MOA, the Parties assume that USFWS will, as a matter of best

available science and appropriate conservatism, rely on the model-averaged Chao2 estimate for assessing the population size for at least the 5-year post-delisting monitoring period. The Parties recognize that methods for population estimation may change in the future as circumstances warrant and new methods are scientifically vetted and accepted.

III. Definitions

1. "Discretionary mortality" is the amount of human-caused grizzly bear mortality over which agencies have discretionary authority, such as management removals and regulated harvest.

2. "Non-Discretionary mortality" is documented loss over which agencies do not have discretionary authority, such as naturally occurring mortality or human-caused mortality such as illegal shootings, defense-of-human-life shootings, and vehicle collisions.

3. "Greater Yellowstone Ecosystem" (GYE) is defined as that portion of Idaho that is east of Interstate Highway 15 and north of U.S. Highway 30; that portion of Montana that is east of Interstate Highway 15 and south of Interstate Highway 90; that portion of Wyoming south of Interstate Highway 90, west of Interstate Highway 25, Wyoming State Highway 220, and U.S. Highway 287 south of Three Forks (at the 220 and 287 intersection), and north of Interstate Highway 80 and U.S. Highway 30. This definition of GYE was used in the 2007 USFWS rule to designate a distinct population segment (DPS) of grizzly bears under the Endangered Species Act, and to delist that DPS; in 2010 USFWS vacated this rule in response to a court decision. The Parties assume USFWS will re-designate a grizzly bear DPS for the GYE geographic area as defined herein.

4. "The Recovery Zone," also known as the "Primary Conservation Area" (PCA), is the area whose boundaries are approximately depicted on the map attached hereto as Attachment A; the Recovery Zone is divided into 18 Bear Management Units.

5. "Demographic Monitoring Area" (DMA) is the area that includes the Recovery Zone and an additional area surrounding the Recovery Zone, approximately 19,279 mi^2 in area and whose boundaries are depicted on the map attached hereto as Attachment A. The DMA is based on suitable habitat. The DMA is the area within which the GYE population is annually surveyed and estimated and within which the total mortality limits will apply.

6. "Chao2" is the population estimation technique currently used for the GYE population of Grizzly Bears.

IV. Responsibilities

1. The Parties will employ best science and adaptive management approaches to collectively manage grizzly bears within the GYE.

2. To achieve population criteria to support a recovered GYE grizzly bear population, the Parties will:

   a. Maintain a minimum population size of 500 bears within the DMA of the GYE.

      i. The Parties agree to manage the GYE grizzly bear population within the DMA, to at least within the 95% confidence intervals associated with the 2002-2014 long-term average grizzly bear population estimate calculated using the model-averaged Chao2 estimator (i.e., 600-747).

   b. Ensure that 16 of the 18 Bear Management Units within the PCA are occupied by at least one female with offspring over a six-year period, with no two adjacent Bear Management Units unoccupied over a six-year period.

   c. Ensure annual total mortality rates are not exceeded within the DMA for independent males, independent females and dependent young, as set forth in the following table, based on the 2002-2014 model-averaged Chao2 estimate for the total population with 95% confidence intervals (600-747). These adjustable mortality rates were calculated as those necessary to manage the population around the 2002-2014 Chao 2 modeled average ($\overline{X}$= 674; 95% CI = 600-747) which occurred during the time period when the population reached a biological carrying capacity.

	Total Grizzly Bear Population Estimate		
	≤674	675-747	>747
Total mortality rate for independent FEMALES.	<7.6%	9%	10%
Total mortality rate for independent MALES.	15%	20%	22%
Total mortality rate for dependent young.	<7.6%	9%	10%

      i. The Parties agree to achieve this criterion using an adaptive management framework that will include, but not be limited to, the following:

         - If the population is less than 600, the Parties will not allow discretionary mortality unless necessary to address human safety issues.
         - At any population level greater than 600, if total allowable independent male or female mortality is exceeded, the number exceeding the total allowable mortality will be subtracted from the next year's discretionary mortality available for harvest for that gender.

- If a state meets any of its allocated regulated harvest limits at any time of the year, the respective state will cease hunting within the DMA.
- If the total mortality limit for independent males, independent females, or dependent young is exceeded for three consecutive years and the annual population estimate falls below 612 (the lower bounds of the 90% confidence interval), the Parties will evaluate alternatives to reduce discretionary mortality and request IGBST biology and monitoring review. The Parties will consider the results of the IGBST review in determining appropriate changes to the management framework.
- If the distribution of reproductive females does not meet the criterion for Bear Management Unit occupancy, the Parties will request IGBST biology and monitoring review. The parties will consider the results of the IGBST review in determining appropriate changes to the management framework.

3. The Parties will support the IGBST in the annual monitoring of the GYE grizzly bear population.

4. a. The Parties will meet annually in the month of January to review population monitoring data supplied by IGBST and collectively establish discretionary mortality limits for regulated harvest for each jurisdiction (MT, ID, WY) in the DMA, so DMA thresholds are not exceeded, based upon the following allocation protocol.

   - Begin with DMA Chao2 total population estimate and estimates for independent males, independent females, and dependent young (demographic classes) for the previous calendar year, as reported by the IGBST.
   - Determine the maximum allowable mortality limit for each demographic class based on the mortality rates identified in the table above.
   - Determine total mortality during the previous calendar year for each demographic class.
   - Subtract the previous year's total mortality from the maximum allowable mortality limit for each demographic class. If the difference is negative (*i.e.*, a DMA annual mortality limit is exceeded for any of the three classes), the number of mortalities above the limit will be subtracted from the corresponding DMA discretionary mortality limit for that class for the current year.
   - Allocate discretionary mortality available for regulated harvest for independent males and females to each management jurisdiction as provided in the following table. The Parties may agree to adjust the allocation of discretionary mortality based on management objectives and spatial and temporal circumstances.

Management Jurisdiction*	**% of DMA outside NPS lands**
WY inside DMA	58%*
MT inside DMA	34%
ID inside DMA	8%

*Four percent (4%) of the DMA outside of National Park System lands in Wyoming is under the jurisdiction of the Joint Business Council of the Eastern Shoshone and Northern Arapaho Tribes of the Wind River Reservation.

b. The Parties will prohibit hunting of females accompanied by young, and young accompanied by females, and discretionary mortality of such animals will only occur for management removals.

c. Each party has discretion as to how it applies its allocation of discretionary mortality pursuant to its respective regulatory processes and management plan.

d. The Parties will coordinate with IGBST to review and make any appropriate adjustments to mortality rates at least every five years.

5. The Parties will confer with the National Park Service (NPS) and United States Forest Service (USFS) annually. The Parties will invite representatives of both GYE National Parks, the NPS regional office and GYE USFS Forest Supervisors to attend the annual meeting.

6. The Parties will monitor mortality throughout the year, and will communicate and coordinate with each other and with federal land management agencies as appropriate to minimize the likelihood of exceeding mortality limits.

7. Each party has discretion to manage grizzly bears within its jurisdiction of the GYE that are outside the DMA pursuant to its respective regulatory processes and state management plan.

8. Each party will designate one representative as a respective Point of Contact for purposes of achieving the objectives of this MOA.

V. Authorities and Regulatory Mechanisms

The Parties enter this MOA pursuant to their respective state authorities as set forth in Title 87 Montana Code Annotated, Title 23 Wyoming Statutes Annotated, and Title 36 Idaho Code.

The Parties have the authority, capability and biological data to implement appropriate hunting restrictions, management relocations and removals, and population management. The Parties will use their respective individual authorities to regulate discretionary mortality as allocated to their jurisdictions under this MOA. The Parties' respective regulatory mechanisms to manage, monitor, restrict, and adjust mortality include, but are not limited to, those identified in Attachment B.

This MOA in no way restricts the Parties from participating in similar activities with other states, agencies, tribes, local governments, or private entities.

VI. No Obligation of Funds

This MOA is neither a fiscal nor a funds obligation document. Any endeavor or transfer of anything of value involving reimbursement or contribution of funds among the Parties will be handled in accordance with applicable laws, regulations, and procedures and such endeavors will be outlined in separate agreements or contracts that shall be made in writing by representatives of the Parties. This MOA does not provide such authority.

VII. Term, Termination and Effective Date

This MOA shall become effective upon the date of signature of all Parties. It shall remain in effect until it is terminated by the Parties. Any party may terminate its participation in the MOA by providing one hundred-eighty (180) days written notice to the other Parties, which notice shall be transmitted by hand or other means of delivery confirmation.

VIII. Amendment

The Parties will meet annually to review implementation of the MOA and to recommend any appropriate modifications to the MOA based on changes to the Strategy, state management plans or other pertinent regulatory documents. Any modification to the MOA will only become effective upon the written consent of all Parties.

IX. No Third Party Beneficiary

Nothing contained herein shall be construed as granting, vesting, creating or conferring any right of action or any other right or benefit upon any third party.

X. Severability

Should any portion of this MOA be judicially determined to be illegal or unenforceable, the remainder of the MOA shall continue in full force and effect.

XI. Sovereign Immunity

The states of Wyoming, Montana, and Idaho do not waive their sovereign immunity by entering into this MOA, and each fully retains all immunities and defenses provided by law with respect to any action based on or occurring as a result of this MOA.

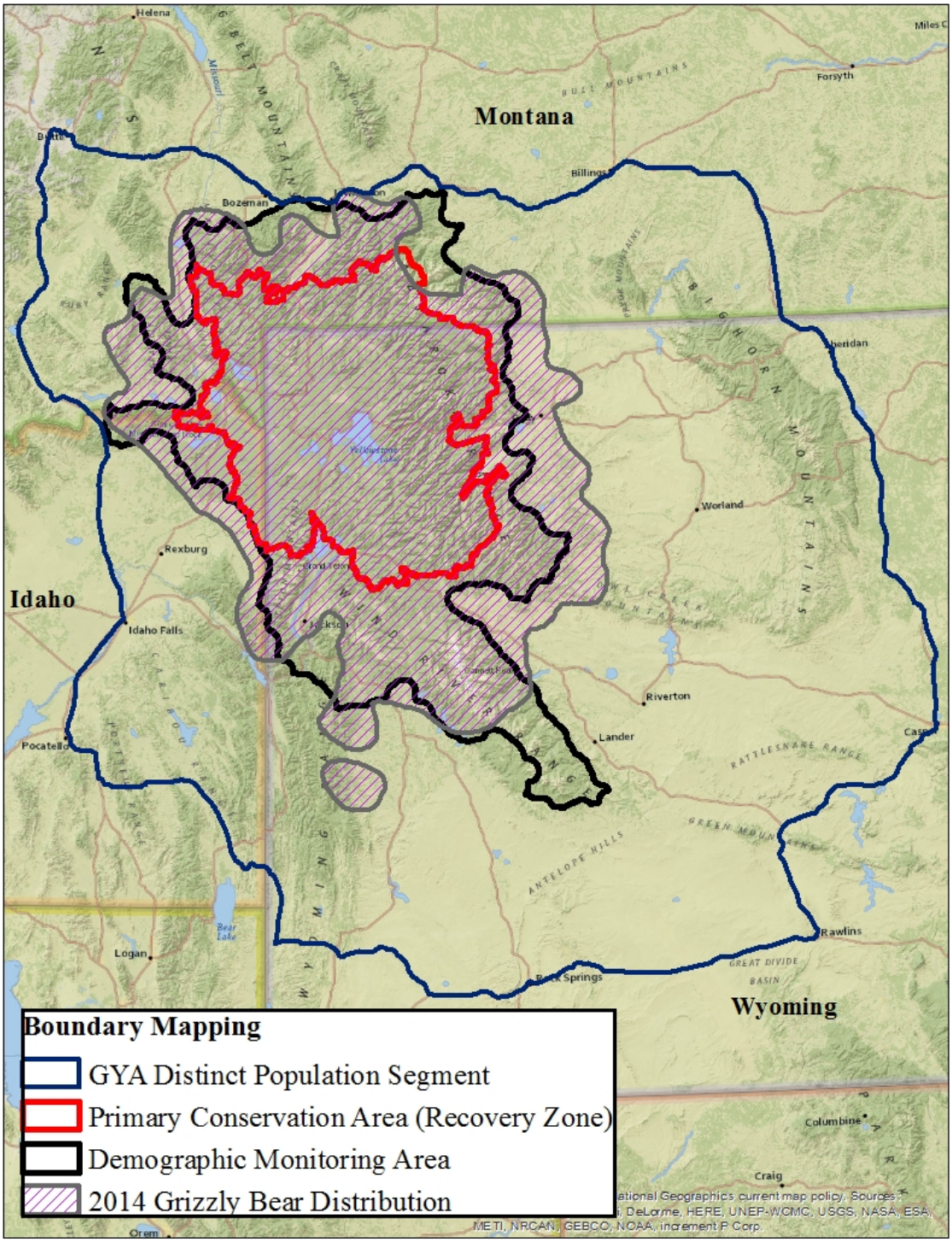
In Witness Thereof, the Parties hereto have executed this MOA as of the last written date below.

President, Wyoming Game and Fish Commission	**Date**
Director, Wyoming Game and Fish Department	**Date**

Chairman, Montana Fish and Wildlife Commission	**Date**
Director, Montana Fish, Wildlife and Parks	**Date**

Chairman, Idaho Fish and Game Commission	**Date**
Director, Idaho Department of Fish and Game	**Date**

ATTACHMENT A



ATTACHMENT B

	Wyoming WS=Wyoming Statute WGBMP=Wyoming Grizzly Bear Management Plan	**Montana** MCA= Montana Code Annotated ARM=Admin. Rules of Montana MTFWC – Montana Fish and Wildlife Commission Regulation	**Idaho** IC=Idaho Code IDAPA=Idaho Admin. Code ISP=Idaho Season Proclamation
Protected Classification	W.S. 23-1-101 (a)(xii)(A) (classified as trophy game animal)	MCA 87-2-101 (4) (classified as a game animal)	IC 36-201 IDAPA 13.01.06.100.01(e) (classified as big game animal)
No Take without Statutory/Commission/Director Authorization	W.S.23-3-102(a)	MCA 87-1-301; MCA 87-1-304; MCA 87-5-302	IC 36-1101(a)
Commission restriction of season, location boundaries, limits, gender, age	W.S. 23-1-302(a)(ii), WGBMP	MCA 87-1-304 (1); MCA 87-5-302	IC 36-104(b)(2) seasons, locations, sex, limits, methods of take; ISP
Commission limit of harvest to automatically close season, including gender-based limits	W.S. 23-1-302(a), WGBMP	MCA 87-1-304; MCA 87-5-302	IC 36-104(b)(2); ISP
Commission authority to restrict hunter effort (e.g., controlled hunts, tag limits)	W.S. 23-1-302(a)(i), WGBMP	MCA 87-1-201(8); MCA 87-1-304 (1); MCA 87-2-702; MCA 87-5-302;	IC 36-104(b)(2) IC 36-104(b)(5) authority to designate controlled hunt IC 36-408(1),(2); ISP
Prohibition against take of females with young present	W.S. 23-1-302(a)	MCA 87-1-304; MCA 87-5-302; MCA 87-5-302	IC 36-104(b)(2) (Commission authority to prohibit in conjunction with season setting); ISP Commission authority to enact through rule (*see* IDAPA 13.01.08.300)
Requirement for license and tag	W.S. 23-3-102(a)	MCA 87-1-201(8); MCA 87-2-701; MCA 87-2-702; MCA 87 2-814; MCA 87-5-302	IC 36-401 IC 36-409(c)
Mandatory Check/Report to Monitor Harvest	W.S. 23-1-302(a)	MCA 87-1-301; MCA 87-5-302	IC 36-104(b)(3) Commission authority for rules for mandatory check and report requirements (see IDAPA

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			13.01.08.420-422 for rules for all big game species open to harvest)
Authority for Emergency Season Closure based on Change in Conditions affecting mortality/habitat	W.S. 16-3-103(b)	MCA 87-1-304 (5); MCA 87-5-302	IC 36-104(b)(3) Commission emergency closure authority IC 36-106(e)(6) Director authority, closure in emergency effective upon written order
Permit required for response to depredation unless self-defense/defense of others/defense of property under threat to human life or domestic animals	W.S. 23-1-302(a)(viii)	MCA 87-1-201(8); MCA 87-1-304(1)(e); ARM 12.9.103(1)(d)	IC 36-1107 (carcass remains property of state)
Mandatory Education	W.S. 23-1-302(a)(xxii)	MCA 87-1-301; MCA 87-1-304 MFWC Black Bear Regulations	IC 36-412(a) Hunter education mandatory for those born after 1/1/1975 IDAPA 13.01.02.100 Recommended additional materials and exam regarding bear identification available on-line.
Penalties	W.S. 23-3-102(d), W.S. 23-6-202, W.S. 23-6-206, W.S. 23-6-208	MCA 87-6-413. (Hunting or killing over limit)	IC 36-1404(c)Misdemeanor IC 36-1404(d) Felony IC 36-1404(e) Revocation of hunting license for certain violations, including for take during closed season, exceeding bag/possession limit IC 36-1404(g): license revocation in Idaho revokes hunting privileges in all 44 states participating in the Interstate Wildlife Violator

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			compact
Civil Penalty	W.S 23-6-204(e)		IC 36-1404(a)(3)
Procedural Aspects of State Regulatory Mechanisms	W.S. 16-3-101, Wyoming Administrative Procedures Act	MCA 2-4-101, et seq, Montana Administrative Procedures Act	IC 74- Open Meeting Requirements, including notice for all meetings of Idaho Fish and Game Commission IC Title 67, Chapter 52 (Idaho Administrative Procedure Act), requirements for public notice and comment, legislative review IC 36-105(3) Public Notice & Publication requirements for season setting